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Plant Inventory No. 204, Part II

Plant Materials Introduced
July 1 to December 31, 1995
(Nos. 589131 to 592561)



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Plant Inventory No. 204, Part II

Plant Materials Introduced
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R.A. Norris, editor

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Plant Inventory No. 204 is a listing of plant materials introduced into the U.S. National Plant Germplasm System during calendar year 1995. The Inventory is divided into two parts that encompass PI numbers 589131 to 592561. This is not a listing of plant material for distribution.

Questions about data organization and proper plant identifications should be directed to the editor: R.A. Norris, National Germplasm Resources Laboratory, 10300 Baltimore Blvd., Bldg. 003, 4th Floor, Beltsville, MD 20705.

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Contents

Inventory	3
Scientific Name Index	384

The following were developed by Earl C. Ohl, Findlay, Ohio, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589131. Malus domestica Borkh.

June Wealthy. Pedigree - Wealthy seedling; discovered about 1937; introduced 1947. Comments:: Fruit: size variable, up to 2 1/2 in. in diam., 2 in. long; oblate; skin light yellow, brightly splashed with deep red, thin, tough, glossy, smooth; dots many, conspicuous; flesh white with yellow-greenish tinge, firm, juicy, tender, crisp subacid; aroma distinct; quality good; keeping quality medium; ripens early, first 2 weeks in July in Ohio, with Yellow Transparent; resembles Wealthy. Tree: size medium; vigorous, upright; hardy; productive and regular bearer. No value for commercial apple growing.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589132. Malus domestica Borkh.

Green Peak Spy #1. Comments:: Synonymous with Northern Spy. Diploid (2n), Chromosome counts made by C. Pratt, 1952. Not a mutation.

The following were developed by Massachusetts Horticultural Society, Roxbury, Massachusetts, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589133. Malus domestica Borkh.

Williams. Pedigree - Unknown; originated about 1750; brought to notice 1830. Comments:: Fruit: size medium, 65-70 mm; skin 90-100% splashed red stripes, very attractive; shape conic; flesh semifirm, cream-colored; flavor subacid; eating quality fair to good; harvest season mid-August, 7 wks before Delicious. Tree: moderately productive; annual cropping; diploid (Proc. Am. Soc. Hort. Sci. 53:197. 1949). Early, medium size, fully red. R.D. Way, 1993.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589134. Malus domestica Borkh.

Boiken. Pedigree - Cultivar known since 1828. Comments:: Fruit: size large 71-82; 54-71 mm; shape flat, rectangular to truncate-conic, convex, strongly ribbed at eye and on body; skin yellow, some light red flush and stripes, greasy; flesh hard, coarse, white; flavor subacid to slightly acid; season very late. Tree: healthy, some resistance to apple scab. Late yellow. Dry sweet, flavorful. Dessert & cooking. Additional LIT.CIT. 1992-93 H. Apple. Tsolum River Fruit Trees Catalogue. p. 14.

The following were developed by Patrick Flanagan, Sir Thomas Hare, Norfolk, England, United Kingdom. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589135. Malus domestica Borkh.

Golden Noble. Pedigree - Unknown; introduced 1820. Comments:: Fruit: large, 75-85 mm; skin light green to yellow; shape round-oblate; flesh firm, cream-colored; flavor subacid; eating quality fair; harvest season late September, 2 wks before Delicious; storage life at -0.5C, 180 days. Tree: medium productive; annual cropper. Large, yellow. PI received from Martino Bianchi, Pistoia, Italy in 1934.

The following were developed by H.L. Jones, Millington, Tennessee, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589136. Malus domestica Borkh.

Razor Golden Delicious. Pedigree - Russet-skinned mutation of Golden Delicious; intro. 1970. Comments:: Fruit and tree indistinguishable from Golden Delicious, except fruit 100% russeted, uniquely light colored, uniform and attractive. Russet-skinned mutation Golden Delicious. --R.D. Way, 1992.

The following were developed by S.M. Coke, Tieton, Washington, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589137. Malus domestica Borkh.

Rose Red Delicious. Pedigree - Whole-tree mutation of Starking Delicious; discovered 1943. Comments:: Fruit and tree indistinguishable from Starking Delicious. Erroneously reported to be self-fruitful. Indistinguishable from Starking Delicious. --R.D. Way, 1992.

The following were developed by Cornell University, New York Agr. Exp. Station, Geneva, New York 14456, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589138. Malus domestica Borkh.

Alton. Pedigree - Early McIntosh x NY 845 (Red Canada x Yellow Transparent crossed in 1923; introduced in 1938. Comments:: Fruit: similar to Crimson Beauty; flavor mild, subacid; ripens just after Crimson Beauty; eating and cooking apple for home and roadside markets. Tree: resembles Crimson Beauty. Early ripening.

The following were developed by Nick Bedami, New Paltz, New York, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589139. Malus domestica Borkh.

Badami Golden Delicious. Pedigree - Thought to be open-pollinated seedling of Golden Delicious; not a mutation. Selected because appeared to have less skin russet than Golden Delicious. Comments:: Fruits: Generally indistinguishable from Golden Delicious; but sometimes slightly more red color, slightly less skin russet, ground color slightly whiter; shape slightly more conic; basin slightly more ridged; dots slightly less conspicuous; flavor slightly more acid. Tree: indistinguishable from Golden Delicious in tree form; productivity; bloom date; but fruits sometimes drop more at harvest time. Similar to Golden Delicious.

The following were developed by Rutgers University, New Jersey Agr. Exp. Sta., New Brunswick, New Jersey 08903, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589140. *Malus domestica* Borkh.

Britemac. Pedigree - Melba x Kildare. Cross made in 1934 by M.A. Blake (1882-1947); selected in 1942; introd. in 1964. Comments:: Fruit: medium to large; slightly oblate; skin striped and blushed, colors better than McIntosh, very attractive, re- sembles Cortland in appearance and shape, sometimes becoming russeted; flesh white, juicy, crisp, similar to McIntosh and Cortland; flavor mildly subacid, slightly aromatic; apparently not well adapted for processing; high dessert quality, as good as or better than, McIntosh; hangs better on tree than McIntosh in central N.J.; primarily of local value (NJ & PA) Tree: considered to be very hardy; strong, spreading; bears well; blooms midseason; pleasant eating quality.

The following were developed by Fred L. Ashworth, Heuvelton, New York, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589141. *Malus domestica* Borkh.

Autumn Arctic. Pedigree - Arctic x Northern Spy. Comments:: Fruit: large, 65070 mm; 50% skin red, green ground; color pattern striped, not attractive; shape round conic; flesh soft, cream-colored; flavor subacid; eating quality fair; harvest season mid-September, 4 wks before Delicious, ripens unevenly; fruits drop from tree as they ripen. Tree: productive, presumed hardy. Use: no commercial value. Worthless.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589142. *Malus domestica* Borkh.

Cherry Cox. Pedigree - Red-fruited mutation of Cox.

PI 589143. *Malus domestica* Borkh.

Rouge Belle de Boskoop. Pedigree - Red-fruited mutation of Belle de Boskoop. PI 199650 received 1952 from Delbar D Nurseries, Paris, France. Comments:: Fruit and tree indistinguishable from Belle de Boskoop, except fruit somewhat redder; triploid (J.Am. Soc. Hort. Sci 103:690. 1978). Red-fruited mutation of Belle de Boskoop.

The following were developed by Charlotte Pratt. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589144. *Malus domestica* Borkh.

Welday Jonathan 4X. Pedigree - Welday Jonathan bud mutation; originated 1958. Comments:: Welday Jonathan treated with Thermal Neutrons to produce a Tetraploid. Tetraploid Welday Jonathan. R.D. Way, 1993.

The following were developed by Cornell University, New York Agr. Exp. Station, Geneva, New York 14456, United States. Donated by Roger D. Way,

Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589145. *Malus domestica* Borkh.

Niagara. Pedigree - Carlton x McIntosh; crossed 1939; selected 1950; introduced 1962. Comments:: Fruit: size medium to large, 70-80 mm; skin 90% red, color pattern blush and stripe, conspicuous dots, sometimes slight russet; shape round; flesh semifirm, whitish cream, some- times greenish tinge; flavor subacid; eating quality fair to good; harvest season early September, 4 wks before Delicious Tree: productive; somewhat biennial. Early, red. R.D. Way, 1992.

The following were developed by K. Lapins, Summerland, British Columbia, Canada. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589146. *Malus domestica* Borkh.

Golden Delicious 4E-25-2. Pedigree - Irradiation-induced, smooth-skinned mutation of Golden Delicious; about 1970; never introduced. Comments:: Fruit and tree: indistinguishable from Golden Delicious, except slightly better finish to fruit skin. Very similar to Golden Delicious.

The following were developed by Cornell University, New York Agr. Exp. Station, Geneva, New York 14456, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589147. *Malus domestica* Borkh.

Early Cortland. Pedigree - Cortland x Zodi; crossed 1938; selected 1949; introduced 1982. Comments:: Fruit: size large, 75-90 mm; skin 60-95% red, prominently striped; shape round-conic; flesh semifirm, cream-colored; flavor somewhat tart; eating quality very good; harvest season first week September, 4 weeks before Cortland. Tree: productive; slightly biennial. An early ripening Cortland type.

The following were developed by H. Dermen, USDA-ARS, Bureau of Plant Industry, Soils, and Agricultural Engineering, Beltsville, Maryland 20705-2350, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589148. *Malus domestica* Borkh.

Dermen Paragon 6-3-3. Pedigree - A hexaploid paragon derived from forced adventitious buds of paragon. Comments:: Hexaploid paragon.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589149. *Malus domestica* Borkh.

Collins June. Comments:: Fruit: size large, 70-80 mm; skin greenish-yellow to yellow shape round-oblate; flesh soft, cream-colored; flavor sub- acid; eating quality fair; harvest season very early, early August; estimated commercial usefulness none. Tree: unprod- uctive; fire blight susceptibility rating 7; very early yellow.

PI 589150. Malus domestica Borkh.

Lowry. Comments:: Fruit: size, small to medium, 65-75 mm; skin 100% dull, dark blush, not attractive; shape round-oblate; flesh hard, light yellow; flavor bland, low aromatics; eating quality fair; harvest season very late, late October 3 wks after Delicious. Tree: very biennial; over crops in "on" years. Small, very dark red, hard, late.

The following were developed by J.L. Richardson, Monitor, Washington, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589151. Malus domestica Borkh.

Richared Delicious. Pedigree - Whole-tree, red-fruited mutation of Delicious; discovered 1915; intro. 1927. Comments:: Fruit and tree indistinguishable from Delicious; except fruit redder; colors earlier and darker than Delicious; blush color pattern; attractive light cherry red. Red- fruited mutation of Delicious. --R.D. Way, 1992.

The following were developed by H. Dermen, USDA-ARS, Bureau of Plant Industry, Soils, and Agricultural Engineering, Beltsville, Maryland 20705-2350, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589152. Malus domestica Borkh.

Dermen Black Stayman. Pedigree - A derivative from a forced adventitious (AD) bud of improved blaxtayman 201, about 1961. Comments:: From an adventitious bud of blaxtayman.

The following were developed by William J. Wilson. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589153. Malus domestica Borkh.

Magnolia Gold. Pedigree - Golden Delicious, open-pollinated seedling; discovered in the 1960s; intro. 1970 by Bountiful Ridge Nursery, Princess Anne, MD; plant patent 3110. Comments:: Fruit: size above medium, 70-80 mm, variable fruit sizes; skin yellow, 20% orange blush, reportedly 95% russet free; shape conic; flesh firm; flavor subacid; eating quality good; similar to Golden Delicious, except more orange and less russet; harvest season late October, 3 weeks after Delicious. Tree: growth habit similar to Golden Delicious; medium productivity; biennial cropping. R.D. Way, 1991.

The following were developed by Chelan Apple Co., Chelan, Washington, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589154. Malus domestica Borkh.

Spur Winter Banana. Pedigree - Whole-tree, spur mutation of Winter Banana; discovered about 1962; introduced 1971. Comments:: Fruit: same as Winter Banana. Tree: 1/2 normal size; used as pollenizer of other varieties. Spur growth mutation of Winter Banana. R.D. Way, 1993. HortScience 7:455. 1972.

The following were donated by Roger D. Way, Cornell University, New York

State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589155. *Malus domestica* Borkh.

Manito. Comments:: Fruit: size ;arge 75-85mm: skin 50-90% orange blush, attractive; flavor slightly acid; harvest season mid-October 1 wk after Delicious. Tree: leaves reddish tinge. R.D. Way, 1991.

The following were developed by Hedgerow, Durham, Washington County, Arkansas, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589156. *Malus domestica* Borkh.

King David. Pedigree - Jonathan x Arkansas Black; discovered 1893; introduced 1902. Comments:: Fruit: medium size, 65-75 mm; skin 100% dark red stripe, appearance similar to Winesap; shape round-oblate; flesh firm, light yellow; flavor acid; eating quality fair; harvest season late October, 2 wks after Delicious, Tree: vigorous, productive, alternate cropping; fruits hang on tree after they ripen. Medium size, dark red, sour.

The following were developed by Charlotte Pratt. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589157. *Malus domestica* Borkh.

Welday Jonathan 2-4-4-4. Pedigree - Bud mutation of Welday Jonathan 2-2-4-4; originated 1958. Comments:: 2-2-4-4 Welday Jonathan treated with X-ray 3000 rads produced this 2-4-4-4 Welday Jonathan. R.D. Way, 1993.

The following were developed by D.B. Perrine, Centralia, Illinois, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589158. *Malus domestica* Borkh.

Perrine York 2-4-4-4. Pedigree - York bud mutation; discovered 1954; never introduced. Comments:: Fruit: Indistinguishable from York Imperial, except larger, 85-100 mm; oblate; dull color; watercore. Tree: Periclinal Cytochimera 2-4-4. (Proc. Amer. Soc. Hort. Sci. 82:56. 1963) Tetraploid York Imperial. --R.D. Way, 1992.

The following were developed by Rutgers University, New Jersey Agr. Exp. Sta., New Brunswick, New Jersey 08903, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589159. *Malus domestica* Borkh.

Jerseyred. Pedigree - Gallia Beauty x White Winter Pearmain; selected 1947; introduced 1954. Comments:: Fruit: size large, 75-85 mm; skin 70-100% red, blushed; shape round-conic; flesh very firm; light yellow; flavor subacid; eating quality less than fair; harvest season very late, 3 wks after Delicious; resembles Rome Beauty. Tree: vigorous; dense; very productive; somewhat biennial. Very late, similar to Rome.

The following were developed by Robert Conkle, Chester, West Virginia, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589160. *Malus domestica* Borkh.

Conkle Jonathan 2-4-4-4. Pedigree - Large-fruited mutation of Jonathan; type 1, 2-4-4-4 Diploid-Tetraploid Chimera; discovered about 1943; never introduced. Comments:: Fruit: large. Produces diploid gametes; a periclinal cytochimera 2-4-4-4. Tree: less fruitful than parent. Chimeral nature determined at the New York State Agr. Exp. Sta., Geneva, NY; accessioned in 1950 by this Sta. 2-4-4-4 cytochimera of Jonathan.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589161. *Malus sieboldii* (Regel) Rehder

Collected in Unknown. Japan; introduced into US in 1856. Comments:: Flowers: single; 20 mm wide; white; late blooming. Fruit: 30 mm; light red; oval. Tree: annual bearer. Leaves: some lobed, some not. Toringo Crab is *sieboldii*; cutleaf crab is *Toringoides*.

PI 589162. *Malus coronaria* (L.) Miller

Glabrata. Collected in United States. North Carolina to Alabama. Pedigree - Seed collected 1912; introduced by Arnold Arboretum. Comments:: Flowers: single; 30 mm; pink changing to white. Fruit: 30 mm; yellow-green; shape oblate. Tree: weak growing; very light cropping; leaves lobed, dark greenish red, sparse, early senescence. Not especially ornamental.

The following were developed by Willard L. Bates, Stevensville, Pennsylvania, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589163. *Malus domestica* Borkh.

Bates Lobo. Pedigree - Lobo bud mutation. Comments:: Fruit: large; irregular. A periclinal cytochimera 2-2-2-4; tends to revert to diploid; chimeral nature determined at the New York State Agr. Exp. Sta., Geneva, NY; accessioned in 1952 and 1953 by this Sta. Tree: vigorous; somewhat spreading; stout branches; somewhat alternate bearing habit. No commercial plantings, academic interest only. Tetraploid Lobo.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589164. *Malus prunifolia* (Willd.) Borkh.

DE 229. Comments:: See description of *Malus prunifolia* GMAL 1575.

The following were developed by Aomori Apple Expt. Sta., Kuroishi, Aomori, Japan. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589165. *Malus domestica* Borkh.

Golden Melon. Pedigree - Golden Delicious x Indo; cross 1931; first fruit 1938; named 1948; published 1949. Comments:: Fruit: large, 65-80mm; skin light green to yellow, attractive; shape round-conic;

flesh firm, cream-colored; flavor sweet; eating quality fair to good; harvest date mid- October, 1 wk after Delicious. Tree: vigorous; productive. Large, yellow, sweet. Received from Aomori Apple Expt. Sta. Aomori Prefecture, Japan in 1951.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589166. *Malus pumila* Miller

Ruberima. Collected in Unknown. Wyman, D. 1955. Crab Apples of America. Amer. Assoc. Bot. Gardens and Arboretums. p. 46. Comments:: Flowers: single; 35 mm wide; pink to white. Fruit: too large to be a crab, 55 mm; green. Some malling dwarfing apple rootstocks are selections of *Paradisiaca*. Dwarfing malling apple rootstocks.

The following were developed by Diedrich Uhlhorn, Jr., Grevenbroich, Rhineland-Palatinate, Germany. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589167. *Malus domestica* Borkh.

Freiherr Von Berlepsch. Pedigree - Ananas Reinette x Ribston Pippin; raised about 1880. Comments:: Fruit: size medium to large, 70-80 mm; skin 40-80% dull red striped, some russet, some scar skin; shape round-oblate; flesh firm, cream-colored; flavor slightly acid; eating quality fair; harvest season mid-October, 1 wk after Delicious. Tree: productive. Late, dull, slightly acid. PI received from Max Planck Inst., Voldagsen, Germany in 1951.

The following were developed by Agriculture Canada, Morden Research Station, P.O. Box 3001, Morden, Manitoba, Canada. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589168. *Malus domestica* Borkh.

Garland. Pedigree - Melba x Haralson; selected 1949; introduced 1961. Comments:: Fruit: size medium to large, 70-85 mm; skin 70-90% red, striped; shape round-oblate; flesh soft, cream-colored, water core; flavor subacid, bland; eating quality fair to good; harvest season mid-September, 4 wks before Delicious. Tree: productive; biennial. Early mid-season, red.

The following were developed by South Dakota State Univ., Brookings, South Dakota, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589169. *Malus domestica* Borkh.

Kansomolez. Pedigree - Unknown; originated before 1933 from Research of N.E. Hansen. Comments:: Fruit: crabapple; small 65 mm; skin 100% pink blush; shape conic; flesh firm, pink; flavor slightly acid, astringent; eating quality poor; harvest season late September, 2 wks before Delicious. Tree: very vigorous; productive; annual cropping; foliage bronze, green with reddish tinge; flower petals lavender. Crabapple.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589170. Malus brevipes (Rehder) Rehder

Pedigree - (*Malus brevipes*) Introduced into cultivation in 1883.
Comments:: Flower: single, small; pure white. Fruit: small 15 mm, berrylike; round; 100% bright red, attractive; calyx mostly Deciduous; stems short; ripening season mid-October, 1 wk after Delicious. Tree: small, stiffly branched bush; heavily productive. Small tree, attractive small fruits.

The following were developed by J.E. March, Wellsboro, Pennsylvania, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589171. Malus domestica Borkh.

March #1. Comments:: Fruit: size very large, 85-90mm; skin mostly grass green, sometimes 10-20% dull orange splash, unattractive; shape round-oblate; flesh firm, greenish-cream colored; flavor slightly acid; eating quality fair; harvest season early October, with Delicious. Tree: triploid; large, vigorous; productive; very biennial cropping; fire blight susceptibility rating 5. Large, green, triploid. R.D. Way, 1991, .

The following were developed by Dept. Hort., Univ., Ill., Urbana, Illinois, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589172. Malus domestica Borkh.

Crandall. Pedigree - Rome Beauty x Jonathan; crossmade 1914; selected 1925; introd. 1952. Comments:: Fruit: medium to small; roundish oblate; skin red, thick; dessert and cooking usage; ripens before Winesap; keeps well in storage through Apr. Tree: productive; comes into bearing early; blooms in midseason; relatively disease resistant. Mid-season, red.

The following were developed by E.A. Ohlson. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589173. Malus domestica Borkh.

Ohlson. Collected in Unknown. Puyallup, Washington, United States. Pedigree - Unknown; chance seedling; discovered about 1935. Comments:: Fruit: size very large, 80-100 mm; skin 30-70% red, splashed stripe; shape oblong, blocky; flesh soft, nearly white; flavor subacid; eating quality fair; harvest season beginning of September, 5 wks before Delicious. Tree: productive annual bearer; Diploid (Proc. Amer. Soc. Hort. Sci. 82:56. 1963). Very large, block shape, diploid. R.D. Way, 1992.

The following were developed by Woolsthorpe, Grantham, England, United Kingdom. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589174. Malus domestica Borkh.

Flower of Kent. Pedigree - Unknown. Original tree growing about 1660. Comments:: Fruit: The falling of this apple led Isaac Newton to discover the law of gravity. Size large, 70-80 mm; 60- 90% red, striped; shape conic; flesh firm, cream-colored; flavor slightly acid,

slightly astringent; eating quality poor; harvest season, ripens unevenly, early September, 4 wks before Delicious. Tree: medium productivity; fruits drop severely before they ripen. Isaac Newton Apple.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589175. Malus domestica Borkh.

Coat Jersey. Comments:: Fruit: size medium, 65 mm; skin unattractive; flesh water- core; harvest season mid-September. Tree: nonprecocious, biennial cropping, unproductive. English Cider.

The following were developed by USDA Northern Great Plains Field Station, Mandan, North Dakota, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589176. Malus domestica Borkh.

Garrison. Pedigree - Duchess of Oldenberg x Starking Delicious; selected 1949; tested as Mandan 49-5; introduced 1957; sibling of Thorberg and Mandan. Comments:: Fruit: size very large, 80-90 mm; skin 80-100% red, splash- ed stripe, not highly attractive; shape round-conic; flesh firm, cream-colored to yellowish; flavor subacid to bland; eating quality fair to good; harvest season uneven maturity, early September, 4 wks before Delicious; short storage life, 45 days at -0.5C. Tree: hardy; spreading; vigorous; medium yields; biennial. Large, red, early mid-season.

The following were developed by Aomori Apple Experiment Station, Kuroishi, Aomori, Japan. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589177. Malus domestica Borkh.

Megumi. Pedigree - Ralls Janet x Jonathan; raised 1931; named 1948; patented 1950. PI 199529 received 1952 from Aomori Apple Expt. Sta., Kuroishi, Aomori, Japan. Comments:: Fruit: medium size, 60-70mm; skin 80% red, striped, green ground, some bitter pit, Jonathan spot; shape round conic; flesh semifirm, cream-colored; flavor subacid, slightly bitter; eating quality fair; harvest season late October, 2 wks after Delicious. Tree: small; strongly alternate bear- ing, overcrops in on year; fruits borne in clusters. Medium size, late, Japanese. R.D. Way, 1992.

The following were developed by M. Black. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589178. Malus domestica Borkh.

Black Ben Davis. Pedigree - Red-fruited mutation of Ben Davis. Comments:: Fruit and tree indistinguishable from Ben Davis, except fruit skin has much more red pigment. A red sport of Ben Davis.

The following were developed by Cornell University, New York Agr. Exp. Station, Geneva, New York 14456, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received

06/24/1985.

PI 589179. Malus domestica Borkh.

Greendale. Pedigree - McIntosh x Lodi; crossed 1924; selected 1936; introduced 1938. Comments:: Fruit: large, 80-85 mm; skin pale green; shape round-oblate flesh semifirm, white; flavor subacid; eating quality fair to good; harvest season early, late August, 6 wks before Delicious. Tree: large, medium productive. Early, pale, green, large.

The following were developed by R.L. Wodarz, Wyndmere, North Dakota, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589180. Malus domestica Borkh.

Cranberry. Pedigree - Redflesh x Dolgo; introduced 1953. Comments:: Fruit: crab; small; long, conic pointed; skin dark red; flesh red, crisp, acid, quality excellent for jelly; matures early Sept. Tree: vigorous; upright when young; productive; hardy; flowers red; useful as an ornamental. Ornamental flowering crab.

The following were developed by Dept. Horticulture, Univ. Illinois, Urbana, Illinois, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589181. Malus floribunda Siebold ex Van Houtte

Prima. Pedigree - PRI 14-510 x NJ 123249; Vf gene inherited from malus flori- bunda 821. Comments:: Fruit: size medium, 70-75 mm; skin 60-95% red, striped; shape round-conic; flesh semifirm, light yellow; flavor sub- acid; eating quality fair to good; harvest season late September, 2 wks before Delicious; fruits do not store well. Tree: spreading; vigorous; diploid (JASHS 103:690.1978); productive; biennial cropping; immune to apple scab; resistant to fire blight; susceptible to cedar-apple rust; only slightly susceptible to mildew. First scab-resistant introduction. --R.D. Way, 1992.

The following were developed by Max Bazzanella Nursery, Mineral, Virginia, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589182. Malus domestica Borkh.

Frostproof. Pedigree - Unknown; discovered 1930; introduced 1947. Comments:: Bloom: very late, 2 wks after Delicious, escapes late spring frost. Fruit: very small, 40-60 mm; skin green, russet, bronze, tough, unattractive; shape round-conic; flesh firm, cream-colored; flavor very astringent; eating quality very poor, inedible; harvest season very late, early November 4 wks after Delicious. Tree: very unproductive; very biennial. Very late bloom.

The following were developed by F.W. Cornwall, Pulteneyville, New York, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589183. Malus domestica Borkh.

Cornwall McIntosh 2-2-2-4. Pedigree - McIntosh bud mutation; diploid-tetraploid chimera type 3 (2-2-2-4). Comments:: Fruit: indistinguishable from McIntosh, except 30% of fruits are about twice

the weight and size of normal fruits. Diploid-Tetraploid Chimera. NOTE: The inventory GMAL 1067.06 was indexed for three different viruses (SP, SG, CLS) and was found negative, 5/28/1992. However, symptoms suggest another virus present on Radiant indicator. (Einset J. & B. Imhoffe).

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589184. *Malus prunifolia* (Willd.) Borkh.

Dulcis. Comments: Flowers: single; pink to white. Fruit: 40-50 mm; 70% pink blush; conic; flesh yellow; protruding calyx. Tree: heavy cropping; alternate bearing. Flowering crab, mediocre attractiveness.

The following were developed by Isaac Jefferies. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589185. *Malus domestica* Borkh.

Jefferies. Pedigree - Unknown; raised about 1830; named by Pennsylvania Horticultural Society in 1848. Comments: Fruit: size medium, 65-75 mm; skin 40-90% splashed stripes; shape round-oblate; flesh semifirm, cream-colored; flavor subacid; eating quality good; harvest season mid-season, 2 wks before Delicious, ripens unevenly. Tree: productive; strongly biennial; susceptible to woolly aphid. Mid-season, splashed stripes, good quality. *Add. LIT CIT: Beach, S.A. 1905. The Apples of New York. Vol. 1 and 2. J.B. Lyon Printers, Albany, NY Vol 2. p. 108; 1992-93 H. Apple. Tsolum River Fruit Trees Catalogue. p. 21.

The following were developed by Univ. Minnesota, Exelsior, Minnesota, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589186. *Malus domestica* Borkh.

Lakeland. Pedigree - Open-pollinated seedling of Malinda; seed 1907, selected 1927; introduced 1950. Comments: Fruit: size medium; oblate to roundish oblate; skin attractive, bright, medium dark red, obscurely striped, medium tender; stem short, medium thick; flesh creamy yellow, sometimes slightly tinged red, texture fine, juicy, medium tender, mildly acid change to subacid in cold storage; quality very good for sauce and pies, good for dessert; stores well to mid-Dec. or later; no pre-harvest drop; Wealthy type; does not require thinning; non-clustering fruiting habit. Tree: bears ann., vig., hardy; suscept. to cedar rust, mod. resist. to fireblight and scab diseases.

The following were developed by Will S. Hall, Hannibal, Missouri, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589187. *Malus domestica* Borkh.

Hall Keeper. Pedigree - Thought to be Jonathan x Winesap (note: Winesap pollen is no viable); introduced about 1916. Comments: Fruit: size medium, 65-80 mm; skin 20-80% red, striped; shape round-oblate; flesh firm, cream-colored; flavor subacid; eating quality below fair; harvest season late, early November, 4 wks after Delicious; storage life long, 7-8 mos. at -0.5DC. Tree: annually productive. Not same as Hall Keeper cited by Ragan, W.H. 1905. Nomenclature of the Apple USDA, Bur.

Plant Industry Bul. 56. Same as Rome Beauty.

The following were developed by R.C. Coombs, Henniker, New Hampshire, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589188. *Malus domestica* Borkh.

Coombs Wealthy. Pedigree - Wealthy Bud mutation; discovered about 1942; never introduced. Comments:: Type 2 (2-2-4-4) chromosomal chimera; breeds as a diploid; fruits same as wealthy, except larger. 2-2-4-4 Chromosomal Chimera.

The following were developed by University of Idaho, Idaho, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589189. *Malus domestica* Borkh.

Idagold. Pedigree - Wagener x Esopus Spitzenburg; selected 1939; introduced 1944. Comments:: Fruit: size large, 80-100mm; skin greenish yellow, waxy, scarfskin; shape round-conic; flesh firm, cream-colored; flavor slightly acid; eating quality less than fair; harvest season late, late October, 3 wks after Delicious. Tree: vigorous; productive; annual cropping. Late, large, yellow.

The following were developed by Univ. Minn. Fruit Breeding Farm, Excelsior, Minnesota, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589190. *Malus domestica* Borkh.

Wedge. Pedigree - Ben Davis x open-pollinated; selected 1912; introduced 1922. Comments:: Fruit: size large, 75-85 mm; skin 50-80% red, striped; shape round-conic; flesh firm, cream-colored, sometimes water core; flavor slightly acid; eating quality less than fair; harvest season late September, 2 wks before Delicious. Tree: very productive; annual cropping; winter hardy; some resistance to European Red Mite; diploid. (Proc.Am.Soc.Hort. Sci. 53:197. 1949). Large, red mid-season.

The following were developed by John B. Collamer, Hilton, New York, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589191. *Malus domestica* Borkh.

Collamer Twenty Ounce. Pedigree - A red-fruited mutation of Twenty Ounce, discovered about 1900. Comments:: Fruit and tree indistinguishable from Twenty Ounce, except fruit redder, broadly striped and splashed with bright carmine. A red sport of Twenty Ounce.

The following were developed by L. Mood. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589192. *Malus domestica* Borkh.

Starking. Pedigree - Red-fruited limb mutation of Delicious; discovered 1921; introduced 1924. Comments:: Fruit and tree indistinguishable from Delicious, except fruit redder. R.D. Way, 1993.

The following were developed by H. Derman, USDA-ARS, Plant Industry Station, Crops Research Division, Beltsville, Maryland 20705-2350, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589193. *Malus domestica* Borkh.

Dermen Paragon 3-6-6. Pedigree - A hexaploid paragon derived from forced adventitious buds of paragon. Comments:: Hexaploid Paragon.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589194. *Malus domestica* Borkh.

Whitney Russet King. Pedigree - Russet-fruited periclinal chimera mutation of Tompkins King; discovered about 1918. Comments:: Same as Tompkins King, except a portion of the fruits are russeted, the rest normal. Russet-fruited mutation of Tompkins King. R.D. Way, 1993.

PI 589195. *Malus domestica* Borkh.

Yellow Bellflower. Collected 1817 in Unknown. Farm near Crosswicks, Burlington County, New Jersey. Comments:: Fruit: variable in size, small to large or very large. Shape roundish-oblong varying to oblong conic. Attractive yellow apple and appearance improves in storage. Flesh whitish tinged with pale yellow, firm, crisp, moderately fine-grained, rather tender, juicy aromatic, very good for culinary use; very acid. Tree: medium to large, vigorous to very vigorous. Season late. Additional LIT.CIT. 1992-93 H. Apple. Tsolum River Fruit Trees Catalogue. p. 33. (Received 1910).

The following were developed by Before 1832., Indiana, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589196. *Malus domestica* Borkh.

Crow Egg. Comments:: Fruit: size small to medium, 60-70 mm; 90% red blush; shape round-conic; flesh firm, white; flavor subacid; eating quality fair; harvest season early October. Tree: extremely biennial cropping; medium productivity; susceptible to fire blight. Cider type.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589197. *Malus domestica* Borkh.

Black Crofton. Pedigree - Unknown; USDA Plant Introduction received as budsticks on August 20, 1957 from Mr. Oates, Grove, Huon, Tasmania. Comments:: Fruit: medium size, 60-70 mm; skin 80% red; color pattern stripe; shape round; flesh firm, white; flavor slightly acid not astringent; eating quality poor; harvest date late, November 1, 3 wks after Delicious; storage life long, 8 mo. at -0.5DC; use cider. Tree: low to medium yields; fire blight susceptibility rating 6. Cider apple.

PI 589198. *Malus x platycarpa* Rehder

Collected in United States. North Carolina to Georgia. Pedigree - Hybrid: *Malus coronaria* x *Malus pumila*; discovered 1912. Comments:: Flowers: single; 35 mm wide; pink buds, white flowers. Fruit: 40-50 mm;

oblate; greasy; acid, astringent, inedible; calyx persistent. Tree: vigorous; productive; fruits drop as they ripen. Leaves: lobed. Small, green, greasy, inedible fruit.

The following were developed by H. Dermen, USDA-ARS, Bureau of Plant Industry, Soils, and Agricultural Engineering, Beltsville, Maryland 20705-2350, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589199. *Malus domestica* Borkh.

Dermen McIntosh 4X. Pedigree - By disbudding young trees of Kimball McIntosh (A mixture of 2x-4x-4x and 2x-4x-2x), Dermen obtained both 2x and 4x adventitious shoots. This Dermen Mc Intosh was derived from the 4x shoots, about 1949.

The following were developed by Judge Mooney, Granby, New York, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589200. *Malus domestica* Borkh.

Mann. Pedigree - Chance seedling. Comments:: Fruit: size large, 75-85mm; skin grass green; shape round- oblate; flesh hard, cream-colored; flavor subacid; eating quality fair; harvest season very late, early November, 4 wks after Delicious. Tree: vigorous, very large; productive strongly biennial. R.D. Way, 1991. Hard, green, late keeping.

The following were developed by George L. Barkley, Manson, Washington, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589201. *Malus domestica* Borkh.

Barkley Rome. Pedigree - Rome Beauty red-fruited bud mutation. Comments:: Fruit: indistinguishable from Rome Beauty except skin color is redder; 90% red; color pattern splashed; less red than Law Rome. Red mutation of Rome Beauty.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589202. *Malus domestica* Borkh.

Hubbardston Nonsuch. Pedigree - Unknown; first recorded 1832. Comments:: Fruit: size large, 75-85 mm; skin 40-90% dull orange-red, striped, scarfskin, greasy, not highly attractive; shape round-conic; flesh firm, cream-colored; flavor subacid, rich eating quality better than fair; harvest season mid-October, 1 wk after Delicious. Tree: extremely biennial cropping; fruits drop as they ripen. Large, dull red, fairly good quality.

The following were developed by Canada Department of Agriculture, Central Experiment Farm, Ottawa, Ontario, Canada. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589203. *Malus domestica* Borkh.

Hunter Spy 2-4-4. Pedigree - Colchicine-induced tetraploid form of Kinkead Spy; about 1953. Comments:: Fruit: similar to Kinkead Red Northern Spy, except larger size 100 mm; 90% red, stripes; severe bitter pit. Tree: unproductive. Tetraploid 2-4-4 Northern Spy.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589204. Malus domestica Borkh.

Sweden Spartan. Pedigree - Tetraploid mutation of Spartan; National Fruit Trials in England received in 1965. Comments:: 4X nature verified by C. Pratt, NY State Agr. Exp. Sta. in 1972. Fruit: size much larger than Spartan, 80-100 mm. Skin 90-100% dark red like Spartan but has russet lines, grooves and nonpigmented chimeras. Shape very oblate, irregular, 5-sided. Flesh color, texture and eating quality same as Spartan. Harvest season 5 days earlier. Leaves: middle leaves of shoots reflexed (turned backward). Fruits drop. Not same as hunter 4X Spartan. No commercial value. Tetraploid Spartan. R.D. Way, 1993.

The following were developed by G.H. Howe, New York Agricultural Exp. Station, Geneva, New York, United States; John Einset; W. McIlvain. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589205. Malus domestica Borkh.

Wrixparent 2-4-4-4. Collected in Unknown. 1940. Pedigree - John Einset claimed it is a tetraploid mutation of Yellow Transparent, but Wrixham McIlvain claimed it is a seedling of Yellow Transparent and G.H. Howe claimed it is synonymous with Early Harvest' discovered 1920; introduced. Comments:: Fruits similar to Yellow Transparent, except larger, 75-80 mm. Tree: more spreading than Yellow Transparent; 2-4-4-4 Periclinal Cytochimera (Proc.Am.Soc.Hort.Sci. 58:103. 1951 and Proc.ASHS 55:262. 1950). R.D. Way, 1993.

The following were developed by L. Johnson, Ticonderoga, New York, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589206. Malus domestica Borkh.

Johnson McIntosh 2-4-4-4. Pedigree - McIntosh but mutation; Type 1 Diploid-Tetraploid chimera, 2-4-4-4. Comments:: Fruit and tree: indistinguishable from McIntosh, except fruit very large, 75-85 mm. Type 1 Tetraploid McIntosh.

The following were developed by H. S. Loop, North East, Pennsylvania, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589207. Malus domestica Borkh.

Loop Giant Spy. Pedigree - Large-fruited mutation of Northern Spy; planted about 1908; discovered 1925; never introduced. Comments:: Fruit; large; flesh more tender, softer, and more subject to pitter pit than parent. A periclinal cytochimera 2-2-4-4 Tree: poor cropper. Chimeral nature determined at the New York State Agr. Exp. Sta., Geneva, NY. Large-fruited mutation of Northern Spy.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589208. *Malus domestica* Borkh.

Fruitland Delicious 2-4-4-4. Pedigree - Delicious bud mutation.
Comments:: *(KLN) = Ken Livermore Nursery.

The following were developed by Joseph Cato, Hobart, Tasmania, Australia. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589209. *Malus domestica* Borkh.

Crofton. Pedigree - Originated about 1870. Comments:: Fruit: small to medium, 55-70 mm; skin 90% dull red stripe; shape round-oblate; flesh firm, greenish cream-colored; flavor subacid, astringent; eating quality poor; harvest season very late, early November. Tree: nonprecocious, very productive. Cider.

The following were developed by Philip J. Jenkins, Yakima, Washington, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589210. *Malus domestica* Borkh.

Golden Delicious. Pedigree - A spur growth habit mutation of Golden Delicious; discovered 1959; introduced 1961 by Stark Bro's Nursery, Louisiana, MO. Comments:: Fruit: indistinguishable from Golden Delicious, except sometimes slightly more russeted. Tree: as Golden Delicious, except spur growth habit. A spur Golden Delicious.

The following were developed by Cornell University, New York Agr. Exp. Station, Geneva, New York 14456, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589211. *Malus domestica* Borkh.

Redfield. Pedigree - Wolf River x *M. pumila* Niedzwetzkyana; crossed 1924; intro. 1938. Comments:: Fruit: size above medium, 70-80 mm; skin 90% dark red, blushed; shape round-conic; flesh semifirm, outer half red, inner half cream-colored; flavor sour; eating quality poor, harvest season mid-October, 1 wk after Delicious. Tree: not highly productive; annual cropping. Red flesh, poor quality similar to Redford. Diploid (Proc. Am. Soc. Hort. Sci 53:197. 1949). --R.D. Way, 1992.

The following were developed by Samuel Porter. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589212. *Malus domestica* Borkh.

Porter. Pedigree - Raised about 1800. Comments:: Fruit: size above medium, 70-80 mm; skin yellow, sometimes 20% orange stripe, russet spots or blotches; shape long conic flesh semifirm, cream-colored; flavor subacid, sometimes slightly astringent; eating quality fair to good; harvest season mid-September, 3 wks before Delicious. Tree: medium productive; annual bearer. Early, yellow, fair quality. --R.D. Way,

1992.

The following were developed by Agriculture Canada, Morden Research Station, P.O. Box 3001, Morden, Manitoba, Canada. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589213. *Malus domestica* Borkh.

Pink Beauty. Pedigree - *Malus baccata* x *Niedzwetzkyana*; named before 1958 by Simpson Orchard Co., Vincennes, IN. Comments:: Flower: Single; whitish pink. Fruit: crab, 25-40 mm; skin 100% pink blush, attractive; shape oblong; ripening season mid-September, 3 wks before Delicious; fruits drop as they ripen. Tree: heavy cropping; Diploid (Proc. Amer. Soc. Hort. Sci. 103:690. 1978). Ornamental Flowering Crab. --R.D. Way, 1992.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589214. *Malus domestica* Borkh.

American Summer Pearmain. Pedigree - First described by Coxe in 1817. Comments:: Size medium; shape tall, rectangular; skin yellow flushed and striped red; flesh tender, yellow; flavour subacid, aromatic; season second-early. Early yellow.

The following were developed by Albert F. Etter, Ettersburg, California, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589215. *Malus domestica* Borkh.

Crimson Gold. Pedigree - Yellow Newtown x *Esopus Spitzenburg*. Introd. 1944. Comments:: Fruit: large, 65-70 mm; skin 10% pink blush on green ground shape conic; flesh firm, cream-colored; flavor subacid; eating quality fair; harvest season very late, early November. Tree: productive; alternate bearing. Late, large, yellow-green. ***NOTE: 18-2-40 was mixed up with Wickson Crab (GMAL 1306) correct number for Crimson Gold is 18-2-36.

The following were developed by George Jeffry, Milwaukee, Wisconsin, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589216. *Malus domestica* Borkh.

Milwaukee. Pedigree - From seed of Oldenburg; before 1899. Comments:: Fruit: size large 70-85mm; skin 50-90% red, striped, not attractive; shape oblate; flesh semifirm, cream-colored; flavor slightly acid; eating quality less than fair; harvest season mid-October, 1 wk after Delicious. Tree: productive; biennial cropping. Late, mid-season, flat, sour. R.D. Way, 1992.

The following were developed by H. Dermen, USDA-ARS, Bureau of Plant Industry, Soils, and Agricultural Engineering, Beltsville, Maryland 20705-2350, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589217. *Malus domestica* Borkh.

Dermen Stayman 3-6-6. Pedigree - Derived from a forced adventitious bud of improved blaxtayman 201, about 1961. Comments:: Hexaploid blaxtayman.

The following were developed by Dept. Hort., ND St. Univ. and USDA, Mandan, North Dakota, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589218. *Malus domestica* Borkh.

Hazen. Collected in Canada. Pedigree - Duchess of Oldenburg x Starking Delicious; introduced 1980. Comments:: Fruit: large, up to 3 in. diam., round to round oblate; basin at blossom end quite broad and shows tendency toward five points typical of Starking Delicious; skin attractive dark red with 80% colored; flesh greenish-yellow, medium firm, juicy, slightly coarse; flavor mild, subacid; ripens late Aug. at Fargo. Tree: demi-dwarf; bears at 3-4 yrs. hardy, free of fireblight, annual cropper. Similar to well-colored Delicious, but ripens 6 wks earlier.

The following were developed by N.E. Hansen, S. Dak. Agr. Expt. Sta., Brookings, South Dakota, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589219. *Malus domestica* Borkh.

Kola. Pedigree - *Malus coronaria* 'Elk River' x *Malus pumila* 'Duchess', introduced 1922. Comments:: Flowers: single; 40-50 mm wide; pink. Fruit: size small 50 mm; skin green, greasy; poor quality. Tree: Tetraploid (Nebel, B.R. 1931. Proc. Amer. Soc. Hort. Sci. 27:406-410). Ornamental flowering crab apple.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589220. *Malus fusca* (Raf.) C. Schneider

F-2. Collected in Unknown. Seedling from Oregon forest. Comments:: Flower: single; small; white. Fruit: 12 mm; oblong. Leaves: lobed. See *Malus fusca*.

The following were developed by D. Sergent. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589221. *Malus domestica* Borkh.

Yellow Red Delicious. Collected in Unknown. North Rose, New York, United States. Pedigree - Anthocyaninless mutation of Delicious; discovered 1967. Comments:: Fruit and tree indistinguishable from Delicious, except fruits are not red but yellow-green, sometimes 20% dull pinkish blush, sometimes red streak chimeras. Delicious with no red color. R.D. Way, 1993.

The following were developed by Arnold Arboretum, The Arborway, Jamaica Plain, Massachusetts 02130, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589222. *Malus x arnoldiana* (Rehder) Sarg. ex Rehder

Arnold Crab. Pedigree - Chance seedling of *Malus floribunda* x *M. baccata*; introduced 1883. Comments:: Flowers: single; large, 50 mm; pink and white; very ornamental. Fruit: 15mm; yellow with red cheek; Fruits attractive in late fall and early winter. Tree: productive parent of Barbara Ann, Cardinal, Dorothea, Henrietta Crosby, Henry F. DuPont, Linda, Van Eseltine. Large ornamental flowers; attractive fruits.

The following were developed by USDA Northern Great Plains Res. Center, Mandan, North Dakota, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589223. *Malus domestica* Borkh.

Dakota. Pedigree - Wealthy x Whitney Crab; tested as Mandan 42-12; introd. 1965. Comments:: Fruit: large, up to 3 in. in diam; round-oblate; stem slender, long; skin an attractive deep red over yellow, sometimes with very dark red splotches; flesh creamy-yellow, crisp, juicy, firm, fine-grained, sprightly subacid; excellent for dessert and culinary uses; ripens in mid-Sept; keeps in common storage for several weeks. Tree: spreading vigorous; productive; hardy. Primarily for the home garden. Large, early, fully colored, hardy.

The following were developed by Orville Stauffer, Myerstown, Pennsylvania, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589224. *Malus domestica* Borkh.

Clear Gold. Pedigree - Golden Delicious limb mutation; discovered 1962. Comments:: Fruit: size medium; conical; skin clear gold, almost no russeting even under adverse conditions; flesh same as Golden Delicious; ripens Oct. 1. Tree: medium large; vigor, hardiness and productivity good.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589225. *Malus pumila* Miller

Niedzwetzkyana. Collected in Unknown. SW Siberia and Turkestan; introduced into US by Arnold Arboretum in 1896. Comments:: Flowers: single; 45 mm wide; purplish red. Fruit: too large to be a crab, 50-60 mm; purplish red; flesh red, sweet Leaves: purplish red. Tree: alternate bearer. Used as a parent to breed the Rosybloom Crab. A true apple, not a crab apple.

The following were developed by Cornell University, New York Agr. Exp. Station, Geneva, New York 14456, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589226. *Malus domestica* Borkh.

Tioga. Pedigree - Sutton x Northern Spy; crossed 1899; introduced 1915. Comments:: Fruit: size large, mostly 75 mm; skin green, yellowing after harvest; shape round-oblate; flesh firm, light yellow; flavor subacid, aromatic; eating quality fair; harvest season very late, beginning of November, 3 wks after Delicious; no commercial value. Tree: productive; somewhat biennial cropping; diploid (Proc.Am.Soc.Hort.Sci. 53:197. 1949). Yellow-green, late, spy type. R.D. Way, 1993.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589227. *Malus coronaria* (L.) Miller

Glancescens. Collected in United States. New York to North Carolina and Alabama. Comments:: Flower: single; off white; 35 mm. Fruit: 25 mm; yellow-green. Tree: small; roundheaded; branches spiny; leaves bluish tint on underside; very alternate bearing habit; susceptible to fire blight. Ornamental flowering crab.

PI 589228. *Malus fusca* (Raf.) C. Schneider

F-50. Comments:: Flower: single; small; white. Leaves: lobed; larger than *Malus fusca* F-2. See *Malus fusca*.

The following were developed by Calvin D. Bingham. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589229. *Malus domestica* Borkh.

Primate. Pedigree - Originated about 1840. Comments:: Fruit: size medium to large, 65-75 mm; skin yellow-green, sometimes 10% pink blush; shape round-conic; flesh whitish; flavor subacid; eating quality fair to good; harvest season late August to early September, 5 wks before Delicious, ripens unevenly. Tree: productive; biennial cropping. Early midseason, yellow-green large. --R.D. Way, 1992.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589230. *Malus hybrid*

M. x *pumila paradisiaca* NA 3608. Comments:: Flowers: single; large 35 mm; diam; pink buds followed by white flowers. Fruit: too large to be classified as a crab apple, 60-70 mm; skin yellow; shape oblate, moderately attractive; ripening season, beginning October, 1 wk before Delicious. Tree: Dwarf growth habit; strongly biennial cropping. Dwarf rootstock. R.D. Way, 1992.

The following were developed by Canada Department of Agriculture, Central Experiment Farm, Ottawa, Ontario, Canada. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589231. *Malus domestica* Borkh.

Hunter Spartan 2-4-4. Pedigree - Colchine-induced tetraploid form of Spartan; about 1956. Comments:: Fruit: similar to Spartan, except larger, size 65-85 mm, sizes variable; skin 90-100% dull dark red, striped and blushed; shape oblate, ribbed, irregular, unsymmetrical; flesh semifirm, white, water core; eating quality good; harvest season early October, with Delicious. Tree: moderately productive; biennial cropping; fruits drop before they ripen. Tetraploid Spartan.

The following were developed by Tadanosuke Otuski, Kuwaori, Fukushima, Japan. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589232. Malus domestica Borkh.

Orin. Pedigree - Golden Delicious x Indo; origin before 1920; named 1952. Comments:: Fruit: size medium, 70 mm; skin green, sometimes red-orange blush, prominent russet lenticels; shape conic; flesh firm, cream-colored; flavor aromatic, sweet; eating quality excellent; harvest season late, late October, 3 wks after Delicious. Tree: not highly productive. Late, green, pronounced lenticels, sweet.

The following were developed by Hausen on the Zaber, Wurttemberg, Germany. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589233. Malus domestica Borkh.

Graue Renette Von Zabergau. Pedigree - Unknown. Seed sown 1885. Comments:: Fruit: large, 75-85 mm; skin 100% russet; shape round-conic flesh firm, nearly white; flavor slightly acid; eating quality poor to fair; harvest season mid-October, 1 wk after Delicious. Tree: productive. Large, russet.

The following were developed by Agriculture Canada, Morden Research Station, P.O. Box 3001, Morden, Manitoba, Canada. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589234. Malus hybrid

Morden 363. Collected in Canada. Pedigree - Haralson x Melba; crossed early 1950s; not introduced. Comments:: Fruit: size medium, 75mm; 60% red, striped; shape round-conic; flesh semifirm, cream-colored; flavor slightly acid; eating quality fair; harvest season late August, 6 wks before Delicious. Tree: medium productive; annual cropping early, red, fair, quality not named. R.D. Way, 1992.

The following were developed by South Dakota Agr. Expt. Sta., Brookline, South Dakota, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589235. Malus domestica Borkh.

Beauty. Pedigree - Malus x Robusta (M. baccata x M. prunifolia) x Unknown. A seedling raised by Niels E. Hansen from Malus X robusta* seed received from the Botanical Gardens at Petrograd, Russia. Introd. in 1919. The name "Beauty" refers to fruit. Comments:: Flowers; single, expanding buds pink to rose pink, open white and pinkish white, approx. 5 cm. across. Fruit; dark red, approx. 4 cm. in diam. Fastigiate habit. Disease free. Ornamental flowering crab.

The following were developed by H. Dermen, USDA-ARS, Bureau of Plant Industry, Soils, and Agricultural Engineering, Beltsville, Maryland 20705-2350, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589236. Malus domestica Borkh.

Dermen Stayman 6-3-3. Pedigree - Derived from a forced adventitious bud of improved blaxtayman 201, about 1961. Comments:: Hexaploid blaxtayman.

The following were donated by Roger D. Way, Cornell University, New York

State Agric. Exp. Station, Department of Horticulture, Geneva, New York
14456-0462, United States. Received 06/24/1985.

PI 589237. *Malus domestica* Borkh.

Bogo Belle de Boskoop. Pedigree - Red-fruited mutation of Belle de Boskoop. Plant Introduction Station received as cuttings on Mar. 14, 1942 from Count F.M. Knuth, Knuthengore, Bandholm, Denmark. Comments:: Fruit: slightly redder than Belle de Boskoop; also slightly redder than Rouge Belle de Boskoop; 50% skin dull stripe, russeted, unattractive; flesh and flavor identical with Belle de Boskoop. A red Boskoop.

The following were developed by D. Uhlhorn, Germany. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589238. *Malus domestica* Borkh.

Ernst Bosch. Pedigree - Annas Reinette x Marks Codlin. First recorded 1908. Comments:: Fruit: High Vitamin C; size small 60-70mm; skin yellow with 10% orange-pink blush; shape round-conic; flesh firm, cream-colored; flavor subacid; eating quality fair; harvest season early September, 4 weeks before Delicious. Tree: not highly productive; fruits drop. High Vitamin C. PI received from Max Planck Inst. Voldagsen, Germany in 1951.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589239. *Malus domestica* Borkh.

Chenango Strawberry. Pedigree - Brought into Chenango County from Connecticut. Comments:: Size medium; shape tall, conic, convex to straight, slightly ribbed; skin yellowish white often almost entirely flushed and splashed red; flesh tender, moderately firm, white; flavour subacid, aromatic; season second-early to mid. Early, conic, splashed stripes.

PI 589240. *Malus domestica* Borkh.

Peck Pleasant. Collected in Unknown. Rhode Island, United States. Pedigree - Unknown; recorded 1832. Comments:: Fruit: size above medium, 70-80 mm; skin poor color, green ground, 10-40% dull orange stripe; shape round-oblate; flesh firm, light yellow; flavor subacid; eating quality fair; harvest season late, beginning November, 3 wks after Delicious. Tree: productive; annual bearing; Diploid. (Proc. Amer Soc. Hort. Sci. 82:56.1963). Late, poor color. R.D. Way, 1992. There's another PECK'S PLEASANT from England, see literature.

The following were developed by Univ. of Illinois, Urbana, Illinois, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589241. *Malus ioensis* (Alph. Wood) Britton

Prairie Rose. Pedigree - Open pollinated seedling of *Malus ioensis*. Comments:: Flowers: double; pink. Similar to Plena but flowers deeper pink. Double-flowered Prairie Crab.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589242. *Malus domestica* Borkh.

Pomme Grise. Pedigree - PI 273458 received 1961 from Canada Dept. Agr. Kentville, Nova Scotia. Comments:: Fruit: Size small, 60-65 mm; skin russet sometimes 10-20% dull orange blush, not attractive; shape round-oblate; flesh firm, light yellow; flavor subacid; eating quality fair; harvest season mid-October, 1 wk after Delicious. Tree: productive; extremely biennial cropping; dense foliage. Small, russet. --R.D. Way, 1992.

The following were developed by Highland Park, Rochester, New York, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589243. *Malus domestica* Borkh.

Fringe Petal Crab. Pedigree - Grown by B.H. Slavin; first described 1931. Comments:: Flower: size large, 50 mm; double, about 34 petals; pink changing to white; late blooming. Fruit: none, sterile; tree; small. Ornamental.

The following were developed by Simpson Orchard Co., Inc., 1504 Wheatland Rd., Vincennes, Indiana 47591, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589244. *Malus hybrid*

Simpson (10-35). Comments:: Flower: single; small; white; attractive. Fruit; size very small, 12 mm, berry-like; skin 100% dark red blush, very attractive; ripe mid-October, 1 wk after Delicious. Tree: spreading; productive; biennial cropping. Ornamental flowers and fruits. R.D. Way, 1993.

The following were developed by Croux & Fils, Chantenay, France. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589245. *Malus domestica* Borkh.

Jay Darling. Pedigree - *M. p. niedzwetzkyana* x *M. baccata*; reported in 1904, perhaps earlier. In 1904 French nursery catalogs listed as *M. atropurpurea*; in 1943 name changed to 'Jay Darling' in honor of First Pres. of Men's Garden Club, Des Moines, Iowa. Comments:: Flowers: single; 4-5 cm in dia.; purplish red at first, becoming gradually somewhat lighter; very attractive. Fruit: 25 mm in dia.; bright purple-red with red-tinted flesh; very attractive; oblate to round-oblate; relished by birds. Tree: round crown; foliage purplish to bronze; growth severely stunted when inoculated with common viruses.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589246. *Malus halliana* Koehne

Parkman. Collected in Unknown. Cultivated in Japan. Introduced in US by Parkman in 1861. Comments:: Flowers: semidouble; rose pink; attractive; pendulous clusters. Fruit: smallest fruit of all apples; long stems; color purple-green; not attractive. Tree: weak; not hardy; difficult to grow; unproductive. Leaves: bronze-green, glossy, thick,

leathery. Parent of Dorothea. More widely grown than *Malus halliana*. Attractive, pendulous clusters of flowers.

The following were developed by A. L. Young, Dominion Experiment Station, Brooks, Alberta, Canada. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589247. *Malus hybrid*

Pioneer Scarlet. Pedigree - Seedling of one of the Rosybloom Crab Apples; intro. before 1954. Comments:: Flower: Petals large, lavender, attractive; also used in commercial apple orchards as pollen source for fruiting cultivars. Fruit: size 30-35 mm; skin 100% bright red, attractive; shape round, protruding calyx; flesh red; flavor very astringent; eating quality inedible; ripening season early October with Delicious; fruits drop as they ripen. Tree: heavy cropping; annual bearing; Diploid (Proc. Amer. Soc. Hort. Sci. 103:690. 1978). Ornamental flowering crab. R.D. Way, 1992.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589248. *Malus domestica* Borkh.

Keukelaar Greening. Comments:: Same as Keukelaar Greening; KLN means Ken Livermore Nursery.

The following were developed by Durand-Eastman Park, Rochester, New York, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589249. *Malus domestica* Borkh.

Katherine. Pedigree - *M. halliana* x *M. baccata*; discovered in 1928 by Bernard H. Slavin; introduced in 1943 by Donald Wyman. Comments:: Flowers: double (15-24 petals) expanding buds deep pink, open pink fading to white, approx. 5.4 cm across. Fruit yellow with a red cheek, approx. 10 mm in dia.; deciduous calyx. Tree: blooms biennially. Flowering crab apple.

The following were developed by Cornell University, New York Agr. Exp. Station, Geneva, New York 14456, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589250. *Malus domestica* Borkh.

Red Jacket. Pedigree - *Malus Niedzwetzkyana* x *M. atrosanguinea*; crossed 1930; selected 1938; intro. 1939. Comments:: Flower: single; size med; blooms very early, 3 days before Delicious; dull reddish pink; Diploid (Proc. Am. Soc. Hort. Sci. 53:197. 1949). very floriferous every year; not highly attractive. Fruit: borne singly; very small, 25 mm; 90% dull pinkish red; round, 5-sided; calyx deciduous; very acid, astringent; ripe late September 2 1/2 wks before Delicious. Tree: med. vigor; fruits drop; foliage dark reddish green in early Spring. Ornamental flowering crab apple. --R.D. Way, 1992.

The following were developed by Arnold Arboretum, Dr. Karl Sax, Jamaica Plain, Massachusetts, United States. Donated by Roger D. Way, Cornell

University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589251. *Malus domestica* Borkh.

Henrietta Crosby. Pedigree - *M. x arnoldiana* x *M. pumila* 'Neidzwetzkyana' originated 1939; introduced 1947. Comments:: Flowers; single; 45 mm in diam; pink; very attractive; Fruit; skin dark red; shape round; size 25 mm in diam; flesh red; flavor astringent. Leaves; greenish-bronze. Tree: vigor medium; fruits drop early; strongly biennial. Flower- ing crab.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589252. *Malus hybrid*

Rosedale. Pedigree - Penn State received from Highmoor Farm, U. Maine, Monmouth, ME. Comments:: Flowers: Blooms very early with Dolgo, before McIntosh; single; pink fading to whitish; attractive. Fruit: size very small 25 mm; skin 70% red; blushed; shape round; inedible; ripening season early September, 4 wks before Delicious; Deciduous calyx; resembles Eleyi. Tree: somewhat small; spreading; productive; leaves bronze colored. Purple flower ornamental crab. --R.D. Way, 1992.

PI 589253. *Malus x atrosanguinea* (Spaeth) C. Schneider

Carmin Crab. Pedigree - *M. halliana* x *M. sieboldii*; introduced into US by Arnold Arboretum in 1889. Comments:: Flowers: single; 25 mm wide; light red fading to pink. Fruit: small, 10 mm; skin 50% yellow, 30% orange, 20% red; long stems; not showy. Leaves: very dark green, 50% are lobed. Tree: annual bearer. Pink flowers.

The following were developed by Lorne J. Doud, Wabash, Indiana, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589254. *Malus domestica* Borkh.

Doud Golden Delicious 2-4-4-4. Pedigree - Golden Delicious bud mutation; discovered in 1948; never introduced into the commercial apple trade. Comments:: Fruit: very large, up to 100mm; otherwise like Golden Delicious. Tree: a periclinal cytochimera 2-4-4-4-; breeds like a tetraploid; chimeral nature determined at New York State Agr. Expt. Sta.; of possible use in breeding; cracks in the bark develop broad spirals up the tree trunk. 2-4-4-4 chromosomal chimera of Golden Delicious.

The following were developed by E. J. Gilbert, Parker, Washington, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589255. *Malus domestica* Borkh.

Redspur Delicious. Pedigree - Whole-tree red-fruited, spur growth habit mutation of Stark- ing Delicious; discovered about 1954; intro. 1957. Comments:: Fruit: indistinguishable from Starking Delicious, except redder. Tree: spur growth habit, about 2/3 standard tree size. Red fruited, spur growth mutation of Starking Delicious.

The following were collected by W.P. Wheeler. Developed by Cornell University, New York Agr. Exp. Station, Geneva, New York 14456, United States

. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589256. *Malus domestica* Borkh.

Montgomery. Collected 1891 in Unknown. Discovered in a cow pasture, Chittenango, New York, USA. Pedigree - Unknown. Comments:: Fruit: size medium, 65mm; skin 80% red, striped; shape round- oblate; flesh soft, snow white; flavor acid; eating quality less than fair; harvest season mid to late August, 4 wks Delicious; storage life at -0.5C 15 days. Tree: medium yields; biennial. Early, no commercial value. R.D. Way, 1992.

The following were developed by S. Lyman. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589257. *Malus domestica* Borkh.

Pumpkin Sweet. Pedigree - seedling; recorded 1834. Comments:: Fruit: very large, 75-90 mm; skin light green, sometimes 10% orange stripe, scarfskin; shape round, ribbed; flesh firm, cream-colored, water core; flavor sweet; eating quality good; harvest season early October, with Delicious. Tree: productive; annual cropping; diploid (Proc. Amer. Soc. Hort.Sci. 50:45. 1947). Large, green, sweet. --R.D. Way, 1992.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589258. *Malus ioensis* (Alph. Wood) Britton

Collected in United States. Minnesota, Wisconsin to Nebraska and Kansas. Comments:: Flowers: single; 40 mm wide; light pink; blooms late. Fruit: 30 mm; green; round, flat; greasy; calyx depressed; calyx persistent. Tree: size small to medium; annual bearer. Twigs and underside of leaf pubescent. Leaves lobed dense foliage. Fruits drop as they ripen. Fruit small, green, greasy.

PI 589259. *Malus x zumi* (Matsum.) Rehder

Calocarpa. Pedigree - *M. manchuria* x *M. sieboldii*; introduced into US by Arnold Arboretum from seed sent from Japan in 1890 by William S. Bigelow. Comments:: Flowers: pink buds followed by white flowers; single; 30 mm. Fruit: 10 mm; bright red to orange; round; long stem; calyx deciduous; one of best for ornamental. Fruits: birds are fond of fruits; Tree: small; very productive; alternate bearer; some leaves lobed; early leaf maturity. Ornamental fruits in fall.

PI 589260. *Malus x dawsoniana* Rehder

Pedigree - *M. fusca* x *M. pumila*; originated in Arnold Arboretum 1881. Comments:: Flowers: single; large, 25-35 mm; white. Fruit: 25-40 mm; shape oblong; yellow-green, attractive autumn color. Tree: vigorous; annual bearer; bark on main branches scaly; twig surfaces pebbly; leaves reddish tinge. Oblong fruits.

PI 589261. *Malus sieboldii* (Regel) Rehder

AA852. Comments:: See GMAL 1007.

PI 589262. *Malus halliana* Koehne

Pedigree - Cultivated in Japan and China; introduced into US in 1863 from Japan by Dr. George R. Hall (1820-99). Comments:: Flowers: single; white. Fruit: 20 mm; yellow; round- oblate; calyx deciduous. Tree: very heavy cropping. Not highly ornamental.

The following were developed by G.C. Smith and Sons, North East, Pennsylvania, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589263. Malus domestica Borkh.

Loop Wealthy 2-4-4-4. Pedigree - Large-fruited mutation of Wealthy; planted 1909; discovered about 1940; never introduced. Comments:: Fruit: large; similar to parent. Produces diploid gametes; a pariclinal cytochimera 2-4-4-4. Tree: not as productive as parent. Chimeral nature determined at the New York State Agr. Exp. Sta., Geneva, NY. Large-fruited mutation of Wealthy.

The following were developed by C.L. Stearns. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589264. Malus domestica Borkh.

Stearns. Collected in Unknown. Clay, New York, United States. Pedigree - Esopus Spitzenburg seedling; fruited before 1899. Comments:: Fruit: size very large, up to 110 mm; skin 70-90% red, splashed stripes; shape round-oblate; flesh semifirm cream-colored; flavor subacid; eating quality good; harvest season mid-September, 3 wks before Delicious. Tree: upright; productive; annual cropping; Diploid(Proc.Am.Soc.Hort.Sci. 50: 45. 1947). Large, mid-season, good quality. R.D. Way, 1993. (Fruit Varieties J. 38:60. 1984.).

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 06/24/1985.

PI 589265. Malus domestica Borkh.

Red Canada. Pedigree - Unknown; intro. before 1822; probable origin New England. Comments:: Fruit: resembles Baldwin; size large, 70-85 mm; skin 80- 100% attractive dark red, striped, greasy when overripe; shape round-oblate; flesh firm, cream-colored; flavor sub- acid; eating quality better than fair; harvest season late, late October, 3 wks after Delicious; long storage life. Tree: productive; strongly biennial cropping; diploid (J. Am. Soc. Hort. Sci. 103:690. 1978). Late, large, red, only medium quality. --R.D. Way, 1992. (Received in 1883 from Ellwanger and Barry).

PI 589266. Malus fusca (Raf.) C. Schneider

F-19. Comments:: Leaves: lobed; reddish tinge. See Malus fusca.

The following were donated by USDA, ARS, U.S. National Arboretum, National Germplasm Repository, Washington, District of Columbia 20002, United States. Received 01/20/1983.

PI 589267. Malus hybrid

Firefly; 151 EM; GMAL 1362.

PI 589268. Malus hybrid

Winter Holly; 172 EM; GMAL 1369.

PI 589269. Malus hybrid

Golden Spires; 181 EM; GMAL 1371. Collected 1850 in Unknown. Worcester, England. Pedigree - Wild. Comments:: Size medium 62-65:57-78 mm; shape tall, rectangular to truncate-conic, convex to concave; ribs prominent

at apex, fairly prominent on body; skin greenish-yellow with slight orange flush and pink stripes, dark yellow dots; flesh coarse, crisp, creamy white; flavour acid, astringent; season mid.

PI 589270. Malus hybrid

Gypsy Gold; 182 EM; GMAL 1372.

PI 589271. Malus hybrid

Madonna; 196 EM; GMAL 1373.

PI 589272. Malus hybrid

Adam; NA 38506; GMAL 1374. Pedigree - M. x Adam.

PI 589273. Malus hybrid

Gloriosa; NA 38513; GMAL 1375. Comments:: Ornamental.

PI 589274. Malus hybrid

Masek; NA 38519; GMAL 1376. Comments:: Ornamental.

PI 589275. Malus fusca (Raf.) C. Schneider

NA 38531; GMAL 1377.

PI 589276. Malus sp.

M. laurifolia; NA 38533; GMAL 1378.

The following were donated by Arie den Boer, Den Boer Arboretum, Des Moines, Iowa 50318, United States. Received 01/20/1983.

PI 589277. Malus halliana Koehne

B 63527; GMAL 1379; NA 2119.

PI 589278. Malus x robusta (Carriere) Rehder

Leucocarpa; B 63528; GMAL 1380; NA 3357.

The following were donated by USDA, ARS, U.S. National Arboretum, National Germplasm Repository, Washington, District of Columbia 20002, United States. Received 01/20/1983.

PI 589279. Malus hybrid

M. rockii; 64 EM; NA 3613; GMAL 1381.

The following were donated by Roland M. Jefferson, U.S. National Arboretum, 3501 New York Avenue, N.E., Washington, District of Columbia 20002, United States. Received 01/20/1983.

PI 589280. Malus hybrid

RMJ 102; GMAL 1382.

PI 589281. Malus baccata (L.) Borkh.

RMJ 104; GMAL 1383.

PI 589282. Malus hybrid

RMJ 105; GMAL 1384.

The following were donated by USDA, ARS, U.S. National Arboretum, National Germplasm Repository, Washington, District of Columbia 20002, United States. Received 03/28/1983.

PI 589283. Malus fusca (Raf.) C. Schneider

190 EM; GMAL 1385.

PI 589284. *Malus hybrid*
Cascade; 193 EM; GMAL 1386. Pedigree - Red Jade x Zumi Calocarpa 152EM2

PI 589285. *Malus hybrid*
Schinto; 186 EM; GMAL 1387. Pedigree - sieboldii hybrid.

The following were donated by Arie den Boer, Den Boer Arboretum, Des Moines, Iowa 50318, United States. Received 01/20/1983.

PI 589286. *Malus x robusta* (Carriere) Rehder
Fastigata; B 63521; GMAL 1388; NA 38535.

The following were donated by USDA, ARS, U.S. National Arboretum, National Germplasm Repository, Washington, District of Columbia 20002, United States. Received 01/20/1983.

PI 589287. *Malus pumila* Miller
Niedzwetzkyana; NA 38534; GMAL 1389.

PI 589288. *Malus hybrid*
Unnamed; 163 EM; GMAL 1390.

The following were donated by John Fiala, 7359 Branch Road, Medina, Ohio 44256, United States. Received 11/21/1984.

PI 589289. *Malus hybrid*
183 EM; GMAL 1391.

The following were donated by A.D. Grove, Research Station, Kentville, Nova Scotia, Canada. Received 03/30/1976.

PI 589290. *Malus hybrid*
C-13-30-88; A 65966; GMAL 1409.

The following were developed by Cornell University, New York Agr. Exp. Station, Geneva, New York 14456, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589291. *Malus domestica* Borkh.
Bean. Pedigree - Golden Delicious x Flower of Kent Seeds were carried around the moon in the early 1970's by Astronaut Bean on Apollo 13 Flight. Comments:: Fruit: small, 30-40 mm: green; flesh firm, white; slightly acid, poor quality; worthless. Seeds went around the moon.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589292. *Malus domestica* Borkh.
Delicious x Pyrus sp.. Pedigree - Delicious x Pyrus crab species F1. Comments:: Fruit: crab: size small, 45-60 mm; skin yellow-green, 10% orange blush; shape oblong, slightly pear shaped, shallow cavity; stem long; flesh firm, light yellow; flavor acid, astringent, bitter; eating quality poor; harvest season early October. Tree: productive; cropping

strongly biennial; tree and leaves apple types. Interesting, inter-generic, small, poor quality.

The following were developed by Merle J. Lucas, Green Forest, Arkansas, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589293. *Malus domestica* Borkh.

Early Banta. Pedigree - A red-fruited mutation of Summer Champion. Comments:: Fruit: size large, 70-85 mm; skin 70-100% red, striped; shape conic; flesh semifirm, cream-colored; flavor subacid; eating quality fair; harvest season mid-September, 3 weeks before Delicious. Tree: very productive -- Red-fruited mutation of Summer Champion.

The following were developed by Mr. Garber, Columbia, Pennsylvania, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589294. *Malus domestica* Borkh.

Fallwater. Pedigree - Unknown. Described 1842. Comments:: Fruit: size large, 80-85 mm; skin dark green ground color with 20% dull reddish stripes, scarafskin, very unattractive shape round-oblate; flesh hard, greenish; flavor subacid; eating quality poor to fair; harvest serason extremely late, early November 3 wks after Delicious. Tree: very productive Very late, unattractive.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589295. *Malus domestica* Borkh.

Hendrick Sweet.

The following were developed by George W. Jones, Jr., Sodus Point, New York, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589296. *Malus domestica* Borkh.

Jones Favorite. Pedigree - Seedling of unknown parentage; discovered about 1950. Comments:: Fruit: size large, 75-80 mm; skin 80-100% red, striped, shape round-conic; flesh hard, light yellow; flavor slightly acid; eating quality fair; harvest season late October, 3 wks after Delicious. Tree: nonprecociuos; medium product- ive. Large, red, late, hard.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589297. *Malus domestica* Borkh.

Lithuanian Peppin. Comments:: Fruit: size medium, 65-75 mm; skin 10-30% orange blush, ground color yellow-green; shape round-conic; flesh semifirm white; flavor subacid; eating quality poor to fair; harvest season late September, 2 wks before Delicious. Tree: medium productive; annual cropping. Partially red; low quality.

The following were developed by Cornell University, New York Agr. Exp. Station, Geneva, New York 14456, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589298. *Malus domestica* Borkh.

Lovell. Pedigree - Golden Delicious x Flower of Kent; cross made by Carlton Cain in the early 1970's; seeds were carried around the moon by Lovell. Comments:: Fruit: size, medium, 75 mm; skin 80-90% red, striped; shape round-oblate; flesh firm, cream-colored; flavor slightly acid; eating quality below fair; harvest season mid-September, 3 wks before Delicious. Tree: unproductive; fruits drop before ripe. Red, mediocre quality, astronaut apple.

The following were developed by John Innes Horticultural Institute, Hertford, Herts, Bayfordbury, England, United Kingdom. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589299. *Malus domestica* Borkh.

Merton Joy. Pedigree - JI 855 (Cox's Orange Pippin x Sturmer Pippin) x Cox's Orange Pippin; raised 1946; named 1965. Comments:: Fruit: size above medium, 70-80mm; skin 70-100% red, striped; shape round-oblate; flesh semifirm, light yellow; flavor subacid; eating quality fair to good; harvest season mid-September, 3 wks before Delicious. Tree: not highly productive; biennial cropping. Mostly red, early mid-season English. R.D. Way, 1992.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589300. *Malus domestica* Borkh.

Mucina. Comments:: Fruit: size medium, 65-70mm; skin yellow-green; shape conic flesh soft, nearly white; flavor subacid; eating quality below fair; harvest season early September-ripens unevenly, 4 wks before Delicious. Tree: not productive; annual bearing. Worthless. R.D. Way, 1992.

PI 589301. *Malus domestica* Borkh.

Ortley. Collected in Unknown. USA, New Jersey, in the orchard of Michael Ortley. Pedigree - Unknown; Described 1817 as Woolman's Lone Pippin; renamed Ortley 1825; renamed Cleopatra 1872. Comments:: Also see P.I. 13788, P.I. 206024. Fruit: size medium, 70- 80 mm; skin yellow-green, not greasy; shape conic; flesh firm, cream-colored; flavor subacid; eating quality fair; harvest season very late, beginning November, 3 wks after Delicious. Tree: productive; annual bearer. Yellow-green, late. R.D. Way, 1992.

The following were developed by Canada Department of Agriculture, Central Experiment Farm, Ottawa, Ontario, Canada. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589302. *Malus domestica* Borkh.

Ottawa SRO 522. Pedigree - Swayzie seedling; selected about 1954; never introduced. Comments:: Fruit: size medium, 65-75 mm; skin 50-80% red, striped; shape round-conic; flesh soft, nearly white; flavor subacid; eating quality fair; harvest season mid to late September, 3 wks before

Delicious. Tree: productive, annual bearer; resistant to apple scab. Unnamed scab-resistant selection. R.D. Way, 1992.

The following were developed by Ralph Banta. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589303. Malus domestica Borkh.

Quindell. Pedigree - Unknown; discovered 1934; intro. 1965. Comments:: Fruit: size medium to large, 70-85 mm; skin 60-100% red, dull stripes, sometimes scarfskin, large dots; shape conic; flesh semifirm, cream-colored; flavor subacid; eating quality fair to good; harvest season mid-to late October, 2 wks after Delicious. Tree: precocious cropping; productive; annual cropping; fruits hang well to tree after ripe. Resembles Orleans. --R.D. Way, 1992.

The following were developed by Western Kentucky Experiment Station, Princeton, Kentucky, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589304. Malus domestica Borkh.

Red Paducah. Pedigree - Red-fruited mutation of Paducah; discovered about 1965. Comments:: Fruit and tree indistinguishable from Paducah (see Paducah description), except fruit redder, 100% red, blushed color pattern, attractive. Red-fruited mutation of Paducah. --R.D. Way, 1992.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589305. Malus domestica Borkh.

Rudens Suitrotais. Comments:: Fruit: size large, 70-90 mm; skin 40-80% red, striped, unattractive; shape round-conic; flesh semifirm, cream-colored; flavor subacid; eating quality fair; harvest season early September, 4 wks before Delicious; commercial usefulness worthless. Tree: medium productive. Very large, mid-season. --R.D. Way, 1993.

The following were developed by S.L. Kaplan. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589306. Malus domestica Borkh.

Shawnee. Collected in Unknown. Woodbridge, Connecticut, United States. Pedigree - Macoun x Delicious; introduced about 1975. Comments:: Fruit: size above medium, 70-80 mm; skin 90-100% dark red, dull, blushed; shape round-oblate; flesh semifirm, cream-colored; flavor subacid; eating quality good; harvest season mid-September, 2 wks before Delicious. Tree: productive; biennial cropping. Medium to large, dark red, good quality. R.D. Way, 1993.

The following were developed by Cornell University, New York Agr. Exp. Station, Geneva, New York 14456, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589307. Malus domestica Borkh.

Stafford. Pedigree - Golden Delicious x Flower of Kent; named 1978.

Comments:: Fruit: size small, 65 mm; skin 70% red, striped, dull; flesh soft cream-colored; flavor astringent; eating quality poor. Worthless for commercial apple growing. R.D. Way, 1993.

The following were developed by A.C. Stone. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589308. *Malus domestica* Borkh.

Sublett. Collected in Unknown. Rives, Tennessee, United States. Pedigree - Unknown; seedling discovered about 1960. Comments:: Fruit: size above medium, 75-80 mm, variable sizes; skin 50-90% red, usually not well colored, striped; shape conic; flesh hard, light yellow; flavor subacid; eating quality fair; harvest season late October, 3 wks after Delicious; Tree: productive; somewhat biennial cropping. Late, hard, insufficient red. R.D. Way, 1993.

The following were developed by Rowe's Nursery, Worcester, England, United Kingdom. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589309. *Malus domestica* Borkh.

William Crump. Pedigree - Cox's Orange Pippin x Worcester Pearmain. First exhibited in 1908. Comments:: Large fruit, brown crimson-red flush, some stripe, conspicuous lenticels, russet dots; flesh light yellow; Crisp, juicy, rich acid flavor; eating quality fair; harvest season mid-October, 4 days after Delicious. Tree: productive; annual cropping. Large, red.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/03/1986.

PI 589310. *Malus domestica* Borkh.

Harvey (England). Pedigree - Seedling of unknown parentage; mentioned by Parkinson in 1629. Comments:: Fruit: size very large, 80-95 mm; skin greenish-yellow, sometimes 5% orange-bluish. shape round-conic; flesh semi-firm, cream-colored; flavor slightly acid; eating quality poor; harvest season late September, 2 wks before Delicious. Tree: low vigor, unproductive. Very large, greenish, low quality.

PI 589311. *Malus domestica* Borkh.

Idaho. Pedigree - Unknown. Received as Idaho Delicious but not a Delicious type. Comments:: Fruit: size medium, 65-80 mm; skin 70-100% red, striped; shape round-conic; flesh semifirm, cream-colored; flavor subacid to sweet; eating quality fair; harvest season early September, 4 wks before Delicious. Tree: not highly productive; fruits drop as they ripen. Red, mid-season, medium size.

The following were donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 03/21/1986.

PI 589312. *Malus domestica* Borkh.

Russian sdlg.. Comments:: An indicator for Chlorotic Leaf Spot Virus.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York

14456-0462, United States. Received 05/02/1986.

PI 589313. *Malus tschonoskii* (Maxim.) C. Schneider

Collected in Unknown. Japan; introduced into US by Arnold Arboretum in 1892. Comments:: Flowers: single; large, 30 mm wide; petals small; white; not ornamental. Fruit: 20-30 mm; 70% red, blush pattern of color; oblate; grit cells. Immature leaves white, mature leaves and twigs heavily pubescent both top and bottom; leaves orange scarlet in fall. Axillary buds very large. Tree: very susceptible to fire blight, sometimes kills trees. Species very uncommon. Only one clone known. Pubescent leaves and twigs; not ornamental. R.D. Way, 1991.

The following were developed by Arnold Arboretum, The Arborway, Jamaica Plain, Massachusetts 02130, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 05/02/1986.

PI 589314. *Malus domestica* Borkh.

Barbara Ann. Pedigree - Dorothea [*Malus arnoldiana* (M. *baccata* x M. *floribunda*) x M. *halliana* cv. *parkmanii*] x M. *purpurea*. Introd. in 1966. Comments:: Flowers: Double (12-15 petals), deep purplish pink, fading to a lighter purplish pink. Approx. 4.5 cm across. Fruit: Purplish red, approx. 1.2 cm. in diam. one of the best flowering crabs. Leaves and inner wood reddish. Tree: open branching. Ornamental flowering crab.

The following were developed by Herman W. Smith, Omaha, Arkansas, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 05/02/1986.

PI 589315. *Malus domestica* Borkh.

Delistein. Pedigree - Unknown, thought to be Delicious x Gravenstein (triploid); discovered late 1920's; introd. about 1940. Comments:: Fruit: size large, 70-80 mm; skin 30-60% red; color pattern splashed; shape conic; flesh soft, cream-colored; flavor subacid; eating quality good; harvest season late September. Tree: productive; biennial; fruits hang to tree; diploid. Mid-season, partially red, large.

The following were developed by Graydon Templin, Manson, Washington, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 05/02/1986.

PI 589316. *Malus domestica* Borkh.

Empress Spur Golden Delicious. Pedigree - Golden Delicious but mutation, spur growth habit; discovered 1962; introduced 1965; assigned to Columbia Basin Nursery, Quincy, WA. Comments:: Fruit: indistinguishable from Golden Delicious, except possibly somewhat more russet. Tree: spur growth habit; needs more nitrogen fertilizer than Golden Delicious to maintain adequate tree vigor. A spur of Golden Delicious.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 05/02/1986.

PI 589317. *Malus florentina* (Zuccagni) C. Schneider

Collected in Unknown. Italy. Pedigree - Introduced into U.S. about 1897. Comments:: Flowers: single; 15 to 20 mm; white; very late

blooming. Fruit: 10 mm; yellow-brown; shape oval. Tree: hardy in central New York state; fastigiate growth habit; only light cropping; alternate bearing. Leaves: small; grayish green; several pairs of lobes. General appearance unlike most MALUS. R.D. Way, 1991.

The following were developed by Unknown donor, England, United Kingdom. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 05/02/1986.

PI 589318. Malus domestica Borkh.

Foxwhelp. Pedigree - Unknown. Recorded in 1664 by Evelyn in his "pomona" an appendix to the Sylva. -- F.C. Bradfield, about 1945. Comments:: Fruit: size large, 80-90 mm, one of largest cider cultivars; skin 40-80% red, dull stripe, not attractive; shape round- oblate; flesh semifirm, cream-colored; flavor slightly acid, astringent; eating quality poor; harvest season early September, 1 wk before Delicious. Tree: nonprecocious cropping; low productivity; fruits drop before ripe; leaf mottling, symptoms of apple mosaic virus. Cider.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 05/02/1986.

PI 589319. Malus fusca (Raf.) C. Schneider

Collected in Unknown. Alaska to California. Pedigree - Known in cultivation in 1836. Comments:: Flowers: single; 20 mm wide; pink to white; not very showy; not useful as ornamental. Fruit: 10 mm; shape oblong; red or yellow; skin not waxy; scant flesh; calyx deciduous; carpels 2,3 or 4. Tree: large; alternate bearing; fruits hang to tree after ripe; leaves lobed. Not highly ornamental.

PI 589320. Malus ioensis (Alph. Wood) Britton

Comments:: Same as GMAL 1344.

The following were developed by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 05/02/1986.

PI 589321. Malus domestica Borkh.

Red Silver. Pedigree - Malus Baccata x M. Pumila Niedzwetzkyana; intro. 1928. Comments:: Flower: single; 40 mm diam.; purplish red. Fruit: size very small, 20mm; skin purplish red, too dark to be decorative; shape round; calyx persistent. Tree: low, shrubby form but taller than Sargent. Leaves: deep reddish purple on current season shoots deeply incised; young leaves at shoot tips covered with fine, silvery-white hairs; susceptible to fireblight. Bark: very dark color. Ornamental flowering crab apple, reddish flowers and leaves. --R.D. Way, 1992.

The following were developed by Iowa Agr. Experiment Station, Ames, Iowa, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 05/02/1986.

PI 589322. Malus domestica Borkh.

Sharon. Pedigree - McIntosh x Longfield; crossed 1906; introduced 1922. Comments:: Fruit: size above medium, 70-80 mm; skin 50-90% red, striped shape round-oblate; flesh semifirm, cream-colored; flavor subacid,

resembles McIntosh; eating quality fair; harvest season late September, 1 wk before Delicious. Tree: productive; strongly biennial cropping; drops fruit too freely; Diploid (Proc.Am.Soc.Hort.Sci. 82:56.1963). Medium size, partially red, mid-season. R.D. Way, 1993.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 05/02/1986.

PI 589323. *Malus domestica* Borkh.

Paradiso. Comments:: Same as GMAL 1212 (Paradise Sweet); both from same tree: Orch 24, row 4, tree 24.

The following were donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 08/01/1986.

PI 589324. *Malus domestica* Borkh.

Virginia Crab. Comments:: An indicator for Apple Stem Grooving Virus. Bears few fruits. Of interest only as a horticultural oddity.

The following were developed by A. Gaggiano. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 08/04/1986.

PI 589325. *Malus domestica* Borkh.

Sungold. Collected in Unknown. Bridgeton, New Jersey, United States. Pedigree - Unknown; discovered 1960; introduced 1963. Comments:: Not a mutation of Golden Delicious but possibly its seedling Compared with Golden Delicious; fruits slightly smaller, 65- 75 mm; skin redder, sometimes 20% orange stripe, less russet shape more conic; eating quality slightly inferior; harvest date few days later. Tree: slightly smaller; very productive; cropping more annual; fruit hangs better; Diploid (J. Am.Soc.Hort.Sci. 103:690. 1978). Resembles Golden Delicious less russetting. R.D. Way, 1993.

The following were developed by Missouri State Fruit Expt. Station, Mountain Grove, Missouri, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 08/04/1986.

PI 589326. *Malus domestica* Borkh.

Wright. Pedigree - Ben Davis x Jonathan; selected 1935; introduced 1942. Comments:: Fruit: size above medium, 65-80 mm; skin 80-100% red, striped, attractive; shape conic; flesh firm, cream-colored; flavor slightly acid; eating quality less than fair; harvest season about October 10, 3 days after Delicious. Tree: very productive; annual cropping; fruits drop; reportedly resistant to scab, blotch and blight; Diploid(Proc.Am.Soc. Hort.Sci. 58:103. 1951). Resembles Jonathan. R.D. Way, 1993.

The following were developed by Horticultural Research Station, Alnarp, Sweden. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 08/04/1986.

PI 589327. *Malus domestica* Borkh.

Alpha 68A. Comments:: Fruit: Very large, up to 100 mm; skin color 5-50% dull red stripes, green ground color, some russet, sunburn, skin

cracks, rot spots on surface, unattractive; flesh firm, green cream colored, watercore; flavor slightly acid; eating quality fair to poor; harvest date late September, 2 wks before Delicious. Three: Tetraploid, fruits drop as they ripen. Use: no commercial value. Tetraploid.

PI 589328. *Malus domestica* Borkh.

Alpha 68B. Comments:: Fruit: Very large, up to 100 mm; skin color 5-50% dull red stripes; green ground color, some russet, sunburn, skin cracks, rot spots on surface, unattractive; flesh firm, greenish cream-colored, watercore; flavor slightly acid; eating quality fair to poor; harvest date late September, 2 wks before Delicious. Tree: Tetraploid, fruits drop as they ripen. Use: no commercial value. Tetraploid.

The following were developed by I.V. Michurin, Mogiley, Former Soviet Union. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 08/04/1986.

PI 589329. *Malus domestica* Borkh.

Antonovka Polutorafuntovaya. Pedigree - Probably a sport of Antonovka. Discovered 1888; introduced 1892. Comments:: Size medium to large 66-86; 55-65 mm; shape intermediate to flat, truncate-conic, convex to straight, ribbed at eye, prominent ribs on body; skin green flushed buff; flesh soft, greenish white; flavour subacid; season mid.

The following were developed by Missouri Fruit Expt. Sta., Mountain Grove, Missouri, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 08/04/1986.

PI 589330. *Malus domestica* Borkh.

Conrad. Pedigree - Ben Davis x Jonathan; selected 1920; introd. 1935. Comments:: Fruit: large; roundish to conic; skin almost entirely red, resembles Jonathan in appearance; flesh white, crisp, firm, moderately juicy, quality good, flavor tart, fine-grained; ripens about 1 week after Jonathan; stores well; not subject to preharvest drop. Tree: vigorous; bears large crops annually; less susceptible to scab than Jonathan, but resistant to several diseases.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 08/04/1986.

PI 589331. *Malus prunifolia* (Willd.) Borkh.

Xanthocarpa NA3604. Comments:: Flowers: single; pink. Fruit: 20-25 mm; yellow; round; ripening season late. Tree: heavily productive.

PI 589332. *Malus coronaria* (L.) Miller

Comments:: Flower: single (some forms double): 40 mm; bright rose as they open then nearly white, fragrant. Fruit: yellow-green; hard; oblate (depressed at ends) 25 mm; calyx persistent; greasy; sour, inedible. Tree: annual bearer; leaves lobed. Pink-white flowers; green, greasy fruits.

PI 589333. *Malus prunifolia* (Willd.) Borkh.

DE 279. Collected in Unknown. NE Asia; introduced into US before 1831; possible a hybrid species. Comments:: Flowers: single; 30 mm wide; pink and white. Fruit. 20 mm; yellow-green to red; calyx persistent. Tree: large. Leaves: not lobed. Used as rootstock for cultivated apples in

Japan and China. Grown only in Arboreta.

PI 589334. *Malus hupehensis* (Pampan.) Rehder

Comments:: Ronald M. Jefferson, US National Arboretum says this is non *Malus hupehensis*. Not *Malus hupehensis*.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589335. *Malus domestica* Borkh.
Antonovka Debnicka.

PI 589336. *Malus domestica* Borkh.
Ottawa 11.

PI 589337. *Malus domestica* Borkh.
Ottawa 13.

The following were developed by William Saunders, Canada Department of Agriculture, Central Experiment Farm, Ottawa, Ontario, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589338. *Malus* hybrid

Columbia. Pedigree - *M. baccata* x *M* cv. Broad Green. Originated as a cross made in 1904 by Dr. William Saunders. Named in 1911. Occasionally used as stock for grafting other crabapple scions. Comments:: Fruit: 3-4 cm (crab apple), pale green, well washed with red; thick, skin, yield fair, quality good, highly frost resistant, disease resistant; one of the best and hardiest of the original Saunders hybrids. Late ripening. Used as rootstock for prairies. Not good stembuilder due to tendency to split. Well worth growing in home gardens. Excellent juice, jelly, canned and sauce, too sour for eating now.

PI 589339. *Malus* hybrid

Trail. Pedigree - Northern Queen X Rideau 1905 cross circa 1923. Selected in 1913. Comments:: Fruit: crab apple, large, 4 cm, orange-red. Dessert and cooking quality good, but not good for canning. Yield and quality good, vigor fair. Bruises easily. Late for some areas of the prairies. "A good crab in the 1930's" days Coutts (1191). One of the best and hardiest of Saunders' second cross crab apples, but often severely infested with blight. Fruit edible. Tree: hardy, productive.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589340. *Malus domestica* Borkh.
Ottawa 292.

PI 589341. *Malus domestica* Borkh.
Spy 227.

PI 589342. *Malus domestica* Borkh.
E 12-14. Collected in South Africa.

PI 589343. *Malus domestica* Borkh.
John Downie. Collected in Netherlands. Pedigree - Introduced in U.S. in 1927, but known in England before 1891. Comments:: Edible, ornamental. White flowers. Beautiful golden and orange-red fruit.

Early flowering.

PI 589344. *Malus coronaria* (L.) Miller
Charlottae. Collected in United States.

The following were developed by Agriculture Canada, Lethbridge Research Station, Lethbridge, Alberta T1J 4B1, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589345. *Malus domestica* Borkh.
Manitoba Spy. Pedigree - Patten Greening seedling. Intro: 1931.
Comments:: Fruit: 8-9 cm standard, ark green streaked dull red. Somewhat ribbed. Fair dessert, good cooking, good, keeper. Ripens early Oct.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589346. *Malus domestica* Borkh.
Stahls Prinz.

PI 589347. *Malus domestica* Borkh.
M.4. Collected in United Kingdom.

The following were collected by E. deWolf. Developed by Arnold Arboretum, The Arborway, Jamaica Plain, Massachusetts 02130, United States. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589348. *Malus domestica* Borkh.
Charlotte. Collected 1902 in Unknown. Discovered new Waukegan, Illinois in 1902 by E. deWolf, husband of Charlotte M. deWolf. Pedigree - M. coronario cv. Charlottae type plant. Arnold Arboretum No. 10794 now at Arnold Arboretum grown from scions received in 1920 from Mr. DeWolf. Comments:: Flowers: double (12-18 petals) expanding buds flesh pink, open pale pink, approx 4.8 cm. across. Fruit: dark, green approx. 3 cm.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589349. *Malus domestica* Borkh.
Ottawa 5.

The following were developed by S.I. Isaev; Z.I. Ivanova; V.K. Zaets; M.P. Maksomova. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589350. *Malus domestica* Borkh.
Fantazja. Pedigree - Antonovka Obiknovannya x Limonchella.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589351. *Malus domestica* Borkh.

Sylvia. Collected in Sweden. Pedigree - *sylvestris*. This may have hybridized with *pumila baccata* and *prunifolia* and so been one of the remote parents of some of our modern apples. Comments:: Crab apple. Single pink buds followed by white flowers. This species is rarely cultivated.

The following were developed by E. Robinson. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589352. *Malus domestica* Borkh.

Aroma. Collected in Sweden. Pedigree - Open-pollinated seedling of Florence; discovered in 1940; intro. 1945. Comments:: Fruit: crab; size 1 3/4 to 1 1/2 in. in diam; skin dark red with light striping, does not spot when picked; flesh tart, flavor good; aromatic; stems long; stores well; ripens August 25. Tree: size medium; spreading; vigor moderate; very productive.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589353. *Malus baccata* (L.) Borkh.

Mandshurica 6114.

The following were donated by Oaklands Nursery, Columbus, Ohio 43216, United States. Received 03/01/1982.

PI 589354. *Malus domestica* Borkh.

Cheal's Weeping; Q 22856; GMAL 1643. Collected in Netherlands.

Unknown source. Received 09/1974.

PI 589355. *Malus domestica* Borkh.

Inducoa No. 1; Q 20058; GMAL 1662.

The following were donated by NYS Agric. Experimental Station, Department of Pomology, Geneva, New York 14456, United States. Received 04/03/1961.

PI 589356. *Malus x platycarpa* Rehder

A 13401; GMAL 1675.

The following were developed by Agriculture Canada, Ottawa Research Station, Central Experiment Station, Ottawa, Ontario K1A 0C6, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589357. *Malus domestica* Borkh.

Ranger. Pedigree - Crimson Beauty (Early Red Bird) x Melba Selected 1944; intro: 1964; tested as Ottawa 342 early by Blair; later and released by Spangelo. Comments:: Size medium, larger than Caravel; shape intermediate, trun- cate-conic, convex; skin yellow flushed and striped red; flesh tender, white; flavor mild; season early; biennial. Tree: vigorous, hardy.

The following were developed by L.P.S. Spangelo. Donated by Dan Thompson,

Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589358. *Malus domestica* Borkh.

Quinte. Pedigree - Crimson Beauty x Red Melba Selected by Lloyd P.S. Spangelo of this station from progeny grown at the Exp. Farm; tested as Ottawa T-441. Intro: 1964. Comments:: Fruit: 7 cm, yellow with bright red blush, good flavor, texture. "Yield moderate and rather biennial. Does not keep. Fairly hardy for an Ontario apple, but produces little fruit." per Coutts (1991). "Earliest good eating, holds up well during shopping..strong grower" Manchester (1991). Very strong growing tree, requires pruning. Annual bearer of heavy crops; requires several pickings. Tree: annually bears good crops; as hardy as McIntosh.

The following were developed by Experimental Farm, Brandon, Manitoba, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589359. *Malus hybrid*

Bedford. Pedigree - Cluster seedling. Originated prior to 1928. Comments:: Fruit: 3 cm (crab apple), heavily washed dull red. Good quality. Tends to overbearing in favorable seasons, resulting in smaller fruit. Formerly used as a rootstock, but superseded by Columbia for this. Valuable for topworking. Flowered and fruited for the first time in 1916; very resistant to fire blight. Extremely hardy.

The following were developed by Agriculture Canada, Scott Research Station, Scott, Saskatchewan, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589360. *Malus domestica* Borkh.

Rescue. Pedigree - Blushed Calville seedling. Tested as Scott #1. Intro: circa 1933. Comments:: Fruit: 3.5 cm crabapple, yellow-green with carmine red blush. Dessert, canning and juice. Slow to brown, soon goes mealy; productive and keeps quite well if picked when ripening. Manchester notes "tree-ripened fruits translucent and very sweet..give satisfaction with Heyer 12 or Dolphin as pollinator. Worthy of planting anywhere". No tolerance to chlorosis. Tree: medium tall, rounded, healthy; very hardy; adapted to northern areas. An excellent apple for eating out of hand.

The following were developed by Canada Department of Agriculture, Kentville Research Station, Kentville, Nova Scotia, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589361. *Malus domestica* Borkh.

Scotia. Pedigree - McIntosh Red seedling (o.p.) Tested as Nova Scotia K 33-125-70 Selected 1948; intro. 1961. Comments:: Fruit: dull, red, flesh soft, prone to dropping. Quality good. Annual bearing. Size medium; skin red; season mid, ripens one week before Gravenstein. Tree: moderately vigorous, bears annually.

The following were developed by F.S. Howlett. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589362. *Malus domestica* Borkh.

Melrose. Collected in United States. Official Ohio State Apple. Pedigree - Jonathan x Delicious. Selected 1937; Intro. 1944. Comments:: Large flattened fruit. Yellowish green skin, flushed and streaked dark red with russet spots. Firm, coarse, juicy creamy white flesh. Slightly acid flavor. Very good cooking and dessert quality, especially after December. Stores at 31 degrees F until April. Tree is a vigorous, productive annual bearer. Growth habit spreading and moderate. Mid-season bloom. Ripens from mid to late Oct. Good apple for roadside market and local sales. Maintaining excellent flavor into May storage.

The following were developed by Cornell University, New York Agr. Exp. Station, Geneva, New York 14456, United States. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589363. Malus domestica Borkh.

Wellington. Collected in United States. Pedigree - Cortland x Crimson Beauty, cross made 1924. Named 2/18/55. Comments:: Fruit: large, round-oblate & somewhat irregular; skin, thin medium tough, 90% red, striped on lighter areas, solid blush on fully colored areas with few conspicuous dots. Flesh nearly white with greenish tinge even after ripened; semi-firm, coarse, crisp, tender, juicy, slightly acid, sprightly Eating quality somewhat better than fair. Useful for cooking, but only fair for desserts. Not particularly good as early commercial processing type. Storage life short, 30 days at 31 degrees F. Tree: large, vigorous. (Not the same as Wellington described by Hagg(1954), Ramdor.

The following were developed by C. Eley. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589364. Malus hybrid

Eleyi. Collected in Unknown. classified under purpurea. Pedigree - M. x purpurea cv. Eleyi. Raised and named before 1920. Intro: into U.S. by Arnold Arboretum in 1921. Though it is said to be a pumila Niedzwetzkyana x spectabilis variety shows no characters of the latter species and hence is. Comments:: Flowers slightly darker and the foliage considerably darker than purpurea. Ornamental. Crimson flowers, small crimson fruit. New leaves red. Add. LIT.CIT. H. Apple. Tsolum River Fruit Trees Catalogue. p. 34.

The following were developed by J. Luke. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589365. Malus domestica Borkh.

Luke. Pedigree - Parentage unknown. J. Luke obtained this as a selection from the Exp. Farm Rosthern, Saskatchewan when it closed in 1940. Tested at Morden. Comments:: Fruit 8-9 cm standard, mottled dark red over green; only fair dessert and flavor; cooking good keeper; ripens early October, rather late for prairie provinces; flesh bruises from hail, Walter Manchester notes.. "Not satisfactory in cold regions unless given good wind break protection and top worked into a hardy early maturing host tree." "A little tender, but a good apple" say Coutts. Introduced in 1961.

The following were developed by D. Wyman. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney,

British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589366. Malus hybrid

Dorothea. Pedigree - Open-pollinated seedling of doubtful parentage, selected 1943: intro: 1948. Comments:: Flowers: semidouble (10-16 petals), expanding buds, carmine, open rose pink not fading to white, approx. 4.5 cm. across. Fruit: yellow, approx. 1.3 cm. in diam.

The following were developed by Dominion Experiment Station, Morden, Manitoba, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/18/1986.

PI 589367. Malus domestica Borkh.

Mantet. Pedigree - Tetofsky x Selected 1928; intro: 1929. Comments:: Size medium to large 69-82:63-86 mm; shape tall, conic to truncate-conic, convex to straight sometimes concave, strongly ribbed base to apex; skin greenish yellow flushed and streaked orange-red, thin; flesh tender, fine; creamy white; flavor sweet, subacid, aromatic season early. Tree: upright; hardy; productive.

The following were donated by Thomas Green, The Morton Arboretum, Lisle, Illinois 60532, United States. Received 08/25/1986.

PI 589368. Malus sargentii Rehder

Comments:: Flowers: 5-8 cm cluster, occasionally 9-10, 5 petals; tiny buds rose red, expanding-rapidly turning white. Fruit: red, purplish red, bluish red, about 3/8", nearly round.

The following were collected by E.H. Wilson. Developed by Arnold Arboretum, The Arborway, Jamaica Plain, Massachusetts 02130, United States. Donated by Thomas Green, The Morton Arboretum, Lisle, Illinois 60532, United States. Received 08/25/1986.

PI 589369. Malus yunnanensis (Franchet) C. Schneider

Collected in Unknown. Discovered by Pierre Delavay. Habitat: Hupeh, Szechwan, and Yunnan, China. Comments:: Collected in Ching-chi Huen, China, introduced 1909 by Arnold Arboretum. Disease free.

The following were donated by Thomas Green, The Morton Arboretum, Lisle, Illinois 60532, United States. Received 08/25/1986.

PI 589370. Malus prunifolia (Willd.) Borkh.

PI 589371. Malus baccata (L.) Borkh.

Aurantiaca. Comments:: Flower: 5-6 in cluster, 5 petals, buds flesh colored, expanding to white. Fruit: yellow with pinkish cheek; 3/4 to 7/8" across.

The following were collected by C.S. Sargent. Developed by Arnold Arboretum, The Arborway, Jamaica Plain, Massachusetts 02130, United States. Donated by Thomas Green, The Morton Arboretum, Lisle, Illinois 60532, United States. Received 08/25/1986.

PI 589372. Malus sargentii Rehder

Collected 1892 in Unknown. Comments:: Flower: 5-8 in cluster, occasionally 9-10, 5 petals; buds, tinge red, expanding to white. Fruit: red, purplish red, bluish red; about 3/8" and nearly round.

The following were donated by Thomas Green, The Morton Arboretum, Lisle, Illinois 60532, United States. Received 08/25/1986.

PI 589373. *Malus kirghisorum* Al. Fed. & Fed.

PI 589374. *Malus baccata* (L.) Borkh.

Cerasiformis. Comments:: Flower: 4-5 in cluster, 5 cup shaped tepals, long bud with touch of pink, expanding to white. Fruit: Pale greenish yellow with pinkish blue; nearly 3/4" across, strongly angular, somewhat ribbed.

PI 589375. *Malus baccata* (L.) Borkh.

PI 589376. *Malus baccata* (L.) Borkh.

Fructo-flavo.

PI 589377. *Malus sikkimensis* (Wenzig) Koehne ex C. Schneider

Comments:: Flower: 4-6 in cluster; mostly 5 petals, many have 4 petals and 4 sepals; buds white with trace of rose red or yellow- ish white. Fruit: greenish yellow, with dark red or brown red cheek, 1/2" to 9/16" across, angular.

PI 589378. *Malus baccata* (L.) Borkh.

PI 589379. *Malus spectabilis* (Aiton) Borkh.

Comments:: Flower: 5-6 in cluster, 5 petals; buds rose red, expanding to pink flushed with rose pink. Fruit: yellow, occasionally with pinkish blush, 1" to 1 1/4" across, nearly round or slightly angular.

PI 589380. *Malus kirghisorum* Al. Fed. & Fed.

The following were donated by Unknown. Received 11/23/1949.

PI 589381. *Malus hybrid*

Cider hybrid; GMAL 1814.

The following were donated by C. Gundy, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 08/28/1986.

PI 589382. *Malus sylvestris* Miller

PI 589383. *Malus x robusta* (Carriere) Rehder

Persicifolia.

PI 589384. *Malus transitoria* (Batalin) C. Schneider

PI 589385. *Malus florentina* (Zuccagni) C. Schneider

Skopje P2. Comments:: Flowers: single; 20 mm diam; white. Fruit: 15 mm dia; yellow-brown-red; attractive; round-oval. Tree: upright habit. Leaves: small; deeply serrated and lobed; veins recessed; scarlet orange autumn color. Less cold hardy than some other species.

PI 589386. *Malus* sp.

- M. lancifolia.
- PI 589387. *Malus yunnanensis* (Franchet) C. Schneider
- PI 589388. *Malus hybrid*
Kingsmere.
- PI 589389. *Malus prunifolia* (Willd.) Borkh.
Macrocarpa.
- PI 589390. *Malus sikkimensis* (Wenzig) Koehne ex C. Schneider
- PI 589391. *Malus x soulardii* (L. Bailey) Britton
- PI 589392. *Malus orthocarpa* Lavallee ex Anon.
- PI 589393. *Malus toringoides* (Rehder) Hughes
- PI 589394. *Malus sargentii* Rehder
- PI 589395. *Malus tschonoskii* (Maxim.) C. Schneider
- PI 589396. *Malus sp.*
M. denticulata.
- PI 589397. *Malus trilobata* (Poiret) C. Schneider
- PI 589398. *Malus hybrid*
Mammoth Crab.
- PI 589399. *Malus yunnanensis* (Franchet) C. Schneider
- PI 589400. *Malus sargentii* Rehder
Rosea.
- PI 589401. *Malus kansuensis* (Batalin) C. Schneider
Calva.
- PI 589402. *Malus florentina* (Zuccagni) C. Schneider
Skopje P3.
- PI 589403. *Malus toringoides* (Rehder) Hughes
- PI 589404. *Malus spectabilis* (Aiton) Borkh.

The following were donated by Thomas Green, The Morton Arboretum, Lisle, Illinois 60532, United States. Received 09/02/1986.

- PI 589405. *Malus sargentii* Rehder

PI 589406. *Malus ioensis* (Alph. Wood) Britton

PI 589407. *Malus* sp.
M. glaucescens.

PI 589408. *Malus* sp.
M. turesii.

The following were developed by Arnold Arboretum, The Arborway, Jamaica Plain, Massachusetts 02130, United States. Donated by Thomas Green, The Morton Arboretum, Lisle, Illinois 60532, United States. Received 09/02/1986.

PI 589409. *Malus* sp.
M. bracteata. Collected in Unknown. Missouri to Georgia and Alabama.

The following were donated by Thomas Green, The Morton Arboretum, Lisle, Illinois 60532, United States. Received 09/02/1986.

PI 589410. *Malus x soulardii* (L. Bailey) Britton
Wild Red. Comments:: Flower: 5-6 in cluster, 5 petals; bud rose red to carmine, expanding to pink flushed with rose pink. Fruit: Bright red carmine or crimson, bright green on shaded side. Carmine or crimson cheek streaked with deeper red; 1 5/8" across, slightly angular.

PI 589411. *Malus* sp.
M. marjorensis 'Formosa.

PI 589412. *Malus sargentii* Rehder

PI 589413. *Malus* sp.
M. flexilis. Comments:: Flower: 5-6 in cluster, 5 petals; buds rose red, expanding to light pink to white when fully open. Fruit: deep red, bright red, becomes translucent after opening. 1/2" across.

PI 589414. *Malus ioensis* (Alph. Wood) Britton

PI 589415. *Malus x platycarpa* Rehder
Hoopesii.

PI 589416. *Malus sargentii* Rehder

The following were collected by C.S. Sargent. Developed by C.S. Sargent, Arnold Arboretum, Jamaica Plain, Massachusetts, United States. Donated by Thomas Green, The Morton Arboretum, Lisle, Illinois 60532, United States. Received 09/02/1986.

PI 589417. *Malus* sp.
M. glabrata. Collected in Unknown. North Carolina to Alabama, USA.
Pedigree - Wild. Comments:: First recorded as Sargent's *Malus* seedling No. 7.

The following were donated by Thomas Green, The Morton Arboretum, Lisle, Illinois 60532, United States. Received 09/02/1986.

PI 589418. *Malus x scheideckeri* Spaeth ex Zabel
Pedigree - *Malus floribunda* x *Malus prunifolia*. Comments:: Flower: 5-7

in cluster, 7-15 petals; buds deep rose red, deep pink, carmine expanding to light pink flushed with rose pink. Fruit: yellow to orange yellow, occasionally with a pink or carmine blush; 3/4"-7/8" wide, angular and somewhat ribbed.

- PI 589419. *Malus ioensis* (Alph. Wood) Britton
Klehmi.
- PI 589420. *Malus* sp.
M. hartwigii.
- PI 589421. *Malus* sp.
M. rockii.
- PI 589422. *Malus transitoria* (Batalin) C. Schneider
- PI 589423. *Malus coronaria* (L.) Miller

The following were collected by W. Purdom. Developed by Arnold Arboretum, The Arborway, Jamaica Plain, Massachusetts 02130, United States. Donated by Thomas Green, The Morton Arboretum, Lisle, Illinois 60532, United States. Received 09/02/1986.

- PI 589424. *Malus x robusta* (Carriere) Rehder
Persicifolia. Collected 1910 in Unknown. Northern China (seeds collected). Pedigree - Introduced into cultivation by the Arnold Arboretum. Comments:: Received as plant in 1913 by the Arnold Arboretum from James Vietch & Sons, Ltd., Chelsea, England as *Pyrus* sp. (Purdom No. 179). Flower: single, white, approx. 4 cm. across. Fruit: bright red, shaded side sometimes yellowish or brown- ish-green; approx. 2 cm. in diam.

The following were donated by Thomas Green, The Morton Arboretum, Lisle, Illinois 60532, United States. Received 09/02/1986.

- PI 589425. *Malus coronaria* (L.) Miller
Dasyealyx.
- PI 589426. *Malus ioensis* (Alph. Wood) Britton
fimbriata.
- PI 589427. *Malus x platycarpa* Rehder
Hoopesii.

The following were developed by Cornell University, New York Agr. Exp. Station, Geneva, New York 14456, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/08/1987.

- PI 589428. *Malus domestica* Borkh.
Barry. Pedigree - Mc Intosh x Cox's Orange Pippin selected 1936; intro. in 1957. Comments:: Fruit: medium to large; skin with a solid, dark red blush, appearance fine; quality good to very good for both dessert and culinary uses; matures in the fall, 2 weeks before Mc Intosh; cold storage life of 3 mo.; resembles Mc Intosh. Very dark, early, good quality.

The following were developed by John Innes Horticultural Institute, Hertford, Herts, Bayfordbury, England, United Kingdom. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/08/1987.

PI 589429. Malus domestica Borkh.

Merton Knave. Pedigree - Laxton's Early Crimson x Epicure; raised 1948; named Merton Ace 1968; renamed Merton Knave 1970. Comments:: Fruit: size medium, 70-75mm; skin 90-100% red, blushed color pattern, attractive; shape round-conic; flesh semifirm sometimes watercore, cream-colored; flavor subacid; eating quality fair; harvest season early, mid-August, 6 wks before Delicious. Tree: not highly productive; leaves roll due to mildew infection; fruits drop as they ripen. Early, attractive, English. R.D. Way, 1992.

The following were developed by Bountiful Ridge Nursery, Princess Anne, Maryland, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/08/1987.

PI 589430. Malus domestica Borkh.

Nugget. Pedigree - Golden Delicious seedling; discovered 1954; introduced 1966. Comments:: Fruit: indistinguishable from Golden Delicious, except more russet. Tree: indistinguishable from Golden Delicious, except growth habit is more spur type. Very similar to Golden Delicious. R.D. Way, 1992.

The following were developed by Cornell University, New York Agr. Exp. Station, Geneva, New York 14456, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/08/1987.

PI 589431. Malus domestica Borkh.

Ogden. Pedigree - Zusoff x McIntosh; crossed 1912; selected 1926; introduced 1928. Comments:: Fruit: size medium to large, 70-80 mm; skin 90% red, striped shape round-oblate; flesh semifirm, nearly white; flavor sweet; eating quality fair; harvest season mid-September, 3 wks before Delicious. Tree: medium productive; biennial bearer; Diploid; fruits drop as they ripen. Sweet, large, red, mid-season. R.D. Way, 1992.

The following were developed by Aomori Apple Experiment Station, Kuroishi, Aomori, Japan. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/08/1987.

PI 589432. Malus domestica Borkh.

Sekai-Ichi. Collected in Japan. Pedigree - Delicious x Golden Delicious; crossed 1930; introduced 1974. Comments:: Fruit: size very large, 100 mm; skin 70-90% red, striped, shape round-conic; flesh firm, light yellow; flavor subacid to sweet; eating quality good; harvest season early October, with Delicious. Tree: vigorous; not highly productive; biennial cropping; fruits drop; Diploid (Aomori Apple Expt. Sta. Bul. 25:61. 1989). Very large; good quality. R.D. Way, 1993.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/08/1987.

PI 589433. *Malus domestica* Borkh.
Tribu.

The following were developed by USDA, ARS, Inter-Regional Potato Introduction Sta., Peninsula Experiment Station, Sturgeon Bay, Wisconsin 54235, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/08/1987.

PI 589434. *Malus domestica* Borkh.

Viking. Pedigree - Parentage includes Jonathan, Delicious, Williams Early Red, Early McIntosh and Starr; named 1969. Comments:: Fruit: size large, 75-80 mm; skin 80-100% dark purplish red, blushed; attractive; shape round; flesh semifirm, cream-colored, some water core; flavor subacid, aromatic; eating quality good; harvest season early, mid-August, 6 wks before Delicious. Tree: precocious cropping; very productive; fruits drop. Early, dark purplish, good quality. R.D. Way, 1993.

The following were collected by Daepf of Oppligen. Donated by G. Schmid, Eidg. Forschungsanstalt, 8820 Wädenswil, Switzerland. Received 01/29/1987.

PI 589435. *Malus domestica* Borkh.

Berner Rosen. Collected in Unknown. Switzerland. Pedigree - First fruited 1888. Comments:: Size medium 55-70:50-65 mm; shape intermediate, rectangular to truncate-conic, convex, slightly ribbed base to apex; skin yellowish green almost covered with dark red flush and stripes; white dots, lilac bloom; flesh: fine, greenish-white tinged red, flavor subacid, aromatic; season mid to late.

The following were donated by G. Schmid, Eidg. Forschungsanstalt, 8820 Wädenswil, Switzerland. Received 01/29/1987.

PI 589436. *Malus domestica* Borkh.

Karmijn. Pedigree - Cox's Orange Pippin x Jonathan. cross 1949. U.S. plant patent pending; assigned to Carlton Plants, Dayton, Oregon. Triploid-does not produce viable pollen. Comments:: Flavorful but not dazzling in appearance. Growth habit is spreading and vigorous. May be flower tender. Fruit: large oblong, conical; color yellow-green w/ carmine red blush; russet can cause skin cracking; flesh yellow, firm, fine-grained; flavor one of the best with high sugar and acid. Harvest with Delicious. Storage good through March. Much be stored 4 weeks before good quality develops. Tree: moderately vigorous; horizontal branching; moderately precocious, low yields bloom. Season mid to late. Add. LIT. CIT. 1992-93. H. Apple. Tsolum River Fruit Trees Cat. p. 22.

PI 589437. *Malus domestica* Borkh.
Primrouge.

PI 589438. *Malus domestica* Borkh.
Berlepsch Red.

PI 589439. *Malus domestica* Borkh.
Schweizer Orangenapfel.

The following were developed by T. Visser. Donated by G. Schmid, Eidg. Forschungsanstalt, 8820 Wädenswil, Switzerland. Received 01/29/1987.

PI 589440. *Malus domestica* Borkh.

Elstar. Pedigree - Golden Delicious x Ingrid Marie Cross Made in 1955

Intro to U.S. 1972. U.S. Plant patent 6450, 6 De. 1988. Assigned to Carlton Plants, Dayton, Oregon. Comments:: Medium to large, round, yellow fruit with 80% light red stripe. Firm, cream colored flesh. Very good for fresh eating, cooking; flavor increases w/about 4 wks of storage. Appearance & eating quality similar to Jonagold; better keep er than Jonagold. Ripens mid-October. Popular in Europe. Tree: very vigorous; precocious cropping; less productive than Gala w/some tendency to biennial cropping. No preharv- est drop; diploid, produces viable pollen; foliage shed Jan. More suscep. to Powdery Mildew than Granny Smith, Jonagold; scab susceptible; fruit very susceptible to Phytophthora rot.

The following were developed by M. Saure. Donated by G. Schmid, Eidg. Forschungsanstalt, 8820 Wädenswil, Switzerland. Received 01/29/1987.

PI 589441. *Malus domestica* Borkh.

Ingol. Pedigree - Ingrid Marie x Golden Delicious. (Hybrid). Comments:: Fruit: large, 80-90 mm; skin 80% red, striped, attractive; shape oblate; flesh cream-colored, semifirm; flavor subacid; eating quality fair; harvest season mid-October, 1 wk after Delicious. Tree: productive.

The following were developed by Williams Brothers. Donated by G. Schmid, Eidg. Forschungsanstalt, 8820 Wädenswil, Switzerland. Received 01/29/1987.

PI 589442. *Malus domestica* Borkh.

Braeburn. Collected in Unknown. Nelson, New Zealand. Pedigree - Possibly a chance seedling of Lady Hamilton and Granny Smith. Comments:: Fruit: Large, conic, green-yellow ground color, 50-75% red orange stripe and blush pattern, maturing in mid-October with Fuji and just before Granny Smith. Flesh: yellowish, sub-acid firm, crisp, juicy with a sprightly flavor. Tree: medium vigor, extremely precocious, mid-season blooming with little tendency to pre-harvest drop. Appears to adapt to all apple districts except for high elevations in eastern Washington State, USA.

The following were donated by G. Schmid, Eidg. Forschungsanstalt, 8820 Wädenswil, Switzerland. Received 01/29/1987.

PI 589443. *Malus domestica* Borkh.

Arlet.

PI 589444. *Malus domestica* Borkh.

Reinette Clochard. Pedigree - In NFT collection as Clochard,; known mid 1800;'s. Comments:: Size medium; shape flat to intermediate, rectangular to truncate-conic, convex, slightly ribbed at eye; skin green- ish yellow speckled with rough russet, particularly round eye, rough; flesh compact, fine, yellowish; flavor sweet, subacid, perfumed; season late to very late.

PI 589445. *Malus domestica* Borkh.

Charden.

The following were developed by L. Verner, Agricultural Experiment Station, Moscow, Idaho, United States. Donated by G. Schmid, Eidg. Forschungsanstalt, 8820 Wädenswil, Switzerland. Received 01/29/1987.

PI 589446. *Malus domestica* Borkh.

Idajon. Pedigree - Wagener x Jonathan Selected 1936; intro: 1949. Comments:: Size medium 64-70:51-74 mm; shape flat, rectangular to truncate-conic; convex, slightly ribbed on body; skin yellow almost entirely

covered bright crimson flush and darker streaks, russet towards and stalk; flesh fine, crisp, creamy white; flavor sweet; season mid. Ripens 10 days before Jonathan. Tree: more resistant than Jonathan to mildew and fireblight. Good quality.

The following were developed by Agriculture Canada, Lethbridge Research Station, Lethbridge, Alberta T1J 4B1, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589447. *Malus domestica* Borkh.

Norcue. Pedigree - Heyer #12 x Rescue Intro: 1976, selected 1958. Comments:: Fruit 5 cm. standard, greenish-yellow ground overlaid with dull red stripes. Sweet dessert ripening end of Aug. and keeps fairly well; flesh cream-colored with tinges of pink under the skin, moderately crisp & juicy with full very sweet flavor, harvest before Heyer 12. Tree: vigorous, upright-spreading; very hardy precocious, annual cropping.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589448. *Malus domestica* Borkh.

Golden Precoce.

PI 589449. *Malus x moerlandsii* Doorenbos

Profusion.

The following were developed by Agriculture Canada, Lacombe Research Station, Lacombe, Alberta, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589450. *Malus hybrid*

Parkland. Pedigree - Rescue x Melba Selected by Agric. Res. Sta., Morden, Manitoba, Canada Intro: 1979 by Alberta. Comments:: Fruit: 6.5 cm. or of variable size, green-yellow with 4% red on the sunny side; flesh creamy-white, tinged green. Dessert, cooking. Early ripening (mid-Aug). Falls. Produces annually. Needs thinning. Keeps 6-8 weeks. Very hardy. Developed in Canadian plains for cold, short season areas.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589451. *Malus domestica* Borkh.

CC-14-45.

The following were developed by M.M. Rossoshansk. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589452. *Malus domestica* Borkh.

Rossoshanskoje Polosatoje. Collected in Former Soviet Union. Pedigree - Seedling "Kronselskiy Prozrachniy" Ulyanuishev.

The following were donated by Dan Thompson, Agriculture Canada, Center for

Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589453. *Malus domestica* Borkh.
Ottawa 546.

The following were developed by William Saunders, Canada Department of Agriculture, Central Experiment Farm, Ottawa, Ontario, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589454. *Malus hybrid*
Earl. Comments:: Long obsolete.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589455. *Malus hybrid*
Robinson. Pedigree - First recorded 1867. Comments:: Size medium 57-64:57-64 mm: shape intermediate, conic to truncate-conic, convex, prominent ribs at eye, ribbed on body; skin dull green, slightly mottled yellow, flushed and streaked brownish red, russet dots, russet at base, thick, tough; flesh crisp, tender, greenish white; flavor slightly sweet, slightly acid, vinous; season very late. Tree: strong, straight, healthy--vigorous.

The following were developed by Arie den Boer, Den Boer Arboretum, Des Moines, Iowa 50318, United States. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589456. *Malus domestica* Borkh.
Evelyn. Pedigree - An open-pollinated seedling of *M. ioensis* possible crossed with *M. x purpurea*. Selected 1939, named 1953, intro: 1953 as *M. ioensis*. (seedling Red No. 1). Comments:: Flowers: single, expanding-buds deep rose red, open-rose red to deep rose red, approx. 3.5 cm. across. Fruit: green- ish yellow and red, approx. 3.5 cm. in diam. Useful for culinary purposes (jelly). Tree: one of the most highly rated ornamentals with rose-pink flowers. Bronze foliage, early blooming. Add. LIT.CIT. 1992-93 H. Apple. Tsolum River Fruit Trees Catalogue. p. 34.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589457. *Malus domestica* Borkh.
Rosu de Cluj. Collected in Romania.

PI 589458. *Malus domestica* Borkh.
Goldgelb 55544. Collected in Germany.

PI 589459. *Malus hybrid*
Maybride.

The following were developed by Agriculture Canada, Lethbridge Research Station, Lethbridge, Alberta T1J 4B1, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney,

British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589460. Malus hybrid

Selkirk. Pedigree - *M. baccata* x *M. pumila* 'Niedzwetzkyan' Formerly M457 Intro: 1962. Comments:: Fruit: 2 cm. crab apple, purple-red. Summer hardy.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589461. Malus domestica Borkh.

Z 61. Collected in Netherlands.

PI 589462. Malus domestica Borkh.

F 14 A15.

The following were developed by Agriculture Canada, Lethbridge Research Station, Lethbridge, Alberta T1J 4B1, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589463. Malus domestica Borkh.

Breakey. Pedigree - Blushed Calville seedling Intro: 1935; selected 1929. Comments:: Fruit: 5 cm. (standard), yellowish green, striped bright red; late; good dessert, good cooking; keeps well; tendency to drop fruit easily. Tree: vigorous, upright, spreading, hardy.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589464. Malus domestica Borkh.

M.3. Collected in United Kingdom.

The following were developed by Agriculture Canada, Lethbridge Research Station, Lethbridge, Alberta T1J 4B1, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589465. Malus hybrid

Shafer. Pedigree - Rescue x Trail. Comments:: Fruit: 4.5 cm. crab apple, yellow, blushed with red. Flesh yellow. Sweet dessert, similar to Trail in size and quality but slightly darker orange and does not bruise as easily as Trail. Hardy.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589466. Malus domestica Borkh.

Roda Mantet.

The following were developed by S.G.A. Doorenbos. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589467. Malus hybrid

Winter Gold. Pedigree - A seedling selection of possibly *M. sieboldi* var. *zumi* made before 1947. Comments:: Flowers: single, expanding buds-deep carmine, open-white, approx. 3 cm. across. Fruit: yellow, occasionally with orange to pink blush, approx. 1.2 cm. in diam. New leaves amber. Yellow fruit hangs on in winter.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589468. *Malus domestica* Borkh.
H53-F15-6. Collected in Romania.

The following were developed by Univ. of Minnesota Fruit Breeding Farm, Excelsior, Minnesota, United States. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589469. *Malus domestica* Borkh.
Haralson. Collected in United States. Pedigree - Malinda x Selected 1913; named and intro: 1923; tested as Minn. 90. Comments:: Medium size, red-striped to deep red fruit. Crisp, juicy, firm, medium tender, white flesh. Mild, pleasantly tart flavor. Good for fresh eating and cider; even better for baking; holds its shape and texture. Stores well for 4-6 months. Tree: Known for hardiness, vigorousness, productivity and quality. Tends to be biennial-early production- often 2nd year after planting. Moderate resistance to fire blight and cedar-apple rust. Ripens from Sept. - October depending on location. -50 degrees F. Additional LIT.CIT. 1992-93 H. Apple. Tsolum River Fruit Trees Catalogue. p. 20.

The following were developed by V.G. Collet. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589470. *Malus domestica* Borkh.
Collet. Pedigree - Parentage unknown; discovered in 1948. Comments:: Fruit: 6.5 cm (standard) greenish cream, uniformly streaked with bright medium red. Turns rose-pink when ripe, early October. Good cooking, excellent dessert. Resembles Godfrey. 1978 Award of Merit from WCSH. "Frost triggers release of sugars if harvested too early" per Evans. Will stand 5-10 degrees F. of frost. Keeps about 10 weeks.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589471. *Malus domestica* Borkh.
Ottawa 4.

The following were developed by Agriculture Canada, Lethbridge Research Station, Lethbridge, Alberta T1J 4B1, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589472. *Malus domestica* Borkh.
Noran. Pedigree - [(*Malus baccata* x Broad Green) Columbia]? x Redant (Antonov-ka open-pollinated) - Smithfield Exp. Farm, Trenton, Ontario notes Columbia x Regent. Selected 1961; Intro: 1976. Comments:: Fruit: 6

cm. standard, green with brick-red blush on sunny side. cooking. Ripens late September. Stores well in air at 4 centigrade until mid-February. Tree: vigorous, up- right-spreading; very hardy, precocious; moderate to good annual cropping.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589473. *Malus domestica* Borkh.
H55-109-149. Collected in Romania.

PI 589474. *Malus domestica* Borkh.
Peypring Cerueuko. Collected in Romania.

The following were developed by D.S. Blair; S.J. Leuty; H.B. Heeney. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589475. *Malus domestica* Borkh.
Lindel. Pedigree - Richared Delicious x Linda Intro: 1971 Cross made 1939; selected 1953. Tested as T-397. Comments:: Fruit: 2 1/2 to 2 3/4 inches in diam.; round, conic; skin moderately thin, yellowish ground color, washed with medium red striped over color; flesh cream color, juicy, texture slightly coarse but firm, acid, moderate; ripens late Oct., approx. week later than Delicious remaining in good condition under refrigeration until March; recommended as fresh fruit and for processing. Tree: large, spreading; vigorous, slightly hardier than McIntosh, productive.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589476. *Malus domestica* Borkh.
Ottawa 5210.

PI 589477. *Malus baccata* (L.) Borkh.
Rosthern.

PI 589478. *Malus domestica* Borkh.
Novosibirski Sweet. Collected in Former Soviet Union.

PI 589479. *Malus domestica* Borkh.
Ottawa 271.

The following were developed by Alberta Special Crops & Hort. Res. Cent., Brooks, Alberta, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589480. *Malus domestica* Borkh.
Westland. Pedigree - Heyer #12 x Dr. Bill circa 1980. Possibly triploid-tested as PF8. Comments:: Fruit: 7.5 cm., pale yellow green, washed & striped red. Good cooking. Keeps 9 weeks in storage. Boyko, "...droopy and tidy and not easy to prune". Evans, "Droops due to heavy bearing. Large fruit, annual crop, needs no thinning, snow white flesh, doesn't brown, good texture. Ripens early September. Annual bearing, compact tree, extremely hardy.

The following were developed by Agriculture Canada, Lethbridge Research Station, Lethbridge, Alberta T1J 4B1, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589481. Malus domestica Borkh.

Norland. Pedigree - Rescue x Melba - Scott selection 1980. Comments:: Fruit: 6.5 cm., standard, red blush, over green-yellow; oblong-conic with slight ribbing. Early dessert & cooking. Excellent quality. Walter Manchester notes "...better & hardier than Westland, but less hardy than Parkland." Drops when ripe; ripens mid-august. Keeps 16 weeks in cold storage. "Best picked for storage before fully ripe." says Sprout (nursery). Tree: semi-dwarf. "Good at Unity ..good breeder"-Coutts (1991).

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589482. Malus domestica Borkh.

Budagovsky 54-118.

PI 589483. Malus domestica Borkh.

Altaiski Sweet. Collected in Former Soviet Union.

PI 589484. Malus hybrid

Tanner. Pedigree - In existence 1872. (only record).

The following were developed by Agriculture Canada, Beaverlodge Research Station, Beaverlodge, Alberta T0H 0C0, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589485. Malus domestica Borkh.

Norson. Pedigree - Haralson x Rescue. Intro: 1976; selected 1958. Comments:: Fruit: medium-small, 50 mm diameter; green to yellow ground color, almost completely overlaid by a very attractive dark red; flesh cream-colored, crisp, juicy; pleasant flavor, good quality, best dessert; harvest late September; excellent keeping ability. Tree: moderately vigorous, upright-spreading; very hardy; relatively precocious; annual heavy crops.

The following were developed by L.P.S. Spangelo; S.J. Leuty; H.B. Heeney. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589486. Malus domestica Borkh.

Murray. Pedigree - McIntosh x 52-05-26 [Platt Melba x R16T19 (Wolf River x Malus atrosanguinea 804)] Tested as Ottawa 628. -Agriculture Canada Res. Sta., Ottawa, Ontario, Canada. Introduced: 1980. Comments:: Fruit: medium, red blush-stripe on green to yellow ground color; fine texture, juicy, moderately acid; quality medium good; poor for processing; short storage life. Tree: moderately vigorous, medium yield; moderately resistant to apple scab - some spots observed; resistant to cedar apple rust; very susceptible to quince rust. Harvest 7-10 days before McIntosh.

The following were donated by Dan Thompson, Agriculture Canada, Center for

Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589487. *Malus domestica* Borkh.

Anis Aliy K-32. Collected in Former Soviet Union.

PI 589488. *Malus domestica* Borkh.

Korichnoe Novae K23938. Collected in Former Soviet Union.

PI 589489. *Malus domestica* Borkh.

Cranzhevoje. Collected in Former Soviet Union.

The following were developed by L.P.S. Spangelo; S.J. Leuty; H.B. Heeney. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589490. *Malus domestica* Borkh.

Trent. Pedigree - McIntosh x R18T40 [Jonathan x (Rome Beauty x M. floribunda 821 sib)]. Tested as Ottawa 531. -Agriculture Canada Res. Sta., Ottawa, Ontario, Canada Introduced: 1979. Comments:: Fruit: medium to large, yellow; flesh moderately juicy firm cream-colored with greenish tinge, slightly coarse; good for processing; fair for juice; susceptible to bitter-pit, 6 mo. storage life. Tree: vigorous, medium yield; resistant to apple scab; susceptible to cedar apple rust; very susceptible to quince rust. Harvest late October.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589491. *Malus domestica* Borkh.

Korichnoe Polosatoje. Collected in Former Soviet Union. National selection, Central Russia.

The following were developed by Balgaard Fruit Breeding Institute, Sweden. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589492. *Malus domestica* Borkh.

Katja. Collected in Sweden. Pedigree - James Grieve x Worcester Pearmain Raised 1947; selected 1955; intro. 1966; named 1968. Prior name: BM 24353. Comments:: Size medium; shape conic, convex, regular; skin yellow flushed scarlet; flesh firm; flavor sweet juicy; season second early, Sept 10-15, a week ahead of James Grieve; recommended for commercial orchards. Very attractive. Tree: size medium, upright, spreading; vigor moderate, hardy, productive and bears annually; seems to be tolerant to mildew scab.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589493. *Malus domestica* Borkh.

Muscadet de Dieppe. Collected in France. Pedigree - 1750. Comments:: Small-medium, orange red, sweet rich, aromatic. Late ripening. One of the very few apple varieties that will make excellent hard cider without blending.

The following were developed by C.F. Patterson. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589494. *Malus domestica* Borkh.

Patterson. Pedigree - Columbia x Melba Intro: 1960. Comments:: Fruit: up to 6 cm small, some years. Blushed red over greenish-yellow (almost no red some years). Flesh pure white, resists browning, good dessert and keeper, juicy and drying. Very good cooking, needs thinning. S. Nelson of U of S "best quality apple". Manchester notes, "well suited to espalier culture. Tree: very sprawly. Annual pruning prevents setting of numerous small fruits and breakage of long limbs. Falls when ripe. Hardy.

The following were developed by Henry M. Tydeman. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589495. *Malus domestica* Borkh.

Malling Kent. Collected in United Kingdom. Pedigree - Intro: 1974. Protected by Plant Breeders' Rights, owned by Plant Breeding International, Cambridge. Cox's Orange Pippin x Jonathan. Test from 1964 to 1974 as A1379. Comments:: Fruit: medium, most fruits 60 mm diam or larger; 75% skin surface dark coppery red on a green ground, occasionally extensive russet; shape slightly conic; texture firm; flavor very acid, late ripening; in 1.7 C storage keeps well until mid-April. Tree: medium size, upright, precocious cropping little pre-harvest drop; blooms with Cox's Orange Pippin and Golden Delicious.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589496. *Malus domestica* Borkh.

Z 73. Collected in Netherlands.

PI 589497. *Malus hybrid*

Ormiston Roy.

PI 589498. *Malus domestica* Borkh.

Dab 100. Collected in Germany.

PI 589499. *Malus hybrid*

Purple Wave.

PI 589500. *Malus hybrid*

Cameron.

The following were developed by University of Alberta, Devonian Botanical Garden, Edmonton, Alberta T6G 2E1, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589501. *Malus domestica* Borkh.

Norda. Pedigree - Rescue or Rosilda x Mantet, tested at Beaverlodge (Agriculture Canada Res. Sta.) in 1960. Smithfield Exp. Farm, Trenton Ont. notes Rosilda x Rescue. Int. 1976; sel 1960; Rosilda (Prince x McIntosh) x Trial (Northern Queen x Rideau). Comments:: Fruit: 5 cm standard, shiny dark-red overlay. Early ripening, dessert, good keeper. Consistently good yields. Flesh cream-colored crisp, moderately

juicy, very good flavor. Harvest late September; stores at 4 C until mid-January. Tree: vigorous, upright-spreading, moderately hardy; relatively precocious, moderately productive.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589502. *Malus domestica* Borkh.
Z 71. Collected in Netherlands.

The following were developed by University of Alberta, Devonian Botanical Garden, Edmonton, Alberta T6G 2E1, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589503. *Malus domestica* Borkh.
Norhey. Pedigree - Heyer #12 x Dr. Bill, selected by Univ. of Alberta 1960; Intro. 1976. Comments:: Fruit over 6 cm standard, yellow; flesh pure white coarse and resistant to browning; slightly tart; cooking and juice; keeps about 6 weeks. Consistently produces a large crop. Walter Manchester notes: "...subject to wood rotting fungi". Tree: vigorous, upright, good branching habit, very winter hardy, hardier than Heyer 12; precocious, heavy annual crop-ping.

The following were developed by Canada Department of Agriculture, Kentville Research Station, Kentville, Nova Scotia, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589504. *Malus domestica* Borkh.
Kestrel. Pedigree - Cross made 1950; selected 1961; intro. 1975. New York Red Spy x Macoun. Tested as C13-30-88. Fruit medium 55-75 mm; shape round-conic, oblate; color almost completely washed or lightly striped with carmine to deep currant red on a pale greenish-yellow background; attractive flesh, creamy white, crisp, fine, juicy, exceptionally good texture; flavor subacid, mildly aromatic; eating quality very good to best; harvest time mid-season, a few days after McIntosh, retains quality in storage; good shelf life. Tree moderately vigorous, well-spurred, upright, spreading, annually productive. Has not had insect/disease problems in Nova Scotia - not tested for actual resistance.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589505. *Malus domestica* Borkh.
Z 185. Collected in Netherlands.

PI 589506. *Malus hybrid*
Hoser.

PI 589507. *Malus domestica* Borkh.
Hamilton. Pedigree - Originated before 1862. Comments:: Size medium to large; shape intermediate to flat, rectangular, convex; not or slightly ribbed; skin yellow marbled and flecked with carmine, dotted with yellow; flesh tender, yellowish; flavor sweet subacid; season mid to late.

PI 589508. *Malus hybrid*
Kobenza.

PI 589509. *Malus domestica* Borkh.
Dab 97. Collected in Germany.

The following were developed by Agriculture Canada, Morden Research Station, P.O. Box 3001, Morden, Manitoba, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589510. *Malus hybrid*
Garry. Pedigree - An open pollinated seedling of *Malus pumila* var. *niedzwetzkyana*. Named 1962, formerly MR 455. Comments:: Flowers: expanding buds maroon, open deep rose red. Fruit: crimson with heavy, waxy bloom; approx. 2 cm in diam; remaining on the tree all winter.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589511. *Malus domestica* Borkh.
Severny Sinap K-21.39. Collected in Former Soviet Union. Comments:: Hardy, scab resistant, stores well. Medium, large fruit, yellow with orange blush. Tall, late dessert apple.

PI 589512. *Malus domestica* Borkh.
F 12 A28. Collected in Unknown. Europe.

The following were developed by P.A. Zhavoronkov. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589513. *Malus domestica* Borkh.
Uralskoje Nalivnoje. Collected in Former Soviet Union.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589514. *Malus hybrid*
Rudolph.

PI 589515. *Malus domestica* Borkh.
Dab 183. Collected in Germany.

The following were developed by Agriculture Canada, Lethbridge Research Station, Lethbridge, Alberta T1J 4B1, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589516. *Malus domestica* Borkh.
Morden 359. Pedigree - Wealthy x Melba. Comments:: "Good apple, but a little too tender", says Coutts (1991) Large, juicy red fruit, useful for pies and sauce. Very hardy, keeps until January.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3,

Canada. Received 02/13/1987.

PI 589517. Malus domestica Borkh.

Kandil Sinap. Collected in Romania. It has been noted that possible origin may be Turkey. Pedigree - Probably arose early 1800s. Comments:: Size large 64:89 mm; shape tall, truncate-conic, concave, ribbed at eye; skin pale yellow almost entirely flushed and striped red; flesh tender, crisp, snow-white; flavor sweet, slightly vinous, perfumed; season mid to very late. Tree grows in a pronounced narrow, pyramidal dwarfish-form. Keeps until Feb.

PI 589518. Malus domestica Borkh.

Sandel.

The following were developed by Agriculture Canada, Beaverlodge Research Station, Beaverlodge, Alberta T0H 0C0, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589519. Malus domestica Borkh.

Trailman. Pedigree - Trail x Osman - circa 1973. Comments:: Fruit 4 cm crabapple, egg shaped. Uniform golden, overlaid by distinctive reddish-brown wash on exposed side. Flesh golden yellow, spicy tart flavor. Dessert or canning, good juice and mixer. Bears at an early age. "A good crab, but too small", says Coutts (1991).

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589520. Malus domestica Borkh.

Rhode Island Greening. Collected in Unknown. Probably in the vicinity of Newport, RI, near the place now known as Green's End. Pedigree - Before 1650, known 1858; introduced into the Old Plymouth Colony from Newport in 1765. Comments:: Size medium to large 67-78:54-66 mm; shape flat, rectangular convex, ribbed at eye and on body; skin yellowish green with occasional orange flush, russet at base, pale dots, greasy; flesh firm, fine, greenish yellow; flavor acid; season very late, triploid, needs pollinator. Large, spreading, vigorous, productive, long-lined tree, biennial cropper. Excellent for cooking and drying. Third most important in New York. Add. LIT.CIT. 1992-93 H. Apple. Tsolum River Fruit Trees Catalogue. p. 27; Bultitude, J. 1983. Apples.

The following were developed by University of Alberta, Devonian Botanical Garden, Edmonton, Alberta T6G 2E1, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589521. Malus domestica Borkh.

Noret. Pedigree - Rescue x Mantet. Intro. 1976; selected 1960. Comments:: Fruit: 5 cm standard, yellow-green, overlaid with shiny dark red. Cooking and dessert. Ripening late August; keeps about 6 wks. "A small but tasty apple:", says Sprout (nursery) A replacement for Rescue. Small tree, selected for earliness and hardiness. Flesh cream-colored, moderately firm, slightly tart, good flavor. Harvest early, 5 days after Dawn Tree: small, upright-spreading; very winter hardy, hardier than Osman and Heyer 12; precocious; annual cropping.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3,

Canada. Received 02/13/1987.

PI 589522. *Malus hupehensis* (Pampan.) Rehder

PI 589523. *Malus domestica* Borkh.

Harcourt. Pedigree - Unknown. Comments:: Fruit: 6 cm (standard), blushed bright red; skin slightly waxed, Good quality dessert, but not a good keeper. Vigor fair. (similar to George) Selected from Wilson Orchards, Gleichen, AB, Canada.

The following were developed by Agriculture Canada, Morden Research Station, P.O. Box 3001, Morden, Manitoba, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589524. *Malus domestica* Borkh.

Glenorchie. Pedigree - Unknown. Intro: Morden 1957. Comments:: Fruit: cream with medium red. Late blooming.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/13/1987.

PI 589525. *Malus domestica* Borkh.

T-3913.

The following were developed by T.A. Zalesak. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 02/15/1987.

PI 589526. *Malus domestica* Borkh.

Zalesak #3. Collected in Unknown. Wallkill, New York, United States. Comments:: Fruit: size medium, 65-70 mm; skin 30-80% red, striped, shape round-oblate; flesh semifirm, cream-colored; flavor slightly acid; eating quality fair; harvest season early September, 5 wks before Delicious. Tree: productive; strongly biennial. Early, partially red, no value. R.D. Way, 1993.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 02/15/1987.

PI 589527. *Malus domestica* Borkh.

Vienna. Comments:: Fruit: size large 70-80 mm; skin 70-100% red, dull, striped; shape round-conic; flesh firm, light yellow; flavor subacid; eating quality fair; harvest season late September, 2 wks before Delicious. Tree: productive; fruits drop. Large, red, mid-season. R.D. Way, 1993.

The following were developed by H.O. Woodward. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 02/15/1987.

PI 589528. *Malus domestica* Borkh.

Woodward. Collected in Unknown. Nimalot Farm, Somerset Ave., Segregansett, Massachusetts, United States. Pedigree - Macoun x

open-pollinated; discovered about 1965. Comments:: Fruit: size medium, 70-80 mm; skin 70-90% red, striped; shape oblate; flesh semifirm, nearly white; flavor subacid; eating quality good; harvest season late August, 6 wks before Delicious. Tree: productive; biennial cropping; overcrops in "on" year. Early, red, good quality. R.D. Way, 1993.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 02/15/1987.

PI 589529. *Malus domestica* Borkh.

Lubec #1. Collected 1960 in Unknown. Middle of cow pasture, Lubec, Maine, USA. Pedigree - Single volunteer seedling, discovered about 1960. Comments:: Fruit: very large, 90-115 mm; skin yellow ground, 10-50% red stripes, dots, not highly attractive; shape round-oblate flesh firm, nearly white; flavor slightly acid; eating quality poor to fair; resembles Wolf River; harvest season early October, with Delicious. Tree: vigorous, non-precocious; productive; fire blight susceptibility rating 4; fruits drop as they ripen. Very large, mediocre quality.

PI 589530. *Malus domestica* Borkh.

Schoner aus Miltenberg. Comments:: Fruit: size above medium, 75-80 mm; skin 60-90% red, striped shape round-conic; flesh semifirm, cream-colored; flavor subacid; eating quality less than fair; harvest season mid-September, 3 wks before Delicious. Tree: unproductive; resistant to mildew; fruits drop as they ripen; Diploid (Proc.Am.Soc.Hort.Sci. 82:56.1973). Red, mid-season, no value. R.D. Way, 1993. (P.I. received in 1937 from R. Schmidt, Rellingen, Holstein, Germany.).

The following were developed by Cornell University, New York Agr. Exp. Station, Geneva, New York 14456, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 02/25/1987.

PI 589531. *Malus domestica* Borkh.

Medina. Pedigree - Deacon Jones x Delicious; crossed 1911; introduced 1922. Comments:: Fruit: Delicious type; large, 1 up to 90mm; variable sizes; skin 50% light red, striped, dull, greenish-yellow ground color; shape round-conic, irregular shape; flesh semifirm, cream colored; flavor mildly subacid to nearly sweet, aromatic; eating quality good; harvest date late, early November, 3 wks after Delicious. Tree: vigorous; moderately productive; annual bearing; fruits hang well after ripe. Large, round-conic, greenish-yellow ground, late. R.D. Way, 1992.

The following were donated by C. Blattny, Institute of Chemical Technology, Suchbatarova 5, Praha, Central Bohemia 166 28, Czech Republic. Received 02/26/1987.

PI 589532. *Malus domestica* Borkh.

Blahova Ruzena.

PI 589533. *Malus domestica* Borkh.

Sampion.

PI 589534. *Malus domestica* Borkh.

Sudeten Reinette.

PI 589535. *Malus domestica* Borkh.
Golden Delicious SE-69.

PI 589536. *Malus domestica* Borkh.
Litevsky Jadernac.

PI 589537. *Malus domestica* Borkh.
Jadernicka.

The following were collected by J.L. Alkins; W.T. Lowen. Donated by M. Weiss, Plant Protection Dept., P.O.B. 78, Bet Dagan, Israel; Z. Fleisher, Plant Protection Dept., Ministry of Agriculture, P.O.B. 15030, Yaffo, Israel. Received 03/03/1987.

PI 589538. *Malus domestica* Borkh.
Tropical Beauty. Collected in Israel. South Africa, originated in Maidstone by Meredith B. Strapp, distributed by F.B. Harrington, Natal. Pedigree - Seed sown circa 1930; first distributed 1953; named & intro in Australia 1958. Somewhat self-fertile but plant with Ein Shemer and/or Adina for best results. Brought into US as PI 281542-not introduced commercially. Comments:: Size medium; shape variable, intermediate, flat or tall, rectangular, base often narrower than apex; convex, strongly ribbed at apex and on body, often a fleshy knob at stalk; skin greenish, gold streaked and flecked carmine, occasional russet hairline, a little sticky; flesh firm, rather coarse, yellowish-white, green coreline & veins, flavor sweetish; season late. Low chill. Attacked by bitter rot in Florida. Propagation rights outside of Australia and New Guinea. Assigned to Stark Bros Orchard & Nursery Co; Louisiana, Miss Proven Florida and Hawaii as well.

The following were donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589539. *Malus domestica* Borkh.
Zlatna Resistentna. Collected in Former Soviet Union.

The following were developed by Kabardino-Balkarsk Hort. Res. Station, Caucasus, Former Soviet Union. Donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589540. *Malus domestica* Borkh.
Alpinist. Collected in Former Soviet Union. Pedigree - Renet Rimirenko x Pepin Cherninko. Comments:: Tree: relatively vigorous with high yield capacity; Fruit: large, late harvest (winter); medium resistance to frost and susceptible to fungus diseases.

The following were donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589541. *Malus domestica* Borkh.
Amur Naliv. Collected in Former Soviet Union.

PI 589542. *Malus domestica* Borkh.
Narjadnoye Crysmskoye. Collected in Former Soviet Union. Comments:: *Letter from Dr. Leonid A. Burmistrov, USSR (10/1/91).

PI 589543. *Malus domestica* Borkh.
Beforest. Collected in Former Soviet Union. Pedigree - Forest seedling. Comments:: per Dr. Leonid A. Burmistrov, "Beforest" is a Canadian cultivar. (letter of 10/1/91).

The following were developed by Crimea Hort. Res. Station, Ukraine. Donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589544. Malus domestica Borkh.

Salute. Collected in Former Soviet Union. Pedigree - Wagener Price Apple x Rhode Island Greening. Comments:: Tree: Relatively vigorous, yield capacity high; medium size fruit; late harvest (winter), medium resistance to frost; relatively tolerant to fungus diseases.

The following were developed by Azerbaidjan Res. In. Fruit Growing Vine*, Former Soviet Union. Donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589545. Malus domestica Borkh.

Vystavochnoye. Collected in Former Soviet Union. Pedigree - Candil Sinap x Wei Ber Rosemarin. Comments:: *Growing and Subtropical Crops.

The following were developed by Pymorsk Exp. Sta. for Small Fruit, Former Soviet Union. Donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589546. Malus domestica Borkh.

Zelenovka Sotchnaya. Collected in Former Soviet Union. Pedigree - Seedling of Kitaika Nalivnaya from (o.p.).

The following were developed by A.V. Petrov. Donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589547. Malus domestica Borkh.

Novinka. Collected in Former Soviet Union. Pedigree - Antonovka x Borovinka.

The following were developed by Mliev Hort. Res. Station, Ukraine. Donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589548. Malus domestica Borkh.

Mleevskaya Crasavitsa. Collected in Former Soviet Union. Pedigree - Golden Winter Pearmain x McIntosh.

The following were developed by Crimea Hort. Res. Station, Ukraine. Donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589549. Malus domestica Borkh.

Eurika. Collected in Former Soviet Union. Pedigree - Reinette d'Orleans x (Boiken x Rhode Island Greening).

The following were developed by L.M. Shemistrenko; P.E. Ninonenko; M.N. Mleevstkaya. Donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589550. Malus domestica Borkh.

Slava Pobeditelyam. Collected in Former Soviet Union. Pedigree -

Papirovka x McIntosh. Comments:: Tree: vigorous with high yield capacity. Fruit: above medium/medium size; early harvest (summer or autumn); high resistance to frost. [Another source: L.P. Simirenko Exp. Stal of Hort.

The following were developed by Crimea Hort. RES. Station, Ukraine. Donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589551. Malus domestica Borkh.

Tawria. Collected in Former Soviet Union. Pedigree - Reinette de Champagne x (o.p.). Comments:: Tree: medium size with high yield capacity Fruit: medium/above medium; late harvest (winter); relatively frost resistant; relatively tolerant to diseases.

The following were donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589552. Malus domestica Borkh.

Aurora. Collected in Former Soviet Union.

PI 589553. Malus domestica Borkh.

Mantuanskoye. Collected in Former Soviet Union. Italy, district of Caldaro, Venezia Tridentina. Pedigree - Described 1889. Comments:: Size medium; shape flat, rectangular, convex, ribbed; skin yellow tinged green, nearly covered with carmine; flesh fine soft, white; flavor sweet subacid, slightly perfumed; season late to very late; flowers early; tree upright.

The following were developed by Crimea Horticulture Res. Station, Ukraine. Donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589554. Malus domestica Borkh.

Obilnoye. Collected in Former Soviet Union. Pedigree - 2072 Oblinoe (Wagener Price Apple x Krymskoe Zolotae) Diane x Osenneie Polosatost QUESTIONABLE PEDIGREE. Comments:: Other possible source: S.F. Chernenko, Developer, The Order of the Red Flag of Labor, I.V. Michurin Central Genetics Laboratory.

The following were donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589555. Malus domestica Borkh.

Joys. Collected in Former Soviet Union.

The following were developed by Crimea Hort. Res. Station, Ukraine. Donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589556. Malus domestica Borkh.

Souvenir. Collected in Former Soviet Union. Comments:: Early harvest (autumn).

The following were donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589557. Malus domestica Borkh.

Calvil Crymskiy. Collected in Former Soviet Union.

PI 589558. Malus domestica Borkh.

Tytovka. Collected in Former Soviet Union. Pedigree - Folk breeding cv. Comments:: Tree: Vigorous with medium yield. Fruit: Large/very large; early harvest (autumn); high resistance to frost; moderately tolerant to fungus diseases.

The following were developed by Crimea Horticulture Research Station, Ukraine . Donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589559. Malus domestica Borkh.

Crymus. Collected in Former Soviet Union. Pedigree - cv. 2077 (London Pippen x Red Reliculous). Comments:: Referenced by letter from Leonid A. Burmistrov, curator of Fruit and Small Fruit Crops, Germplasm Plant Introduction, Dept. N. 1. Vavilon All-Union Scientific Research Institute of Plant Industry, 44 Herzen Str, Leningrad 19000, USSR.

The following were developed by Crimea Hort. Res. Station, Ukraine. Donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589560. Malus domestica Borkh.

Livadiyskoye. Collected in Former Soviet Union.

The following were developed by Pridnestrovia, Former Soviet Union. Donated by T. Verderevskaya, Institute of Horticulture, Fructovaja 14, Kishinev, Moldova. Received 03/06/1987.

PI 589561. Malus domestica Borkh.

Shaphran Letnij. Collected in Former Soviet Union. Pedigree - Folk breeding cv. Comments:: Tree: medium size with high yield. Fruit: medium size; early harvest (summer); high resistance to frost and moderately tolerant to scab disease. Origin? S.W. Ukraine/E. Moblova.

The following were developed by Vine Fruit and Horticulture Station, Geisenheim, Germany. Donated by G. Naumann, Institut fur Obstbau und Gemusebau, der Universitat Bonn, Auf dem Hugel 6, 5300 Bonn, Germany. Received 03/11/1987.

PI 589562. Malus domestica Borkh.

Oldenburg. Pedigree - Minister von Hammerstein X Baumann's Reinette Raised 1897, first fruit 1904. Comments:: Size medium 68:60 mm; shape intermediate, truncate-conic, convex, ribbed at eye; skin yellowish green to orange, flushed and striped red; flesh fine, loose texture, yellow- ish white tinged green; flavor subacid; season mid. There is another OLDENBURG from Russia, see literature.

The following were donated by G. Naumann, Institut fur Obstbau und Gemusebau, der Universitat Bonn, Auf dem Hugel 6, 5300 Bonn, Germany. Received 03/11/1987.

PI 589563. Malus domestica Borkh.

Brettacher. Comments:: Size large 83-93:63-73 mm; shape flat, conic, convex, ribbed at eye and on body; skin greenish yellow flushed pink, streaked red; flesh coarse, crisp, white tinged green; flavor acid; season very late.

The following were collected by Hesselman. Donated by G. Naumann, Institut fur Obstbau und Gemusebau, der Universitat Bonn, Auf dem Hugel 6, 5300 Bonn, Germany. Received 03/11/1987.

PI 589564. Malus domestica Borkh.

Kaiser Wilhelm. Collected 1800 in Germany. Witzhelden, Kreis Solingen, Germany. Pedigree - Possibly Harberts Reinette x In distribution since mid 1800's. Comments:: Size medium to large 61-76; 50-65 mm; shape intermediate, conic, convex, ribbed at eye and on body; skin pale yellow, shaded deeper yellow often much flushed crimson with darker stripes, russet in cavity and on base; flesh fine, crisp to tender, yellowish white; flavor subacid, sweet, spicy; season late to very late.

The following were developed by C. Burchhardt. Donated by G. Naumann, Institut fur Obstbau und Gemusebau, der Universitat Bonn, Auf dem Hugel 6, 5300 Bonn, Germany. Received 03/11/1987.

PI 589565. Malus domestica Borkh.

Landsberger Reinette. Pedigree - Raised circa 1840; first fruit 1852. Comments:: Size medium to large 64-80; 57-65 mm; shape intermediate, rectangular to truncate-conic, convex, ribbed on body and at eye; skin yellow, flushed orange, russet dots, russet in cavity; flesh fine, tender, whitish; flavor subacid, refreshing, sweet, perfumed; season mid to very late (Oct. to Dec.) Tree: moderately vigorous, spreading, produces spurs very freely. Pleasant dessert apple, primarily garden variety. Additional LIT.CIT. 1992-93 H. Apple. Tsolum River Fruit Trees Catalogue. p. 23.

The following were donated by G. Naumann, Institut fur Obstbau und Gemusebau, der Universitat Bonn, Auf dem Hugel 6, 5300 Bonn, Germany. Received 03/11/1987.

PI 589566. Malus domestica Borkh.

Baumann's Reinette. Pedigree - Probably raised in Belgium by Van Mons; recorded 1911. Comments:: Medium size, approx. 64 mm; flat rectangular, convex, slightly ribbed at the eye, ribbed on body, base to apex; skin yellow, almost entirely flushed and striped crimson, some russet; flesh hard, coarse white; flavor acid, slightly aromatic; season very late. Tree: moderately vigorous, upright-spreading. Produces spurs very freely. Attractive exhibition and garden variety.

PI 589567. Malus domestica Borkh.

Schneiderapfel.

PI 589568. Malus domestica Borkh.

Kardinal Bea.

The following were developed by D., Jr. Uhlhorn. Donated by G. Naumann, Institut fur Obstbau und Gemusebau, der Universitat Bonn, Auf dem Hugel 6, 5300 Bonn, Germany. Received 03/11/1987.

PI 589569. Malus domestica Borkh.

Zuccalmaglio. Pedigree - Ananas Reinette x Purpurroter Agatapfel Raised 1878. Comments:: Size medium 65:53-71 mm; shape variable, tall to flat rectangular to truncate-conic, convex, sometimes almost straight strongly ribbed at eye, slightly ribbed on body; skin yellowish green with dull brownish red flush and faint stripes, russet dots, streaks and patches, slightly rough, sticky; flesh fine, firm, rather dry, yellowish white; flavor sweet subacid; season mid.

The following were donated by Hilary F. Goonewardene, Purdue University, Dept. of Entomology, Entomology Hall, W. Lafayette, Indiana 47907, United States. Received 03/15/1987.

PI 589570. Malus domestica Borkh.

E36-7. Comments:: To be grafted on standard seedling. Dormant scionwood of multiple pest resistant germplasm.

PI 589571. Malus domestica Borkh.

E11-24. Comments:: To be grafted on standard seedling. Dormant scionwood of multiple pest resistant germplasm.

PI 589572. Malus domestica Borkh.

E14-32. Comments:: To be grafted on standard seedling. Dormant scionwood of multiple pest resistant germplasm.

The following were donated by G. Gilles, Research Station of Gorsem, Virology Dept., Brede Akker3, B3800 Sint Truiden, Belgium. Received 03/18/1987.

PI 589573. Malus domestica Borkh.

Belle Fleur de France. Pedigree - In NFT collection, where it is the same as Manznauer Jager. Comments:: Large 75 mm, intermediate to flat, truncate-conic, convex, prominently ribbed at eye and base to apex yellow flushed dull red with russet; flesh: firm, creamy white, tinged green, sweet, subacid; season late to very late; late flowering.

PI 589574. Malus domestica Borkh.

Borowitzky. Pedigree - Known in Russia in the 1700's or earlier. First known in England circa 1817. About 1834 imported into US BY Massachusetts Horticultural Society from the London, England Horticultural Society. Comments:: Size large 71:58 mm; shape intermediate to flat, rectangular to truncate-conic, convex, slightly ribbed, skin pale yellow flushed orange-red, striped red; flesh firm, crisp, white; flavor subacid; season second-early.

The following were developed by Pennell. Donated by G. Gilles, Research Station of Gorsem, Virology Dept., Brede Akker3, B3800 Sint Truiden, Belgium. Received 03/18/1987.

PI 589575. Malus domestica Borkh.

Ellison's Orange. Collected in Unknown. England, raised by Rev. C.C. Ellison, Bracebridge, Lincoln-shire, and Mr. Wipf, gardener at Hartsholme Hall. Pedigree - Cox's Orange Pippin x Calville Blanc. (probably d'Ete). Recorded 1904; intro to US 1911. Comments:: Size medium 64:57 mm; shape intermediate truncate-conic, convex, not ribbed; skin golden yellow, crimson stripes and slight flush; flesh tender, yellow, juicy, flavor aromatic, sweet, aniseed. Keeps one month. Season mid. Somewhat like Cox's Orange Pippin at base. Very susceptible to canker. Tree: Quite vigorous, upright-spreading. Produces spurs moderately well. Additional Lit.Cit.: H. Apple. Tsolum River Fruit Trees Catalogue. 1992-93. p. 17.

The following were donated by G. Gilles, Research Station of Gorsem, Virology Dept., Brede Akker3, B3800 Sint Truiden, Belgium. Received 03/18/1987.

PI 589576. Malus domestica Borkh.

Martini VH/430.

PI 589577. Malus domestica Borkh.

Brabant Bellefleur de. Collected in Unknown. Flemish or Dutch, brought

to notice 1700's. Comments:: Size medium to large; shape intermediate, truncate-conic, convex; skin greensih yellow, orange red flush, red stripes; flesh firm, crisp, yellowish-white; flavor sweet subacid, slightly aromatic; season very late; late flowering.

PI 589578. *Malus domestica* Borkh.
Balancier.

PI 589579. *Malus domestica* Borkh.
Quastresse.

PI 589580. *Malus domestica* Borkh.
Marie-Joseph d'Othee. Pedigree - Smith, M.W.G. 1971. Nat. Apple Reg. of the U. Kingdom p. 338. Comments:: Size medium 69:57 mm; shape flat, truncate-conic, convex, slightly ribbed, generally asymmetric; skin is yellowish green, flushed dull brownish red, streaked crimson; flesh firm, greenish white; flavor sweet, subacid; season very late; late flowering.

PI 589581. *Malus domestica* Borkh.
Devonshire Quarrenden. Collected in Unknown. Devon, England. Pedigree - Recorded 1678 Believed to be parent of Worcester Pearmain. Comments:: Size medium 51:32 mm; shape flat, rectangular, convex, some- times ribbed on body; skin pale greenish yellow, generally entirely covered with deep brownish red flush, greasy; flesh firm, crisp, white tinged green; flavor sweet, subacid season second-early. Ripens in August. Must be picked at exactly the right time as it ripens in the heat. Tree: medium size, upright-spreading. Produces spurs freely. Attractive, pleasant, distinctive, refreshing vinous flavor. 1992-93 H. Apple. Tsolum River Fruit Trees Catalogue. p. 16.

PI 589582. *Malus domestica* Borkh.
Rambour Franc. Collected in Unknown. France, said to have come from village of Rambure, near Abbeville. Pedigree - Recorded in 1535. Comments:: Recorded in 1535. Grown in France. Size large 100:75 mm; shape flat truncate-conic, convex, ribbed on body, prominently ribbed at eye, asymmetric; skin pale greenish yellow, flushed pale red, streaked carmine, russet patches; flesh firm, moderately fine, yellowish; flavor subacid, slightly sweet, vinous; season second-early to mid.

PI 589583. *Malus domestica* Borkh.
Belle Fleur Large Mouche. Comments:: Large 75 mm;, flat to intermediate, rectangular, convex, irregular, ribbed, green-yellow, flushed and striped red; flesh: firm, dry, greenish white, subacid; insipid; season late to very late.

PI 589584. *Malus domestica* Borkh.
Belle de Nordhaussen. Pedigree - Raised in garden of Kaiser, Nordhausen. Intro: 1892. Comments:: Medium 69 mm; intermediate to flat, rectangular to truncate- conic; convex, ribbed at eye and slightly on body; light yellow flushed pink to dark red, some russet on base; Flesh: fine, moderately firm, yellowish-white, sweet, subacid; season late to very late.

PI 589585. *Malus domestica* Borkh.
Hoolaart Doux. Pedigree - First described 1756; In existence 1889. Comments:: Size large 72:61 mm; shape intermediate, conic, convex, ribbed at eye and body; skin pale yellow with brownish and occasional pink flush, russet round stalk; flesh medium fine fairly tender, white; flavor very sweet; season very late.

PI 589586. *Malus domestica* Borkh.
Radoux. Pedigree - Recorded 1872; in existence 1895. Comments:: Size medium to large; shape flat; skin white, flushed dark red; flesh white;

season late.

PI 589587. *Malus domestica* Borkh.

Court Pendu Rose. Collected in Unknown. Of great antiquity but first described about 1613. Comments:: Size medium 62:44-50 mm; shape flat, rectangular, convex, not ribbed; skin yellow flush dull red with some russet; flesh firm, crisp, yellowish white; flavor sweet, rich, perfumed; season very late; late flowering.

PI 589588. *Malus domestica* Borkh.

Reinette Grise. Pedigree - In cultivation in the vicinity of Montreal and in other portions of the St. Lawrence Valley. According to Forsyth, introduced into England from Canada. Comments:: Fruit: below medium to small, fairly uniform in size and shape. Skin moderately thick, rather tough, deep yellow or greenish partly or entirely covered with russet. Flesh yellowish, firm, crisp, moderately fine grained, juicy, rich subacid, aromatic, very good to best. Tree: moderately vigorous.

PI 589589. *Malus domestica* Borkh.

Directeur Lesage. Pedigree - Received 1949 from France. Comments:: Size medium 57:57 mm; shape intermediate, truncate-conic, convex, indistinct ribs; skin pale, greenish yellow mottled brownish orange, striped crimson, greasy; flesh fine, white, crisp; flavor slightly subacid; season early to second- early.

PI 589590. *Malus domestica* Borkh.

Keuleman. Pedigree - In NFT Collection, morphologically indistinguishable from Bondon. Received 1948. Comments:: Size medium 64:57 mm; shape intermediate, truncate-conic, convex, ribbed at eye and on body; skin yellow flushed orange, patches of pale red and russet; flesh coarse, white tinged green; flavor slightly bitter; season very late.

PI 589591. *Malus domestica* Borkh.

Court Pendu de France.

PI 589592. *Malus domestica* Borkh.

Roter Eiserapfel. Pedigree - Early 1700's. Comments:: Size medium 55-62:50-58 mm; shape tall to intermediate, conic to truncate conic, convex, ribbed at eye and on body; skin greenish gold, flushed deep reddish orange, carmine flecks, russet dots, russet base, bloom; flesh very hard, fine creamy white, green core line; flavor sweet subacid; season very late.

The following were developed by Kempster. Donated by G. Gilles, Research Station of Gorsem, Virology Dept., Brede Akker3, B3800 Sint Truiden, Belgium. Received 03/18/1987.

PI 589593. *Malus domestica* Borkh.

Blenheim Orange. Collected 1740 in Unknown. England. Pedigree - Distributed circa 1818. Comments:: Size large 90:65 mm; shape flat, rectangular, convex, slightly ribbed on body; skin yellow flushed and streaked red with russet; flesh crisp, yellow flavor subacid, sweet characteristic flavor; season mid to late. Triploid, comes fairly true from seed. Now seldom grown commercially; popular garden and exhibition variety. Tree: upright- spreading, vigorous with many stout limbs. Mildew resistant, may get scab if rainfall heavy. Freezes well. Additional LIT.CIT. 1992-93. H. Apple. Tsolum River Fruit Trees Catalogue. p. 14.

The following were donated by G. Gilles, Research Station of Gorsem, Virology Dept., Brede Akker3, B3800 Sint Truiden, Belgium. Received 03/18/1987.

PI 589594. Malus domestica Borkh.

Purpurroter Cousinot. Pedigree - Described 1766. Comments:: Size medium 58:58 mm; shape conic, convex; skin yellow, nearly covered with deep red flush and stripes, a few russet dots; flesh fine, firm, yellowish white, sometimes tinged red; flavor vinous, sweet; season late to very late.

PI 589595. Malus domestica Borkh.

Pfirsichroter Sommerapfel. Pedigree - Described early 1800's. Comments:: Size medium 53-60:45-55 mm; shape intermediate to tall, occasionally flat, truncate-conic, convex, ribbed on body and at eye; skin yellowish green almost covered with bright scarlet flush and stripes, large dots, smooth, thin, tender; flesh firm, fine white tinged green; flavor sweet subacid, aromatic; season early; early flowering.

PI 589596. Malus domestica Borkh.

Calville Blanc. Pedigree - Recorded 1598; first mentioned in literature in 1798. Comments:: Size medium to large; shape flat conic, convex, entire fruit prominently ribbed; skin yellow with light red flush; flesh tender, yellowish white; flavor sweet and subacid, aromatic; season VERY LATE. Highest vitamin C content of any apple, more than orange juice. Considered best apple for cider and cider vinegar. Also, good eating apple. Excellent keeper. Med-large tree, growth habit moderate and somewhat upright. Requires cross pollination.

PI 589597. Malus domestica Borkh.

Pigeonnet.

PI 589598. Malus domestica Borkh.

La Paix. Pedigree - In NFT collection where it is the same as Mother. Received 1950. Comments:: Size medium 63:51 mm; shape tall, conic to truncate-conic, convex, ribbed at eye and on body; skin yellow up to three-quarters flushed and streaked orange-red to bright red, some russet patches and netting, slightly tacky; flesh firm, cream; flavor sweet, slightly subacid, slightly aromatic, season mid.

PI 589599. Malus sikkimensis (Wenzig) Koehne ex C. Schneider

PI 589600. Malus domestica Borkh.

Nico.

PI 589601. Malus domestica Borkh.

Court Pendu. Pedigree - Of great antiquity but first described about 1613. Comments:: Size medium 62:44-50 mm; shape, flat, rectangular convex, not ribbed; skin yellow flushed dull red with some russet; flesh firm, crisp, yellowish white; flavor sweet, rich, perfumed; season very late; late flowering.

PI 589602. Malus domestica Borkh.

Court Pendu Gris. Collected in Unknown. Grown, at present, in France, known in 1300's. Comments:: Size medium 62-67:52-54 mm; shape flat, truncate-conic, convex, ribbed on body, asymmetric; skin deep yellow, slightly flushed and striped pink, russet round eye, thick; flesh firm, fine, crisp, yellowish white; flavor very sweet, slightly subacid, aromatic; season very late.

The following were developed by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States. Donated by R.M. Peterson, South Dakota State University, Dept. of Horticulture, Brookings, South Dakota 57006, United States. Received 03/30/1987.

PI 589603. Malus hybrid

Red and Yellow. Pedigree - Selected from a group of *M. baccata* seedlings introduced from Siberia, origin not known. Characteristics appear to be pure *M. baccata*. Comments:: Fruit: 1/2" diam., red blush over yellow ground color. Good rootstock.

PI 589604. Malus hybrid

Kit Trio. Pedigree - Mercer x Sweet Russet Crab Intro: 1938. Comments:: Fruit: 1 5/8" across, rich polished yellow all over; flesh pleasant, sweet, juicy; cooks yellow and tender, slices retain their shape, quality good. Season: late. Flowers: 5-8 in cluster, 5 petals, coral red bud.

PI 589605. Malus hybrid

Joe Trio. Pedigree - *Pyrus baccata cerasifera* x Mercer Wild Crab Intro: 1936. Comments:: Fruit: 1 3/4" x 1 3/8", oblate yellow with striped and mixed red. Flesh acid, cooks up into very good quality sauce. Season: all winter.

PI 589606. Malus hybrid

Waziya. Pedigree - Nevis Minnesota wild crab x Northwestern Greening apple; sister to Wecota and Wetonka. Intro: 1938. Comments:: Perhaps largest and best of Nevis hybrids; fruit oblate, 2 1/2 x 2 1/4", green, unctuous and fragrant like wild crab. Sharp acid fruit does not cook up, but has less wild crab acerbity. All year keeper.

PI 589607. Malus hybrid

Sasha. Pedigree - A seedling of the Hibernial pollinated with Gravenstein pollen. Intro: 1919. Comments:: Fruit: fine yellow, oblate, excellent quality, sweet, commercial size. Tree: susceptible to fire blight.

PI 589608. Malus hybrid

Lina. Pedigree - Seedling of Malinda Intro: 1933. Comments:: Fruit: 2 1/2" across; much like Malinda in conical shape; with blush, but with no knobs; remarkably perfectly conical shape with no corrugations. Flesh: mild subacid, juicy, cooks up more easily than Malinda. Stores well; included to cluster and alternate bearing. Tree: hardy with upright growth habit. Additional LIT.CIT.: McCrory, S.A. 1958. North Central Regional Pub. No. 90. S.D. Ag Ex St Bl 471, p 25.

PI 589609. Malus hybrid

Linda Sweet. Pedigree - A seedling of Malinda Apple, top-grafted on Sweet Russet Crabapple. Intro: 1922. Comments:: A large crabapple with skin much russeted. 1 1/2" diam. oblong, conic. Flesh: mild, subacid, sweet. Apparently a later winter crab. The influence of the Sweet Russet pollen is evident from the sweet flesh and russet skin. Tree: hardy, inclined to overbear, winter hardy. Additional LIT.CIT.: 1991. Edible Apples in Prairie Canada, Pub. 21. p. 41.

PI 589610. Malus hybrid

Red Wild. Pedigree - Open-pollinated. Comments:: Fruit: 1" diam., red over yellow, and of poor quality. Tree: hardy.

PI 589611. Malus hybrid

Wakaga. Pedigree - Nevis Minnesota wild crab x Wolf River apple. Intro: 1938. Comments:: Fruit: perhaps largest of the Nevis hybrids, 2 3/8 x 2 1/2" deep solid red over green. Cavity green out over base. Flesh: mild acerb acid. Cooks up tender into light, yellow sauce. Season: all winter.

The following were collected by H.E. Hansen. Developed by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States.

Donated by R.M. Peterson, South Dakota State University, Dept. of Horticulture, Brookings, South Dakota 57006, United States. Received 03/30/1987.

PI 589612. Malus domestica Borkh.

Yellow Sweet. Collected in United States. Comments:: Fruit: round, yellow, juicy sweet. In list 1924.

The following were developed by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States. Donated by R.M. Peterson, South Dakota State University, Dept. of Horticulture, Brookings, South Dakota 57006, United States. Received 03/30/1987.

PI 589613. Malus hybrid

Dwarf Tree. Pedigree - Parents unknown. Comments:: Originally selected as a dwarf tree, it has grown to average size. Tree has vigor, is attractive and shows no blight. Fruit: very oblong resembling a plub, black-red with heavy purplish bloom, poor quality; clusters and hangs well, giving it an ornamental value; novelty because of fruit shape matures mid-September.

PI 589614. Malus hybrid

Zapta. Pedigree - Hybrid of the wild native crabapple from Elk River, Minnesota, with pollen of the Bismark apple, a large variety from New Zealand resembling the Alexander. Intro: 1922. Comments:: Fruit: 2 1/8" diam. green, acid and acerb; cooks up well into sauce.

The following were collected by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States. Developed by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States. Donated by R.M. Peterson, South Dakota State University, Dept. of Horticulture, Brookings, South Dakota 57006, United States. Received 03/30/1987.

PI 589615. Malus hybrid

Amur. Collected 1919 in United States. Seed collected in 1919 in Leningrad, Russia. Pedigree - *M. baccata*; seed collected in 1919 by Hansen in Leningrad, Russia. Selected about 1925; intro. 1929. Comments:: Fruit: crab. Apparently no longer being propagated.

The following were developed by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States. Donated by R.M. Peterson, South Dakota State University, Dept. of Horticulture, Brookings, South Dakota 57006, United States. Received 03/30/1987.

PI 589616. Malus hybrid

Zelma. Pedigree - Open-pollinated seedling of Wolf River apple. Intro: 1940. Comments:: Fruit: very large, 3" diam. oblate with red stripes with mixed and solid red over yellow ground with grayish net-veining. Basin smooth, abrupt, narrow; cavity acute, narrow russeted; flesh pleasant subacid. Excellent quality sauce.

PI 589617. Malus hybrid

Waubay. Collected in United States. Mercer planted near a Wolf River apple tree at Ames, Iowa. Pedigree - Grimes Golden x Mercer unguarded (open-pollinated seedling of the Mercer Crab from Iowa Experiment Station.) Intro: 1933. Comments:: Fruit: 1 1/4" diam. round-conical, brilliant red; all winter keeper; flavor combines rich, spicy, subacid sweet of Grimes Golden with long keeping capacity and hardiness of seedling or Mercer wild crab. Also ornamental.

PI 589618. Malus hybrid

Keo. Pedigree - Seedling of Amur Crabapple, may be selfed seedling.
Intro: 1940. Comments:: Flower: number in cluster 5-6; number of petals 5; Fruit: 1 5/8" across, oblate, regular; with a flat basin; flesh white; sauce red-tinted, of excellent quality; slices retain shape in cooking, color remarkable-intense polished bright crimson, red all over, shaded deeper on sun side, crisp, pleasant juicy acid, doesn't soften easily. Bright red color is highly marketable.

PI 589619. Malus hybrid

Hans Trio. Pedigree - Fluke No. 29 x Yellow Siberian Crab Intro: 1938
. Comments:: Fruit: oblate, 1 3/4" across, green covered with dull mixed red, flesh juicy, tough, pleasant, subacid; does not cook up but flesh is neutral, not acerb. Season all winter.

PI 589620. Malus hybrid

South Dakota Bison. Pedigree - Jonathan apple x Sylvia crab, one half Johathan apple, one fourth Siberian crab, Pyrus baccata and one fourth yellow transparent apple. Intro: 1933. Comments:: Fruit: large, red of excellent quality. Tree: heavy bear-er. Flowers: 4-5 in clusters, 5 petals, buds rose red fading.

PI 589621. Malus hybrid

South Dakota Ben. Pedigree - Jonathan apple x Tony crab, one half Jonathan, one fourth baccata crab, one fourth MacMahon White. Intro: 1938. Comments:: Fruit: 2" across, nearly round and all covered with red, striped and mixed over yellow ground with white bloom. Yellow ground light and clear; basin flat, minutely wrinkled Flesh white, very firm, juicy, pleasant and lively subacid, yellow sauce, excellent quality, annual bearer. Season winter.

PI 589622. Malus hybrid

Wetonka. Pedigree - Nevis Minnesota wild crab x Wolf River apple; sibling: Wecota Intro: 1929. Comments:: Fruit: 2" across oblate, solid bright red over yellow-green ground; dots yellow, distinct; skin unctuous; basin wide, slightly wrinkled; cavity shallow, obtuse, green. Tube cylindrical, stamens marginal. Flesh acid, solid, not very acerb, does not cook up; neutral flavor. Tree: heavy bearer. A winter crab for the FAR NORTH, freezing improves quality.

PI 589623. Malus hybrid

Wamdesa. Pedigree - Elk River, Minnesota wild crab x Jonathan apple Intro: 1938. Comments:: Flower: 4-5 in cluster, 5 petals, long claw, very fragrant, buds rose pink. Fruit: 2" diam., thin solid red all over; dots large russet many areolar; unctuous; basin deep smooth abrupt. Flesh juicy acid, acerb, cooks up tender into pleasant light colored, mildly acid and acerb sauce. All year keeper. Heavy bearer. Tree: small or semi-dwarf, inclined to over-produce and alternate bearing.

PI 589624. Malus hybrid

Red Tip. Pedigree - Wild crab - Elk River Minnesota M. ioensis x Pyrus Malus Niedzwetzkyana Intro: 1919. Comments:: Flower: 4-6 in cluster, 5 petals; Fruit: small, red-fleshed Tree: with red tipped leaves, it is interesting as an ornamental.

PI 589625. Malus hybrid

Cappy. Comments:: Heavy Fire Blight, Severe Scab.

PI 589626. Malus hybrid

Forest King. Collected 1904 in United States. Near the Wisconsin border in the woods near Winnebago, Illinois. Pedigree - Wild-should be in collection with Mercer, Missouri, Giant and other large crabs; usually classified as Pyrus Souldardii regarded by botanists as natural hybrids

of *Pyrus ioensis* and *Pyrus malus*. Comments:: Introduced 1938. Fruit: regular, round, truncated with white dots; green to golden yellow, unctuous, 2 1/2" across, 2 1/4" deep, weight 5 1/4 ounces; surface light greenish- yellow to golden yellow; dots, minute, white or green numerous; cavity acuminate stem filling lower part of cavity seeds plump. flesh: white, juicy, flavor crabby, acerb, milder than ordinary wild crab. Tree: hardy and productive.

PI 589627. Malus hybrid

Giant Crab. Collected 1911 in United States. Sherrard, Illinois. Pedigree - Wild Intro: 1917. Comments:: Largest wild crab. Fruit: 5 petals; Fruit: 3" diam, like other wild crabs, Soulardii and Mercer. Used mainly for jelly and adding a quince-like flavor to common applesauce. Additional LIT.CIT.: McCrory, S.A. 1958. North Central Regional Pub. No. 90., S.D. Ag Ex St Bl 471, p. 17.

The following were developed by Isabella Preston, Canada Dept. of Agric. Central Exp. Farm, Ottawa, Ontario, Canada. Donated by R.M. Peterson, South Dakota State University, Dept. of Horticulture, Brookings, South Dakota 57006, United States. Received 03/30/1987.

PI 589628. Malus hybrid

Scugog. Pedigree - Open-pollinated seedling of *M. pumila* var. *niedzwetzkyana* Intro: 1920. Comments:: Flowers: single, expanding buds dark purplish red, open bud purplish red with white claw, approx. 4.5 cm in diam. , 4-6 clusters, 5 petals. Fruit: dark crimson to oxblood red, approx. 4.5 cm. diam.

The following were developed by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States. Donated by R.M. Peterson, South Dakota State University, Dept. of Horticulture, Brookings, South Dakota 57006, United States. Received 03/30/1987.

PI 589629. Malus hybrid

Chance. Pedigree - One of the Chance seedlings from mixed seed of northern grown apples. Intro: 1919. Comments:: Original tree productive. Fruit: oblate, regular of full commercial size, red striped all over with attractive blue bloom. Flesh: white, pleasant subacid. Season probably January or later.

PI 589630. Malus hybrid

Ann Trio. Pedigree - Tony x Mercer Intro. 1938. Comments:: Fruit: crab, averaging 1 1/2 in. long and 1 1/4 in. diam; skin bright solid red over an orange ground, bloom white; flesh yellow, pleasantly acid; hangs on tree into October. Tree: productive, spreading.

PI 589631. Malus hybrid

Ben Trio. Pedigree - Progress crab x Mercer crab Intro: 1938. Comments:: Fruit: 1 1/2 x 1 1/2" deep, dark solid red all over, with many distinct russet dots; flesh, sweet subacid, very good quality sauce, light red. Tree: heavy bearer. Season: all winter. Good yield.

PI 589632. Malus domestica Borkh.

Wotanda. Pedigree - Nevis Minnesota crab x Northwestern Greening apple; the largest of several seedlings of the same pedigree. Intro: 1939. Comments:: Fruit: 2 1/2 x 2", very regular, oblate, unctuous, yellow- ish green; calyx segments very small, closed; all year keeper; heavy for its size, a little over 4 ounces. When cooked, flavor is mild. Tree: productive.

PI 589633. Malus domestica Borkh.

Max Trio. Comments:: On test at Morden (1956).

The following were collected by N.K. Fluke. Developed by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States. Donated by R.M. Peterson, South Dakota State University, Dept. of Horticulture, Brookings, South Dakota 57006, United States. Received 03/30/1987.

PI 589634. Malus domestica Borkh.

Mercer. Collected 1892 in United States. Sherrard Mercer County, Illinois, around 1892. Pedigree - Wild. Comments:: Flower: 4-5 in cluster, 5 petals, rose-pink buds Fruit: Yellow, oblate, 2 5/8" diam; tree: especially productive when top grafter on Hibernial apple; beautiful in bloom. Flavor; acid acerb. Used mainly for jelly or adding quince-like flavor to apple sauce. *Additional Lit. Cit. Comm. R.M. Jefferson.

The following were developed by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States. Donated by R.M. Peterson, South Dakota State University, Dept. of Horticulture, Brookings, South Dakota 57006, United States. Received 03/30/1987.

PI 589635. Malus domestica Borkh.

Wecota. Pedigree - Nevis wild crab x Northwestern Greening Apple sibling: Wetonka Intro: 1929. Comments:: Fruit: 2 " diam. round, yellow-green skin, oily; flavor acid not very acerb, cooks up softer than others with less wild crab flavor. Season all winter. Winter crabs for the FAR NORTH, the Wecota and Wetonka are the first two hybrids of the wild crab from Nevis, Minnesota, the farthest northern point where species found wild. Can stand severe freezing; has shown some scab infection.

PI 589636. Malus domestica Borkh.

Wiyuta. Pedigree - Nevis Minnesota wild crab (Pyrus Ioensis) x Wolf River apple. Intro: 1939. Comments:: Fruit: 2 1/2" across; 2" deep, round, slightly truncated, regular, much striped and marbled red over greenish yellow; cavity with much green out over base. A great improvement, when cooked, over the Nevis wild crab. Season all winter and spring.

PI 589637. Malus domestica Borkh.

Ivan. Pedigree - Intro: 1916. Comments:: Flower: 5-7 in cluster; 5 petals; Fruit: noteworthy for the calyx segments being absent in the ripe fruit, the same as in the pure Siberian crab (Pyrus baccata). Fully one and three-fourths inches in diameter, roundish oblate, good color, marbled with stripes and orange, red, acid. Mature mid-September. Tree: small, attractive, winter hardiness.

PI 589638. Malus domestica Borkh.

Erl Trio. Pedigree - Fluke No. 10 x Pyrus baccata x Dolgo crab Intro: 1938. Comments:: Fruit: 1 1/2" across, solid dull red over green ground. Flesh: subacid, juicy, white, red next to skin, retains form in cooking, but is not acerb. Tree: strong forks and heavy bearer. All winter keeper.

PI 589639. Malus domestica Borkh.

South Dakota Winter. Pedigree - Red Vein x M. ioensis va. Elk River Intro: 1942. Comments:: Fruit: 1 1/2" diam. oblate with a long stem; flesh white, firm, juicy, and slightly acid. Tree: vigorous, hardy with attractive foliage; makes good sauce, even after freezing - keeps well.

PI 589640. Malus domestica Borkh.

Wakapala. Pedigree - Mercer crab x Tolman Sweet apple pollen. 3/4

tame apple, 1/4 wild crab. Intro: 1928. Comments:: Fruit: 2 1/8" diam., yellow striped with red; flavor: sub- acid with spicy sweet fragrance. Cooks up quickly into excellent sauce, slices retain shape in cooking. Season: winter.

PI 589641. Malus hybrid

South Dakota Bona. Pedigree - Jonathan apple x Sylvia crab. Sister to South Dakota Bison. Intro: 1938. Comments:: Fruit: 1 1/2" across, 1 1/4" deep, attractive deep, rich, solid polished red, nearly black red; flesh yellow, rich, mild, pleasant subacid, red sauce, good quality. Late fall, early winter. Tree: heavy bearer.

PI 589642. Malus hybrid

Eda. Pedigree - Jonathan apple x Tony crab; it is one-half Jonathan; one-fourth baccata; one-fourth MacMahon White apple. Sister to S. D. Ben (intro. 1938) Intro: 1940. Comments:: Color: deep solid polished and marbled red, thinly striped over yellow; Flesh: rich, pleasant subacid, much like a Jonathan. Fruit: 2" diam.; cooks like Jonathan, excellent quality, slices retaining shape, heavy for size. Choice dessert apple for fall and early winter. Tree: excellent bearing habits, blight and scab not a problem.

The following were collected by James Arrowood. Developed by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States. Donated by R.M. Peterson, South Dakota State University, Dept. of Horticulture, Brookings, South Dakota 57006, United States. Received 03/30/1987.

PI 589643. Malus hybrid

Nevis. Collected in United States. The farthest northwestern point (found native) Nevis, Minnesota near the headwaters of the Mississippi River. Pedigree - The wild american crabapple, Pyrus Ioensis. Intro: 1930. Comments:: A beautiful dwarf ornamental lawn tree bearing when only four feet high; rich pink flowers in great profusion; 3-4 in cluster; 5 petals. Fruit: roundish, oblate, 1 1/2" diam. Disease and drought will defoliate tree by mid-August, subject to scab.

The following were developed by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States. Donated by R.M. Peterson, South Dakota State University, Dept. of Horticulture, Brookings, South Dakota 57006, United States. Received 03/30/1987.

PI 589644. Malus hybrid

South Dakota Macata. Pedigree - McIntosh apple x Pyrus baccata. Intro: 1938. Comments:: Fruit: 1 1/2" across, 1 1/8" deep, brilliant polished red all over flesh, rich subacid; light colored pleasant flavored sauce. Season - late fall.

The following were donated by James N. Cummins, New York State Agric. Exp. Station, Department of Horticultural Sciences, Geneva, New York 14456-0462, United States. Received 03/31/1987.

PI 589645. Malus domestica Borkh.

Winter Majetin. Collected in United Kingdom. Comments:: Fruit: size medium, 60 mm; skin greenish-yellow, red-brown blush, greasy; shape round-conic; flesh greenish-white, crisp; flavor subacid; eating quality fair; harvest season very late; culinary, cooks to firm puree, good strong taste. Tree: resistant to woolly aphid; formerly used as rootstock in Australia.

The following were developed by Laxton Bros. Ltd, Bedford, England, United Kingdom. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589646. *Malus domestica* Borkh.

Fortune. Pedigree - Cox's Orange Pippin x Wealthy Raised 1904, intro: 1931. Comments:: Size medium 67:60 mm; shape intermediate, truncate-conic, convex, slightly ribbed on body; skin pale yellowish green, flushed and streaked rich red, occasional russet; flesh firm, creamy white; flavor sweet, rich, season second early. Good keeper, holds flavor well in storage. Tree: not very vigorous, upright-spreading. Produces spurs fairly freely. Very high-quality mid-season dessert apple. Ideal for garden use.

The following were donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589647. *Malus domestica* Borkh.

Northwood. Comments:: Cider, sweet; harvest November; large, spreading tree.

PI 589648. *Malus domestica* Borkh.

Rosemary Russet. Pedigree - Heirloom cultivar first described 1831. Comments:: Size medium 70:55 mm; shape flat, conic, convex, slightly ribbed at eye; skin yellow, tinged green, flushed brownish red, nearly covered with light brown russet; flesh firm, fine, white tinged yellowish green; flavor sweet, subacid, aromatic; season late to very late. Tree: moderately vigorous, upright spreading. Too small for commercial use, primarily garden variety. Beautiful flowers. Additional Lit. Cit.: Sanders, Rosanne. PI 536989.

The following were developed by G.T. Spinks, University of Bristol, Research Station, Long Ashton, Bristol, England, United Kingdom. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589649. *Malus domestica* Borkh.

Exeter Cross. Pedigree - Worcester Pearmain x Beauty of Bath Raised 1924; named 1953. Comments:: Size medium 57-64; 39-45 mm; shape flat, truncate-conic to rectangular, convex, ribbed on body; skin creamy white; flavor sweet, subacid, moderately aromatic; season early to second early. Tree: moderately vigorous, upright, tip bearing.

The following were donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589650. *Malus domestica* Borkh.

Ellis Bitter.

The following were developed by John Basham & Sons, Bassaleg, Wales, United Kingdom. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589651. *Malus domestica* Borkh.

St. Cecilia. Pedigree - Cox's Orange Pippin x Raised 1900; intro: 1918. Comments:: Size medium to large 70-76:57-64 mm; shape intermediate, rectangular to conic, convex, sometimes slightly ribbed at eye and on body; skin pale yellowl flshed pale carmine with red stripes, russet at base; flesh fairly crisp, soft, white sometimes tinged green; flavor quite sweet; slightly subacid Season late to very late. Tree: vigorous,

upright-spreading A good garden variety.

The following were donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589652. *Malus domestica* Borkh.
Vilberie.

PI 589653. *Malus domestica* Borkh.
Harry Master's Jersey. Comments:: Cider.

The following were developed by Ashmead. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589654. *Malus domestica* Borkh.
Ashmead's Kernel. Pedigree - Raised in Gloucester in 18th century.
Intro: early 1700's. Comments:: Medium size, greenish yellow fruit with brown flush, usually covered with a heavy russet. Flat round shape, sometimes slightly conical. Crisp, yellowish flesh; sugary, juicy and aromatic. Tart when tree-ripe, peak flavor quality in early November. Makes excellent tasting cider. Keep 3-4 months. Large precocious tree; ripens late October. Hardy to -40DF. Good resistance to scab. Late, high quality dessert apple. Additional LIT.CIT. 1992-93 H. Apple. Tsolum River Fruit Trees Catalogue. p. 13.

The following were donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589655. *Malus domestica* Borkh.
NFTI.

The following were developed by G.T. Spinks, University of Bristol, Research Station, Long Ashton, Bristol, England, United Kingdom. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589656. *Malus domestica* Borkh.
Cheddar Cross. Pedigree - Allington Pippin x Star of Devon; selected 1946. Raised 1916; intro: 1949; brought into US in 1952 at PI 199100. Comments:: Size medium 60:50 mm; shape flat to intermediate, rectangular to truncate-conic, convex, indistinctly ribbed at eye and on body; skin green and russet; flesh medium texture creamy white; flavor subacid to slightly sweet; season mid. Tree: medium size, upright-spreading, round-headed. Produces spurs moderately well. Early dessert. Tip-bearer. Scab resistant. Good cropper. Additional LIT.CIT. 1992-93 H. Apple. Tsolum River Fruit Trees Catalogue. p. 15.

The following were collected by Cheal. Developed by Crawley. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589657. *Malus domestica* Borkh.
Crawley Beauty. Collected 1870 in United Kingdom. Cottage garden in Crawley, Sussex, England in 1870. Pedigree - According to W. Copeland, this is an American cultivar; according to E.A. Bunyard (in his catalogue), it is a French cultivar. In the NFT, it appears to be identical with the French cultivar, Nouvelle, France. Comments:: Size medium to large 69-71; 50-56 mm; shape flat, truncate-conic, convex,

not ribbed; skin bright yellow, orange-red flush, red stripes and blotches, slightly greasy; flesh coarse, crisp firm, silvery white; flavor subacid, slightly sweet; season very late; late flowering. Chiefly grown as cooker. Tree: moderately vigorous, spreading. Produces spurs freely.

The following were donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589658. *Malus domestica* Borkh.

St. Edmund's Russet. Pedigree - Recorded 1875. Comments:: Size medium 54-66:51-56 mm; shape intermediate to flat, truncate-conic, convex, not or slightly ribbed; skin green- ish yellow, almost entirely covered with russet, slightly tinged with brownish red, fairly rough, thick tough; flesh firm, fine, crisp, creamy white; flavor sweet, subacid, aromatic; season second-early to mid. Tree: moderate vigor, upright-spreading. Useful garden apple with commercial possibilities.

The following were developed by C. Ross, Office of Economic Affairs, Frankfurt, Germany. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589659. *Malus domestica* Borkh.

Charles Ross. Pedigree - Peasgood's Nonsuch x Cox's Orange Pippin. First exhibited 1890 as Thomas Andrew Knight. Comments:: Size large 100:75 mm; shape flat, conic, convex, not ribbed; skin pale yellowish green, flushed light red, striped darker red; flesh tender, breaking, tinged orange; flavor sweet to subacid; season mid to late. Tree: moderately vigorous, upright spreading. Produces spurs very freely.

The following were collected by Vahldik. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589660. *Malus domestica* Borkh.

Holstein. Collected in United Kingdom. Germany, raised or discovered by a teacher in Eutin, Holstein, Germany. Pedigree - Open pollinated seedling of Cox's Orange Pippin. Originated circa 1918. Comments:: Size large 76:72 mm; shape tall, truncate-conic, convex, slightly ribbed at eye and on body, frequently knobbed at stalk; skin greenish yellow with orange and red stripes, occasional patches of russet; flesh firm, coarse yellowish white; flavor subacid, season late; triploid. Good keeper. Tree: vigorous grower, wide spreading. Very scab resistant. {Additional Lit. Citation: 1992-93, H. Apple. Tsolum River Tree Catalog, p. 20}.

The following were developed by W. Lynn. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589661. *Malus domestica* Borkh.

Emneth Early. Collected in United Kingdom. Emneth, Cambridgeshire, England. Pedigree - Lord Grosvenor x Keswick Codlin First recorded 1899. Comments:: Size medium 64:70 mm; shape tall, conic, straight, ribbed at eye and on body; skin yellowish green; flesh soft, greenish white; flavor acid; season early to second-early.

The following were donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589662. *Malus domestica* Borkh.

Brown's Apple. Comments:: Cider. Very sharp. Tree medium size, upright.

PI 589663. *Malus domestica* Borkh.

Taylor's. Pedigree - Exhibited 1883 (only record) from Worcester.

The following were developed by Cooling of Bath, Bailbrook, England, United Kingdom. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589664. *Malus domestica* Borkh.

Beauty of Bath. Pedigree - Intro: 1864. Comments:: Fruit: medium 2 1/2 - 2", flat shape, yellow flushed with red stripe; flesh: creamy white, soft, very juicy, sweet, a little acid, distinctive flavor. Tree: moderately vigorous round, spreading. Early August harvest. Received First Class Certificate from Royal Horticultural Society in 1887.

The following were developed by F.W. Thorrington. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589665. *Malus domestica* Borkh.

Sunburn. Pedigree - Cox's Orange Pippin x. Comments:: Size medium 57-64:45-51 mm; shape intermediate, conic, convex, slightly ribbed at eye and on body; skin orange-yellow, tinged green, flushed orange with a few darker streaks; flesh soft, loose texture, creamy white; flavor sweet, subacid, aromatic; season late.

The following were donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589666. *Malus domestica* Borkh.

Dunkerton Late. Comments:: Cider.

PI 589667. *Malus domestica* Borkh.

Doux Normandie.

The following were developed by Stuart Low Company, Bush Hill Park, England, United Kingdom. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589668. *Malus domestica* Borkh.

Howgate Wonder. Collected in United Kingdom. England, Howgate Lane, Bembridge, Isle of Wight. Pedigree - Blenheim Orange x Newton Wonder Raised 1915-1916, intro: 1932. Comments:: Size large 95:79 mm; shape intermediate, truncate, conic, convex, ribbed at eye and slightly on body; skin golden yellow with pale red flush and streaks; flesh fairly crisp, cream; flavor subacid, sweet; season late. One of the largest cooking apples in cultivation today. Tree: moderately vigorous, upright-spreading, produces spurs freely, strong, cropping heavily.

The following were developed by F.S. Howlett. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589669. *Malus domestica* Borkh.

Holiday. Pedigree - Macoun x Jonathan; cross made 1940, first fruit 1948. Tested as Ohio 6187. Comments:: Size medium 64:58 mm; shape

intermediate to flat rectangular convex; skin yellowish white, extensive deep red flush, waxy bloom; flesh crisp white; flavor subacid. Has inherited rich flavor of Jonathan and white juicy flesh of Macoun. Season mid to late. Tree: moderately vigorous, upright, somewhat hard to prune-tendency to grow too tall.

The following were donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589670. *Malus domestica* Borkh.

Michelin. Comments:: Medium size, round yellow fruit. Cider apple; bittersweet, upright grower; heavy cropping. Blooms midseason. Can be mildew susceptible. Ripens early November.

PI 589671. *Malus domestica* Borkh.

Court Royal. Comments:: Cider.

PI 589672. *Malus domestica* Borkh.

Fyriki.

The following were developed by F. Alston, East Malling Research Station, East Malling, Kent, England, United Kingdom; R. Watkins; J.W. Bates. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589673. *Malus domestica* Borkh.

Greensleeves. Pedigree - James Grieve x Golden Delicious; seed germinated in 1966; tested as A12016. Intro: 1977. Protected by Plant Breeders' Rights. Comments:: Fruit: medium 65 mm+; skin green-yellow with a trace of russet in the stem cavity; juicy; flavor is pleasantly sub-acid; ripens in early midseason. Tree: semi-dwarf, ideal for high-density orchards; very prococious, productive (yielded 100% more fruit than Cox's Orange Pippin in the first four fruiting years); when stored at 3.3C, fruit is marketable until early November. Long flowering period one week before Orange Pippin; profuse; shows some resistance to severe frosts.

The following were donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589674. *Malus domestica* Borkh.

Pethyre. Comments:: Cider.

The following were developed by W. Pope, Unknown. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589675. *Malus domestica* Borkh.

Winston. Pedigree - Cox's Orange Pippin x Worcester Pearmain. Raised 1920, intro: 1935, renamed 1944. Comments:: Size medium 51-61:48-56 mm; shape tall, conic to truncate-conic, convex, indistinctly ribbed at eye and on body; skin greenish yellow, extensive orange-red flush, darker red streaks, greenish russet dots, tough; flesh firm, crisp, tender, greenish white; flavor sweet, slightly subacid; season late to very late. Tree: moderately vigorous, upright-spreading, needs thinning. Late keeping, high quality dessert apple.

The following were donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589676. *Malus domestica* Borkh.

King of the Pippins. Pedigree - In existence 1884; recorded 1862 but probably much older. Intro: by Kirke of Brompton. Comments:: Size medium 56:56 mm; shape intermediate to tall, conic, convex not ribbed; skin greenish yellow flushed red with some brown russet; flesh firm, crisp, white tinged yellow; flavor sweet, rich vinous; season second-early. Small for commercial use, but a useful garden variety. One of the best late dessert apples. Tree: moderately vigorous, upright, produces spurs very freely, crops heavily.

PI 589677. *Malus domestica* Borkh.

Brown Thorn.

The following were developed by Rowe, Worcester, England, United Kingdom. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589678. *Malus domestica* Borkh.

King Edward VII. Pedigree - Blenheim Orange x Golden Noble First recorded 1902, intro. 1908. Comments:: Size medium to large 64070:48-57 mm; shape flat to intermediate, rectangular to truncate-conic, convex, not ribbed; skin yellowish green, smooth, waxy; flesh firm, crisp, fine white tinged green, flavor acid; season very late; late flowering.

The following were donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589679. *Malus domestica* Borkh.

Fillbarrel.

The following were developed by F. Alston, East Malling Research Station, East Malling, Kent, England, United Kingdom; R. Watkins. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589680. *Malus domestica* Borkh.

Suntan. Pedigree - Cox's Orange Pippin x Court Pendu Plat; tested as A1585. Protected by Plant Breeders' Rights. Intro. 1974. Comments:: Fruit: 65 mm in diam. and larger; color orange red blush and stripes on a greenish golden ground russet, appearance similar to Cox's Orange Pippin; shape slightly flattened; high acidity, fully aromatic flavor; high quality; ripens late at 3.3C, stores well until late March, but subject to low-temperature breakdown at 1.7C. Tree: vigorous spreading; high yields every year, triploid, pollen not viable; late flowering, 6 days later than Cox's Orange Pippin, avoids spring frost; can be pollinated by Golden Delicious & Kent; trees on M 7 roots not precocious.

The following were developed by Witham, Stockport, England, United Kingdom. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589681. *Malus domestica* Borkh.

Lord Derby. Pedigree - Recorded 1862. Comments:: Size large 88:82 mm; shape intermediate truncate-conic, convex, ribbed on body and at eye; skin green changing to yellow; flesh firm, pale yellow; flavor subacid; season mid to late. Tree: moderately vigorous, upright-spreading. Produces spurs freely. Well-known cooking apple. Grown commercially in UK to some extent and also a useful garden variety.

The following were donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589682. *Malus domestica* Borkh.
Improved Lambrook Pippin.

The following were developed by G. Cave. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589683. *Malus domestica* Borkh.
George Cave. Pedigree - Raised 1923, named 1945. Comments:: Size medium 60:55 mm; shape intermediate, rectangular, convex, indistinctly ribbed on body; skin greenish yellow flushed and striped red, large russet dots, greasy, thick, tough; flesh fine, white-tinged green; flavor subacid, sweet aromatic; season early. Attractive early apple, reliable cropper, grown to some extent commercially. Tree: moderate-ly vigorous, upright-spreading. Produces spurs freely. Very good early dessert. July to Aug.

The following were donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589684. *Malus domestica* Borkh.
Grenadier. Pedigree - In NFT collection, where it is indistinguishable from Golden Ball (I). Recorded 1862; commercialized circa 1875. Comments:: Size medium to large 57-75:51-63 mm; shape intermediate to flat, conic, convex, ribbed on body and prominently at eye, irregular; skin yellowish green, sometimes slightly flush brown, occasional hairline, white dots, particularly at apex scarf skin at base, rather greasy; flesh fairly firm, fine, compact white tinged green; flavor acid; season early to second-early. Tree: medium vigor, upright-spreading, Produces freely. Most widely grown commercial cooking apple in UK. Heavy cropper, resists scab and canker.

PI 589685. *Malus domestica* Borkh.
Brown Snout.

The following were developed by C. Turner, The Royal Nurseries, Slough, England, United Kingdom. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589686. *Malus domestica* Borkh.
Arthur Turner. Pedigree - Named 1913; intro. 1915. Comments:: Size large 75-91:65-80 mm; shape flat to intermediate truncate-conic, convex, ribbed base to apex; skin yellowish green, sometimes flushed orange-red, thin russet patches and netting, slightly rough; flesh firm, fine white; flavor acid; season early to mid; tree: upright, vigorous Award of Garden Merit in 1945 for its blossom. (National Fruit Trials). Scab resistant. Additional LIT.CIT. 1992-93 H. Apple. Tsolum River Fruit Trees Catalogue. p. 13.

The following were donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589687. *Malus domestica* Borkh.
Pixie. Pedigree - Raised in 1947 at National Fruit Trials. Parentage

unknown but probably seedling from Cox's Orange Pippin or Sunset.
Comments:: Medium 65:51 mm, flat-round, regular, flattened at base and apex. No ribs, surface slightly bumpy. Ground color green- ish-yellow, becoming yellow, one quarter to three quarters flushed with orange-red, short, broken bright red stripes, some small grey russet areas, lenticels fairly conspicuous as grey russet dots; skin smooth and dry. Flesh creamy white, tinged green, crisp, fine-textured, fairly juicy with good aromatic flavor. Tree: moderately vigorous, wide- spreading flat headed. High quality, heavy cropping, late- keeping dessert apple. Ideal for garden sales.

- PI 589688. *Malus domestica* Borkh.
Sweet Coppin. Comments:: Cider, sweet. Large spreading tree.
- PI 589689. *Malus domestica* Borkh.
Frequin Tardive de la Sarthe.
- PI 589690. *Malus domestica* Borkh.
Le Bret. Comments:: Cider.
- PI 589691. *Malus domestica* Borkh.
Tale Sweet.
- PI 589692. *Malus domestica* Borkh.
Stembridge Cluster. Comments:: Cider.
- PI 589693. *Malus domestica* Borkh.
Stembridge Jersey.
- PI 589694. *Malus domestica* Borkh.
Sunset. Pedigree - Seedling of Cox's. 1918. Comments:: Medium. Orange yellow, scarlet flush and stripes like Cox's Orange. Firm, crisp; sweet, slightly acid. Dessert. Oct. to Nov. Tree: moderately vigorous, resistant to scab.
- PI 589695. *Malus domestica* Borkh.
Merton Pearmain.

The following were developed by Chivers. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

- PI 589696. *Malus domestica* Borkh.
Chiver's Delight. Pedigree - Raised circa 1920 - Parentage not known. Comments:: Size medium to large 68-74; 57-64 mm; shape intermediate truncate-conic, convex, ribbed at eye, slightly on body; skin color variable, green to yellow, occasional orange flush and carmine steaks; flesh firm, yellowish white; flavor sweet subacid, slightly aromatic; season late. Tree: moderately vigorous, upright, a little spreading. Produces spurs very freely.

The following were donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

- PI 589697. *Malus domestica* Borkh.
Stoke Red. Comments:: Cider.
- PI 589698. *Malus domestica* Borkh.
Captain Kidd.
- PI 589699. *Malus domestica* Borkh.
Somerset Redstreak. Comments:: Cider.

The following were developed by R. Veitch, Bureau of Plant Research, Department of Agriculture, Brisbane, Queensland, Australia. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589700. *Malus domestica* Borkh.

Rev. W. Wilks. Pedigree - Peasgood's Nonsuch and Ribston Pippin; recorded 1904. introduced 1908. Comments:: Size large 88:76 mm; shape flat, conic, convex, slightly ribbed at eye and on body; skin pale yellow with slight flush and stripes; flesh, cooks well, tender, white; flavor acid; season mid. Tree: rather small spreading. Produces spurs very freely. Very handsome, mid-season cooking apple. Primarily grown for garden and exhibition. Tends to be biennial.

The following were developed by T. Squire. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589701. *Malus domestica* Borkh.

Lane's Prince Albert. Pedigree - Said to be Russet Nonpariel x Dumelow's Seedling. Raised around 1840; introduced by Lane around 1850. Comments:: Size large 76:59 mm; shape intermediate, truncate-conic, convex, slightly ribbed at eye, skin yellowish green, flushed orange, striped red; flesh very soft, fine, white tinged green; flavor acid; season very late. Tree: very vigorous. Well known, late keeping apple. Primarily a garden variety, but also grown on a small scale commercially in UK. A regular cropper of compact habit.

The following were donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 03/31/1987.

PI 589702. *Malus domestica* Borkh.

Early Crimson.

PI 589703. *Malus domestica* Borkh.

Kingston Black. Comments:: Famous English cider apple - one of only three English varieties used as a single-variety cider. Classed as bitter sharp. Medium size, round fruit. Crimson to purplish over yellowish orange background color. Strongly astringent after-taste. Makes a distinctively flavored cider without blending. Vigorous rounded tree. Somewhat hard to grow. Ripens from mid-September to mid-October depending on location. Subject to scab and canker.

The following were developed by J. Musch. Donated by G. Gilles, Research Station of Gorsem, Virology Dept., Brede Akker3, B3800 Sint Truiden, Belgium. Received 03/18/1987.

PI 589704. *Malus domestica* Borkh.

Joseph Musch. Pedigree - In NFT collection is identical with Gascoyne's Scarlet. Recorded 1872. Comments:: Size large; shape variable, intermediate, truncate-conic, convex, ribbed at eye and on body; skin pale yellow with bright red flush and stripes, russet at base; flesh rather coarse, dry, whitish yellow; flavor subacid, sweet. Season mid to late.

The following were donated by P.J. Sampson, Dept. of Agriculture Tasmania, Senior Plant Pathology Section, 1 Franklin Wharf, Hobart, Tasmania, Australia. Received 05/22/1987.

PI 589705. Malus domestica Borkh.

Cleopatra. Collected in Unknown. Orchard of Michael Ortley, New Jersey. USA.; also Australia and New Zealand. Comments:: Size medium to large 65-62:60-70 mm; shape tall, rectangular convex to straight, ribbed at eye; skin yellow, striped green, occasional slight flush, dotted, greasy; flesh fairly fine, crisp, tender, creamy yellow; flavor subacid; season mid to very late. Tends to be biennial. Tree: moderately vigorous, becoming spreading and round-headed. Produces spurs freely.

PI 589706. Malus domestica Borkh.

Earliblaze.

The following were developed by Dewdney. Donated by P.J. Sampson, Dept. of Agriculture Tasmania, Senior Plant Pathology Section, 1 Franklin Wharf, Hobart, Tasmania, Australia. Received 05/22/1987.

PI 589707. Malus domestica Borkh.

Lord Wolsley. Pedigree - Raised circa 1850. Comments:: Size large 75:65 mm; shape flat, conic, convex, slightly ribbed on body; skin yellow flushed brownish red; flesh crisp, fine, greenish white; flavor acid; season mid.

The following were developed by C.F. Bixley. Donated by P.J. Sampson, Dept. of Agriculture Tasmania, Senior Plant Pathology Section, 1 Franklin Wharf, Hobart, Tasmania, Australia. Received 05/22/1987.

PI 589708. Malus domestica Borkh.

Red Dougherty. Pedigree - Sport of Dougherty - introduced 1930; selected in 1928. Comments:: Size small to medium 49-60; 40-54 mm; shape tall to inter-mediate, rectangular to truncate-conic, convex, slightly ribbed on body and at eye; skin green, striped dull dark red almost overwall, white ringed, russet spots, occasional russet patches, thin; flesh firm fine, hard, tough, greenish white; flavor sweet subacid, season very late. Tree: very long thin stalk, willowy; weak vigor, spur bearing with strong tip-bearing; regular bearer; precocious cropper, identical to Dougherty; more suited to warm climates.

The following were donated by P.J. Sampson, Dept. of Agriculture Tasmania, Senior Plant Pathology Section, 1 Franklin Wharf, Hobart, Tasmania, Australia. Received 05/22/1987.

PI 589709. Malus domestica Borkh.

Merton 778.

PI 589710. Malus domestica Borkh.

Merton 793.

The following were donated by James Luby, University of Minnesota, Department of Horticultural Sciences, 254 Alderman Hall, St. Paul, Minnesota 55108, United States. Received 08/17/1987.

PI 589711. Malus domestica Borkh.

Carnifex.

PI 589712. Malus domestica Borkh.

Crookston.

PI 589713. Malus domestica Borkh.

Early Bird Red.

PI 589714. *Malus domestica* Borkh.
Maude.

PI 589715. *Malus domestica* Borkh.
Morden 358. Collected in Canada.

PI 589716. *Malus domestica* Borkh.
Morden 360. Collected in Canada.

The following were developed by Agriculture Canada, Lethbridge Research Station, Lethbridge, Alberta T1J 4B1, Canada. Donated by James Luby, University of Minnesota, Department of Horticultural Sciences, 254 Alderman Hall, St. Paul, Minnesota 55108, United States. Received 08/17/1987.

PI 589717. *Malus domestica* Borkh.
Morden 363. Collected in Canada. Pedigree - Haralson x Melba Introduced 1968. Comments:: Fruit: 7 cm standard, attractive, red, very tasty. Ripens second half of September and must be picked when ripe to store well into spring. Flesh white, "no good at Unity", says Coutts (1991). Very hardy.

The following were developed by Univ. Minn. Fruit Breeding Farm, Excelsior, Minnesota, United States. Donated by James Luby, University of Minnesota, Department of Horticultural Sciences, 254 Alderman Hall, St. Paul, Minnesota 55108, United States. Received 08/17/1987.

PI 589718. *Malus domestica* Borkh.
Northland. Collected in Canada. Pedigree - Progeny of M. cv. Dolgo (Univ. of Minn.) McIntosh x Dolgo Cross probably made in 1926; selected in 1938; tested as Minn. 1423. Comments:: Fruit: crab, averaging about 1 1/2 to 1 3/4 " in diam., stem medium, slender about 1/2" long; calyx closed; skin solid bright to deep red, thick, tough; dots small and inconspic- uous; bloom purplish; flesh dark yellowm tinged red beneath skin, crisp, medium, tender; flavor acid, pleasant. Matures Aug. 14-24; excellent for dessert purposes, canned sauce, pickles, jelly; especially adapted in northern part of state Tree: medium, relatively hardy, very productive, not entire- ly free from scab or blight; tendency to alternate bearing.

The following were donated by James Luby, University of Minnesota, Department of Horticultural Sciences, 254 Alderman Hall, St. Paul, Minnesota 55108, United States. Received 08/17/1987.

PI 589719. *Malus domestica* Borkh.
Ottawa 274. Collected in Canada.

The following were developed by W.P. Baird. Donated by James Luby, University of Minnesota, Department of Horticultural Sciences, 254 Alderman Hall, St. Paul, Minnesota 55108, United States. Received 08/17/1987.

PI 589720. *Malus domestica* Borkh.
Prairie Gold. Pedigree - Robin Crab Apple x Duchess of Oldenburg Selected in 1935; intro. 1952. Comments:: Fruit: a large crab apple or a small standard apple; oblate, ridged; skin yellow, flesh firm, juicy, slightly tart to subacid, flavor pleasant; resembles Grimes Golden. Tree: semidwarf; spreading, very hardy.

The following were developed by R.L. Wodarz. Donated by James Luby,

University of Minnesota, Department of Horticultural Sciences, 254 Alderman Hall, St. Paul, Minnesota 55108, United States. Received 08/17/1987.

PI 589721. *Malus domestica* Borkh.

Reta. Pedigree - Open-pollinated seedling of McIntosh. Comments:: Fruit: crab, averaging 1 3/4 " diam., rounded; skin greenish yellow, blushed; flesh creamy white, juicy, flavor mild, suitable for eating fresh; ripens September 15 in midseason. Storage life short. Tree: hardy, very productive; size medium; upright when young.

The following were donated by James Luby, University of Minnesota, Department of Horticultural Sciences, 254 Alderman Hall, St. Paul, Minnesota 55108, United States. Received 08/17/1987.

PI 589722. *Malus domestica* Borkh.

Richland Crab.

PI 589723. *Malus domestica* Borkh.

Spasserud.

PI 589724. *Malus domestica* Borkh.

Stroming.

The following were developed by R.C. Palmer, Unknown. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/17/1987.

PI 589725. *Malus domestica* Borkh.

Jubilee. Pedigree - McIntosh x Grimes Golden Cross made 1926; original tree planted 1928; first fruited 1934; selected 1939 by A.J. Mann, introduced 1939. Comments:: Medium size, shiny solid bright red fruit. Crisp, juicy, cream colored flesh; agreeably flavored. Drops from the tree when ripe. Keeps very well. Ripens during October. Tree: vigorous and hardy as McIntosh. Named in 1939 in honor of the British Columbia Fruit Growers' Association's Golden Jubilee Convention.

The following were developed by L.P.S. Spangelo; S.J. Leuty; H.B. Heeney. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/17/1987.

PI 589726. *Malus domestica* Borkh.

Britegold. Pedigree - Sandel (Delicious x Sandaw) x Ottawa 522 [Platt Malba x R6T68 (Jonathan x {Rome Beauty x *Malus floribunda* 821 sib})] Tested as Ottawa 652 - Agriculture Canada Res. Sta. Ottawa, Ont. Canada. Introduced 1980. Comments:: Fruit: medium to large, bright yellow; flesh cream-colored yellow, coarse, tender, juicy; low acid; medium quality; good for slices, fair for sauce, short storage life. Tree: low to medium vigor; spreading; tendency to drop and become biennial, low yield; some fruits drop before ripe. Resistant to apple scab, very susceptible to cedar apple rust and quince rust. Harvest after McIntosh.

The following were collected by E. Dickson. Donated by Norman F. Weeden, Cornell University, New York State Agric. Exp. Station, Department of Horticultural Sciences, Geneva, New York 14456, United States. Received 08/24/1987.

PI 589727. *Malus angustifolia* (Aiton) Michaux

Collected 08/17/1987 in New Jersey, United States. New Jersey near Cold

Springs, Cape May Co. Hedge row near lima bean field; soil sandy, fine textured, well-drained few coarse stones. Pedigree - Wild. Comments:: Approx. 15 ft tall, being crowded out by encroaching forest and cultivated field; overgrown with *Vitis lambrusca*. Five fruit were found. Uncommon.

PI 589728. *Malus coronaria* (L.) Miller

Collected 08/18/1987 in Virginia, United States. Virginia ca. 1.5 mi. South of Spring Grove on Hwy 40. Roadside edge of pine and oak forest. Soil dry, stuck together. Surry Co. Pedigree - Wild. Comments:: Lone *M. coronaria*; 20 ft. tall; 3 inch DBH; 1 fruit on tree 2 on ground.

The following were donated by USDA, ARS, U.S. National Arboretum, National Germplasm Repository, Washington, District of Columbia 20002, United States. Received 08/24/1987.

PI 589729. *Malus hybrid*
Centurion.

PI 589730. *Malus hybrid*
Coralburst.

PI 589731. *Malus hybrid*
Henning.

PI 589732. *Malus hybrid*
Henry F. Dupont.

PI 589733. *Malus hybrid*
Indian Summer.

PI 589734. *Malus hybrid*
Ralph Shay.

PI 589735. *Malus hybrid*
Sugar Thyme.

PI 589736. *Malus hybrid*
Wild Red.

PI 589737. *Malus hybrid*
Freeman Hybrid.

PI 589738. *Malus baccata* (L.) Borkh.

PI 589739. *Malus coronaria* (L.) Miller

PI 589740. *Malus coronaria* (L.) Miller

PI 589741. *Malus floribunda* Siebold ex Van Houtte

PI 589742. *Malus floribunda* Siebold ex Van Houtte

PI 589743. *Malus floribunda* Siebold ex Van Houtte

PI 589744. *Malus halliana* Koehne

- PI 589745. *Malus ioensis* (Alph. Wood) Britton
Texana.
- PI 589746. *Malus x platycarpa* Rehder
- PI 589747. *Malus sieboldii* (Regel) Rehder
- PI 589748. *Malus sieboldii* (Regel) Rehder
- PI 589749. *Malus sieboldii* (Regel) Rehder
- PI 589750. *Malus sikkimensis* (Wenzig) Koehne ex C. Schneider
- PI 589751. *Malus hupehensis* (Pampan.) Rehder
- PI 589752. *Malus tschonoskii* (Maxim.) C. Schneider
- PI 589753. *Malus micromalus* Makino
- PI 589754. *Malus micromalus* Makino
- PI 589755. *Malus x sublobata* (Dippel) Rehder
- PI 589756. *Malus hupehensis* (Pampan.) Rehder
- PI 589757. *Malus halliana* Koehne
- PI 589758. *Malus yunnanensis* (Franchet) C. Schneider
Veitchii.
- PI 589759. *Malus yunnanensis* (Franchet) C. Schneider
- PI 589760. *Malus hupehensis* (Pampan.) Rehder

The following were collected by E. Dickson. Donated by Norman F. Weeden, Cornell University, New York State Agric. Exp. Station, Department of Horticultural Sciences, Geneva, New York 14456, United States. Received 08/27/1987.

- PI 589761. *Malus angustifolia* (Aiton) Michaux
Collected 08/27/1987 in South Carolina, United States. S. Carolina, Berkeley Co., near Holly Hill; 0.7 mi. SE of Berkeley-Orangeburg Co. line on Rt 176. West side of road. Pedigree - Wild. Comments:: 15 ft tall, 3 cm. trunk diameter at edge of forest; largest tree in population of about 35; many seedlings at forest edge. Forest canopy: *Pinus Taeda*; *Quercus Phellos*, *Q. maxima*, *Q. nigra*; Liquid amber, *Carya*. Understory: *Myrica*, *Alnus*, *Carpinus*.

- PI 589762. *Malus angustifolia* (Aiton) Michaux
 Collected 08/22/1987 in South Carolina, United States. S. Carolina, Jasper Co. 2.6 mi. south from Rt 321 on S-27-34 west side of road. Soil whitish, fine textured. Pedigree - Wild. Comments:: Single tree at pine-oak forest edge. About 15 ft high, 3-4 cm. diameter.
- PI 589763. *Malus angustifolia* (Aiton) Michaux
 Collected 08/21/1987 in North Carolina, United States. N. Carolina, Bladen Co., same general site as Dickson 527, but located between forest edge and dry depressed area (old pond). Pedigree - Wild. Comments:: Vigorous tree about 15 ft. tall; leaves very large and serrated on vigorous shoots. Population consists of approx 15 trees.
- PI 589764. *Malus angustifolia* (Aiton) Michaux
 Collected 08/22/1987 in South Carolina, United States. S. Carolina, Berkeley Co., same site as 531. Pedigree - Wild. Comments:: 3 cm. diameter.
- PI 589765. *Malus angustifolia* (Aiton) Michaux
 Collected 08/26/1987 in North Carolina, United States. N. Carolina, Macon Co. Old river terrace above stream near stream opposite to entrance to Van Hook Glade Campground (National Nantahalia Forest). Pedigree - Wild. Comments:: Many fruits, 25 ft. tall. 5 ft. from stream. Population of 8 trees, one very large and recently fallen (20 cm diam). Old cultivated apple 100 yds from site.
- PI 589766. *Malus angustifolia* (Aiton) Michaux
 Collected 08/27/1987 in Virginia, United States. Virginia, Shenandoah Co. 5.4 mi SE of junction US 11 and Co. 675 on Co. 675 at W. corner of unmarked dirt Rd to the W. Pedigree - Wild. Comments:: 20 ft. tall, 6 cm diameter. Population of 6 large trees and 20+ smaller trees. Ostoya Virginia, Cornus, Pinus virginiana, Carya, Ovata, Carya cordiformis, Quercus.
- PI 589767. *Malus angustifolia* (Aiton) Michaux
 Collected 08/26/1987 in North Carolina, United States. N. Carolina, Madison Co., ca. 0.8 mi. E. from Petersburg on Hwy 213, S. side of Rd. Pedigree - Wild. Comments:: 25 ft. tall-broad. 22 cm diameter. Many fruit, very robust Large population scattered among cultivated apples.
- PI 589768. *Malus coronaria* (L.) Miller
 Collected 08/26/1987 in North Carolina, United States. N. Carolina, Clay co, 0.7 mi S.E. from Hwy 64 on U.S. Forest Service Rd 71. Roadside in open grassy area. Pedigree - Wild. Comments:: 25 ft. tall, 5 cm diameter. 4 trunks from same root system, 3 quite large. Many fruit.
- PI 589769. *Malus angustifolia* (Aiton) Michaux
 Collected 08/26/1987 in North Carolina, United States. N. Carolina, Transylvania Co. in pasture 0.2 mi from Hwy 64 on Co. Rd. 1392 (Cherryville Rd.), Old Hwy 64. Pedigree - Wild. Comments:: 12 ft. tall, many fruit. Lower half of tree with climbing vines. 2 trees in pasture and about 25 in between pasture and Hwy 64.
- PI 589770. *Malus angustifolia* (Aiton) Michaux
 Collected 08/27/1987 in Virginia, United States. Virginia, Polaski Co., on Va. Rt. 100, 0.3 mi N. of Co. Rd. 733 in median strip. Old hedge row by old fence line. Pedigree - Wild. Comments:: 12 ft. tall, 5 cm. diam. apples crataegus sp., flowering dogwood, Red Oak, Red Maple. Associated with Pinus virginia.
- PI 589771. *Malus angustifolia* (Aiton) Michaux
 Collected 08/26/1987 in North Carolina, United States. N. Carolina, Madison Co., same as Dickson 583. Pedigree - Wild. Comments:: 25 ft.

tall, 18 cm. diam., many fruit.

PI 589772. *Malus angustifolia* (Aiton) Michaux

Collected 08/26/1987 in North Carolina, United States. N. Carolina, Clay Co., 0.8 mi. S.E. from Hwy 64 on U.S. Forest Service Rd. 71. Soil brownish. Pedigree - Wild. Comments:: 40 ft. tall, branching at 10 ft., 10 cm. diam. Single tree with few fruit. Red Oak, White Oak, Red Maple, Yellow Birch Magnolia frazierl, Beech, Sourwood, Witch Hazel, Ilex, Amelanchier, Rhododendron.

PI 589773. *Malus angustifolia* (Aiton) Michaux

Collected 08/26/1987 in North Carolina, United States. N. Carolina, Macon Co., same site as Dickson 573. Pedigree - Wild. Comments:: 20 ft. tall, 4 cm. diam., very vigorous, although knocked over. Slightly reddish sandy soil with some clay.

The following were developed by E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589774. *Malus domestica* Borkh.

PRI 1661-1. Pedigree - McIntosh x 612-1 (Starking Giant Limb x 14-126 [Golden Delicious x "F2"26829-2-2]) "F2"26829-2-2 = 9433-2-2 (Rome Beauty x M. floribunda 821) x 9433-2-8 (Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821; excellent mildew resistance; Oct. 19, 2 5/8 - 2 7/8, slightly oblate, yellow ground, crisp, attractive; successful parent. Selected 10/20/67.

PI 589775. *Malus domestica* Borkh.

PRI 2382-1. Pedigree - NJ157555 X 1214-1 (134-23 [Starking x Jonsib Crab] x NJ123249) Selected 8/26/75. Comments:: Scab resistance from Jonsib Crab; good mildew resistance; Very good rust resistance. Aug. 20, 2 3/8 - 2 3/4, round medium 25-99% very bright red with slight orange cast, yellow ground color; flesh pale-yellow to cream; tender to firm, bland to spicy, moderately juicy. Fair quality; scab resistance from Jonsib Crab.

PI 589776. *Malus domestica* Borkh.

PRI 1316-1. Pedigree - ORIT23 X N.J.28 Selected 9/26/66. Comments:: Scab resistance from Antonouka P.I. 172616. Sept. 19, 2 7/8 - 3", oblate-round, medium, 50-70% red, yellow ground, crisp, juicy, attractive.

PI 589777. *Malus domestica* Borkh.

PRI 1918-1. Pedigree - Starking Giant Limb x 863-5 (Melba x 54-12 <Wealthy x "F2"26829-2-2>) Selected 9/21/70. "F2"26829-2-2 = 9433-2-2 (Rome Beauty x M. floribunda 821) x 9433-2-8 (Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821, excellent powdery mildew resistance, excellent cedar rust resistance. Sept. 30, 2 5/8 - 3", round, striped light red, 25-99%, green ground, flesh crisp, white, firm, very astringent, very spicy, very acid, juicy.

The following were developed by Safi S. Korban, University of Illinois, Department of Horticulture, 1201 W. Gregory, Urbana, Illinois 61801, United States. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589778. *Malus domestica* Borkh.

Co-op 27. Pedigree - Ill #2 (Winesap open-pollinated) x 1042-100 (Idared x 187-6 <49-102 ['Jonathan' x "F2"26830-2-] x Delicious>) "F2"26829-2-2 = 9433-2-2 (Rome Beauty x M. floribunda 821) x 9433-2-8 (Rome Beauty x M.

floribunda 821) Selected 10/5/72. Comments:: Scab resistance from M. floribunda 821. Oct. 13, 2 5/8 - 3", oblate - round to round to short conic- variable, splashed, medium-bright 50-99% red, green-yellow to pale yellow-green, ground color, very conspicuous lenticels, flesh crisp and firm, very attractive.

The following were developed by E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589779. Malus domestica Borkh.

PRI 14-152. Pedigree - Golden Delicious x "F2"26829-2-2 "F2"26829-2-2 = 9433-2-2(Rome Beauty x M. floribunda 821) x 9433-2-8(Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821. Selected in early 1950's first generation, backcross. Provided by Purdue University.

The following were developed by Purdue University, Horticultural Research Farm, West Lafayette, Indiana 47906, United States. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589780. Malus domestica Borkh.

PRI 384-1. Pedigree - 'McIntosh' x PRI 45-39(Russian Seedling # 12740-7A x 'Delicious'). Comments:: Scab resistance from Russian Seedling # 12740-7A. *Malus pumila*. (Race 2 differential indicator 'Venturia Inaequalis') Provided by Purdue University.

The following were developed by E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589781. Malus domestica Borkh.

PRI 1214-1. Pedigree - 134-23(Starking x Jonsib Crab) x NJ 123249 Selected 8/23/66. Comments:: Scab resistance from Jonsib Crab. Aug 21, 2 5/8 - 2 3/4" oblate-round to round, striped, medium-bright 50-99% red with slight orange cast, green to green-yellow, ground color, flesh pale-yellow, crisp, mildly bland, juicy.

PI 589782. Malus domestica Borkh.

PRI 14-126. Pedigree - Golden Delicious x "F2"26829-2-2 "F2"26829-2 = 9433-2-2(Rome Beauty x M. floribunda 821) x 9433-2-8(Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821. Sept 7, 1.3 - 2.3", conic, medium 80% red, striped, yellow ground, firm, tough attractive. Selected in early 1950's First Generation backcross. Provided by Purdue Univ. Hort. Research Farm.

PI 589783. Malus domestica Borkh.

PRI 1290-3. Pedigree - Golden Delicious x 415-67(27-27<Wealthy x R#12740-7A> x Delicious). Comments:: Scab resistance from Russian #12740-7A-M. *pumila* (Race 4 differential indicator). Oct 3, 2 1/8 - 2 3/4, oblate-round, 75-99% light green, green-yellow ground color, flesh firm to tender, juicy to very juicy, very astringent, bland.

The following were developed by J.B. Mowry. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589784. Malus domestica Borkh.

PRI 478-33. Pedigree - 27-330(Wealthy x R#12740-7A) x Delicious

Selected 9/18/58. Comments:: Scab resistance form Russian #12740-7A. Sept. 18, 2 1/4", conic, striped red, skin smooth & tough, good finish, flesh moderately firm, coarse, medium dry, mildly sub-acid. Susceptible to black-rot (*Botryosphaeria obtusa*), powdery mildew. (*Podosphaera leucotrichia*, and cedar apple rust. (*Gymnosporangium, Juniperus-virginiana*) Provided by Univ. of Ill.

The following were developed by E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589785. *Malus domestica* Borkh.

PRI 1346-2. Pedigree - Golden Delicious x Early Victoria Selected 9/12/67. Comments:: Scab resistance from Early Victoria. Aug. 28, 2 5/8 - 3", oblate-round to round, pale yellow to yellow, cream firm flesh, juicy, very spicy, attractive.

PI 589786. *Malus domestica* Borkh.

PRI 77-1. Pedigree - 'Wolf River' x M. sieboldii (M.A. 2982-22). Comments:: Scab resistance from M. sieboldii 2982-22. Sept. 18, 1.1" oblate-round, yellow ground color, medium 90% red, firm, bitter.

The following were developed by F. Gilbert, Purdue University, Horticultural Research Farm, West Lafayette, Indiana 47907, United States. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589787. *Malus domestica* Borkh.

PRI 1033-5 'Viking. Pedigree - (Drops of New Jersey) x 187-4(49-102<Jonathan x "F2"26830-2> x Delicious) "F2"26829-2-2=0433-2-2(Rome Beauty x M. floribunda 821) x 9433-2-8(Rome Beauty x M. floribunda 821). Comments:: Polygenic scab resistance only. Aug. 3 2 1/2 - 2 3/4, oblate-round to round, medium-dark 75-100% red-purple red, alternating on green-yellow ground, flesh is crisp and firm and juicy; attractive. Supplied by U. Wisconsin, Penninsular Exp. Sta., Sturgeon Bay, Wisconsin.

The following were developed by E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589788. *Malus domestica* Borkh.

PRI 1957-1. Pedigree - N.J.28 x 669N.J.5('Crandall' x PRI 14-226<'Golden Delicious' x "F2"26829-2-2>) Selected 8/2/71. "F2"26829-2-2 = 9433-2-2(Rome Beauty x M. floribunda 821) x 9433-2-8(Rome Beauty x M. floribunda 821). Comments:: Polygenic resistance only (to scab). Aug 8, 2 5/8 - 3", oblate-round to round to short conic- variable, slightly striped, flesh is tender, crisp, spicy & full flavored, juicy to very juicy, very attractive.

PI 589789. *Malus domestica* Borkh.

PRI 1744-1. Pedigree - 'Wealthy' x 786-1(McIntosh x 43-7<M. sargentii 843[selved] x 20 ounce>) Selected 9/7/67. Comments:: Scab resistance from M. sargentii 843. Sept. 1, 2 1/8 - 2 1/2 round, medium-dark 50-99% red on green-yellow to green-green background, flesh is crisp, tough, and bland.

PI 589790. *Malus domestica* Borkh.

PRI 1484-1. Pedigree - 518-1(78-8<Wolf River x M.A. 1255> x Delicious) x Golden Delicious Selected 10/1/66. Comments:: Scab resistance from MA

1255. Oct 8, 2 3/8 - 2 1/2, short conic to conic, yellow ground, self-yellow conspicuous, lenticels; flesh is firm, juicy, very astringent and bitter. Attractive.

PI 589791. Malus domestica Borkh.

PRI 1279-9. Pedigree - 'Cox Orange' x 333-9 (McIntosh x 69-118<'Wolf River' x M. atrosanguinea 804>) Selected 9/19/67. Comments:: Scab resistance from M. atrosanguinea 804 Sept. 19, 2 1/2", conical, medium 90% red on yellow-green ground, slightly striped, flesh is hard to crisp, attractive.

PI 589792. Malus domestica Borkh.

PRI 1850-4. Pedigree - McIntosh x 1079-1 (234-87<68-99<Wolf River x M. zumi calocarpa> x Jonathan x N.J. 12-49). Selected 8/25/69. Comments:: Scab resistance from M. zumi calocarpa. Aug. 30, 2 1/8 - 2 3/4, oblate-round to round, very striped, light to medium, 1-74% red on green to pale yellow to cream ground and color, flesh pale, tender to firm, very astringent, slightly full flavored, medium juicy to juicy. NOTE: The inventory GMAL 2423.01 was indexed for three different viruses (SP, SG, CLS) and were found negative, 5/28/1992. However, symptoms suggest another virus present on Radiant indicator.

PI 589793. Malus domestica Borkh.

PRI 612. Pedigree - Starking Giant Limb x 14-126 (Golden Delicious x "F2"26829-2-2) "F2"26829-2-2 = 9433-2-2 (Rome Beauty x M. floribunda 821) x 9433-2-8 (Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821. Aug. 14, 2 3/8 - 2 3/4, conical, washed striped, light to medium 50-99% red on green-yellow to pale yellow ground; flesh is cream, very crisp and firm, juicy; attractive. Excellent horticultural parent. Excellent bearing habit. Selected 8/22/62.

PI 589794. Malus domestica Borkh.

PRI 1754-2. Pedigree - 'Starking' x 810-1 (168-60<McIntosh x 40-15 [19651 x 40 oz.]> x Idared) Selected 9/26/67. Comments:: Scab resistance from M. prunifolia 19651. Sept. 28, 2 3/8 - 3", oblate-round, splashed, slightly striped, medium-dark 50-99% bright red with a slight orange cast on a green to green-yellow background, very conspicuous lenticels, flesh is crisp and tough, slightly spicy, full-flavored, moderately juicy; attractive.

The following were developed by D.F. Dayton. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589795. Malus domestica Borkh.

PRI 2482-100. Pedigree - Mollie's Delicious x 1469-100 (Starking x 643-11<McIntosh x 76-29 [Wolf River x M. micromalus]>) Selected 9/18/78. Comments:: Scab resistance from M. micromalus (pit-type). Sept. 20, 2 3/8 - 2 3/4, oblate-round to round to short conic-variable, medium 50-100% red with a slight orange cast flesh is crisp and hard, bland, slightly bitter, very astringent, moderately juicy; attractive.

The following were developed by Purdue University, Horticultural Research Farm, West Lafayette, Indiana 47906, United States. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589796. Malus domestica Borkh.

PRI 1571-3. Pedigree - Monroe x 612-1 (Starking Giant Limb x 14-126<Golden Delicious x "F2"26829-2-2>) Selected 9/2/69. "F2"26829-2-2 = 9433-2-2 (Rome Beauty x M. floribunda 821) x 9433-2-8 (Rome Beauty x M. floribunda 821). Comments:: Scab resistance

from M. floribunda 821. Excellent mildew resistance, very good scab resistance. Sept. 1, 2 7/8 - 3", long conic; medium 50-99% light red on a pale-yellow to cream ground, flesh is firm to tender, juicy. Very good potential parent-good bearing habit.

The following were developed by E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589797. Malus domestica Borkh.

PRI 672-1. Pedigree - Golden Delicious x 14-152 (Golden Delicious x "F2"26829-2-2) Selected 9/60 "F2"26829-2-2 = 9433-2-2 (Rome Beauty x M. floribunda 821) x 9433-2-8 (Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821. Sept. 17, 2 1/3 - 2 1/2", round, very bright 100% yellow on yellow ground, flesh is very crisp, slightly spicy, very full-flavored, juicy to very juicy; very attractive. Good fruit flesh texture and flavor.

PI 589798. Malus domestica Borkh.

PRI 258-8. Pedigree - Starking x M. baccata jackii. Comments:: Scab resistance from M. baccata jackii. No fruit description. Fruit approximately 2.5 cms in diameter.

The following were donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589799. Malus domestica Borkh.

PRI F2.

The following were developed by E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589800. Malus domestica Borkh.

PRI 1743-1. Pedigree - McIntosh x 648-10 (100-3<20 ounce x M. toringo 852 [dwarf spreading]> x Crandall) Selected 9/7/69. Comments:: Scab resistance from M. toringo 852 (dwarf spreading) Sept. 4, 2 1/4 - 2 1/3", round, dark 90% red, yellow ground, crisp flesh, juicy; attractive.

PI 589801. Malus domestica Borkh.

PRI 1472-3. Pedigree - 643-14 (McIntosh x 76-29<Wolf River x M. micromalus>) x Starking Selected 9/26/67. Comments:: Scab resistance from M. micromalus (at type). Powdery mildew resistance excellent; excellent cedar rust resistance. Sept. 26, 2 3/8 - 2 3/4", short-conic to conic, slightly striped, medium-dark purple-red, flesh crisp, green, very attractive.

PI 589802. Malus domestica Borkh.

PRI 527-3. Pedigree - PRI-76-27 ('Wolf River' x M. micromalus) x 'Delicious'. Comments:: Scab resistance from M. micromalus (pit type). Aug 20, 2 3/8 - 2 3/4", round, very striped, medium-dark 75- 100% purple-red to red; flesh tender, very astringent, medium juicy; attractive.

PI 589803. Malus domestica Borkh.

PRI 2543-1. Pedigree - NJ42 x 1264-1 (Idared x 169-58<Starking x 40-17 [M. prunifolia 19651 x 20 oz.]>) Selected 8/7/75. Comments:: Scab resistance from M. prunifolia 19651. Aug. 5, 2 5/6 - 3", round, light to medium 50-100% red on a pale-yellow ground; flesh is firm to tender, slightly spicy, very juicy; attractive.

PI 589804. Malus domestica Borkh.

PRI 2465-9. Pedigree - NJ38 x 1225-100 (NJ123249 x 14-510<Golden Delicious x "F2"26829-2-2]) Selected 8/18/75. "F2"26829-2-2=9433-2-2 (Rome Beauty x M. floribunda 821) x 9433-2-8 (Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821; mildew resistance very good; cedar rust resistance excellent. Aug 13, 2 3/8 - 2 3/4", round to short-round, splashed 75- 99% light to medium red; green-yellow ground; flesh crisp, firm, tough, juicy to very juicy; attractive.

The following were developed by Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589805. Malus domestica Borkh.

Co-op 15. Pedigree - NJ27 x 612-1 (Starking Giant Limb x 14-126<Golden Delicious x "F2" 26829-2-2>) Selected 9/18/69 "F2"26829-2-2 = 9433-2-2 (Rome Beauty x M. floribunda 821) x 9433-2-8 (Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821, EXCELLENT MILDEW RESISTANCE, rust resistance excellent. Sept. 13, 2 3/8 - 2 1/2, conic to long conic, washed, 75 - 100% medium dark red, green ground color, conspicuous lenticels - white and russet; crisp flesh, juicy to very juicy; attractive. Goonewardene: resistant to coddling moth and plum curcitoo.

The following were developed by E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589806. Malus domestica Borkh.

PRI 1661-2. Pedigree - McIntosh x 612-1 (Starking Giant Limb x 14-126<Golden Delicious x "F2"26829-2-2>) Selected 10-17-70. "F2"26829-2-2=9433-2-2 (Rome Beauty x M. floribunda 821) x 9433-2-8 (Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821. Very good mildew resistance. Excellent cedar rust resistance. Retains quality 6 months or more in refrigerated storage. Oct 16, 2 5/8-3", round, splashed 65-74% light pink, green ground, flesh crisp, white, slightly spicy, juicy. Very interesting parent. Very nice bearing habit.

The following were developed by Purdue University, Horticultural Research Farm, West Lafayette, Indiana 47906, United States. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589807. Malus domestica Borkh.

PRI 1773-6. Pedigree - McIntosh x 612-4 (Starking Giant Limb x 14-126<Golden Delicious x "F2"26829-2-2>) Selected 10/9/69. "F2"26829-2-2 = 9433-2 (Rome beauty x M. floribunda 821) x 9433-2-8 (Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821. Excellent mildew resistance; excellent cedar rust resistance. Sept. 11, 2 5/8 - 3" oblate-round to short-conic, washed 75-100% medium red, green to green-yellow ground color, moderate russeting, very attractive, crisp flesh, juicy to very juicy.

The following were developed by E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589808. Malus domestica Borkh.

PRI 1293-3. Pedigree - Jonared x 442-23 (Delicious x 27-128<Wealthy x Russian seedling #12740-7A>) Selected 9/13/66. Comments:: Scab resistance from Russian 12740-7A. Sept. 14, 2 5/8 - 3", oblate-round, light 25-74% red, green to green-yellow ground, very crisp, very juicy, very attractive.

PI 589809. Malus domestica Borkh.

PRI 1660-5. Pedigree - 'Jonathan' x 612-1 ('Starking Giant Limb' x 14-126<Golden Delicious x "F2"26829-2-2>) Selected 10/4/67. "F2"26829-2-2 =9433-2-2 (Rome Beauty x M. floribunda 821) x 9433-2-8 (Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821; excellent mildew resistance; excellent cedar rust resistance. Oct 1, 2 5/8 - 3", oblate-round to round, washed medium red, green-yellow ground, crisp flesh, tender, firm, juicy to very juicy.

PI 589810. Malus domestica Borkh.

PRI 1660-6. Pedigree - 'Jonathan' x 612-1 ('Starking Giant Limb' x 14-126<Golden Delicious x "F2"26829-2-2>) Selected 10/4/67. F2"26829-2-2 =9433-2-2 (Rome Beauty x M. floribunda 821) x 9433-2-8 (Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821; excellent mildew resistance; good rust resistance; successful parent. Sept. 29, 2 5/8 - 2 3/4", round, splashed, bright 50-99% medium red, green-yellow to pale yellow ground color; flesh green to pale yellow, firm-crisp, slightly spicy, moderately juicy, very attractive.

The following were developed by L.F. Hough, Rutgers University, Department of Horticulture, New Brunswick, New Jersey, United States. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589811. Malus domestica Borkh.

N.J. 100537. Pedigree - 'Petrel x Orleans'. Comments:: Scab resistance from Petrel/Orleans, 1 generation. Aug. 29, 2 5/8 - 3". short-conic, striped, 25-49% light red, green ground; flesh tender, juicy blend.

The following were developed by E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589812. Malus domestica Borkh.

PRI 2377-1. Pedigree - NJ70249 X 1341-1 ('Jonathan' x Hansen's M. baccata #2) Selected 8/20/73. Comments:: Scab resistance from Hansen's M. baccata #2. Aug. 17, 2 3/8 - 2 1/2", oblate-round, splashed, slightly striped, 25-99% light red with slight orange cast, green to yellow ground color; flesh crisp, firm-stays firm, moderately juicy, very attractive.

The following were developed by D.F. Dayton. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589813. Malus domestica Borkh.

PRI 1293-100. Pedigree - 'Jonared' x 442-3 (Delicious x 27-128<Wealthy x Russian seedling # 12740-7A>). Comments:: Scab resistance from Russian seedling #12740-7A. Sept. 3, 2 1/2", oblate, dull 60% medium red, light russet-tinged and scarred skin, very firm flesh, firm, very crisp, mild-sub-acid, calyx and frost ring attractive.

The following were developed by E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589814. *Malus domestica* Borkh.

PRI 1563-1. Pedigree - McIntosh x 598-1 (Crandall x 47-77 <'Jonathan' x "F2"26829-2-2>) Selected 10/17/66. "F2"26829-2-2=9433-2-2 (Rome Beauty x M. floribunda 821) x 9433-2-8 (Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821. Oct. 13, 2 5/8 - 2 3/4", oblate-round, splashed striped, medium 25-99% red, pale yellow to cream ground color; flesh white, moderately juicy; successful parent; extremely white flesh.

PI 589815. *Malus domestica* Borkh.

PRI 1228-5. Pedigree - 'Melrose' x 14-644 (Golden Delicious x "F2"26829-2-2) Selected 10/2/67. "F2"26829-2-2=9433-2-2 (Rome Beauty x M. floribunda 821) x 9433-2-8 (Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821; mildew resistance excellent; very good cedar rust resistance. Oct. 2, 2 1/8 - 2 1/4" round, medium 50-100% light red with orange cast, green to greenish-yellow ground, flesh firm to tender, moderately juicy.

The following were developed by C.S. Crandall. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589816. *Malus prunifolia* (Willd.) Borkh.

19651. Pedigree - Not confirmed - wild origin. Originally named M. arnoldiana but later re-named M. prunifolia. Comments:: Received by C.S. Crandall at the University of Illinois from Dr. C.S. Sargent, Arnold Arboretum, Mass. in 1907. Resistance to *Venturia inaequalis* (Cke) Wint. Tree: erect in habit; long willowy shoots bend outward when fruit commences. Flowers: expand about 3 mm and are nearly pure white when open. Fruit: roundish-oblong, base regular apex irregular, clear lemon-yellow covered with a scanty, waxy, white bloom; skin smooth, thin, tough; dots few, small white, inconspicuous. Supplied by Purdue U., W. Lafayette, Ind.

The following were developed by E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589817. *Malus domestica* Borkh.

PRI 1302-1. Pedigree - Ill. #2 (Winesap o.p.) x 10-147 <Jonathan x "F2"26829-2-2> Selected 10/2/67. "F2"26829-2-2=9433-2-2 (Rome Beauty x M. floribunda 821) x 9433-2-8 (Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821; very good mildew resistance; excellent cedar rust resistance; good life in storage (4-5 month). Oct. 9, 2 3/8 - 3", oblate-round to round, bright 50-100% very bright red on a green-yellow to pale yellow ground, conspicuous lenticels, flesh is crisp, full-flavored moderately juicy to juicy; attractive; slight astringence in skin.

The following were developed by D.F. Dayton. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589818. *Malus domestica* Borkh.

Mildew Immune Seedling. Pedigree - 'Starking Delicious' open

pollinated. Comments:: Originally considered immune to mildew, resistance broke down in later trials. Still remains highly resistant to powdery mildew (*Podoshpaera leucotricha* Ell & Ev.) Salm.

The following were developed by E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589819. *Malus domestica* Borkh.

PRI 2050-2. Pedigree - 'Golden Delicious' x 1050NJI('Winter Banana' x 2-19 <McIntosh x "F2"26829-2-2>) Selected 9/28/70. "F2"26829-2-2 = 9433-2-2(Rome Beauty x M. floribunda 821) x 9433-2-8(Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821. Oct. 11, 2 5/8 - 3", round to short conical, self-yellow, no blush, flesh very crisp, slightly bland, very juicy; attractive; extremely successful parent; widely used.

The following were developed by D.F. Dayton. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589820. *Malus hybrid*

Prairie Fire. Pedigree - Ill. ornamental crab 6-1(Ill. ornamental crab 1-7<M. zumi calacarpa{Rehd.}Rehd. x M. pumila niedzweiskyana{Dieck.} Schneid.> x M. x astrosanguinea {Spaeth} Schneid) x Malus 'Liset'. Comments:: Scab resistance form M. x atrosanguinea 804.

PI 589821. *Malus domestica* Borkh.

PRI 1576-100. Pedigree - 'Golden Delicious' x 612-4('Starking' Giant Limb x 14-126 <Golden Delicious x "F2"26829-2-2>) Selected 9/18/67. Comments:: Scab resistance from M. floribunda 821. Very good mildew resistance, excellent cedar rust resistance. Limited storage, tender-flesh. Sept. 25, 2 5/8 - 3", conic to long-conic, blushed 100% yellow. Yellow ground; flesh pale-yellow to cream, tender to firm, slightly spicy, full-flavored, slightly to moderately juicy; very attractive.

The following were developed by E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589822. *Malus domestica* Borkh.

PRI 2465-6. Pedigree - NJ38 x 1225-100(NJ123249 x 14-510<Golden Delicious x "F2"26829-2-2>) Selected 8/18/75. "F2"26829-2-2=9433-2-2 (Rome Beauty x M. floribunda 821) x 94333-2-8(Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821. Aug. 15, 2 3/8 - 2 3/4", short-conic, medium 75-100% dark purple-red to red, ground yellow to cream; flesh tender to firm, slightly tough, full-flavored, slightly spicy, very juicy; very attractive.

The following were developed by Hilary F. Goonewardene, Purdue University, Dept. of Entomology, Entomology Hall, W. Lafayette, Indiana 47907, United States; E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589823. *Malus domestica* Borkh.

PRI 1703-1. Pedigree - NY53705-21(Esopus Spitzenburg' x 7-23<'Wealthy' x "F2"26829-2-2>) x N.J. 78637 Selected 9/26/67. "F2"26829-2-2=9433-2-2(Rome Beauty x M. floribunda 821) x 9433-2-8 (Rome Beauty x

M. floribunda 821). Comments:: Scab resistance from M. floribunda 821. Sept. 19, 2 3/8 - 3", conic, blushed 100% yellow, on yellow ground; flesh pale-yellow, firm, slightly full-flavored to bland, juicy, attractive. Deep canary yellow skin color; strong aldehyde breakdown. Goonewardene: Resistance to apple maggot and red barded leaf-roller.

The following were developed by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589824. Malus domestica Borkh.

Jonsib Crab. Pedigree - Jonathan x Irkutsk (M. baccata). Introd. 1938. Comments:: Crab apple. Fruit: small, 45 mm; skin brilliant red, striped; flavor sweet, subacid; harvest season late fall. Tree: bears heavily; resistant to Venturia inaequalis.

The following were developed by D.F. Dayton. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589825. Malus domestica Borkh.

PRI 1660-104. Pedigree - Jonathan x 612-1(McIntosh x 14-226<Golden Delicious x "F2"26829-2-2>) Selected 8/22/70. "F2"26829-2-2=9433-2-2 (Rome Beauty x M. floribunda 821) x 9433-2-8(Rome Beauty x M. floribunda 821). Comments:: Scab resistance from M. floribunda 821. Excellent mildew resistance; moderate cedar rust resistance. Aug. 23 2 3/8 - 2 3/4", short-conic, medium dark 50-99% red, yellow ground, flesh tender to firm, slightly astringent, spicy, slightly full-flavored, juicy, scarf skin.

The following were developed by E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589826. Malus domestica Borkh.

PRI 2175-24. Pedigree - 'Raritan' x PRI1018-101(N.J.24<N.J.117637['Melba' x {'Wealthy' x 'Starr'}] x N.J.12/'Red Rome' x Melba/> x PRI47-147|'Jonathan' x "F2"26829-2-2-|) Selected 8/8/72. Comments:: Scab resistance from M. floribunda 821; excellent mildew resistance; excellent cedar rust resistance. No description other than very precocious. Moderately to heavily susceptible to fire blight. Sister of 'Red Free'. Goonewardene: Resistance to Red-banded leaf roller. "F2"26829-2-2=9433-2-2(Rome Beauty x M. floribunda 821) x 9433-2-8(Rome Beauty x M. floribunda 821).

The following were developed by C.S. Crandall. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589827. Malus floribunda Siebold ex Van Houtte

821. Pedigree - Wild. Comments:: Field immunity to (Venturia inaequalis{Cke}). Grown by Crandall from seeds received from Arnold Arboretum, at Harvard, Jamaica Plain, Massachusetts in 1908; species originated in Japan.

The following were developed by E.B. Williams. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589828. *Malus domestica* Borkh.

PRI 1569-3. Pedigree - NJ27 x PRI612-1 ('Stacking' Giant Limb x PRI14-126 <'Golden Delicious' x "F2"26829-2-2>) Selected 9/2/69. "F2"26829-2-2 = 9433-2-2 (Rome Beauty x *M. floribunda* 821) x 9433-2-8 (Rome Beauty x *M. floribunda* 821). Comments:: Scab resistance from *M. floribunda* 821; very good mildew resistance; excellent cedar rust resistance. Aug. 19, 2 7/8 - 3", conic to long-conic medium 50-100% red, yellow ground, flesh rough and bland, juicy to very juicy; large fruit, annual bearing, excellent, uniform bearing habit.

PI 589829. *Malus domestica* Borkh.

PRI 333-9. Pedigree - McIntosh x PRI69-118 ('Wolf River' x *M. x atrosanguinea* 804) Selected 9/6/56. Comments:: Race 5 (*Venturia inaequalis*) differential indicator. Scab resistance from *M. x atrosanguinea* 804. (Prt type). Good powdery mildew resistance. Sept. 6, 2.6" oblate, dark 90% red, green ground, heavy wax bloom, skin smooth, tender, thick; flesh white, coarse, firm tender, moderately dry; flavor mildly subacid; fair to poor quality.

The following were donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589830. *Malus domestica* Borkh.

PRI F2. Pedigree - "F2"9433-2-2 (*M. floribunda* 821 x Rome Beauty) x "F2"9433-2-8 (*M. floribunda* 821 x Rome Beauty).

The following were collected by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States. Developed by South Dakota Stat U. Dept. of Hort., Brookings, South Dakota, United States. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589831. *Malus baccata* (L.) Borkh.

Hansen's #1. Collected 1920 in Unknown. U.S.S.R. Comments:: Collected in Russia by Neils E. Hansen in 1920's as seed. Provided by J.A. Crosby. Purdue Univ.

The following were donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589832. *Malus prunifolia* (Willd.) Borkh.

Xanthocarpa. Pedigree - Formerly identified by Morton Arboretum as 591-25. Comments:: Fruit size: 0.8"; resistant to *Venturia inaequalis*. Yellow-green; round. Flower: single, pink, attractive. Tree: heavily cropping.

The following were collected by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States. Developed by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589833. *Malus baccata* (L.) Borkh.

Alexis. Collected 1919 in Unknown. Russia. Comments:: Originally brought from Russia by N.E. Hansen as seed in 1919. Fruit: very much

like Dolgo Crab, long conical, polished brilliant dark solid cherry crab with attractive blue bloom; flesh yellow acid. Tree: very productive, free from blight. Additional Lit.Cit. Hansen, N.E. 1940. S. Dakota Ag. Exp. St Bl. 339.

The following were developed by Morton Arboretum, Lisle, Illinois, United States. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589834. *Malus sikkimensis* (Wenzig) Koehne ex C. Schneider

Pedigree - 1363-24 resembles the specific description given by Rehder in 1940. Comments:: Fruit size 0.5"; resistant to *Venturia inaequalis*.

The following were donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589835. *Malus domestica* Borkh.

Russian #12740-7A. Pedigree - Russian seedling. Comments:: Used as an indicator in testing for chlorotic leaf spot virus, stem pitting virus and other viruses.

PI 589836. *Malus domestica* Borkh.

Cathay. Pedigree - Open pollinated.

PI 589837. *Malus domestica* Borkh.

Antonovka Monasir.

The following were collected by N.E. Hansen, Agricultural College of South Dakota, Brookings, South Dakota, United States. Developed by South Dakota State Univ., Dept. of Hort., Brookings, South Dakota, United States. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589838. *Malus baccata* (L.) Borkh.

Hansen's #2. Collected 1920 in Unknown. Russia. Pedigree - Wild. Comments:: Collected in Russia by Neils E. Hansen in 1920's collected as seed. Provided by J.A. Crosby, Purdue Univ.

PI 589839. *Malus baccata* (L.) Borkh.

Hansen's #3. Collected 1920 in Unknown. U.S.S.R. Pedigree - Wild. Comments:: Collected in Russia by Neils E. Hansen in 1920's collected as seed. Provided by J.A. Crosby, Purdue Univ.

The following were developed by Illinois Agricultural Experiment Station, Urbana, Illinois, United States. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 09/18/1987.

PI 589840. *Malus x zumi* (Matsum.) Rehder

Calocarpa. Pedigree - Dg-R27T48 and 49 resembles the specific description given by Rehder in 1940. Comments:: Fruit size: 0.4", resistant to *Venturia inaequalis*.

The following were developed by J. Hiatt. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture,

Geneva, New York 14456-0462, United States. Received 12/22/1987.

PI 589841. *Malus domestica* Borkh.

Delicious. Pedigree - Thought to be a seedling of Yellow Bellflower; first fruited in 1879. Comments:: Scions cut from suckers of the original Delicious tree. More than 150 red-fruited and spur-growth mutations. Most important apple variety in U.S. Fruit: size large, 65-90 mm; skin 50-100% red, striped or blushed; shape conic; flesh firm, creamy white; flavor sweet aromatic; eating quality good; harvest season early October; storage life at -0.5C long, 6 months. Tree: medium yields, annual cropping.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 12/22/1987.

PI 589842. *Malus domestica* Borkh.

Red Spy. Pedigree - Red-fruited mutation of Northern Spy. Received about 1975 from USDA Irrigated ARS Center, Prosser, WA. Comments:: A red-fruited mutation of Northern Spy received by the Prosser Repository from Oregon and tested negative for viruses on Virginia Crab, Spy 227 and Russian Seedling R 12740-7A. At Geneva, NY, fruits not as red as Field Spy. Red-fruited mutation of Northern Spy, virus tested. --R.D. Way, 1992.

The following were donated by Andersen, 3 Valley View Knoll, RR #6, Iowa City, Iowa 52240, United States. Received 12/22/1987.

PI 589843. *Malus ioensis* (Alph. Wood) Britton

The following were developed by C.E. Bennett, Ogden, Utah, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/14/1988.

PI 589844. *Malus domestica* Borkh.

Golden Winesap. Pedigree - Winesap x open-pollinated; introduced 1916. Comments:: Fruit: large, 75-85 mm; skin yellow-green ground, 40-60% pink blush, appearance similar to Winter Banana, except no suture line; shape round-conic; flesh firm, cream-colored, bitter pit; flavor slightly acid; eating quality fair; harvest season very late, first of November, 3 wks after Delicious; storage life at -0.5C 150 days. Tree: medium productive; alternate cropping. late, yellow with blush, resembles Winter Banana.

The following were developed by W.W. Smith, Royal Botanic Garden, (Regius Keeper), Edinburgh, Scotland, United Kingdom. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/14/1988.

PI 589845. *Malus domestica* Borkh.

Smith Jonathan. Pedigree - Large-fruited bud mutation of Jonathan; discovered about 1950; never introduced. Comments:: Fruit: larger than Jonathan, 75-90 mm; skin 100% dark red, blushed, Jonathan Spot; shape round-oblate, lobed; flesh firm, light yellow, sometimes severe water core and bitter pit; flavor like Jonathan; eating quality fair to good; harvest season few days earlier than Jonathan. Tree: more spreading than Jonathan; productive; annual cropping; fruit drops more than

Jonathan; leaves thicker. A Periclinal Cyto chimera 2-2-4-4 (Proc. Am.Soc.Hort.Sci. 81:56. 1963). R.D. Way, 1993. (Fruit Var. & Hort. Dig. 1951.).

The following were developed by J. Anderson, Driffield, England, United Kingdom. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/14/1988.

PI 589846. *Malus domestica* Borkh.

Crimson Superb. Pedigree - Red sport of Laxton's Supurb; first exhibited 1950. Comments:: Fruit: indistinguishable from Laxton's Superb, except more red color. A red sport of Laxton's Superb.

The following were developed by R.B. Alexander, Weatherford, Texas, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/14/1988.

PI 589847. *Malus domestica* Borkh.

Holland. Pedigree - Unknown; discovered 1921; introduced about 1925. Comments:: Fruit: size medium, 65-80 mm; skin 100% red; color pattern blushed; shape conic; flesh semifirm to soft, cream-colored; flavor subacid; eating quality better than fair; harvest season mid-September, 3 wks before Delicious. Tree: moderately productive; annual cropping. Early, bright red.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/14/1988.

PI 589848. *Malus domestica* Borkh.

Baxter. Pedigree - Known about 1800. Comments:: Size large 100:76 mm; shape flat to intermediate, rectangular, convex, slightly ribbed at eye and on body; skin green-yellow mottled and flushed red, dotted; flesh coarse, firm, greenish white; flavor insipid; season mid to late; tree upright. Large.

The following were developed by John Innes Horticultural Institute, Hertford, Herts, Bayfordbury, England, United Kingdom. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/14/1988.

PI 589849. *Malus domestica* Borkh.

Merton Ace. Pedigree - Laxton's Early Crimson x Epicure; raised 1948; named Merton Ace 1968; renamed Merton Knave 1970. Comments:: Fruit: size, medium, 70-75mm; skin 90-100% red, blushed color pattern, attractive; shape round-conic; flesh semi-firm, sometimes watercore, cream-colored, flavor subacid; eating quality fair; harvest season early mid-August, 6 wks before Delicious. Tree: not highly productive; leaves roll due to mildew infection; fruits drop as they ripen. Early attractive, English. R.D. Way, 1992.

The following were donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/14/1988.

PI 589850. *Malus domestica* Borkh.

Gales. Pedigree - Unknown; Robert Kurle (address below) received scions

from Milo Gibson, Oregon about 1970. Comments:: Fruit: size large, 75-80 mm; skin 90-100% red, striped, attractive; shape round-oblate; flesh semifirm, light yellow flavor subacid; eating quality good; harvest season mid- October, 3 days after Delicious. Tree: productive. Mid- season, red, good quality.

The following were developed by Frank Browning, Wallingford, Kentucky, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/14/1988.

PI 589851. *Malus domestica* Borkh.

Potomac. Pedigree - Unknown. Discovered in 1962 as an odd single tree in a plant ing; intro. 1970 by Bountiful Ridge Nursery, Princess Anne, MD. Comments:: Fruit: size medium to large, 70-85 mm; skin 90-100% red, striped, attractive; shape round-conic; flesh very firm, light yellow; flavor subacid, sometimes astringent; eating quality less than fair; harvest season mid-to late October, 2 wks after Delicious. Tree: productive; annual cropping; fire blight susceptibility rating 3. Large, red, late, mediocre quality. --R.D. Way, 1992.

The following were developed by Bowman. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/14/1988.

PI 589852. *Malus domestica* Borkh.

Ohio Nonpareil. Collected in Unknown. Massillon, Ohio, United States. Pedigree - Unknown; described 1848. Comments:: Fruit: size large, 75-80 mm; skin 80-90% dull red, striped; shape round-conic; flesh firm, yellow; flavor subacid; eat- ing quality better than fair; harvest season mid-October, 1 wk after Delicious. Tree: nonprecocious; not productive; annual bearer; fruits drop as they ripen. Non-precocious, medium yields, red, mid-October. R.D. Way, 1992.

The following were developed by Garfield Shults, Homedale, Idaho, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/14/1988.

PI 589853. *Malus domestica* Borkh.

Coconut Crunch. Pedigree - Northern Spy x Delicious; introd. about 1982. Comments:: Fruit: size very large, 85-90 mm; skin 80% red, striped, shape conic, ribbed; flesh hard, yellow, water core, bitter pit; flavor subacid; eating quality fair; harvest season late October. Tree: not productive. Very large, red,hard.

The following were developed by Iowa State Univ. Dept. of Horticulture, Ames, Iowa, United States. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/14/1988.

PI 589854. *Malus domestica* Borkh.

Chieftan. Pedigree - Jonathan x Delicious; crossed by S.A. Beach in 1917; introd. 1966. Comments:: Fruit: averages between Jonathan and Delicious in size; symmetrical, slightly conic; skin bright red, solid color- ing, smooth; flesh firm, juicy, subacid; flavor good to excellent, milder than Jonathan, more sprightly than Delicious; excellent storage qualities, free of Jonathan spot. Tree: hardy; strong framework; moderately vigorous; resembles Jonathan; productive; relatively resistant to apple scab and fireblight. Resembles Delicious.

The following were developed by Aomori Apple Expt. Sta., Kuroishi, Aomori, Japan. Donated by Roger D. Way, Cornell University, New York State Agric. Exp. Station, Department of Horticulture, Geneva, New York 14456-0462, United States. Received 01/14/1988.

PI 589855. *Malus domestica* Borkh.

Murasaki. Pedigree - Jonathan x Delicious; crossed 1935; named 1948. Comments:: Fruit: size medium, 70-75 mm; skin 80-90% dark red blush, attractive; shape round-conic; flesh firm, cream-colored; flavor slightly acid; eating quality fair; harvest season late October, 3 wks after Delicious. Tree: very productive; somewhat biennial. Attractive, firm, late. R.D. Way, 1992.

The following were developed by A.H. Mullins. Donated by Bountiful Ridge Nurseries, Princess Anne, Maryland 21853, United States. Received 03/24/1940.

PI 589856. *Malus domestica* Borkh.

Yellow Delicious; C 21333; GMAL 2612. Collected in Unknown. Chance seedling in Clay County, West Virginia, USA. Pedigree - Possibly Grimes Golden x. Comments:: Size med. 70:65-69mm; shape intermediate to tall, rectangular-conic, convex, ribbed on body and at eye; skin yellow, occasional orange flush, welter and dotted russet, flesh crisp, yellowish white, flavour sweet, season late to very late; stalk long; Good keeper. Good disease resistance. Tree spreading, very vigorous, bears young and heavily. Widely grown throughout the world. - Originated 1890; intro; 1914; self fruitful but yields improved when pollinated by Lodi, Jonathan, Melrose or Red Delicious. Excellent pollinator for other apples.

The following were donated by J. H. Waring, University of Maine, Orono, Maine 04469, United States. Received 09/03/1946.

**PI 589857. *Malus pumila* Miller
Niedzwetzkyana; GMAL 2613.**

Unknown source. Received 09/21/1960.

**PI 589858. *Malus* sp.
97; GMAL 2614.**

Unknown source. Received 09/21/1960.

**PI 589859. *Malus prunifolia* (Willd.) Borkh.
240; GMAL 2615.**

Unknown source. Received 09/21/1960.

**PI 589860. *Malus* sp.
107; GMAL 2616.**

Unknown source. Received 09/21/1960.

**PI 589861. *Malus* sp.
179; GMAL 2617.**

The following were donated by Bruce J. Parlman, USDA, ARS, Natl. Germplasm Resources Laboratory, 11601 Old Pond Drive, Glenn Dale, Maryland 20769-9157, United States. Received 02/01/1988.

PI 589862. *Malus hybrid*

Irene; A 13268; AP-C-38; B 53957. Comments:: Virus indicator.

The following were donated by The Swedish University, Division of Fruit-Breeding, S-291 94, Balsgard, Kristianstad, Sweden. Received 03/21/1985.

PI 589863. *Malus domestica* Borkh.

Bemali; C 15714; BE9860; GMAL 2699. Comments:: NOTE: The inventory GMAL 2699.03 was indexed for three different viruses (SP, SG, CLS) and were found negative, 5/28/1992. However, symptoms suggest another virus present on Radiant indicator.

The following were donated by Bruce J. Parlman, USDA, ARS, Natl. Germplasm Resources Laboratory, 11601 Old Pond Drive, Glenn Dale, Maryland 20769-9157, United States; Hortus Botanicus, Academiae Scientiarum 229021, Salaspils, Latvia. Received 02/10/1988.

PI 589864. *Malus x hartwigii* Koehne

PI 589865. *Malus x hartwigii* Koehne

PI 589866. *Malus x hartwigii* Koehne

PI 589867. *Malus x hartwigii* Koehne

PI 589868. *Malus x hartwigii* Koehne

The following were donated by Curator, National Clonal Germplasm Repository, 33447 Peoria Road, Corvallis, Oregon 97330, United States. Received 02/10/1988.

PI 589869. *Malus asiatica* Nakai
Collected in China.

PI 589870. *Malus asiatica* Nakai
Collected in China.

PI 589871. *Malus asiatica* Nakai
Collected in China.

PI 589872. *Malus asiatica* Nakai
Collected in China.

PI 589873. *Malus asiatica* Nakai
Collected in China.

The following were donated by Norman F. Weeden, Cornell University, New York State Agric. Exp. Station, Department of Horticultural Sciences, Geneva, New York 14456, United States; Cheng Suozhan, Chinese Academy of Agric. Sciences, Institute of Pomology, China. Received 02/10/1988.

PI 589874. *Malus asiatica* Nakai
Collected in China.

PI 589875. *Malus asiatica* Nakai
Collected in China.

PI 589876. *Malus asiatica* Nakai
Collected in China.

PI 589877. *Malus asiatica* Nakai
Collected in China.

PI 589878. *Malus asiatica* Nakai
Collected in China.

PI 589879. *Malus honanensis* Rehder
Collected in China. Pedigree - Introd. into US by Arnold Arboretum in 1921. Comments:: Not particularly ornamental, but foliage can turn a brilliant red in the fall. Flower: single; 20 mm diam; white. Fruit: small, 10 mm, orange, round. Leaves: small, lobed.

PI 589880. *Malus honanensis* Rehder
Collected in China.

PI 589881. *Malus honanensis* Rehder
Collected in China.

The following were donated by Curator, National Clonal Germplasm Repository, 33447 Peoria Road, Corvallis, Oregon 97330, United States. Received 02/10/1988.

PI 589882. *Malus doumeri* (Bois) A. Chev.
Collected in Taiwan.

The following were developed by South Dakota Agr. Exp. Station, Brookings, South Dakota, United States. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589883. *Malus domestica* Borkh.
Anoka. Pedigree - Mercer x Duchess Selected 1918; intro. 1920. For proper pollination and best yields, plant near other varieties. Comments:: Fruit: Big yellow apple striped and heavily overlaid with red. Mild subacid flavor good for culinary use - sauce and pies before ripening. Quality poor. Tree: Very hardy, bears very young, productive, grows 15-20 ft. tall. Moderately resistant to fireblight. Ripens in September.

The following were donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589884. *Malus domestica* Borkh.
Baldwin. Collected 1740 in Unknown. Lowell, MA. Farm of John Ball. Pedigree - Chance seedling. Comments:: Most widely planted of New England by 1852. Most widely planted in the US until late 1920's. Most important in NY from 1910-40's. Fruit: large, winter tough, smooth bright red with white stars; flesh crisp, firm, juicy, aromatic yellowish. Adds spiciness and aroma to cider. Excellent keeper. Tree: vigorous; biennial but can be regulated by pruning and thinning.

Triploid. Ripens late Sept. to Nov. depending on location. Additional LIT.CIT. 1992-93 H. Apple. Tsolum River Fruit Trees Catalogue. p. 13.

The following were developed by Univ. Minn. Fruit Breeding Farm, Excelsior, Minnesota, United States. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589885. Malus domestica Borkh.

Beacon. Pedigree - (Minn 243) Malinda x Wealthy Developed in Minnesota; Intro: 1936. NOT Fenton var. described in 1873. Comments:: Fruit medium to large w/tough, solid red skin. Flesh juicy, mildly subacid. Excellent early eating apple, good for cooking. Tree: vigorous, productive, heavy bearing. Ripens over a long period during summer. Hardy to -50D F with occasional winter injury. Resistant to fireblight and scab; susceptible to cedar rust. Superior to Maiden Blush, Duchess, Wealthy.

The following were developed by W.H. Chandler. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589886. Malus domestica Borkh.

Beverly Hills. Pedigree - Melba x Early McIntosh Seeds sown 1939; first fruit 1942; introduced commercially 1945. Tested as UCLA 302. Comments:: Size medium to large 64-75:50-61 mm; shape flat to intermediate, rectangular, convex, ribbed at eye and slightly on body; skin pale, greenish yellow, orange red flush, streaked dark red, russet dots, smooth, thin, tender, a little sticky flesh: scented, soft, tender, firm, white; flavor slightly subacid. Season second-early. Very good for fresh eating and cooking. Requires 300 - 500 hours of chilling.

The following were developed by J. Thompson, Unknown. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589887. Malus domestica Borkh.

Blairmont. Pedigree - Released 1982. Comments:: Fruit: 3" diam. dark red over pale yellow skin. Ripens 12 days after full bloom. Blossoms have good frost tolerance. Trees have not been attacked by powdery mildew. Moderately resistant to black rot and bitter rot. Ripens early. Especially well adapted to the Southeast where high temperatures often prohibit growing high quality apples. "In both appearance and quality, Blairmont is rated very good to excellent" - Hortscience.

The following were developed by J.H. Dickey. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589888. Malus domestica Borkh.

Blaxstayman. Collected 1926 in Unknown. Wenatchee, Washington, discovered about 1926. Pedigree - Sport of Stayman Winesap Intro: 1930. Comments:: Size medium; shape intermediate, truncate-conic, convex; skin almost entirely flushed carmine and dark red, flesh soft, cream-tinged green; flavor sweet; season late. Much higher percentage of extra fancy fruit than parent.

The following were developed by M.J. Dorsey, University of Minnesota, St.

Paul, Minnesota, United States. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589889. *Malus domestica* Borkh.

Blaze. Pedigree - Collins x Fanny; cross made in 1938; selected in 1951; test- ed as Ill. 17. Comments:: Mild red Jonathan-type apple that ripens three weeks earlier Flavor somewhat less tart than Jonathan. Tree: upright spreading; vigorous; productive. Moderately susceptible to apple scab, cedar, apple rust, black rot. Moderately resistant to apple botch, powdery mildew and fireblight.

The following were donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589890. *Malus domestica* Borkh.

Chehalis. Pedigree - Developed north of Chehalis, Washington, near Oakville. Parentage unknown. Discovered 1955; selected 1962; Intro: 1965. Comments:: Large greenish yellow apple usually with pink blush on exposed side. Resembles Golden Delicious in looks and flavor, but large, crisper and more elongated. Crisp, cream colored flesh. Medium-fine texture. Good baking apple. Moderately vigorous tree is self-pollinating. Highly scab resistant; somewhat mildew resistant. Excellent for organic growers who like a big sweet, yellow apple. Ripens late Sept. to mid-October. Keeps well in cold storage.

PI 589891. *Malus domestica* Borkh.

Geneva Black.

PI 589892. *Malus domestica* Borkh.

Golden Russet. Collected in Unknown. Thought to be English or Burlington County, New Jersey. Pedigree - Known since mid 1700's. Seedling of English Russet. Described by Downing in 1845. Comments:: Size medium 70:57 mm; shape intermediate to flat, truncate- conic, convex; skin yellowish russet with occasional bright red tinge, thick; flesh firm crisp, pale yellow; flavour sweet, aromatic, very sugary juice, used for cider, dried apples, fresh eating and cooking. Season late to very late. Excellent keeper. Dec-April. Vigorous, medium to large tree, requires cross-pollination. Scab resistant, suffers little from pests.

The following were developed by F.S. Howlett. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589893. *Malus domestica* Borkh.

Holly. Pedigree - Jonathan x Delicious. Cross made 1952; Intro. 1970. Selected 1961; tested as 8408. Comments:: Fruit: medium-large, oblong conic; skin completely covered with cherry red, smooth, thick; flesh subacid, texture excellent; less tendency to become mealy in storage than Delicious; ripens about 8 days after Delicious, Oct. 20 at Wooster. Tree: medium-large, spreading, vigorous, hardy, moderately productive.

The following were developed by Univ. of Minnesota, St. Paul, Minnesota, United States. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589894. *Malus domestica* Borkh.

Keepsake. Pedigree - MN 447(o.p. Malinda) x Northern Spy; cross made

1936; selected 1947; introduced 1979; tested as Mn 1593. Comments:: Unattractive, irregularly shaped, 2.25-2.75" diam. 90% red. Flesh fine grained, very crisp, juicy, light yellow; aromatic flavor. Very hardy when picked. Mellows with age- peak fresh eating quality in Jan. or Feb. Keeps in storage through April. Ripens mid-Oct. to mid-Nov., depending on location. Tree: moderately vigorous spreading. Resistant to fire blight and cedar apple rust. Hardy through Minnesota, but may not mature in northernmost counties. Withstands temp. -40 degrees F.

The following were developed by Richard Wellington. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589895. *Malus domestica* Borkh.

Macoun. Pedigree - McIntosh x Jersey Black Seed produced 1909; first fruit described 1918; introduced for trial 1923. Comments:: Size medium 65:49 mm; shape flat, rectangular; dark purplish red blush over green background. Firm aromatic white flesh. Drops readily-bruises easily. Medium size, vigorous hardy, spur-type, productive tree. Upright habit, needs training and thinning, biennial. Very resistant to fire blight. Blooms late. Ripens several weeks after McIntosh. One of the highest quality eating apples known. Storage 110 days at 31 degrees F.

The following were developed by E.W. Daniels. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589896. *Malus domestica* Borkh.

Northwest Greening. Pedigree - Golden Russet x Alexander Introduced in 1872. Waupaca County. Comments:: Popular old winter variety. Large to very large. Handsome, up to 5" across. Waxy smooth, pale green skin with hint of yellow, turns to yellow mature. Juicy, mild subacid flavor. Excellent cooking apple, especially for pies. Known for keeping qualities, keeps well into winter. Used as a late- season pollinator. ripens during October. Hardy to -50 deg Biennial.

The following were developed by Univ. of Minnesota Fruit Breeding Farm, Excelsior, Minnesota, United States. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589897. *Malus domestica* Borkh.

Oriole. Pedigree - Yellow Transparent x Livland Raspberry. Seed sown 1914, selected 1923, introduced 1949. Tested as Minn. 714. Comments:: Size medium to large 60-73:57-69 mm; shape intermediate to tall, rectangular convex, ribbed at eye and on body; skin yellow with pink flush and streaks; flesh soft, coarse, creamy white; flavor slightly sweet, slightly subacid. Excellent for eating and cooking. Season early. Tree: vigorous, extremely productive, heavy annual cropper. Hardy to -50 degrees F with occasional winter injury.

PI 589898. *Malus domestica* Borkh.

Prairie Spy. Pedigree - Introduced 1940. Parentage unknown, seed planted in 1914, selected in 1923, tested as Minn. 1007. Comments:: Size medium to large 61-75:52-62 mm; shape flat, rectangular convex. not ribbed; skin green to yellowish green, striped and blotched dull orange-red, whitish grey dots, very sticky tough; flesh firm, fine, greenish white; flavor sweet sub- acid, crisp, juicy, excellent flavor for all purpose. Season late. Tree: hardy, vigorous, long-lived annually productive. Some resistance to apple scab and cedar apple rust. Matures in Oct. Resembles Northern Spy.

The following were donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589899. *Malus domestica* Borkh.
Red Baron.

The following were developed by Dummer. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589900. *Malus domestica* Borkh.
Discovery. Collected in Unknown. Originated in England around 1900. Pedigree - Worcester Pearmain x ? Beauty of Bath; Commercial Grower No. 2345 p. 725 IRHS; Raised circa 1949; transplanted 1955. Pollinate with Gravenstein Lodi or Summer Red. Comments:: Size medium to large 60-77:45-61 mm; shape flat, rectangular to truncate-conic, convex, slight ribbing at eye, very even; skin pale greenish yellow, flushed bright red, light dots, fine scattered russet, solid russet at base. Flesh crisp, yellowish white tinged pink, excellent flavor. Some resistance to scab. Ripens from early to mid-August depending on location. Not a keeper. fruit tends to crack. Hardy compact tree - natural semi-dwarf. Flowers frost resistant. Additional LIT.CIT. 1992-93. H. Apple. Tsolum River Fruit Trees Catalogue. p. 16.

The following were developed by Univ. of Minnesota Fruit Breeding Farm, Excelsior, Minnesota, United States. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589901. *Malus domestica* Borkh.
Redwell. Pedigree - Scott's Winter open-pollinated. Seed sown circa 1911, selected 1923, introduced 1946; tested as Minn. 638. Comments:: Size medium to large 67-76;:57-69 mm; shape tall, sometimes flat, rectangular, sometimes truncate-conic, convex, sometimes ribbed at eye and slightly on body; skin greenish yellow, flushed reddish orange, carmine streaks, russet at base, russet dots, patches and netting; flesh a little soft, greenish white; flavor subacid, mild, excellent; season mid-late. Vigorous tree - strong framework, bears annually. Partially dwarfing; medium susceptibility to cedar rust and scab. Storage until Jan.

The following were donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589902. *Malus domestica* Borkh.
Regent.

PI 589903. *Malus domestica* Borkh.
Smokehouse. Collected in Unknown. Originated on the Farm of William Gibbons, Lancaster County, near Millcreek, PA. Pedigree - Before 1837. Thought to be a seedling of Vandevere of Delaware and Pennsylvania. Comments:: Size large 84;64 mm; shape flat, rectangular to truncate-conic, convex, not ribbed; skin yellow or greenish, mottled dull red, sometimes flushed bright red, striped carmine, russet dots; flesh rather firm, moderately fine and tender, crisp, slightly tinged yellow, flavor subacid, slightly aromatic; season mid to very late. Vigorous tree, requires pruning. Reliable. Subject to apple scab. Fresh cider

flavor.

PI 589904. *Malus domestica* Borkh.
Smoothgold.

The following were developed by David Wildung, University of Minnesota, North Central Experiment Station, 1865 Highway 169 E, Grand Rapids, Minnesota 55744, United States; Wes Gray, West Central Experiment Station, Morris, Minnesota 56267, United States; C. Stushnoff, Department of Horticultural Science, University of Minnesota, St. Paul, Minnesota, United States; S. Munson; L.B. Herty. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States . Received 02/15/1988.

PI 589905. *Malus domestica* Borkh.

State Fair. Pedigree - Mantet x Orile. Introduced 1978. Cross made 1949, selected 1959, tested as MN 1639. Comments:: Round-conic, medium size fruit is brilliantly striped with reddish orange over a yellow background. Creamy flesh is juicy, aromatic, sweet and firmer than most early varieties. Moderately subacid flavor. Excellent for fresh eating. Keeps well for a summer apple. Somewhat susceptible to scab and mildw. Ripens uniformly-early to late August, depending on location. Cold hardy to -40 degrees F. Highly susceptible to fire blight.

PI 589906. *Malus domestica* Borkh.

Sweet Sixteen. Pedigree - MN 477 (Malinda open-pollinated) x Northern Spy Cross made by Alderman in 1937; selected in 1950, tested as MN 1630. Introduced 1979. Comments:: Red striped conic fruit up to 3". Aromatic, moderately acid; firm, crisp, cream-colored flesh. Unique, pleasing faintly nutty flavored cooking apple. Excellent for pice, sauce, dessert. Handles and stores well. Early bearing, late blooming tree with moderately spreading, vigorous habit. Dependable annual bearer. Resistant to scab & fire blight. Extremely cold-hardy variety; can withstand -50 degrees F with occasional winter injury. {Addendums & Regtrs. of Apple, List 35; Hort Sci Vol.26(8)}.

The following were donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589907. *Malus domestica* Borkh.

Transcendent Crab. Pedigree - x *adstringens* clons. Grown before 1844. Comments:: One of the largest of the Siberian crab apples. Medium to large round-oval fruit, flattened at the ends. Slightly, but regularly ribbed. Golden yellow with rich crimson cheek sometimes nearly covered with red. Juicy, creamy yellow flesh - fine flavor. Long slender stalk. Open deep cavity. Closed calyx. Good for fresh eating; excellent for jelly. Poor storage ability. Beautiful, heavy bearing, medium size tree. Ripens late August to September. Considered one of the best economic crab apples but often severely infested with fire blight. Hardy. 600 hrs. chilling.

The following were developed by A.R. Whitney. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589908. *Malus* hybrid

Whitney Crab. Pedigree - Described by Warder in 1869. Comments:: Round to conic crab apple; often larger than a golf ball. Uniform in size and shape. Light greenish yellow with red blush or stripes. Sweet juicy yellowish flesh. Mildly subacid with slight crab apple flavor.

Favorite for home canning, preserving, pickling and spicing. Fair keeper. Narrow, upright trees bear heavily even when young. Pink and white blossoms. Plant 2 or more trees for top yield. Ripens late July to late August depending on location. Requires 600 hrs chilling. One of the most popular of the economic crabapples.

The following were donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589909. *Malus domestica* Borkh.

York. Pedigree - Possibly in existence 1905; Described 1869. Comments:: Size medium; shape intermediate, rectangular to conic, convex; skin pale yellow with slight red flesh; flesh tender whitish; flavour subacid; season mid. Good to very good for culinary uses.

The following were developed by John W. Dudley, University of Illinois, Department of Agronomy, 1102 S. Goodwin Avenue, Urbana, Illinois 61801, United States. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589910. *Malus domestica* Borkh.

Dudley. Pedigree - Open-pollinated seedling of Duchess of Oldenburg. Intro: 1891. Comments:: Medium-large uniform fruit. Bright greenish yellow skin, splashed and striped with red. Yellow-tinged flesh, firm, crisp, very juicy. Brickly subacid flavor becoming mild in storage. Excellent for sauce and baking. Reasonable keeper. Moderately vigorous tree; very hardy and productive. Hardy to -50 degrees F. Season September - October.

The following were donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/15/1988.

PI 589911. *Malus domestica* Borkh.

Hibernal. Pedigree - Said to have gone to Russia in 1870. Recorded in the USA in 1880. Comments:: Size medium to large 65-75:50-61 mm; shape flat to intermediate, truncate-conic, convex, ribbed at eye and on body; skin greenish yellow, orange-red flush with crimson splashes russet in cavity and on base; flesh firm, coarse, yellowish white; flavor acid, astringent; season, mid. Tree: useful for top-working as it imparts some hardness to tender varieties. Hardy to -50 degrees F. {Additional Lit. Cit: Dolan. 1981. Apple Cult. p.64}.

PI 589912. *Malus hybrid*

Hyslop Crab. Pedigree - Unknown, but long before 1869. Comments:: Fruit: med to large, uniform, roundish ovate, sometimes inclined to oblong; clear pale yellow skin, overspread with lively dark red shading to deep carmine skin; flesh yellow, tinge of red next to skin; moderately fine, juicy but becoming dry and mealy. Flavor: subacid, astringent, good for culinary purposes. Season Sept.-Oct. Tree: Good grower, reliable, biennial cropper. Often severely infested with fire blight.

PI 589913. *Malus domestica* Borkh.

Dorsett Golden. Comments:: LOW CHILLING VARIETY. Medium size golden yellow apple for warm winter areas. Crisp, firm, sweet flesh; often seedless good for fresh eating, cooking, canning and freezing. Stores up to three months without getting mealy. Upright, vigorous, early bearing tree. Self-fruitful. Excellent yellow apple for southern and coastal

areas. Successful, even during hot southern summers. Produced - southern California & Phoenix, Ariz. area. Ripens June-July depending on location. Chilling requirement very low, less than 100 hrs.

The following were donated by L.J. Vander Brock, Plantenzicktan Dienst, Postbus 9102, 6700 H.C. Wageningen, Netherlands. Received 03/17/1988.

PI 589914. *Malus domestica* Borkh.
Beatrix.

PI 589915. *Malus domestica* Borkh.
Dubbele Zoete Aagt.

The following were developed by Hazelbag, Wageningen?Rockange?, Gelderland, Netherlands. Donated by L.J. Vander Brock, Plantenzicktan Dienst, Postbus 9102, 6700 H.C. Wageningen, Netherlands. Received 03/17/1988.

PI 589916. *Malus domestica* Borkh.
Glorie van Holland. Pedigree - Raised circa 1890. Comments:: Size medium, shape intermediate, truncate-conic, convex not ribbed; skin yellow with red flush and stripes, sometimes russet; flesh medium to slightly tough; flavor slightly acid slightly sweet, season mid.

The following were donated by L.J. Vander Brock, Plantenzicktan Dienst, Postbus 9102, 6700 H.C. Wageningen, Netherlands. Received 03/17/1988.

PI 589917. *Malus domestica* Borkh.
Jamba.

The following were developed by Plant Breeding Laboratory, Wageningen, Netherlands. Donated by L.J. Vander Brock, Plantenzicktan Dienst, Postbus 9102, 6700 H.C. Wageningen, Netherlands. Received 03/17/1988.

PI 589918. *Malus domestica* Borkh.
Jan Steen. Pedigree - Sterriennette (Reinette Rouge Etoilee) x Cox's Orange Pippin. Received 1955. Comments:: Size medium to large 64-76:57-64 mm; shape intermediate, truncate-conic, convex, ribbed at apex, not or slightly ribbed on body, lipped; skinlight greenish yellow, almost completely flushed deep pink to crimson slightly striped, russet dots and streaks; flesh fairly crisp, fine, cream; flavor slightly acid; season mid to very late; tree upright.

The following were donated by L.J. Vander Brock, Plantenzicktan Dienst, Postbus 9102, 6700 H.C. Wageningen, Netherlands. Received 03/17/1988.

PI 589919. *Malus domestica* Borkh.
Korallo.

The following were developed by P. Lombarts. Donated by L.J. Vander Brock, Plantenzicktan Dienst, Postbus 9102, 6700 H.C. Wageningen, Netherlands. Received 03/17/1988.

PI 589920. *Malus domestica* Borkh.
Lombart's Calville. Pedigree - Said to be a seedling or selection of Calville Blanc d'Hiver Raised 1906, introduced 1911. Comments:: Size medium to large 67-74; 58-68 mm; shape intermediate to tall, truncate-conic, convex, strongly ribbed eye and body; skin yellow, greasy, flesh firm, fairly coarse, soft cream; flavor sweet subacid,

season mid to very late.

The following were developed by A.A. Schaap. Donated by L.J. Vander Brock, Plantenzicktan Dienst, Postbus 9102, 6700 H.C. Wageningen, Netherlands. Received 03/17/1988.

PI 589921. *Malus domestica* Borkh.

Odin. Pedigree - Golden Delicious x Ingrid Marie Cross made 1953, selected 1959. Introduced under license 1966. Comments:: Size medium; shape tall to intermediate, rectangular, convex slightly ribbed at eye; skin pale yellow, flushed deep red; flavor subacid; season mid.

The following were developed by Horticultural Laboratory, Wageningen, Netherlands. Donated by L.J. Vander Brock, Plantenzicktan Dienst, Postbus 9102, 6700 H.C. Wageningen, Netherlands. Received 03/17/1988.

PI 589922. *Malus domestica* Borkh.

Primus. Pedigree - Reinette Rouge Etoilee x Cox's Orange Pippin Raised 1935. Comments:: Size large; shape intermediate, truncate-conic, straight, ribbed at eye; skin greenish yellow to yellow, striped orange-red, russet dots and straks, rough, greasy; flesh soft, coarse, creamy white; flavor very sweet; season late.

The following were donated by L.J. Vander Brock, Plantenzicktan Dienst, Postbus 9102, 6700 H.C. Wageningen, Netherlands. Received 03/17/1988.

PI 589923. *Malus domestica* Borkh.

Red Dijmanszoet.

PI 589924. *Malus domestica* Borkh.

Sweet Caroline.

PI 589925. *Malus domestica* Borkh.

Zoete Ermgaard. Pedigree - Known since 1864; Zoete Ermgaard (original name). Comments:: Size medium 56-68:48-66 mm; shape tall, conic, convex to straight ribbed base to apex, a little asymmetric; skin yellow with dull orange-red flush and broken stripes, patched and netted russet, rather rough and tough; flesh firm, crisp; coarse, dry, creamy white, flavor sweet, slightly subacid; season mid to late; late flowering.

PI 589926. *Malus domestica* Borkh.

M.10. Collected in United Kingdom.

PI 589927. *Malus domestica* Borkh.

M.11. Collected in United Kingdom.

PI 589928. *Malus domestica* Borkh.

M.13. Collected in United Kingdom.

PI 589929. *Malus domestica* Borkh.

M.16. Collected in United Kingdom.

The following were donated by James N. Cummins, New York State Agric. Exp. Station, Department of Horticultural Sciences, Geneva, New York 14456-0462, United States. Received 04/15/1988.

PI 589930. *Malus prunifolia* (Willd.) Borkh.

Naga. Collected in Japan.

PI 589931. *Malus domestica* Borkh.

Maruba. Collected in Japan.

- PI 589932. *Malus prunifolia* (Willd.) Borkh.
M0-84. Collected in Japan. Comments:: Weeping.

The following were collected by Norman F. Weeden, Cornell University, New York State Agric. Exp. Station, Department of Horticultural Sciences, Geneva, New York 14456, United States. Received 07/14/1988.

- PI 589933. *Malus fusca* (Raf.) C. Schneider
Collected 07/10/1988 in Oregon, United States. Ellmaker State Park, Lincoln Co., Oregon on Hwy 20 near edge of grass at top of bank above creek; with prunus, Crataegus. Pedigree - Wild. Comments:: Tree ca. 5 cm. DBH, many secondary trunks.
- PI 589934. *Malus fusca* (Raf.) C. Schneider
Collected 07/10/1988 in Oregon, United States. Ellmaker State Park, Lincoln Co. Oregon on Hwy 20 near edge of grass at top of bank above creek, with Prunus, Crataegus. Pedigree - Wild. Comments:: Tree 5 cm. DBH; one cutting may have been from 88103.
- PI 589935. *Malus fusca* (Raf.) C. Schneider
Collected 07/10/1988 in Oregon, United States. South Beach State Park, Lincoln Co., Oregon, along old road to clearing off service road; in salal, Alnus, pine. Pedigree - Wild. Comments:: Several trees ca. 20 ft. high; fruit immature.
- PI 589936. *Malus fusca* (Raf.) C. Schneider
Collected 07/10/1988 in Oregon, United States. In swamp off Hwy 101 at turnoff to South Beach State Park, Lincoln Co., Oregon. Pedigree - Wild. Comments:: Small bent tree ca. 20 ft. high - With Alnus pine, Himalaya Berry, Crataegus, Rhododendron; many other trees/ bushes of *M. fusca* present.
- PI 589937. *Malus fusca* (Raf.) C. Schneider
Collected 07/10/1988 in Oregon, United States. Ona Beach State Park, Lincoln Co., Oregon just N. of parking area, along rocks near water. Pedigree - Wild. Comments:: Shrub ca. 1.5 m. high, branches stiff, thick. Plant nearly finished blooming, styles united at base. Young leaves thick, pubescent. This plant and several others at the site were definitely shrubby. Others at the site were arboreous as were those seen earlier.
- PI 589938. *Malus fusca* (Raf.) C. Schneider
Collected 07/10/1988 in Oregon, United States. Across from 2nd to southernmost entrance to Bardonia State Park on Park Loop; between road and lagoon on steep, heavily vegetated slope. With, Alnus, Rhamnus, pine. Pedigree - Wild. Comments:: Tree ca. 25 ft. tall; no flowers or fruit observable. A second tree in the same locality also lacked observable fruit.
- PI 589939. *Malus fusca* (Raf.) C. Schneider
Collected 07/11/1988 in California, United States. Adjacent to sand dune off dirt road leading to ocean beach South of mouth of Smith River, Del Norte Co., CA. Pedigree - Wild. Comments:: Shrubby tree with one main trunk, but branching profusely above. Few fruit observable, nearby plant had fruit.
- PI 589940. *Malus fusca* (Raf.) C. Schneider
Collected 07/11/1988 in California, United States. Adjacent to Kellogg Rd. to beach ca. 100 m. from beach with *Lonicera*, *Salix*, marsh grass; ground dry but probably moist to wet much of the year. Pedigree - Wild. Comments:: Several low bushy trees ca. 4 m. high; sufficient fruit on

several individuals to warrant returning in Fall.

PI 589941. *Malus fusca* (Raf.) C. Schneider

Collected 07/11/1988 in California, United States. Trailhead on state park land on Kellogg Rd, about 200 m from beach, south of mouth of Smith River, Del Norte Co, CA. Pedigree - Wild. Comments:: Large round tree ca. 30 ft. high, growing in marshy habitat, low drainage ditch for immediate area, ground presently firm but probably muddy most of the year; largest plant seen to date, plenty of fruit.

PI 589942. *Malus fusca* (Raf.) C. Schneider

Collected 07/11/1988 in California, United States. About 10 m. from 88114. (Trailhead on state park land on Kellogg Rd., about 200 m. from beach, south of mouth of Smith River, Del Norte Co, CA.). Pedigree - Wild. Comments:: Many other individuals nearby; younger plants present; seed from previous year's fruit collected.

PI 589943. *Malus domestica* Borkh.

Collected 07/12/1988 in California, United States. Kneeland Rd. ca. 1.3 mi. west of Barry Rd, between fence and road, dry ridge open grassland. Pedigree - Wild. Comments:: Small tree ca. 15 ft. tall; probably not *M. fusca* but fruit not available.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/22/1988.

**PI 589944. *Malus domestica* Borkh.
Kinsei.**

The following were developed by East Malling Research Station, Maidstone, England, United Kingdom. Donated by A.I. Campbell, Long Ashton Research Station, Long Ashton, Bristol, England B518 9AF, United Kingdom. Received 08/22/1988.

PI 589945. *Malus domestica* Borkh.

Michaelmas Red. Pedigree - McIntosh x Worcester Pearmain Raised 1929, selected about 1940. Introduced in England 1945, Canada and U.S. 1946. Comments:: Size medium 56-63:57 mm; shape intermediate, truncate-conic, convex; skin pale, greenish yellow, streaked pale red, nearly covered deep even crimson, tends to go very dark on keeping; flesh rather soft, greenish white; flavor sweet, subacid; season mid to late. Tree: moderately vigorous, upright-spreading; spurs very freely. Unattractive dessert apple, small for commercial growing.

The following were developed by E.B. Williams. Donated by Hilary F. Goonewardene, Purdue University, Dept. of Entomology, Entomology Hall, W. Lafayette, Indiana 47907, United States. Received 08/25/1988.

PI 589946. *Malus domestica* Borkh.

PRI 1732-2. Pedigree - 'McIntosh' x 703-2 (P.I.172633 'Antonovka' x 'Jonared') Selected 9/2/69. Comments:: Scab resistance from Antonovka - P.I.172633; very good mildew resistance; excellent cedar rust resistance. Sept. 10, 2 - 2 1/4" round, very-bright 50-100% medium red, green ground, flesh firm, crisp, bland, bitter, juicy. Goonewardene: Resistance to Plum Curculio and red-banded leaf roller.

PI 589947. *Malus domestica* Borkh.

PRI 2138-1. Pedigree - PRI 1018-101 (N.J.24 [N.J.117637 {'Melba' x 'Wealthy' x 'Starr'}] x N.J.12 ['Red Rome' x 'Melba']) x PRI 47-147 \ 'Jonathan' x "F2"26829-2-2\ x 'Vista Bella'. Selected 7/26/91.

Comments:: July 26, 2 3/8 - 2 1/2, round, washed and slightly striped medium 50-100% purple-red to red; yellow ground; very conspicuous lenticals; cream flesh, firm, very attractive. Scab resistance from *M. floribunda* 821. Tendency for fruit to drop. Goonewardene: resistance to codling moth and plum curculio.

PI 589948. *Malus domestica* Borkh.

PRI 1841-11. Pedigree - McIntosh x 703-1 (P.I. 172622 'Antonovka' x 'Jonared') Selected 8/18/69. Comments:: Scab resistance from Antonovka - PI 172633; good mildew resistance; excellent cedar rust resistance. Aug. 16, 2 5/8 - 2 3/4", round to short-conic, light to medium 50-99% red, blushed, aromatic, pale yellow to cream ground, flesh, firm, tough, bland, spicy, aromatic, juicy; attractive. Goonewardene: resistance to apple maggot and codling moth.

PI 589949. *Malus domestica* Borkh.

PRI 1557-2. Pedigree - 'Crandall' x PRI 544-5 ('Golden Delicious' x PRI 14-145 <'Golden Delicious' x "F2"26829-2-2>) Selected 8/19/69. Comments:: Aug 20., 2 3/4" conic; 50% light red, yellow ground (nice) crisp, breaking, fair quality, tendency to drop; heavy annual cropper; excellent powdery mildew resistance. Goonewardene: resistant to red-banded leaf roller and European red-mite.

The following were developed by L.F. Hough, Rutgers University, Department of Horticulture, New Brunswick, New Jersey, United States. Donated by Hilary F. Goonewardene, Purdue University, Dept. of Entomology, Entomology Hall, W. Lafayette, Indiana 47907, United States. Received 08/25/1988.

PI 589950. *Malus domestica* Borkh.

PRI 1983-201. Pedigree - NJ60837 x 669NJ5 ('Crandall' x 14-226 <'Golden Delicious' x "F2"26829-2-2>) Selected 10/10/71. Comments:: Scab resistance from *M. floribunda* 821. Octo. 10, 2 5/8 - 3; round to conic; 70-90% red, yellow ground; flesh cream, very crisp, juicy to very juicy; attractive. Fire blight susceptible; very hard crisp; excellent quality. Goonewardene: resistance to apple maggot and codling moth.

The following were developed by Williams. Donated by Hilary F. Goonewardene, Purdue University, Dept. of Entomology, Entomology Hall, W. Lafayette, Indiana 47907, United States. Received 08/25/1988.

PI 589951. *Malus domestica* Borkh.

Co-op 12. Pedigree - 'Raritan' x PRI 1018-101 (N.J.24 <N.J.117637 ['Melba' x {'Wealthy' x 'Starr'}] x N.J.12/'Red Rome' x 'Melba'> x PRI 47-147 \ 'Jonathan' x "F2"26829-2-2 \) Selected 8/1/72. Comments:: Jul. 31, 2 5/8 x 3"+; short-conic; medium 50-75% red; pale-yellow to green-yellow ground; flesh crisp and firm; juicy; very attractive; produces annually; uniform large fruit; some tendency to drop storage 2 1/2 to 3 weeks maximum; sister of 'Red Free'; scab resistance from *M. floribunda* 821 Goonewardene: resistance to codling moth and European red mite.

PI 589952. *Malus domestica* Borkh.

Redfree. Pedigree - 'Raritan' x pri 1018-101 (N.J.24 <N.J.117637 ['Melba' x {'Wealthy' x 'Starr'}] x N.J.12/'Red Rome' x 'Melba'> x PRI 47-147 \ 'Jonathan' x "F2"26829-2-2 \) Selected 8/9/71. Comments:: Scab resistance from *M. floribunda* 821. Aug. 10, 2 5/6 - 3", oblate-round, medium 50-99% very bright red, green-yellow to pale-yellow ground, flesh firm, crisp, slightly aromatic, full flavored, medium juicy to juicy; very attractive. Good resistance to powdery mildew; immune to cedar-rust; moderate resistance to fire blight. Goonewardene: resistance to plum curculio and European red mite.

PI 589953. *Malus domestica* Borkh.

Co-op 17. Pedigree - Ill #2(Winesap o.p.) x 668-100<Melrose x 14-126[Golden Delicious x "F2"26829-2-2]> Selected 10/17/71. Comments:: Scab resistance from *M. floribunda* 821. Oct. 28, 2 1/8 - 2 3/4", round, blushed yellow, 100% red, yellow to pale-yellow ground, flesh pale yellow to cream, firm, tough, bland, slightly bitter, slightly aromatic; very attractive; very long in refrigerated storage (6-8 months) Goonewardene: resistance to apple maggot, plum curculio and red banded leaf roller.

The following were developed by D.F. Dayton. Donated by Hilary F. Goonewardene, Purdue University, Dept. of Entomology, Entomology Hall, W. Lafayette, Indiana 47907, United States. Received 08/25/1988.

PI 589954. *Malus domestica* Borkh.

PRI 1042-102. Pedigree - 'Idared' x 187-6('Delicious' x 49-102[Jonathan x "F2"26829-2-2]) Selected 10/15/65. Comments:: Oct. 16, 2 1/8 - 2 1/3, oblong-round to round, washed medium 50-100% red, yellow ground, flesh, white, crisp, tough, attractive. Scab resistant from *M. floribunda* 821; 5 generations from source. Goonewardene: resistant to powdery mildew and plum curculio.

The following were developed by Morton Arboretum, Lisle, Illinois, United States. Donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 08/25/1988.

PI 589955. *Malus micromalus* Makino

Pedigree - 245-38 resembles the specific description given by Rehder in 1940.

The following were donated by Jeff Crosby, Purdue University, Dept. of Botany & Plant Pathology, Lilly Hall of Life Sciences, West Lafayette, Indiana 47909, United States. Received 08/25/1988.

PI 589956. *Malus domestica* Borkh.

Antonovka 172670-B.

PI 589957. *Malus domestica* Borkh.

MA #1255.

PI 589958. *Malus domestica* Borkh.

MA # 4.

PI 589959. *Malus domestica* Borkh.

MA # 8.

PI 589960. *Malus domestica* Borkh.

MA # 16.

The following were developed by L.F. Hough, Rutgers University, Department of Horticulture, New Brunswick, New Jersey, United States; J.B. Mowry; Catherine H. Bailey. Donated by Rutgers Fruit Research Center, Cream Ridge, New Jersey 08514, United States. Received 08/29/1988.

PI 589961. *Malus domestica* Borkh.

Sir Prize. Pedigree - Doud Golden Delicious (2-4-4) x PRI 14-152 (Golden Delicious x F2 26829-2-2. F2 26829-2-2 is result of cross between 2 selections of Rome Beauty and *Malus floribunda* 821. Cross made

1955, first fruit 1961, tested as Co-op 5. Comments:: Large greenish yellow fruit. High quality, but very thin tender skin that bruises easily. Strong, vigorous tree. Immune to scab; resistant to mildew and cedar-apple rust. Excellent home garden variety, too tender for commercial markets. Tree: vigorous, productive, little tendency for biennial bearing; triploid characteristics; appears well adapted to Midwest. Provided by Rutgers U., N. Jersey.

PI 589962. Malus domestica Borkh.

Jonafree. Pedigree - 855-102 x NJ31 - Fifth generation derivative of CS Crandall Rome x M. floribunda; cross ancestry includes Jonathan, Gallia Beauty, Red Spy, Golden Delicuios, Rome Beauty and M. floribunda 821; sdlg planted 1965, sel 1972, test/co op 22. Comments:: Fruit is 75% medium red with smooth russet-free skin. Firm crisp, juicy, pale yellow flesh. Good dessert quality. Tree is field immune to scab, resistant to fire blight and cedar apple rust. Somewhat susceptible to mildew. Fruit hangs well to maturity. Ripe fruit does not develop Jonathan Spot; much less tendency to internal breakdown. Assigned to Newark Nurs., Hartford, Mich, TRECO (R), Wood- burn, Ore & Stark Bros., Louisiana, MO. U.S. Plant Patent No 4633, 1/81. Additional Lit.Cit.: 1992-93. H. Apple. Tsolum River Fruit Trees Catalogue. p. 21.

The following were donated by Rutgers Fruit Research Center, Cream Ridge, New Jersey 08514, United States. Received 08/29/1988.

PI 589963. Malus domestica Borkh.

Crown Prince Rudolf.

The following were developed by K.O. Lapins. Donated by Rutgers Fruit Research Center, Cream Ridge, New Jersey 08514, United States. Received 08/29/1988.

PI 589964. Malus domestica Borkh.

Sinta. Pedigree - Golden Delicious x Grimes Golden Cross made 1955, selected 1965. Comments:: Medium size fruit; Pale yellow, sometimes almost white with pinkish blush in the sun. Crispy, juicy blesh. Sweet aromatic flavor superior to that of either parent, quality good; recommended for local roadside market to precede Gold- en Delicious; ripens 4th week of Sept. or 3 weeks before Golden Delicious. Tree: medium size, spreading; vigor moderate, precocious, moderately productive.

The following were collected by Jules Janick, Purdue University, Department of Horticulture, West Lafayette, Indiana 47907-1165, United States; F.H. Emerson; J.R. Shay. Developed by L.F. Hough, Rutgers University, Department of Horticulture, New Brunswick, New Jersey, United States; J.B. Mowry; Catherine H. Bailey; E.R. William; D.F. Dayton. Donated by Rutgers Fruit Research Center, Cream Ridge, New Jersey 08514, United States. Received 08/29/1988.

PI 589965. Malus domestica Borkh.

Priscilla. Collected in Unknown. Pedigree - Parent is (Starking Delicious x 610-2). Sdlg. 610-2 has a complex pedigree being derived from a sibcross of Rome Beauty x Malus floribunda 821, crossed successively to Gold- en Delicious and McIntosh. Cross 1961, fruit 1966. Comments:: Medium size, slightly conical fruit with 65% bright red blush over yellow background. Crisp, coarse mildly subacid, white to slightly greenish flesh. Good flavor and quality. Will store for three months. Fruit hangs well. Immune to scab; resistant to fire blight, powdery mildew and cedar- apple rust. Picks with Jonathan in mid-September. Good Introduced 1972. Provided by Rutgers Univ., New

Jersey.

The following were donated by Rutgers Fruit Research Center, Cream Ridge, New Jersey 08514, United States. Received 08/29/1988.

PI 589966. *Malus domestica* Borkh.
Puregold.

PI 589967. *Malus domestica* Borkh.
Lurared.

The following were developed by James E. Miller, Department of Soybean Breeding, 7301 N.W. 62nd Avenue, P.O. Box 85, Johnston, Iowa 50131-0085, United States. Donated by Rutgers Fruit Research Center, Cream Ridge, New Jersey 08514, United States. Received 08/29/1988.

PI 589968. *Malus domestica* Borkh.
Pacific Gold. Pedigree - Chance seedling; intro. 1948; selected 1944.
Comments:: Fruit: very large; flesh tender, crisp, quite sweet, dessert quality fine, good for culinary purposes; ripens in late fall or early winter. Tree: medium size, bears young, yields heavy crops annually.

The following were developed by L. Arends. Donated by Rutgers Fruit Research Center, Cream Ridge, New Jersey 08514, United States. Received 08/29/1988.

PI 589969. *Malus domestica* Borkh.
Paulared. Pedigree - Patented 3/12/68 #2800; assigned to Hill Top Orchards and Nurseries, Inc., Hartford, Mich. Parentage unknown, sdg. discovered in 1960. Introduced 1967. Comments:: New popular early apple. Beautiful solid red blush fruit. Light to creamy, firm, crisp, juicy, mildly tart flesh. All-purpose quality. Excellent for pies and sauce. Fruit hangs well. Colors evenly throughout the tree. Can be harvested in two pickings. Requires thinning in order to maintain size and annual crops, vigorous, hardy. Ripens about 3 weeks ahead of McIntosh.

The following were donated by Rutgers Fruit Research Center, Cream Ridge, New Jersey 08514, United States. Received 08/29/1988.

PI 589970. *Malus domestica* Borkh.
Petrel.

The following were developed by L.P.S. Spangelo; S.J. Leuty; H.B. Heeney; L.L. Modderman. Donated by Rutgers Fruit Research Center, Cream Ridge, New Jersey 08514, United States. Received 08/29/1988.

PI 589971. *Malus domestica* Borkh.
Macfree. Pedigree - McIntosh x PRI48-177 (from crosses at the Univ. of Ill. involving Rome Beauty, Jonathan and M. floribunda). Cross made 1953. Intro: 1974. Selected 1963; tested as 0-532 and 53-08-02.
Comments:: Fruit: size equal to or slightly smaller than McIntosh; round to slightly conic, somewhat unequal, smooth; skin greenish-yellow ground color, covered with 75% medium to dark red; flesh white, may be some green tinge, juicy, coarse, tough; quality medium to good; ripens second week of Oct. at Trenton. Keeps 3-4 mos. Tree: spreading, vigorous, hardy, resistant to *V. inaequalis*.

The following were donated by USDA, ARS, U.S. National Arboretum, National

Germplasm Repository, Washington, District of Columbia 20002, United States.
Received 08/31/1988.

PI 589972. *Malus halliana* Koehne

PI 589973. *Malus kansuensis* (Batalin) C. Schneider

PI 589974. *Malus yunnanensis* (Franchet) C. Schneider
Veitchii.

The following were donated by Michael Medalen, Box 1547, Petersburg, Arkansas 99833, United States. Received 08/31/1988.

PI 589975. *Malus fusca* (Raf.) C. Schneider
Collected in Alaska, United States. Found in Scow Bay near Petersburg, Alaska. Edge of woods, along the beach.

The following were collected by E. Dickson. Donated by Norman F. Weeden, Cornell University, New York State Agric. Exp. Station, Department of Horticultural Sciences, Geneva, New York 14456, United States. Received 09/01/1988.

PI 589976. *Malus coronaria* (L.) Miller
Collected 08/26/1988 in Ontario, Canada. Canada, Ontario, Middlesex Co., 0.15 mi. W. of junction with Hwy 73 on Concession 11, the first road S. of Hwy 401, Middlesex County Forest. Pedigree - Wild. Comments:: 8 ft. high, 2 inch diam. at base, 5 fruit; two trees at forest edge, Aspen, pine, fir, Crataegus.

PI 589977. *Malus coronaria* (L.) Miller
Collected 08/26/1988 in Ontario, Canada. Canada, Ontario, Elgin Co., 0.1 mi. W. from Hwy 35 on Co. Rd. 56, Conc VII just past Orville Cemetery, N. roadside, disturbed area. Pedigree - Wild. Comments:: 8 ft. tall, 12 ft. wide; 2 inches diam trunk; odd assortment of escaped *Malus domestica*, *Crataegus*, *Rhus*, milkweed.

PI 589978. *Malus coronaria* (L.) Miller
Collected 08/26/1988 in Ontario, Canada. Canada, Ontario, Elgin Co., 0.1 mi. W. from Hwy 35 on Co. Rd. 56. Conc VII just past Orville Cemetery, N. roadside, disturbed area. Pedigree - Wild. Comments:: 15 ft. E. of 637. 8 ft. tall; 2 inches diam. of trunk; odd assortment of escaped *Malus domestica*, *Crataegus*, *Rhus*, milkweed.

PI 589979. *Malus coronaria* (L.) Miller
Collected 08/26/1988 in Ontario, Canada. Canada, Ontario, Elgin Co., 0.1 mi. W. from Hwy 35 on Co. Rd. 56, Conc VII just past Orville Cemetery, N. roadside, disturbed area. Pedigree - Wild. Comments:: 25 ft. E. of 637. 15 ft. high; 2 1/2 inches diam., scions and fruit; odd assortment of escaped *Malus domestica*, *Crataegus*, *Rhus*, milkweed.

PI 589980. *Malus coronaria* (L.) Miller
Collected 08/28/1988 in Ontario, Canada. Canada, Ontario, Middlesex County Park, McLaren Tract, near intersection of Co. 1 & Co. 14 N. side of forest, four small trees. Pedigree - Wild. Comments:: 4 ft. tall - scion.

PI 589981. *Malus coronaria* (L.) Miller
Collected 08/28/1988 in Ontario, Canada. Canada, Ontario, Middlesex Co., Middlesex County Park, McLaren Tract, near intersection of Co. 1 and Co. 14, N. side of forest, four small trees. Pedigree - Wild.

Comments:: 2 ft. high, 1 inch diam. - scion - 3 fruit.

PI 589982. *Malus coronaria* (L.) Miller

Collected 08/28/1988 in Ontario, Canada. Canada, Ontario, Kent Co., 1.4 mi. from Hwy 21 on Conc. 1. Sandy soil, reddish; S. of Thames River, E.1 of Howard Tp. Dump, N. roadside. Pedigree - Wild. Comments:: 8 ft. tall, 10 ft. broad, 1 1/2 inch diameter, lone tree at forest edge; scion and fruit; Beech, Crataegus, Oak.

PI 589983. *Malus coronaria* (L.) Miller

Collected 08/28/1988 in Ontario, Canada. Canada, Ontario, Essex Co., 0.7 mi. E. on R3 W. Gosfield south from Co. Rd. 23, going toward Jack Miner. Dry woods - about 0.1 mi. W. of this side, 10+ smaller fruitless trees. Pedigree - Wild. Comments:: 15 ft. high, fruit.

PI 589984. *Malus coronaria* (L.) Miller

Collected 08/29/1988 in Michigan, United States. Michigan, Livingston Co., about 0.1 mi. from intersection of Oak Grove Rd. and Hwy 59, heading N. on Oak Grove Rd. Fence R.O.W., W. roadside. Pedigree - Wild. Comments:: 8 ft. high, 4 inch diam., 12 ft. broad; fruit and scion; population of about 8 trees E. of cornfield, spray damage?.

PI 589985. *Malus coronaria* (L.) Miller

Collected 08/29/1988 in Michigan, United States. Michigan, Livingston Co., about 0.1 mi. from intersection of Oak Grove Rd. and Hwy 59, heading N. on Oak Grove Rd., Fence, R.O.W., W. roadside. Population of about 8 trees, E. of cornfield. Pedigree - Wild. Comments:: 10 ft. high, 4 inch diam. fruit and scion. (spray damage?).

PI 589986. *Malus coronaria* (L.) Miller

Collected 08/29/1988 in Michigan, United States. Michigan, Livingston Co; N. of Oak Grove. 0.5 mi. from junction with Fisher on Jones Rd. Roadside population 50+. Pedigree - Wild. Comments:: 8 ft. tall, 2 in diam., scion, fruit; Daucas, Euphorbiacrae.

PI 589987. *Malus coronaria* (L.) Miller

Collected 08/29/1988 in Michigan, United States. Michigan, Livingston Co., N. of Oak Grove, 0.5 mi. from junction with Fisher on Jones Rd. Roadside population 50+. Pedigree - Wild. Comments:: 18 ft. tall, 2 1/2 inch diam., scion, fruit; Daucas, Euphorbiacrae.

PI 589988. *Malus coronaria* (L.) Miller

Collected 08/30/1988 in Michigan, United States. Michigan, Berrien Co., 0.1 mi. W. of Creek Rd. on Stafford Rd. 4 trees at fence row, S. roadside. Pedigree - Wild. Comments:: 8 ft. tall, 3 inch diam., scion and fruit; Poison Ivy, Rugus, Juglans.

PI 589989. *Malus coronaria* (L.) Miller

Collected 08/30/1988 in Michigan, United States. Michigan, Berrien Co., Warren Woods Natural Area. Pedigree - Wild. Comments:: 30 ft. tall, 4 inch diam., very slender; in open area with Rhus, Crataegus, scion and fruit; climax forest, Beech, Maple.

PI 589990. *Malus coronaria* (L.) Miller

Collected 08/30/1988 in Michigan, United States. Michigan, Newago Co., 0.1 mi. N. on Cottonwood Rd., from Hwy 82, 1 large tree, several seedlings. Pedigree - Wild. Comments:: 12 ft. high, 4 inch diam.; oak, pine Euphorbiacrae.

PI 589991. *Malus coronaria* (L.) Miller

Collected 08/31/1988 in Michigan, United States. Michigan, Midland Co., 0.9 mi. N. on 9 Mile Rd. from Olson Rd. E. roadside in powerline clearing, sandy soil. Pedigree - Wild. Comments:: 6 ft. tall, 1 inch diam., fruit, scion; Willow, Fern, Spiraea.

- PI 589992. *Malus coronaria* (L.) Miller
 Collected 08/31/1988 in Michigan, United States. Michigan, Midland Co.,
 0.9 mi. N. on 9 Mile Rd. from Olson Rd., E. roadside in powerline
 clearing, sandy soil. Pedigree - Wild. Comments:: 4 ft. tall, 1 inch
 diam., fruit, scion; Willow, Fern, Spiraea.
- PI 589993. *Malus coronaria* (L.) Miller
 Collected 08/31/1988 in Michigan, United States. Michigan, Lapeer Co.,
 on 5 Lakes Rd., 0.2 mi. N. from Daley Rd., W. roadside. 10(+)
 individuals. Pedigree - Wild. Comments:: 10 ft. tall, 1 inch diam.,
 fruit and scion.
- PI 589994. *Malus coronaria* (L.) Miller
 Collected 08/31/1988 in Michigan, United States. Michigan, Lapeer Co.,
 on 5 Lakes Rd., 0.2 mi. N. from Daley Rd., W. roadside 10(+)
 individuals. Pedigree - Wild. Comments:: 8 ft. tall, 1 inch diam.;
 fruit and scion.
- PI 589995. *Malus coronaria* (L.) Miller
 Collected 08/31/1988 in Michigan, United States. Michigan, Lapeer Co.,
 on 5 Lakes Rd., 0.2 mil N. from Daley Rd., W. roadside 10(+)
 individuals. Pedigree - Wild. Comments:: 12 ft. tall, 1 inch diam. few
 fruit.
- PI 589996. *Malus coronaria* (L.) Miller
 Collected 09/09/1988 in Indiana, United States. Indiana, Marion Co.,
 North roadside on Hwy 74, W. of Indianapolis. Pedigree - Wild.
 Comments:: 15 ft. high, 4 inch diam., scion and fruit; large population
 (100+) at fence row, south slope, steep.
- PI 589997. *Malus coronaria* (L.) Miller
 Collected 09/09/1988 in Indiana, United States. Indiana, Marion Co., N.
 roadside on Hwy 74, W. of Indianapolis. Pedigree - Wild. Comments:: 15
 ft. high, 3 inch diam., fruit and scion. large population (100+) at
 fence row, south slope steep.
- PI 589998. *Malus ioensis* (Alph. Wood) Britton
 Collected 09/10/1988 in Illinois, United States. Illinois, Champaign
 Co., on state Rt. 150, 1.5 mi. E. of I30, near Urbana. Grove of 100+
 trees between railroad tracks and south roadside. Pedigree - Wild.
 Comments:: 10 ft. high; 3 inch diam., 10 ft. broad, scion and fruit.
- PI 589999. *Malus ioensis* (Alph. Wood) Britton
 Collected 09/10/1988 in Illinois, United States. Illinois, Champaign
 Co., on State Rt. 150, 1.5 mi. E. of I30 near Urbana. Pedigree - Wild.
 Comments:: 10 ft. high, 3 inch diam. 10 ft. broad, scion and fruit;
 grove of 100+ trees, between railroad tracks and south road- side.
- PI 590000. *Malus coronaria* (L.) Miller
 Collected 09/10/1988 in Illinois, United States. Illinois, Piatt Co.,
 Monticello, near street in part, close to the courthouse. Pedigree -
 Wild. Comments:: 40 ft. high, 5-6 inch diam., 3-4 trunks at base.
- PI 590001. *Malus ioensis* (Alph. Wood) Britton
 Collected 09/10/1988 in Illinois, United States. Illinois, Piatt Co.,
 Allerton Park, S.E. of Monticello on walking path that originates near
 the S.E. entrance. Pedigree - Wild. Comments:: 15 ft. high; 3 inch
 diam., scion and fruit; secondary growth uplant forest, Hackberry, Ash,
 Linden.
- PI 590002. *Malus ioensis* (Alph. Wood) Britton
 Collected 09/10/1988 in Illinois, United States. Illinois, Piatt Co.,
 Allerton Park, S.E. of Monticello on walking path that originates near

the S.E. entrance. Pedigree - Wild. Comments:: 15 ft. high; 3 inch diam., scion and fruit.

PI 590003. *Malus ioensis* (Alph. Wood) Britton

Collected 09/10/1988 in Illinois, United States. Illinois, Piatt Co., 1.7 mi. E. from White Heath exit on Hwy 72, S. roadside. Pedigree - Wild. Comments:: 25 ft. high; 10 inches at base, scion and fruit; non-native crabs nearby.

PI 590004. *Malus ioensis* (Alph. Wood) Britton

Collected 09/10/1988 in Illinois, United States. Illinois, Logan Cp., Sheridan Twp., 1.8 mi., E. of New Holland. Powerline between soybean and corn fields, 0.1 mi. S. of Hwy 10 on Co. 275, then E. on first dirt road. Pedigree - Wild. Comments:: 15 ft. high, 5 inch diam., scion and fruit; Crataegus, Rubus, Rosa, Euphorbiaceae.

PI 590005. *Malus ioensis* (Alph. Wood) Britton

Collected 09/10/1988 in Illinois, United States. Illinois, Logan Co., Sheridan Twp., 1.8 mi. E. of New Holland. Powerline between soybean and corn fields, 0.1 mi. S. of Hwy 10 on Co. 275, then E. on first dirt road. Pedigree - Wild. Comments:: 6 ft. high; 2 inch diam.; Crataegus, Rubus, Rosa, Euphorbiaceae.

PI 590006. *Malus ioensis* (Alph. Wood) Britton

Collected 09/11/1988 in Illinois, United States. Illinois, Rock Island Co., 0.3 mi. E. of Rt. 67 on 154 Ave., N. roadside at fence of pasture; two trees. Pedigree - Wild. Comments:: 6 ft., 2 inch diam., fruit and scion.

PI 590007. *Malus ioensis* (Alph. Wood) Britton

Collected 09/11/1988 in Iowa, United States. Iowa, Johnson Co., 1.0 mi. S. from Rustic Rd., on 1st Ave, near Coralville exit on Hwy 80, 6+ trees. Very dusty road- side. Pedigree - Wild. Comments:: 8 ft. high, 4 inch diam., fruit and scion.

PI 590008. *Malus ioensis* (Alph. Wood) Britton

Collected 09/11/1988 in Iowa, United States. Iowa, Johnson Co., 1.0 mi. S. from Rustic Rd. on 1st Ave, near Coralville exit on Hwy. 80. 6+ trees. Very dusty road- side. Pedigree - Wild. Comments:: 6 ft. high; 1 1/2 inch diam., fruit and scion.

PI 590009. *Malus ioensis* (Alph. Wood) Britton

Collected 09/13/1988 in Iowa, United States. Iowa, Story Co., West Peterson Park, Story Co., Conservation Board, N. roadside across from cornfield. Pedigree - Wild. Comments:: 8 ft. high, 2 1/2 inch diam., fruit and scion. Prunus, Gleditsia, Alnus, Rhus.

PI 590010. *Malus ioensis* (Alph. Wood) Britton

Collected 09/13/1988 in Iowa, United States. Iowa, Story Co., West Peterson Park, Story Co. Conservation Board, N. roadside, across from cornfield. Pedigree - Wild. Comments:: 6 ft. high, 3 inch diam., fruit and scion; Prunus, Gleditsia Alnus, Rhus.

PI 590011. *Malus ioensis* (Alph. Wood) Britton

Collected 09/13/1988 in Iowa, United States. Iowa, Webster Co., 50 ft. in front of N. entrance to Dolliver Memorial State Park, S. roadside. Pedigree - Wild. Comments:: Lone tree, 30 ft. high; 8 inch diam.

PI 590012. *Malus ioensis* (Alph. Wood) Britton

Collected 09/13/1988 in Iowa, United States. Iowa, Monono Co., Whiting Woods, Monono Co. Conservation Board, west roadside; Asian Crab nearby; 0.5 mi. N. from Timber Ridge Ranch entrance. Pedigree - Wild. Comments:: 25 ft. high, 8 inch diam., scion and fruit.

- PI 590013. *Malus ioensis* (Alph. Wood) Britton
 Collected 09/13/1988 in Iowa, United States. Iowa, Monono Co., Whiting Woods, Monono Co. Conservation Board, west roadside, Asian Crab nearby, 0.5 mi. N. from Timber Ridge Ranch entrance. Pedigree - Wild. Comments:: 25 ft. high, 9 inch diam. Double flowered type.
- PI 590014. *Malus coronaria* (L.) Miller
 Collected 09/14/1988 in Nebraska, United States. Nebraska, Richardson Co., N.E. of Barada, W. bank of the Missouri River; steep slope, wooded, edge of forest. Pedigree - Wild. Comments:: 10 ft. high; 1 1/2 inch diam., no fruit, scion; 10+ fruitless.
- PI 590015. *Malus ioensis* (Alph. Wood) Britton
 Collected 09/15/1988 in Missouri, United States. Missouri, Buchanan Co., Missouri Western State College campus, Biology study area. 100+ individuals scattered throughout secondary woods, Gleditsia, Alnus, rubra. Pedigree - Wild. Comments:: 12 ft. high, 5 inch diam., fruit and scion.
- PI 590016. *Malus ioensis* (Alph. Wood) Britton
 Collected 09/16/1988 in Missouri, United States. Missouri, Randolph Co., Claude Shores Memorial Roadside Rest just N. of Hwy 22 on Hwy 63, E. roadside. Fence row with 20+ trees. Pedigree - Wild. Comments:: 7 ft. high, 1 1/1 inch diam.
- PI 590017. *Malus ioensis* (Alph. Wood) Britton
 Collected 09/16/1988 in Missouri, United States. Missouri, Randolph Co., Claude Shores Memorial Roadside Rest just N. of Hwy 22 on Hwy 63, E. roadside. Fence row with 20+ trees. Pedigree - Wild. Comments:: 15 ft. high, 3 inch diam.
- PI 590018. *Malus coronaria* (L.) Miller
 Collected 09/18/1988 in Illinois, United States. Illinois, Pope Co., 8.7 mi. W. of Hwy 45 on Mossac Co. 400 N., 1.4 mi. W. of Smithland Locks and Dam Ohio River turn- off, at edge of forest beyond recent clearing. Pedigree - Wild. Comments:: 5 ft. high, fruitless, scion, felled coronaria with many new upright shoots.
- PI 590019. *Malus coronaria* (L.) Miller
 Collected 09/18/1988 in Illinois, United States. Illinois, Pope Co., 8.7 mi. W. of Hwy 45 on Mossac Co. 400 N., 1.4 mi. W. of Smithland Locks and Dam Ohio River turn- off. At edge of forest, beyond recent clearing. Pedigree - Wild. Comments:: 30 ft. high, 7 inch diam. fruit, scion. Felled coronaria with many new upright shoots.
- PI 590020. *Malus coronaria* (L.) Miller
 Collected 09/19/1988 in Kentucky, United States. Kentucky, Montgomery Co., on Hwy 213 E. roadside, 0.8 mi. S. from Spruce First Church of God. 4.9 mi. S. of Hwy 460 junction at Jeffersonville. Population of 20+ at creek bed. Pedigree - Wild. Comments:: 20 ft. high, 6 inch diam.
- PI 590021. *Malus coronaria* (L.) Miller
 Collected 09/19/1988 in Kentucky, United States. Kentucky, Rowan Co., 7.8 mi. N. from junction with Hwy 799 on Hwy 377 E. roadside, W. of creek, 6+ trees. Pedigree - Wild. Comments:: 15 ft. high, 3 inch diam., scion.

The following were developed by Stark Brothers Nurseries, Louisiana, Missouri 63353, United States. Donated by Charles Putensen, 1906 350th Street, Spencer, Iowa 51301-7456, United States. Received 01/09/1989.

- PI 590022. *Malus domestica* Borkh.
 Oliver or Senator. Pedigree - Propagated since about 1873 in

Northwestern Arkansas. Comments:: Flatish round, medium size fruit. Almost solid red over green background with prominent white or russet dots. Tender crisp, juicy flesh. Most refreshing flavor. Crops very well every year. Ripens in early October.

The following were developed by W.R. Putnam. Donated by Charles Putensen, 1906 350th Street, Spencer, Iowa 51301-7456, United States. Received 01/09/1989.

PI 590023. Malus domestica Borkh.

Gilliflower. Collected in Unknown. England. Pedigree - First mentioned 1629 among others grafted in the U.S. and cited in the "Ohio Cultivator" August 1, 1846. Comments:: Size large 83:76 mm; shape very uneven, conic, prominently ribbed on body and at eye; skin pale yellowish green flushed red, greasy; flesh tender, white; flavor sweet; season mid to late.

The following were donated by Charles Putensen, 1906 350th Street, Spencer, Iowa 51301-7456, United States. Received 01/09/1989.

PI 590024. Malus domestica Borkh.

Longfield. Pedigree - Described as Pepinka Letovskaya in 1903. Imported by USDA from Russia in 1870. Comments:: Size medium, shape intermediate to tall, rectangular to truncate-conic, convex, ribbed at eye; skin pale yellow, flushed pink, greenish or whitish dots; flesh very tender, loose texture, white; flavor sweet, subacid; season mid to late; tree spreading.

PI 590025. Malus domestica Borkh.

Anisim. Comments:: Cold hardy - seemed to have been used in crosses for cold hardiness tests. Per Hansen, "Tree a strong grower in the nursery and orchard and a prodigious bearer; young trees upright, spreading with age -- the beautiful color ... attracts favorable attention".

The following were developed by Stark Bros. Nursery, Iowa, United States. Donated by Charles Putensen, 1906 350th Street, Spencer, Iowa 51301-7456, United States. Received 01/09/1989.

PI 590026. Malus domestica Borkh.

Hawkeye. Collected in Unknown. Originated as a sprout from a rootstock on the farm of Jesse Hiatt near Perex, Iowa, United States. Pedigree - Originated circa 1880; introduced U.S.A. 1895; England around 1912. Comments:: Size medium 64-58 mm; shape intermediate truncate-conic, straight, prominently ribbed on body and at eye; skin green- ish yellow with red flush and stripes; flesh firm, crisp, creamy white; flavor sweet distinctive; season late; fairly late flowering.

The following were donated by John K. Clements, 24062 Riverside Drive NE, St. Paul, Oregon 97137, United States. Received 02/24/1989.

PI 590027. Malus domestica Borkh.

Benham. Comments:: Some disease resistance.

The following were collected by T.R. Dudley, U.S. National Arboretum, USDA-ARS-NA, 3501 New York Ave. NE, Washington, District of Columbia 20002, United States. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590028. *Malus halliana* Koehne

Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province bounded on the west by Sichuan Province and on the South by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590029. *Malus halliana* Koehne

Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590030. *Malus halliana* Koehne

Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590031. *Malus halliana* Koehne

Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590032. *Malus halliana* Koehne

Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera, and species).

The following were collected by H.J. Kelsey. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590033. *Malus floribunda* Siebold ex Van Houtte

Collected 1927 in Unknown. Pedigree - Wild.

PI 590034. *Malus floribunda* Siebold ex Van Houtte

Collected 1927 in Unknown. Pedigree - Wild.

The following were collected by Karl Sax. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590035. *Malus floribunda* Siebold ex Van Houtte

Collected 1953 in Unknown. Pedigree - Wild.

The following were donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590036. *Malus fusca* (Raf.) C. Schneider
Collected 1980 in United States. Pedigree - Wild.

PI 590037. *Malus fusca* (Raf.) C. Schneider
Collected 1981 in United States. Pedigree - Wild.

PI 590038. *Malus fusca* (Raf.) C. Schneider
Collected 1981 in United States. Pedigree - Wild.

PI 590039. *Malus fusca* (Raf.) C. Schneider
Collected 1981 in United States. Pedigree - Wild.

The following were collected by Vilmorin, France. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590040. *Malus hupehensis* (Pampan.) Rehder
Collected 1920 in Unknown. Pedigree - Wild.

The following were donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590041. *Malus hupehensis* (Pampan.) Rehder
Pedigree - Wild.

The following were collected by E.H. Wilson. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590042. *Malus hupehensis* (Pampan.) Rehder
Collected 1908 in Unknown. Pedigree - Wild.

The following were collected by Kazakh Academy of Science, Alma Ata, Kazakhstan. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590043. *Malus kirghisorum* Al. Fed. & Fed.
Collected 1973 in Unknown. Pedigree - Wild.

The following were collected by Cary Arb. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590044. *Malus orientalis* Uglitzk.
Collected 1977 in Unknown. Pedigree - Wild.

The following were collected by Hort. Bot. Acad. Sci., Tashkent, Uzbekistan. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590045. *Malus prattii* (Hemsley) C. Schneider
Collected 1973 in China. Pedigree - Wild.

The following were collected by B.G. Wageningen. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590046. *Malus prattii* (Hemsley) C. Schneider
Collected 1976 in China. Pedigree - Wild.

PI 590047. *Malus prattii* (Hemsley) C. Schneider
Collected 1976 in China. Pedigree - Wild.

The following were collected by C.S. Sargent. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590048. *Malus sargentii* Rehder
Collected 1892 in Unknown. Pedigree - Wild.

PI 590049. *Malus sargentii* Rehder
Collected 1892 in Unknown. Pedigree - Wild.

The following were donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590050. *Malus sargentii* Rehder
Collected 1921 in Unknown. Pedigree - Wild.

The following were collected by H. Hara. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590051. *Malus sieboldii* (Regel) Rehder
Collected 1954 in Unknown. Pedigree - Wild.

The following were collected by T.R. Dudley, U.S. National Arboretum, USDA-ARS-NA, 3501 New York Ave. NE, Washington, District of Columbia 20002, United States. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590052. *Malus hupehensis* (Pampan.) Rehder
Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperature to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera, and species).

PI 590053. *Malus hupehensis* (Pampan.) Rehder
Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of this Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports

rich and varied flora (including relict families, genera and species).

PI 590054. *Malus halliana* Koehne

Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590055. *Malus halliana* Koehne

Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590056. *Malus halliana* Koehne

Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590057. *Malus hupehensis* (Pampan.) Rehder

Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590058. *Malus halliana* Koehne

Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590059. *Malus halliana* Koehne

Collected 1980 in China. Shennongia Forest District, northwestern part of the Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

The following were donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590060. *Malus x sublobata* (Dippel) Rehder

Collected 1962 in Unknown. Pedigree - Wild.

PI 590061. *Malus sylvestris* Miller
Collected 1920 in Unknown. Pedigree - Wild.

PI 590062. *Malus toringoides* (Rehder) Hughes
Collected 1937 in Unknown.

The following were collected by T.R. Dudley, U.S. National Arboretum, USDA-ARS-NA, 3501 New York Ave. NE, Washington, District of Columbia 20002, United States. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590063. *Malus yunnanensis* (Franchet) C. Schneider
Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590064. *Malus yunnanensis* (Franchet) C. Schneider
Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590065. *Malus yunnanensis* (Franchet) C. Schneider
Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590066. *Malus yunnanensis* (Franchet) C. Schneider
Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590067. *Malus yunnanensis* (Franchet) C. Schneider
Collected 1980 in China. Shennongia Forest District, northwestern part of the Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

The following were collected by W. Purdom. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 03/22/1989.

PI 590068. *Malus x robusta* (Carriere) Rehder
Persicifolia. Collected in Unknown. Pedigree - Wild.

The following were developed by Hilary F. Goonewardene, Purdue University, Dept. of Entomology, Entomology Hall, W. Lafayette, Indiana 47907, United States. Received 03/30/1989.

PI 590069. *Malus domestica* Borkh.
E7-47. Comments:: Multiple pest resistance.

PI 590070. *Malus domestica* Borkh.
E7-54. Comments:: Multiple pest resistance.

PI 590071. *Malus domestica* Borkh.
E29-56. Comments:: Multiple pest resistance.

PI 590072. *Malus domestica* Borkh.
E31-10. Comments:: Multiple pest resistance.

The following were developed by D.F. Dayton. Donated by Hilary F. Goonewardene, Purdue University, Dept. of Entomology, Entomology Hall, W. Lafayette, Indiana 47907, United States. Received 03/30/1989.

PI 590073. *Malus domestica* Borkh.
PRI 1236. Pedigree - PRI 47-147('Jonathan' x "F2"26829-2-2) x 'Julyred' Selected 8/14/63. Comments:: Aug 14, 2 to 2 7/8"; medium dark washed red on light yellow, very good finish; tough; poor quality. Scab resistance from *M. floribunda* 821. Goonewardene: resistant to powdery mildew and codling moth.

PI 590074. *Malus domestica* Borkh.
PRI 1293-102. Pedigree - 'Jonared' x 442-23(Delicious x 27-128<'Wealthy' x Russian seedling #12740-7A>) Selected 1964. Comments:: Scab resistance from Russian seedling #12740-7A (differential resist.) No date; up to 3", oblate medium 60% dark red on greenish ground. Flesh yellowish, fine textured, very firm, exceptionally crisp, sub-acid to mild; conspicuous dots; very attractive. 1972 Note: Scab on trees in old virus block-Clark Farm. Goonewardene: resistant to: P. Mildew and Apple Maggot.

The following were developed by E.B. Williams. Donated by Hilary F. Goonewardene, Purdue University, Dept. of Entomology, Entomology Hall, W. Lafayette, Indiana 47907, United States. Received 03/30/1989.

PI 590075. *Malus domestica* Borkh.
PRI 1290-2. Pedigree - 'Golden Delicious' x 415-67(Delicious x 27-27<'Wealthy' x Russian seedling #12740-7A>) Selected 9/23/64. Comments:: Scab resistance from Russian seedling #12740-7A. Sept. 23, 2 1/2 - 3", oblate self-yellow, nice finish, crisp Goonewardene: resistant to: P. Mildew and Apple Maggot.

The following were developed by D.F. Dayton. Donated by Hilary F. Goonewardene, Purdue University, Dept. of Entomology, Entomology Hall, W. Lafayette, Indiana 47907, United States. Received 03/30/1989.

PI 590076. *Malus domestica* Borkh.
PRI 674-103. Pedigree - 'Grimes Golden' x 14-152(Golden Delicious x "F2"26829-2-2) Selected 10/1/63. Comments:: Scab resistance from *M. floribunda* 821. Oct 1, 2 1/2", roundish-oblate, self-yellow, skin smooth

and glossy, some small russet dots, most dots greenish. Flesh very pale-yellowish, moderately course, very firm, slightly tough to crisp, juicy, sub-acid to mild; aromatic, musky. Goonewardene: resistance to: Powdery Mildew and Plum curculio.

The following were developed by E.B. Williams. Donated by Hilary F. Goonewardene, Purdue University, Dept. of Entomology, Entomology Hall, W. Lafayette, Indiana 47907, United States. Received 03/30/1989.

PI 590077. *Malus domestica* Borkh.

PRI 1219-1. Pedigree - 'Julyred' x 10-147('Jonathan' x "F2"26829-2-2) Selected 8/5/63. Comments:: Ayg. 5, 2 3/4", slightly oblate, medium 90% red on yellow ground, crisp, juicy; attractive. Goonewardene: resistance to powdery mildew and Plum Curculio.

PI 590078. *Malus domestica* Borkh.

PRI 996. Pedigree - 'Richared Delicious' x 47-77('Jonathan' x "F2"26829-2-2). Comments:: Throckmorton - South Block. Scab resistant from *M. floribunda* 821. Goonewardene: resistance to powdery mildew and Plum Curculio.

PI 590079. *Malus domestica* Borkh.

PRI 1312-6. Pedigree - 'Starking' x 528-3('Jonared' x 76-27<'Wolf River' x *M. micromalus*>). Selected 9/19/67. Comments:: Scab resistance from *M. micromalus*. Sept. 19, 2 1/2 - 3", conical, medium 90% dark red, yellow ground, tough breaking; attractive. Goonewardene: resistant to apple maggot and plum curculio.

The following were developed by Purdue University, Horticultural Research Farm, West Lafayette, Indiana 47906, United States. Donated by Hilary F. Goonewardene, Purdue University, Dept. of Entomology, Entomology Hall, W. Lafayette, Indiana 47907, United States. Received 03/30/1989.

PI 590080. *Malus domestica* Borkh.

PRI 2331. Pedigree - PCF4-56 x 1225-100(N.J. 123249 x 14-510<'Golden Delicious' x "F2"26829-2-2>). Comments:: O'Neall Farm Block B1 Scab resistance from *M. floribunda* 821. Goonewardene: resistance to apple maggot and red-banded leaf roller.

The following were developed by E.B. Williams. Donated by Hilary F. Goonewardene, Purdue University, Dept. of Entomology, Entomology Hall, W. Lafayette, Indiana 47907, United States. Received 03/30/1989.

PI 590081. *Malus domestica* Borkh.

PRI 1592. Pedigree - 528-5('Jonared' x 76-27<'Wolf River' x *M. micromalus*>) x 'June Sweet'. Comments:: Scab resistance from *M. micromalus*. Goonewardene: resistance to apple maggot and red-banded leaf roller.

PI 590082. *Malus domestica* Borkh.

PRI 1569-1. Pedigree - NJ27 X 612-1('Starking'Giant Limb x PRI 14-126<'Golden Delicious' x "F2"26829-2-2>). Comments:: Scab resistance from *M. floribunda* 821. Sept. 20, 2 3/4 - 3", oblate, medium 90% red, yellow-green ground, flesh crisp, breaking, sub-acid, aroma; attractive. Goonewardene: resistance to apple maggot and coddling moth.

PI 590083. *Malus domestica* Borkh.

PRI 2190-1. Pedigree - N.J.440249 x PRI-872('Jersey Red' x PRI 10-147<'Jonathan' x "F2"26829-2-2>) Selected 10/25/71. Comments:: Scab resistance from *M. floribunda* 821. Oct. 19, 2 3/4 - 3 1/4", round, medium 99% dark red, yellow ground, flesh very crisp, juicy; attractive.

Goonewardene: resistance to codding moth (*Laspyresia pomonella*[L.]) and red-banded leaf roller (*Argyrotaenia velutinana* {Walker}).

The following were developed by D.F. Dayton. Donated by Hilary F. Goonewardene, Purdue University, Dept. of Entomology, Entomology Hall, W. Lafayette, Indiana 47907, United States. Received 03/30/1989.

PI 590084. *Malus domestica* Borkh.

PRI 1561-100. Pedigree - McIntosh x PRI 596-1('Jonathan' x 10-124<'Jonathan' x "F2"26829-2-2>) Selected 8/6/69. Comments:: Scab resistance from *M. floribunda* 821. July 23, 1 3/4", conic, yellow ground, medium-dark 90% red, smooth, tender stem; flesh white, fine, firm, crisp, juicy, mildly sub-acid, very attractive, crab type. Goonewardene: resistance to codding moth and red-banded leaf roller.

The following were developed by E.B. Williams. Donated by Hilary F. Goonewardene, Purdue University, Dept. of Entomology, Entomology Hall, W. Lafayette, Indiana 47907, United States. Received 03/30/1989.

PI 590085. *Malus domestica* Borkh.

PRI 1176-1. Pedigree - PRI 401-1('mcIntosh' x PRI45-98<Russian seedling #12740-7A x 'Delicious'>) x PRI 14-126{'Golden Delicious' x "F2"26829-2-2} Selected 9/6/66. "F2"26829-2-2 = 9433-2-2 (Rome Beautyx*M. floribunda* 821)x9433-2-8(Rome Beax*M. floribunda* 821). Comments:: Scab resistance, possibly from Russian seedling #12740-7A and/or *M. floribunda* 821. Sept. 6, 2 1/2" (heavy drop) conic; yellow ground color; 50% medium red; 1 slightly striped; soft; fair. Goonewardene: resistance to codding moth and red-banded leaf roller.

The following were donated by Larry L. McGraw, Sheep Rock Nursery, Kimberly, Oregon 97848, United States. Received 04/07/1989.

PI 590086. *Malus domestica* Borkh.

Greensweet.

The following were donated by Curator, National Clonal Germplasm Repository, 33447 Peoria Road, Corvallis, Oregon 97330, United States. Received 04/14/1989.

PI 590087. *Malus domestica* Borkh.

Breakwell's Seedling.

The following were donated by USDA, ARS, U.S. National Arboretum, National Germplasm Repository, Washington, District of Columbia 20002, United States. Received 08/31/1989.

PI 590088. *Malus yunnanensis* (Franchet) C. Schneider

Veitchii. Collected in Pakistan.

The following were donated by Thomas Green, The Morton Arboretum, Lisle, Illinois 60532, United States. Received 08/31/1989.

PI 590089. *Malus floribunda* Siebold ex Van Houtte

The following were collected by T.R. Dudley, U.S. National Arboretum, USDA-ARS-NA, 3501 New York Ave. NE, Washington, District of Columbia 20002,

United States. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 01/02/1990.

PI 590090. *Malus halliana* Koehne

Collected 1980 in China. Shennongia Forest District, northwestern part of the Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590091. *Malus halliana* Koehne

Collected 1980 in China. Shennongia Forest District, northwestern part of the Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590092. *Malus halliana* Koehne

Collected 1980 in China. Shennongia Forest District, northwestern part of the Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

The following were collected by W.W. Des Moines. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 01/02/1990.

PI 590093. *Malus ioensis* (Alph. Wood) Britton

Spinosa. Collected 1973 in United States. Comments:: var. of Prairie Crab Apple.

The following were collected by Botanic Garden, Academy of Science, Leningrad, Russian Federation. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 01/02/1990.

PI 590094. *Malus kirghisorum* Al. Fed. & Fed.

Collected 1955 in Former Soviet Union. Pedigree - Wild.

The following were collected by Morton Arboretum, Lisle, Illinois, United States. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 01/02/1990.

PI 590095. *Malus prattii* (Hemsley) C. Schneider

Pratt's Crab Apple. Collected 1973 in China. Pedigree - Wild.

The following were collected by H. Zabel. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts

02130, United States. Received 01/02/1990.

PI 590096. *Malus pumila* Miller
Collected 1890 in Unknown. Pedigree - Wild.

The following were donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 01/02/1990.

PI 590097. *Malus pumila* Miller
Collected 1936 in Unknown. Pedigree - Wild.

PI 590098. *Malus pumila* Miller
Collected 1936 in Unknown. Pedigree - Wild.

PI 590099. *Malus sieboldii* (Regel) Rehder
Collected 1929 in Unknown.

The following were collected by Nippon Shinyaku Inst. for Bot. Research, Sakanotsuji-cho 39, Yamashina-Ku, Kyoto 607, Japan. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 01/02/1990.

PI 590100. *Malus sieboldii* (Regel) Rehder
Toringo Crab Apple. Collected 1983 in Japan. Pedigree - Wild.

PI 590101. *Malus sieboldii* (Regel) Rehder
Toringo Crab Apple. Collected 1983 in Japan. Pedigree - Wild.

PI 590102. *Malus sieboldii* (Regel) Rehder
Toringo Crab Apple. Collected 1983 in Japan. Pedigree - Wild.

The following were donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 01/02/1990.

PI 590103. *Malus sieboldii* (Regel) Rehder
Toringo Crab Apple. Collected 1979 in Japan. Pedigree - Wild.

The following were collected by Karl Sax. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 01/02/1990.

PI 590104. *Malus sikkimensis* (Wenzig) Koehne ex C. Schneider
Collected 1951 in Unknown. Pedigree - Wild.

PI 590105. *Malus sikkimensis* (Wenzig) Koehne ex C. Schneider
Collected in Unknown. Pedigree - Wild, 1951?.

PI 590106. *Malus sikkimensis* (Wenzig) Koehne ex C. Schneider
Collected in Unknown. Pedigree - Wild, 1951?.

The following were collected by Royal Botanic Gardens, Kew, Richmond, Surrey, England, United Kingdom. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 01/02/1990.

PI 590107. *Malus sikkimensis* (Wenzig) Koehne ex C. Schneider

Collected 1936 in Unknown. Pedigree - Wild.

PI 590108. *Malus sikkimensis* (Wenzig) Koehne ex C. Schneider

Collected 1936 in Unknown. Pedigree - Wild.

The following were collected by T.R. Dudley, U.S. National Arboretum, USDA-ARS-NA, 3501 New York Ave. NE, Washington, District of Columbia 20002, United States. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 01/02/1990.

PI 590109. *Malus* sp.

Collected 1980 in China. Shennongia Forest District, northwestern part of the Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590110. *Malus* sp.

Collected 1980 in China. Shennongia Forest District, northwestern part of the Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

The following were collected by C.S. Sargent. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 01/02/1990.

PI 590111. *Malus hybrid*

Yellow Autumn Crab Apple. Collected 1890 in Japan. Pedigree - Wild.

The following were collected by T.R. Dudley, U.S. National Arboretum, USDA-ARS-NA, 3501 New York Ave. NE, Washington, District of Columbia 20002, United States. Donated by Rob Nicholson, The Arnold Arboretum of Harvard Univ., The Arborway, Jamaica Plain, Massachusetts 02130, United States. Received 01/02/1990.

PI 590112. *Malus yunnanensis* (Franchet) C. Schneider

Yunnan Crab Apple. Collected 1980 in China. Shennongia Forest District, northwestern part of the Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590113. *Malus yunnanensis* (Franchet) C. Schneider

Yunnan Crab Apple. Collected 1980 in China. Shennongia Forest District, northwestern part of the Hubei Province, bounded on the west by Sichuan

Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590114. *Malus yunnanensis* (Franchet) C. Schneider

Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590115. *Malus yunnanensis* (Franchet) C. Schneider

Veitchii. Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports a rich and varied flora (including relict families, genera and species).

PI 590116. *Malus yunnanensis* (Franchet) C. Schneider

Veitchii. Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

PI 590117. *Malus yunnanensis* (Franchet) C. Schneider

Veitchii. Collected 1980 in China. Shennongia Forest District, northwestern part of Hubei Province, bounded on the west by Sichuan Province and on the south by the confluence of the Juichong and Dangyang Rivers. Pedigree - Wild. Comments:: Participants of the 1980 Sino-American Botanical Expedition observed a varied climate ranging from warm temperate to subtropical. A complex topography of steep mountainous terrain supports rich and varied flora (including relict families, genera and species).

The following were donated by David Taylor, Brogdale Experimental Horticulture Sta., Ministry of Agriculture, National Fruit Trials, Faversham, Kent Me13, England, United Kingdom. Received 01/26/1990.

PI 590118. *Malus domestica* Borkh.

Ananas Reinette. Pedigree - Recorded 1821. Comments:: Size medium; shape tall, rectangular to truncate-conic, convex to straight; skin yellow flushed brownish, dotted; flesh firm, fine, fairly tender, yellowish white; flavor sweet, subacid, perfumed; season very late; tree upright. Pineapple taste. Dessert. November to February. Tree: very small. Good cropper.

PI 590119. *Malus domestica* Borkh.

Blanc Dur (Orne). Pedigree - Received by NFT from France in 1948. Comments:: Size medium 55-68:50-55 mm; shape intermediate, sometimes flat or tall, conic to truncate-conic, convex to straight, ribbed at eye and slightly on body, sometimes base to apex; skin greenish yellow,

slight dull brownish flush, some russet dots; flesh coarse, crisp, yellowish white, green core and veins; flavor subacid sweet; season very late, very long stalk, late flowering.

PI 590120. *Malus domestica* Borkh.

Bonne-Hotture. Collected 1867 in Unknown. Maine-et Loire, France. Comments:: Size medium 60-65 mm; shape intermediate to flat, truncate-conic, convex; skin green-yellow with russet and occasional flush, rough; flesh firm, crisp, greenish-white; flavor sweet; season mid to very late.

PI 590121. *Malus domestica* Borkh.

Cornish Aromatic (Wakeley). Collected in Unknown. Cornwall, England. Pedigree - Brought to notice in 1813 but thought to be many centuries old. Comments:: Size medium to large 60-73; 50-65 mm; shape flat to intermediate truncate-conic to conic, convex, ribbed at eye and on body; skin yellow flushed orange and red, and striped deeper red with russet dots and patches, rough. Flesh firm, crisp, fine, creamy white; flavor sweet, subacid, aromatic; season late. Tree: vigorous, upright, spreading. Produces spurs freely.

The following were developed by J. Harris. Donated by David Taylor, Brogdale Experimental Horticulture Sta., Ministry of Agriculture, National Fruit Trials, Faversham, Kent Me13, England, United Kingdom. Received 01/26/1990.

PI 590122. *Malus domestica* Borkh.

D'Arcy Spice. Collected in Unknown. Found in garden of the Lahh, Tolleshunt d'Arcy, Essex, England. Pedigree - Originated 1785 or earlier; introduced 1848. Comments:: Size medium 64:57 mm; shape intermediate, rectangular to truncate-conic, convex to straight, prominently ribbed at eye and body; skin yellowish green flushed dull red, russet patches and dots, rough, tough; flesh fine, firm, crisp, greenish white; flavor sweet, rich, vinous; season very late. Tree: somewhat weak, upright, spreading. Produces spurs fairly freely. Rather unattractive, late-keeping dessert apple. Likes cool, dry climate. Frost hardy. Additional LIT.CIT. 1992-93. H. Apple. Tsolum River Fruit Trees Catalogue. p. 16.

The following were donated by David Taylor, Brogdale Experimental Horticulture Sta., Ministry of Agriculture, National Fruit Trials, Faversham, Kent Me13, England, United Kingdom. Received 01/26/1990.

PI 590123. *Malus domestica* Borkh.

Doree de Tournai. Pedigree - Raised 1817. Comments:: Size medium 51-57; 45-51; shape intermediate, truncate-conic straight, indistinct ribs; skin yellowish green, slight yellow or orange-red flush, flesh firm, crisp, yellowish; flavor subacid, sweet, rich, strong aroma; season late.

PI 590124. *Malus domestica* Borkh.

Edelborsdorfer. Collected in Unknown. From Bordsorf in Meissen or near Leipzig. Pedigree - Probably the 1500's; mentioned by Cordus in 1561. Comments:: Size medium 55-67; 48-55 mm; shape intermediate to flat, truncate-conic to rectangular convex, not or slightly ribbed skin yellow flushed red, russet dots and veins, flesh firm, pale yellow; flavor sweet, vinous; season very late.

PI 590125. *Malus domestica* Borkh.

Edelroter. Pedigree - First described 1873. Comments:: Size medium 60:56 mm; shape intermediate, rectangular to truncate-conic, convex, broad ribs; skin pale yellow, fleck-ed red, dotted; flesh fine, soft, whitish cream; flavor sweet, aromatic; season late.

The following were developed by M. de la Perraudiere. Donated by David Taylor, Brogdale Experimental Horticulture Sta., Ministry of Agriculture, National Fruit Trials, Faversham, Kent Me13, England, United Kingdom. Received 01/26/1990.

PI 590126. Malus domestica Borkh.

Fenouillet de Ribours. Collected in Unknown. France, found in garden of la Rouairie. Pedigree - First fruited 1840. Comments:: Size large: shape flat, rectangular to truncate-conic, convex, prominent ribs at eye and on body; skin greenish, partly covered with bronze russet, white dots; flesh fine, white; flavor sweet, subacid, aniseed perfume; season very late.

The following were donated by David Taylor, Brogdale Experimental Horticulture Sta., Ministry of Agriculture, National Fruit Trials, Faversham, Kent Me13, England, United Kingdom. Received 01/26/1990.

PI 590127. Malus domestica Borkh.

Friandise. Pedigree - First described 1760. Comments:: Size medium 51:57 mm; shape tall, rectangular, convex to concave, asymmetric; skin pale yellow patched with bright red and russet, flesh crisp, greenish white; flavor sweet, aromatic, season mid to late.

PI 590128. Malus domestica Borkh.

Golden Harvey. Pedigree - Probably originated in 1600's. Comments:: Size medium 51:45 mm; shape intermediate, rectangular, convex, not ribbed; skin yellow, flushed red nearly covered with rough russet; flesh firm, crisp, yellow; flavor sweet, rich, aromatic; season late to very late.

PI 590129. Malus domestica Borkh.

Golden Pippin. Collected in Unknown. Old American apple of beautiful shape. Pedigree - Many stocks said to be Golden Pippin, but the true one is probably not still in existence. Record 1629. Introduced 1880. Comments:: Size medium 51:51 mm; shape intermediate, rectangular to truncate-conic, convex, not ribbed; skin golden with a deeper tinge, dotted with russet and white; flesh firm, crisp, yellow; flavor sweet, subacid, rich, season mid to very late. Ripens Sept. Valuable for cooking and dessert.

PI 590130. Malus domestica Borkh.

Hubbards Pearmain. Pedigree - Known before 1800. Comments:: Size medium 57-68:57 mm; shape tall to intermediate, conic to truncate-conic, convex to straight, slightly ribbed at eye and on body; skin greenish yellow, flushed orange to brownish red, sometimes striped and blotched, netted and patchy russet; flesh coarse, soft, dry, cream; flavor slightly sweet, rich; season late to very late.

PI 590131. Malus domestica Borkh.

Isle of Wight Pippin. Pedigree - Recorded: 1817 but thought to be much older. Comments:: Size small 51:39 mm; shape intermediate to flat, rectangular to truncate conic, convex, not or very slightly ribbed; skin yellow orange with small russet patches, a little rough greasy; flesh firm, white tinged green; flavor slightly sweet, slightly aromatic; season late.

PI 590132. Malus domestica Borkh.

London Pippin.

PI 590133. Malus domestica Borkh.

Old Pearmain. Pedigree - Recorded in both France and England, circa

1200. Comments:: Published descriptions vary. Hagg 5th edition has: "Size medium 56:50 mm; shape tall, rectangular or conic, ribbed at eye and on body; skin yellow streaked crimson, almost entirely flushed dark red, large russet dots; flesh tender, yellowish; flavor sweet, rich; season mid to late". (Other published descriptions approximate more nearly to Winter Pearmain.)

The following were developed by J. Williams, Unknown. Donated by David Taylor, Brogdale Experimental Horticulture Sta., Ministry of Agriculture, National Fruit Trials, Faversham, Kent Me13, England, United Kingdom. Received 01/26/1990.

PI 590134. *Malus domestica* Borkh.

Pitmaston Russet Nonpareil. Pedigree - Nonpareil x Raised at Pitmasto near Worcester. First fruit 1814. Comments:: Size medium to large 68-85:54-66 mm; shape flat, rectangular occasionally truncate-conic, convex, occasionally slightly ribbed at eye and on body; skin yellowish green almost covered with russet, russet dots, occasional red mottled flush, rough, rather tough; flesh firm, greenish yellow; flavor rich, aromatic, season late.

The following were donated by David Taylor, Brogdale Experimental Horticulture Sta., Ministry of Agriculture, National Fruit Trials, Faversham, Kent Me13, England, United Kingdom. Received 01/26/1990.

PI 590135. *Malus domestica* Borkh.

Reinette d' Anjou. Pedigree - First mentioned 1817. Comments:: Size medium to large 63-74:54-65 mm; shape intermediate to flat, rectangular to truncate - conic, convex, occasionally slightly ribbed at eye; skin yellowish green with brownish red flush and red stripes, russet dots, russet at base, sometimes on body, slightly tacky; flesh firm, tender, fine, creamy white, green core line; flavor subacid, slightly sweet, slightly aromatic; season late.

PI 590136. *Malus domestica* Borkh.

Reinette de Cuzy. Collected in Unknown. France found in Chapuis, Cuzy, Seine-et-Loire. Pedigree - Said to be several centuries old but first recorded 1863. Comments:: Size large; shape tall to intermediate, truncate-conic to rectangular, convex, ribbed at eye and on body, generally asymmetric; skin bright yellow blushed brick red, russet in cavity, russet dots and streaks; flesh fine, compact, tender, yellowish, flavor sweet, subacid, perfumed; season late to very late.

PI 590137. *Malus domestica* Borkh.

Reinette Franche.

PI 590138. *Malus domestica* Borkh.

Reinette Grise de Portugal. Pedigree - Known in 1798. Comments:: Size medium to large; shape flat, conic to rectangular, convex, slightly ribbed at eye; skin green, almost entirely covered with rough, brown grey russet; flesh very fine, fairly tender, greenish or yellowish; flavor sweet, subacid, perfumed; season late to very late.

PI 590139. *Malus domestica* Borkh.

Reinette Ontz. Pedigree - Recorded 1840; in NFT collection where it is very similar to Blenheim orange. Comments:: Size large; shape intermediate, rectangular, convex, not ribbed; skin golden, marbled and striped dull carmine, russet at base and apex, russet dots, flesh fine, tender, whitish; flavor sweet, subacid, perfumed; season very late.

PI 590140. *Malus domestica* Borkh.

Reinette Thouin. Collected in Unknown. France, seedling from garden of

M. Gillet de Laumont, Beaumont, near Montgomery. Pedigree - First fruited 1822. Comments:: Size medium 57:51 mm; shape intermediate to tall, truncate-conic, convex to straight, ribbed at eye and on body, some-times lipped at base; skin yellow, russet dots, russet on basal half of fruit, rough; flesh firm, crisp, coarse, greenish-white; flavor subacid; season late to very late.

The following were developed by Robertson. Donated by David Taylor, Brogdale Experimental Horticulture Sta., Ministry of Agriculture, National Fruit Trials, Faversham, Kent Me13, England, United Kingdom. Received 01/26/1990.

PI 590141. Malus domestica Borkh.

Ross Nonpareil. Collected in Unknown. Ireland, known in Meath 1802. Comments:: Size medium 57:44; shape flat to intermediate, truncate-conic, convex, occasionally slightly ribbed at eye; skin pale yellow flushed deep orange with carmine streaks, nearly covered with russet; flesh fairly crisp, tender, fine; flavor sweet, aromatic; season mid. Tree: moderately vigorous, upright spreading, high quality dessert apple. Primarily a garden apple.

The following were donated by David Taylor, Brogdale Experimental Horticulture Sta., Ministry of Agriculture, National Fruit Trials, Faversham, Kent Me13, England, United Kingdom. Received 01/26/1990.

PI 590142. Malus domestica Borkh.

Voilette. Comments:: Cider apple - used for fermented cider.

The following were developed by Weidner, Gerasmuhle, Germany. Donated by David Taylor, Brogdale Experimental Horticulture Sta., Ministry of Agriculture, National Fruit Trials, Faversham, Kent Me13, England, United Kingdom. Received 01/26/1990.

PI 590143. Malus domestica Borkh.

Weidners GoldreINETte. Pedigree - Orleans Reinette x Raised 1844. Comments:: Size large 72:51-54 mm; shape flat, rectangular to truncate-conic, convex, not ribbed; skin yellow flushed and striped crimson, dotted, occasional russet marks; flesh fine, fairly tender, crisp, yellowish; flavor rich, sweet, subacid; season late to very late.

The following were donated by David Taylor, Brogdale Experimental Horticulture Sta., Ministry of Agriculture, National Fruit Trials, Faversham, Kent Me13, England, United Kingdom. Received 01/26/1990.

PI 590144. Malus domestica Borkh.

Weisser Winter Taffetapfel. Pedigree - Recorded 1800. Comments:: Size medium 55-58:42-48 mm; shape flat, rectangular, convex, ribbed slightly at eye and on body; skin pale yellow with slight orange to pink flesh, little scaly russet in cavity, slightly greasy; flesh tender, fine, white; flavor sweet, subacid; season very late.

The following were developed by Kewley. Donated by David Taylor, Brogdale Experimental Horticulture Sta., Ministry of Agriculture, National Fruit Trials, Faversham, Kent Me13, England, United Kingdom. Received 01/26/1990.

PI 590145. Malus domestica Borkh.

Manks Codlin. Pedigree - First fruited 1815. Comments:: Size medium 59-70:55-65 mm; shape intermediate, sometimes tall, conic, convex, ribbed on body and at eye; skin pale yellow slightly flushed red dotted smooth, thin; flesh firm, fine, yellowish white; flavor acid; season

early to mid; tree has burrs.

The following were developed by C.S. Crandall. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/13/1990.

PI 590146. *Malus domestica* Borkh.

Crandall. Pedigree - Rome Beauty x Jonathan. Cross made 1914. Selected in 1925; tested as Ill. 1 Intro: 1952. Comments:: Medium red fruit; crisp, juicy flesh. Good for dessert and culinary uses. Ripens before Winesap; keeps well in storage through April. Tree: productive; comes into bearing early, blooms mid-season; relatively disease resistant.

The following were developed by W.F. Hines, Port Washington, Ohio 43837, United States. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/13/1990.

PI 590147. *Malus domestica* Borkh.

Delawine. Pedigree - Delicious x Stayman Winesap Intro: 1948. Comments:: Fruit: shape, size and color of Delicious; flesh juicy, flavor of Stayman Winesap. Tree: strong grower, spreading, foliage heavy, tendency toward annual bearing.

The following were donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/13/1990.

PI 590148. *Malus domestica* Borkh.

Erickson. Pedigree - Parentage unknown. Seed planted 1905; selected 1910; intro. 1923. Comments:: Fruit: large; skin green; ripens early; resembles Hibernial; tree very hardy, annual bearer.

PI 590149. *Malus domestica* Borkh.

Antonovka Ottawa.

The following were developed by A.W. King. Donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/13/1990.

PI 590150. *Malus domestica* Borkh.

Kingjon. Pedigree - Introduced by various commercial firms since its discovery in 1933 as a limb sport on a 50 year old tree of Jonathan. Comments:: Resembles parent, but skin colors are earlier and darker, at first red striped, then becoming solid red. Tree: standard type. A widely distributed and excellent color variant of Jonathan.

The following were donated by Irrigated Agric. Research Ext. Center, P.O. Box 30, Washington State University, Prosser, Washington 99350, United States. Received 02/13/1990.

PI 590151. *Malus domestica* Borkh.

Ottawa #1.

PI 590152. *Malus domestica* Borkh.

Ottawa #524.

The following were developed by S. Taniuchi. Donated by Bruce J. Parlman,

USDA, ARS, Natl. Germplasm Resources Laboratory, 11601 Old Pond Drive, Glenn Dale, Maryland 20769-9157, United States. Received 03/23/1990.

PI 590153. Malus domestica Borkh.

Kogetsu. Collected in Japan. Pedigree - Intro: 1981. Golden Delicious x Jonathan Japanese Reg. No. P130. Comments:: Fruit: medium-large, 300-350 g; round; skin 95% red; flesh creamy white with good sugar/acid balance; excellent flavor, some drop. Harvest w/Gala, stores well.

The following were donated by Bruce J. Parlman, USDA, ARS, Natl. Germplasm Resources Laboratory, 11601 Old Pond Drive, Glenn Dale, Maryland 20769-9157, United States. Received 03/23/1990.

PI 590154. Malus domestica Borkh.

Kitanosachi. Collected in Japan.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 08/20/1990.

PI 590155. Malus domestica Borkh.

Delikates. Collected in South Africa.

The following were donated by Suzanne Hurtt, USDA, ARS, Natl. Germplasm Resources Laboratory, Building 580, BARC-East, Beltsville, Maryland 20705-2350, United States. Received 04/01/1991.

PI 590156. Malus domestica Borkh.

Bonza; Q 24698. Collected in Australia.

The following were developed by Hudson Wholesale Nursery, Tangent, Oregon, United States. Donated by Larry L. McGraw, Sheep Rock Nursery, Kimberly, Oregon 97848, United States. Received 02/21/1991.

PI 590157. Malus domestica Borkh.

Hudson's Golden Gem. Collected in Oregon, United States. Discovered as fence row seedling, Hudson Nursery, Tangent, Oregon, United States. Pedigree - Requires cross-pollination. Intro: 1931. Comments:: Excellent foliage characteristics. Large, high quality russet. Conical, elongated fruit; smooth, uniformly dull yellow, russet skin; very long stem; sugary, juicy, crisp flesh. Flavor is somewhat nutty. Excellent dessert apple. Keeps in storage for three months. Heavy russeted fruit, sometimes cracks when ripe. Hangs on the tree well into winter. Large, vigorous, productive tree bears annually; disease resistant especially to scab. Ripens late October. Requires 600 hrs. of chilling.

The following were developed by Agriculture Canada, Morden Research Station, P.O. Box 3001, Morden, Manitoba, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/05/1992.

PI 590158. Malus domestica Borkh.

Goodland. Pedigree - Patten Green seedling; selected 1925, named 1955, tested as Morden 354. "Poor breeder" - says Coutts 1991. Comments:: Standard size fruit from 5 to over 8 cm, creamy-green washed with red. Flesh creamy-white, fine textured, crisp sweet. Late. Keeps about 2 months. "Not as hardy as Battleford.." Manchester. "Upright habit, self thinning, annual bearer, excellent dessert flavor and texture"..Evans. "A good apple tender." No resistance to chlorosis. Productive. Tree:

medium tall, very hardy; annually productive.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/05/1992.

PI 590159. *Malus domestica* Borkh.
Loyalist.

The following were developed by L.P.S. Spangelo; S.J. Leuty; H.B. Heeney. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/05/1992.

PI 590160, *Malus domestica* Borkh.
Moira. Pedigree - McIntosh x Dg22-81 [Jonathan x (Rome Beauty x *Malus floribunda* 821 sib)]. Tested as Ottawa 548. Intro: 1978. Comments:: Fruit small than McIntosh, up to 76 mm in diam; round, conic skin color medium lively red on light green to yellow ground color, prominent white lenticels; flesh creamy white slightly tinged with green, crisp, moderately acid; processed fruit was rated fair for juice and poor for sauce and slices harvest with Delicious; storage life 2-3 months at 2C, blooms 2-3 days after McIntosh. Tree: moderately vigorous, spreading; high yield efficiency; resistant to apple scab & cedar apple rust, susceptible to fire blight, quince rust. Development includes Smithfield Exp. Farm, Trenton, Ont. CA.

The following were developed by Raymond L. Granger, Agriculture Canada, Research Station, 430 Gouin Blvd. St.-Jean-sur-Richelieu, Saint-Jean, Quebec J3B 3E6, Canada; G.L. Rousselle. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/05/1992.

PI 590161. *Malus domestica* Borkh.
Richelien. Pedigree - Ottawa 521 x 11-51; ancestry includes Melba, McIntosh, Jonathan, Rome Beauty and *Malus floribunda* 821. Cross made 1964 in Ottawa, selected at Trenton, Ontario; evaluated at Frelighsburg, Quebec. Tested as Ottawa 635. Comments:: Fruit: medium-large, 65-70 mm diam, color 60% to 65% red on light green color; shape oblong, conical; flesh white, juicy crisp, mild to subacid. High sugar and aroma, quality good. Introduced as midseason dessert apple, also suitable for culinary use. Harvest 1 week before McIntosh; storage life 3 months or more in air. Tree: vigor medium, spreading, precocious, annually productive; resistant to apple scab (V) moderately resistant to powdery mildew and to fire blight; very susceptible to cedar apple rust and quince rust.

The following were developed by W.D. Lane; R.A. MacDonald. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/05/1992.

PI 590162. *Malus domestica* Borkh.
Shamrock. Pedigree - McIntosh 10C-8-43 (irradiated spur type) x Starkspur Golden Delicious; cross made by K. Lapins in 1970; selected 1978; tested as 8C-1-15. Comments:: Fruit: medium, about equal to Golden Delicious; shape round slightly oval; color dark green with white lenticels, very similar to Granny Smith, attractive; sometimes a slightly brown-red color develops on the sun-exposed side. Flesh juicy, firm, bruise resistant; eating quality good; harvest 3 days before McIntosh. Storage life at 0 - 3 C. Keeps in good condition for 7

months. Tree: medium, smaller than McIntosh; compact spurry growth habit, very precocious, moderately productive, bloom time early with McIntosh.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/05/1992.

PI 590163. *Malus domestica* Borkh.

Sterappel. Collected in Netherlands. Pedigree - First described 1830. Comments:: Size medium 68:55 mm; shape intermediate to flat, rectangular to truncate-conic, convex, not or very slightly ribbed at eye; skin yellow, generally entirely covered with deep red, many star-shaped or angular russet dots; flesh fairly firm, fine, yellowish white tinged pink under skin and often at core; flavor sweet subacid, slightly perfumed; season mid to late. Tree: moderately vigorous, very upright. Produces few spurs and inclined to be tip-bearing.

PI 590164. *Malus domestica* Borkh.

Sunrise. Collected in Mexico. Pedigree - Northern Spy x "England, possibly raised at Welford Park, Borkshire"; recorded 1897. Comments:: Size medium 64:51 mm; shape intermediate, conic, convex, ribbed at eye and on body; skin pale yellow, variable orange red flush and bright carmine stripes, russet at base, shining; flesh soft, tender, loose texture, whitish; flavor sweet, subacid. (unique pear-grape flavor) Good eating. Season mid-late.

PI 590165. *Malus domestica* Borkh.

J-TE-B. Collected in Czechoslovakia.

PI 590166. *Malus domestica* Borkh.

J-TE-C. Collected in Czechoslovakia.

PI 590167. *Malus domestica* Borkh.

J-TE-D. Collected in Czechoslovakia.

PI 590168. *Malus domestica* Borkh.

J-TE-E. Collected in Czechoslovakia.

PI 590169. *Malus domestica* Borkh.

J-TE-G. Collected in Czechoslovakia.

The following were donated by Susan K. Brown, Cornell University, New York State Agric. Exp. Sta., Department of Horticultural Sciences, Geneva, New York 14456-0462, United States. Received 03/10/1992.

PI 590170. *Malus baccata* (L.) Borkh.

#3552.

PI 590171. *Malus domestica* Borkh.

Northern Lights.

PI 590172. *Malus domestica* Borkh.

Bob White.

PI 590173. *Malus domestica* Borkh.

Kelsey.

The following were developed by James N. Cummins, New York State Agric. Exp. Station, Department of Horticultural Sciences, Geneva, New York 14456-0462, United States. Donated by Susan K. Brown, Cornell University, New York State

Agric. Exp. Sta., Department of Horticultural Sciences, Geneva, New York 14456-0462, United States. Received 03/10/1992.

PI 590174. *Malus domestica* Borkh.
Novole.

The following were donated by Susan K. Brown, Cornell University, New York State Agric. Exp. Sta., Department of Horticultural Sciences, Geneva, New York 14456-0462, United States. Received 03/10/1992.

PI 590175. *Malus angustifolia* (Aiton) Michaux
Prince George.

PI 590176. *Malus domestica* Borkh.
Flame.

The following were developed by George P. Peffer. Donated by Susan K. Brown, Cornell University, New York State Agric. Exp. Sta., Department of Horticultural Sciences, Geneva, New York 14456-0462, United States. Received 03/10/1992.

PI 590177. *Malus domestica* Borkh.
Pewaukee. Pedigree - Duchess of Oldenburg X Northern Spy. Comments:: First recorded 1870. Size medium to large; shape intermediate, rectangular, convex, ribbed on body; skin yellow flushed and mottled orange-red, striped red, often covered with bloom, dotted; flesh fairly firm, rather coarse and tender, white; flavor subacid, slightly aromatic; season mid to very late.

The following were donated by Susan K. Brown, Cornell University, New York State Agric. Exp. Sta., Department of Horticultural Sciences, Geneva, New York 14456-0462, United States. Received 03/10/1992.

PI 590178. *Malus domestica* Borkh.
Otterson.

PI 590179. *Malus domestica* Borkh.
E.8.

PI 590180. *Malus domestica* Borkh.
Blue Pearmain. Collected in Unknown. Old variety of uncertain origin, but supposed to be American variety. Pedigree - Probably in cultivation for more than 150 years. Hedride mentions it in Boston in early part of 19th century. Comments:: Fruit medium to large, roundish, inclined to oblate, some- times a little conic, irregular; skin rough, yellow splashed and netted with red. Flesh yellowish, moderately firm, coarse, moderately juicy. Flavor is mild, subacid, agree- able, aromatic, good. Matures October, keeps until March. Bears well; often high percentage of unmarketable fruit.

PI 590181. *Malus domestica* Borkh.
Tahir 3-1. Comments:: Unique type per R. Way.

PI 590182. *Malus domestica* Borkh.
NY 55. Comments:: Black Rot resistant.

PI 590183. *Malus domestica* Borkh.
Dayton.

PI 590184. *Malus domestica* Borkh.
Golden Delicious.

PI 590185. *Malus domestica* Borkh.
Jonathan.

PI 590186. *Malus domestica* Borkh.
Wijcik McIntosh.

The following were developed by Agriculture Canada Res. Sta., St. Jean-Sur-Richeli, Quebec, Canada. Donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/17/1993.

PI 590187. *Malus domestica* Borkh.
Rouville. Pedigree - Intro. 1983. 52-05-312 x 69-52; ancestry includes Red Melba, Melba, McIntosh, Wolf River and *Malus atrosanguinea* 804. Cross made 1962 at Ottawa, selected 1972 at Trenton, Ont. Eval. at Frelighsburg, Quebec. Tested as Ottawa 627. Comments:: Fruit: very large, 70-80 mm. diam; skin 75% red on pale green-yellow ground; shape oblate, symmetrical, somewhat ribbed; flesh white to creamy, juicy, slightly coarse; flavor subacid, high sugar and tannin. Quality fair to good, dual purpose including processing for juice; storage life two months. Tree: vigorous, semispreading; precocious, annually productive; cold hardy; resistant to apple scab in most years but foliage susceptible to race 5. Described by G.L. Rouselle in 1983; named by R.L. Granger in 1991.

The following were donated by Dan Thompson, Agriculture Canada, Center for Plant Health, 8801 East Saanich Road, Sidney, British Columbia V8L 1H3, Canada. Received 02/17/1993.

PI 590188. *Malus domestica* Borkh.
J-TE-H (15707). Collected in Czechoslovakia.

PI 590189. *Malus domestica* Borkh.
Delia. Collected in Romania.

The following were developed by S. Brown. Donated by Susan K. Brown, Cornell University, New York State Agric. Exp. Sta., Department of Horticultural Sciences, Geneva, New York 14456-0462, United States. Received 02/26/1993.

PI 590190. *Malus hybrid*
NY 58-22. Pedigree - Open-pollinated McIntosh seedling. Comments:: Bright red 1" fruit; hangs on the tree until late winter. Upright spreading tree, with glossy dark green leaves. Large pure white single flowers. Blooms with McIntosh.

The following were developed by Univ. of Illinois, Urbana, Illinois, United States. Donated by Jules Janick, Purdue University, Department of Horticulture, West Lafayette, Indiana 47907-1165, United States. Received 04/19/1993.

PI 590191. *Malus hybrid*
Co-op 1. Pedigree - PRI 47-147 x N.J. 123249 (Williams et al. 1967). Comments:: Fruit 64-70 mm; round oblate; pale yellow to cream ground color; bright finish; slightly striped, 70% med to pale red; fine-grained, cream colored, firm to slightly crisp flesh; spicy, spritely acid, slightly aromatic flavor; moderately juicy. Matures 6 wks before Delicious. Tree: limber, bare-wooded branches; unreliable cropping. Field immune to apple scab; moderate resistance to powdery mildew; field immune to cedar-apple rust; susceptible to fire-blight.

Acidic, small fruit size, uneven fruit drop, heavy fruit drop, inadequate storage life.

The following were developed by Purdue University, Indiana Agr. Exp. Station, West Lafayette, Indiana 47907, United States. Donated by Jules Janick, Purdue University, Department of Horticulture, West Lafayette, Indiana 47907-1165, United States. Received 04/19/1993.

PI 590192. Malus hybrid

Co-op 3. Pedigree - N.J. 8 x PRI 558-1 (Williams et al. 1967).
Comments:: Fruit: 57-70 mm; round to short conic; green yellow to yellow ground color; bright finish; slightly striped, 60-80% med. red; med. grained, white to cream colored, slightly crisp yet tender flesh at harvest, softening after 3 wks in storage; bland, spritely acid; mod. juicy. Mature 5 wks before Delicious. Tree: semi-vigorous, spreading. Field immune to apple scab; good resistance to powdery mildew; susceptible to fire blight; highly resistant to cedar-apple rust. Insufficient flavor; tender flesh; small fruit; uneven ripening; tendency to drop; short storage.

The following were developed by University of Illinois, Urbana, Illinois, United States. Donated by Jules Janick, Purdue University, Department of Horticulture, West Lafayette, Indiana 47907-1165, United States. Received 04/19/1993.

PI 590193. Malus hybrid

Co-op 6. Pedigree - PRI 558-1 x 'Mollie's Delicious' (Williams et al. 1972). Comments:: Fruit: 70-76 mm; conic to long conic; green-yellow to yellow ground color; bright finish; slightly striped 75% light to med. red; fine grained, tough skin; cream colored, moderately tough, tender flesh; spritely acid, bland; juicy. Matures 5 1/2 wks before Delicious. Tree: vigorous, somewhat lanky and bare wooded branches. Field immune to apple scab; good level of resistance to powdery mildew; susceptible to cedar-apple rust; susceptible to fire blight. Acidic, insufficient flavor; tender flesh; poor coloring; uneven ripening; heavy drop; no storage. Problems severe for further consid.

The following were developed by Purdue University, Indiana Agr. Exp. Station, West Lafayette, Indiana 47907, United States. Donated by Jules Janick, Purdue University, Department of Horticulture, West Lafayette, Indiana 47907-1165, United States. Received 04/19/1993.

PI 590194. Malus hybrid

Co-op 7. Pedigree - PRI 1018-9 x N.J. 154955 (Williams et al. 1972).
Comments:: Fruit: 70-76 mm; or more; round to short conic; yellow ground; bright finish; heavily splashed, slightly striped, mottled some years, 70-80% med. red, attractive; med. grained; cream colored crisp & breaking flesh; sweet to mildly sub-acid & slightly aromatic in flavor; moderately juicy. Large fruit size. Fruit hangs until over-ripe. Matures 5 wks before Delicious. Tree: vigorous, highly vegetative and branching; moderately biennial. Field immune to apple scab; susceptible to powdery mildew; highly resistant to cedar-apple rust; mod. resistant to fire blight. Poor growth habit.

PI 590195. Malus hybrid

Co-op 8. Pedigree - PRI 558-1 x 'Millie's Delicious' (Williams et al. 1972). Comments:: Fruit: 76 mm or more (3+"); round-conic w/distinctive, pointed narrow calyx end; green-yellow to pale-yellow ground; bright finish; blushed 60-85% light-med. red; attractive; med. grained, cream colored, firm to crisp & slightly breaking flesh; mildly sub-acid, bland; juicy. Some drop tendency; Matures 2 1/2 wks before Delicious.

Tree: moderate vigor, spreading branches w/90D crotch angles, uniformly distributed, large fruit; annual light to mod. cropping. Field immune to apple scab; highly resistant to powdery mil- dew & cedar-apple rust; mod. resistant to fire blight.

PI 590196. Malus hybrid

Co-op 9. Pedigree - 'Starking Delicious' x PRI 877-2 (Williams et al. 1972). Comments:: Fruit: 76 mm or more (3+"); variable, short conic to round or slightly oblate; green-yellow to yellow ground, bright finish; striped 90-1--% med. to dark, red to purple-red, attractive; coarse grained, cream colored, firm-crisp, mod. tough flesh; sweet to mildly sub-acid, bland, slightly arom- atic flavor; juicy. Flavor & quality similar to, but less than Delicious. Fruit hangs until over-ripe. Matures 1 1/2 wk before Delicious. Tree: mod. vigor, spreading branches w/90D crotch angles, biennial. Field immune to apple scab, high resistance-powdery mildew, fire blight; susc. c-ap-rst.

PI 590197. Malus hybrid

Co-op 10. Pedigree - 'Starking Delicious' x PRI 610-2 (Williams et al. 1972) (Field immune to apple scab; RESISTANCE: high to cedar-apple rust; moderate to powdery mildew and fire blight.) Highly susceptible to leaf bronzing-Eur red mite[Panonychus ulmi]. Comments:: Fruit: 70-76 mm or more; conic w/pronounced calyx end points bright finish; bright red blushed 100% self yellow to pale- yellow, very attractive; very smooth, non-russeted skin; totally inconspicuous lenticels; med. grained, cream to pale yellow colored, firm-crisp, slightly tender flesh; sweet to mildly sub-acid, bland, slightly spicy flavor; juicy. Flavor & quality similar to, but less than Delicious. Mealy in storage. Matures with Delicious. Tree: mod. vigorous, strong, thick, heavily spurred branches w/90D crotch angles. Excellent growth habit.

The following were developed by U. of Illinois, Urbana, Illinois, United States. Donated by Jules Janick, Purdue University, Department of Horticulture, West Lafayette, Indiana 47907-1165, United States. Received 04/19/1993.

PI 590198. Malus hybrid

Co-op 11. Pedigree - Ill. #2('Winesap' o.p.) x PRI 1042-100) [Williams et al. 1972] Field immune to apple scab. RESISTANCE: High to cedar-apple rust; fire blight. Mod. susceptible to powdery mildew. Comments:: Fruit: 70-76 mm; conic to long conic w/pronounced calyx and points; yellow ground color; bright finish; slightly striped slightly splashed, 75-95% med. red, attractive; med. grained pale yellow, crisp & breaking tough flesh, mildly sub-acid. Flavor: slightly spicy, full, rich, juicy; fair at harvest- good after a month storage. Hangs on tree well. Matures 2 wks after Delicious. Tree: mod. vigorous, slightly upright, thin branched, very sparse cropping. Tough flesh texture; thin but tough skin; astringence & slight bitterness at harvest; susceptible to fruit storage scald.

PI 590199. Malus hybrid

Co-op 14. Pedigree - PRI 10-147 x 'Mollie's Delicious' (Williams et al. 1975) Field immune to apple scab, cedar-apple rust. RESISTANCE: High to powdery mildew; moderate to fire blight. Comments:: Fruit: 64-76 mm; long conic; yellow ground color; bright finish; slightly striped, splashed, 75% med. red to slightly orange, attractive; fine grained, pale yellow, very firm, crisp & breaking flesh at harvest, becoming mealy after sto- rage; sweet to mildly sub-acid, bland flavor; mod. juicy. Heavy cropping w/ slight biennial bearing. Hangs on tree unt- il over-ripe; tends to soften. Matures 6 wks before 'Delic- ious'. Tree: Mod. vigorous, spurred, slightly upright bran- ches. Stem & fruit cracking; tendency to overcrop with small fruit size. Low chilling requirement.

The following were developed by Purdue University, Indiana Agr. Exp. Station, West Lafayette, Indiana 47907, United States. Donated by Jules Janick, Purdue University, Department of Horticulture, West Lafayette, Indiana 47907-1165, United States. Received 04/19/1993.

PI 590200. Malus hybrid

Co-op 16. Pedigree - PRI 764 x PRI 672 (Williams et al. 1975) Field immune to apple scab; SUSCEPTIBILITY: High to powdery mildew; cedar-apple rust; moderately to fire blight. Comments:: Fruit: 70-76 mm or more; conic, classic 'Golden Delicious' shape; mod. bright finish; occasionally red blushed 100% self yellow w/ small russeted lenticels, very attractive; Flesh: fine grained, pale yellow, firm very crisp & breaking texture maintained 5 mos plus in storage. Flavor: mildly sub acid, slightly spicy, full, rich. Hangs on tree well. Matures w/Delicious. Tree: mod. vigorous, thin branched & somewhat bushy. Sugar & flavor become starchy, "potato-like" flavor after storage, developing extremely greasy cuticle. Poor growth habit and susceptibility to secondary diseases.

The following were developed by U. of Illinois, Urbana, Illinois, United States. Donated by Jules Janick, Purdue University, Department of Horticulture, West Lafayette, Indiana 47907-1165, United States. Received 04/19/1993.

PI 590201. Malus hybrid

Co-op 18. Pedigree - N.J. 60837 x PRI 669-205 (Williams et al. 1975). Comments:: Fruit: 64-70 mm; short conic to round; cream to pale yellow ground, bright finish, washed, 50-80% light to med. red; mod. grained, cream to pale yellow, firm, crisp flesh, fair to good quality, very juicy (retained in storage). Hangs well on tree, heavy annual cropping. Matures 1 wk after Delicious; storage believed 3 mo., conclusive data unavailable. Tree: Mod. vigorous, spreading, wide crotch angles; thick, semi-spur branches. Field immune to apple scab; mod. resistant to powdery mildew; mod. resistant to cedar-apple rust. Susceptible to fire blight. Moderate to small fruit.

PI 590202. Malus hybrid

Co-op 19. Pedigree - N.J. 57249 x PRI 854-100 (Dayton et al. 1977) Field immune to apple scab; RESISTANCE: high to powdery mildew, cedar-apple rust; moderately to fire blight. Comments:: Fruit: 70-76 mm; oblate-round; cream to pale yellow ground; very smooth, glossy finish, slightly striped, washed, 50-95% light red to pink, attractive; fine grained, pale yellow, somewhat crisp/tender flesh/harvest, softening after storage mildly sub-acid, spicy, full, rich flavor; very juicy. Light cropping. Retains quality 3-4 wks storage. Matures 8 wks before Delicious. Tree: vigorous, slightly upright, weeping tendency to bear clustered fruit tips of branches; fruit drops when ripe. Limited storage; poor color; uneven ripening; poor growth habit.

PI 590203. Malus hybrid

Co-op 20. Pedigree - 'Crandall' x PRI 688-100 (Dayton et al. 1977) Field immune to apple scab; moderately resistant to fire blight. Comments:: Fruit: 64-70 mm; oblate-round; pale yellow to deep canary yellow ground; smooth, glossy finish; striped, washed, 50-80% med. to light red or orange, unique; fine grained, deep yellow, firm, very crisp & breaking flesh/harvest, retaining texture up to 1 1/2 mo. in storage; mild to mod. sub-acid, spicy, full rich flavor, juicy. Very sparse cropping w/biennial tendency. Matures 6-7 wks before Delicious. Tree: mod. vigorous slightly upright, very thin branching producing brushy undesirable tree; drop when ripe. SUSCEPTIBLE: to powdery mildew; very to cedar-apple rust.

The following were developed by Purdue University, Indiana Agr. Exp. Station, West Lafayette, Indiana 47907, United States. Donated by Jules Janick, Purdue University, Department of Horticulture, West Lafayette, Indiana 47907-1165, United States. Received 04/19/1993.

PI 590204. Malus hybrid

Williams' Pride. Pedigree - PRI 1018-101 x NJ 50 (Intro. as 'Williams Pride'. (Janick et al. 1988) Field immune to apple scab, cedar-apple rust. RESISTANCE: high level to fire blight; good level to powdery mildew. Comments:: Fruit: 67-76 mm plus; variable size; round to conic, variable shape; lime green to pale yellow ground; washed & faintly striped, bright, 70-90% med. to dark red or purple-red; conspicuous, slightly sunken lenticels; med. to coarse grained, cream colored, firm very crisp & breaking flesh; mod. to mildly sub-acid, slightly spicy, full, rich flavor; juicy; excellent summer dessert quality. Suggested for advanced commercial testing on soils where nutrient deficiencies do not predispose trees to bitter pit. Not recommended on MM-111 rootstock or under high nitrogen fertilization.

PI 590205. Malus hybrid

Co-op 24. Pedigree - N.J. 125355 x 'Prima' (Williams et al. 1984) Field immune to apple scab. RESISTANCE: High to powdery mildew; moderately to fire blight. Susceptible to cedar-apple rust. Comments:: Fruit: 64-70 mm; variable, oblate-round or short-conic and slightly lobed, wide calyx cavity w/open calyx; green-yellow to pale yellow ground; bright glossy finish; washed to 75-95% med. to dark red to purple-red, very attractive; fine grained, pale yellow to cream colored, firm, very crisp and breaking flesh; mildly sub-acid, slightly spicy, slightly mod. cropping. Matures 1/2 - 1 wk before Delicious. Tree: Mod. vigor, slightly upright. 1 1/2- 2 mos in storage, flavor breaks down to aldehyde & becomes unpalatable.

PI 590206. Malus hybrid

Co-op 25. Pedigree - PCF 2-134 x PRI 669.205 (669NJ5) (Williams et al. 1984) Observed to be susceptible to apple maggot in late-season unsprayed blocks. Comments:: Fruit: 76 mm+; round-short-conic; green-yellow to yellow ground; mod. to bright finish; slightly splashed, washed 75% to 90% light to med. red to orange; mod. grained, pale yellow to cream colored, extremely, very crisp & breaking flesh sweet to mildly subacid, slightly spicy, fruity, rich, pleasant flavor; juicy. Open calyx tube. Somewhat bland at harvest, flavor improves after a month in storage; retains quality in cold storage for 7+ mos. One of the longest storing selections to originate from PRI program. Fruit hangs well. Matures 1 1/2 wk before Delicious. Tree: mod. vigor.

The following were developed by U. of Illinois, Urbana, Illinois, United States. Donated by Jules Janick, Purdue University, Department of Horticulture, West Lafayette, Indiana 47907-1165, United States. Received 04/19/1993.

PI 590207. Malus hybrid

Co-op 26. Pedigree - 'Starking Delicious' x PRI 610-2 (Williams et al. 1984) Field immune to apple scab; highly resistant to: powdery mildew, cedar-apple rust, fire blight. Comments:: Fruit: variable size & shape; 64-77mm; round or short-conic to long-conic; green-yellow to pale-yellow ground; very bright, glossy finish; washed 75-100% med. red, attractive; fine grained, cream colored, firm to crisp, slightly tender flesh, texture varies; sweet to mildly sub-acid, somewhat bland, pleasant flavor; juicy. Quality peaks after harvest. Fruit hangs well. Matures with Delicious. Tree: moderate vigor, annual heavy cropping. Insufficient storage life. Testing on dwarfing rootstocks has shown tendency for

water core. Sensitive to Stem Pitting & Chlorotic Leaf Spot.

The following were developed by Purdue University, Horticultural Research Farm, West Lafayette, Indiana 47906, United States. Donated by Jules Janick, Purdue University, Department of Horticulture, West Lafayette, Indiana 47907-1165, United States. Received 04/19/1993.

PI 590208. Malus hybrid

Co-op 28. Pedigree - PRI 1982 x Prima. Comments:: Fruit: 60-70mm; variable shape-round to oblate-conic; green- yellow; slightly striped, washed 75-95% med. red; med. grain white to cream color, firm, crisp & breaking flesh; full, rich flavor; mod. juicy.; Retains flesh texture & quality for up to 4 months in frig.storage. Heavy cropping with strong biennial tendency. Bloom early-mid. Maturity, 1-1 1/2 wks before Delicious. Tree upright, vigorous, spreading. Immune to apple scab; mod. resist to powdery mildew, cedar- apple rust; high suscept. to fire blight. Tendency for re- duced fruit size & reduction in flavor with a heavy crop.

The following were developed by Purdue University, Indiana Agr. Exp. Station, West Lafayette, Indiana 47907, United States. Donated by Jules Janick, Purdue University, Department of Horticulture, West Lafayette, Indiana 47907-1165, United States. Received 04/19/1993.

PI 590209. Malus hybrid

Co-op 29. Pedigree - Golden Delicious x PRI 1050-201 (1050NJ1). Comments:: Fruit: 70-76mm; round to short-conic; mod. to bright finish; occasional mottled, pink-orange blush, 100% pale yellow, attractive; med.-course grained, cream color, very firm and crisp & breaking flesh; full, rich flavor; juicy. Very good quality. Retains for 5 months or more in frig. storage. Hang on tree until over ripe. Mod.- heavy cropping. Winter storage apple; 2-2 1/2 wks after Delicious. Field immune to apple scab; mod. resist. to powdery mildew; high resist. to cedar- apple rust and fire blight. Stem end russet & mottled blush detract from appearance.

PI 590210. Malus hybrid

Enterprise. Pedigree - PRI 1661-2 x PRI 1661-1. Comments:: Fruit 64-76mm; round-elongate & occasionally oblong; green- yellow to deep yellow ground color; bright, glossy finish; washed 80-100% med. red-slightly orange, attractive; fine grained, pale yellow-cream colored, firm, crisp & breaking flesh; mod. thick, tough skin; full, rich, flavor; juicy; Good quality. Retains 6 months or more in refrig. storage. Winter storage apple with uniform ripening, mod-heavy annual cropping, and single harvest. 2 1/2 wks after Delicious. Field immune to apple scab; mod. resist. to powdery mildew, high resist. to cedar-apple rust and fire blight.

The following were developed by Purdue University, Horticultural Research Farm, West Lafayette, Indiana 47906, United States. Donated by Jules Janick, Purdue University, Department of Horticulture, West Lafayette, Indiana 47907-1165, United States. Received 04/19/1993.

PI 590211. Malus hybrid

Co-op 31. Pedigree - Rock 41-112 x PRI 841-103. Comments:: Fruit 60-76mm; round; green yellow- yellow ground color; appearance varies from year to year, best under hot, dry condidtions. 80-100% dark purple-red; tendency for heavy scarf-skin; med. - course grained, cream colored, firm, very crisp & breaking flesh; full, rich flavor; juicy; Very good quality. Retains 6 months or more in refrig. storage. Winter storage apple with uniform ripening, mod. - heavy cropping, & single

harvest. Biennial tendency after heavy crop. 2 wks after Delicious. Field immune to apple scab; mod. resist. to apple scab & good res. to fire blight; mod. susc. to cedar..

PI 590212. Malus hybrid

Co-op 32. Pedigree - Camuzet x Coop 10 [PRI 1659-10] (Starking Delicious x PRI 610-2) Cross Made 1974; selected 1982 by E.B. Williams; tested as HFRow 34. Comments:: Fruit: 2 3/8 to 2 7/8" oblate-round to round; skin pale green-yellow to cream colored at harvest maturing to deep yellow; flesh pale yellow, colored, crisp, medium to fine grained; flavor mildly acid to sweet, slightly spicy, moderately rich; retains quality 4-6 wks in storage. Tree: moderately vigor, spreading, semi-spur type, droop under heavy crop; moderate cropping; biennial tendency. Harvest late June, early Aug. Field immune to scab, slightly resistant to rust, mildew resistant, moderately resistant to fire blight. Good quality, better than Lodi or Yellow Transparent.

PI 590213. Malus hybrid

Co-op 33. Pedigree - PCF 2-134 (NJ 37848 x NJ 440249) x PRI 669-205 (Crandall x PRI 14-226) Cross made 1971; selected 1978 by E.B. Williams; tested as CLR19T60. Comments:: Fruit: 2 1/4 x 2 3/4", round; skin blushed, 70-90% medium - dark red to purple red over light green ground at harvest, tender moderate thickness, flesh yellow, extremely crisp & breaking, yet somewhat melting, medium to fine grained, juicy. Flavor mod. to mildly subacid, rich, spicy for about 1 mo. after harvest. Tree: standard, spreading, narrow branches, less than desirable growth habit. Moderate to heavy cropping with biennial tendency. Blooms mid-season; harvest mid-Sept. Disease susceptibility.

PI 590214. Malus hybrid

Co-op 34. Pedigree - Monroe x PRI 612-1 (Starking Delicious, Giant Limb x PRI 14-126) Cross made 1960; selected 1967 by E.B. Williams; tested as TNR10T11. Comments:: Fruit: 2 1/2 x 2 7/8" attractive, mostly conic, 60-80% light to medium red, slightly tough, moderately thick skin; flesh white to cream, slightly crisp, firm medium grained; flavor spritely to moderately acid, moderately spicy, full-flavored juicy, similar to Jonathan. Tree: standard, round top, spreading growth habit, good annual cropper, very good over-all disease resistance, appears adapted to midwest and other Jonathan areas. Blooms late to midseas, harvest early Oct.

PI 590215. Malus hybrid

Co-op 35. Pedigree - Golden Delicious x Coop 17 [PRI 1689-100] (Illinois #2 {Winesap open pollinated} x PRI 668-100) Cross made 1972; selected 1981 by E.B. Williams; tested as HER3T139. Comments:: Fruit: 2 5/8 to 3", oblate conic to short conic; skin green-yellow at harvest maturing to yellow, smooth glossy finish w/little russet, moderately thick, slightly tough; flesh cream, firm, very crisp, juicy, medium grained; flavor mildly acid, pleasant, somewhat bland with aroma. Tree: moderately vigorous, standard, round top, semi-spur type bearing habit, some biennial tendencies. Good over-all level of disease resistance. Smaller and maturing with or slightly later than Golden Delicious, but storage life superior.

PI 590216. Malus hybrid

Co-op 36. Pedigree - Golden Delicious x PRI 2050-2 (Golden Delicious x PRI 1050-201) Cross made 1971; selected 1980 by E.B. Williams, tested as CLR13T40. Comments:: Fruit: 2 1/2 to 2 7/8", short conic to conic, skin pale green-yellow at harvest, maturing to pale yellow, thin, tender; flesh cream, crisp and breaking, yet melting, medium grained, juicy; flavor moderately to mildly subacid, rich, fruity, full. Tree: moderate vigor, slightly upright, very desirable semi-spur growth habit, moderate to heavy produced w/strong biennial tendencies (needs thinning). High over-all level of disease resistance. Smaller and maturing a week

after Golden Delicious, but storage life superior.

PI 590217. Malus hybrid

Co-op 37. Pedigree - Golden Delicious x Coop-17 [Pri 1689-100] (Illinois #2 {Winesap open pollinated} x PRI 668-100) Cross made 1972; selected in 1980 by E.B. Williams; tested as HER4T20. Comments:: Fruit: 2 5/8 to 3", short conic to conic; skin green-yellow at harvest maturing to yellow, smooth, glossy finish with little russet, moderately thick, tender; flesh pale yellow to cream, firm, very crisp & breaking, yet melting, juicy, medium to fine grained; flavor moderately acid, rich, slightly aromatic, full flavored, juicy. Tree: moderately vigorous, standard, round top, semi-spur type bearing habit with some biennial tendencies. Good over-all disease resistance. Smaller and maturing a week after Golden Delicious, but storage life superior.

PI 590218. Malus hybrid

Goldrush. Pedigree - Golden Delicious x Coop 17 [PRI 1689-100] (Illinois #2 {Winesap open pollinated} x PRI 668-100) Cross made 1972; selected 1980 by E.B. Williams; tested as HER4T16. Comments:: Fruit: 2.75 to 3" ovate to short conic, regular; skin green-yellow at harvest, maturing to saffron yellow, smooth non-waxy finish, russetted conspicuous lenticels, tender, thin to medium thickness; flesh pale yellow, medium coarse grain-ed, very firm, very crisp & breaking; flavor, rich, spicy acid at harvest, mellowing in storage. Tree: moderate vigor slightly upright spreading, highly desirable growth & bearing habit, heavy producer. Disease resistant but rust susceptible. Long term winter storage apple. [Good quality].

The following were donated by Larry L. McGraw, Sheep Rock Nursery, Kimberly, Oregon 97848, United States. Received 03/25/1994.

PI 590219. Malus domestica Borkh.

Green Newtown Pippin. Pedigree - Possible sport of Yellow Newtown Pippin or possibly Yellow Newtown Pippin is a sport of Green Newtown Pippin. Green and Yellow first differentiated in 1817. Comments:: Height: Original 100 year old tree about 20' tall- Dwarfish. Upright, spreacking; branches, limbs contorted. Generally a tip bearer, few spurs. Fruit: med.-large, unsymmetrical, abundant bearer, can be biennial. Shape rather oblate & irregular. A nice yellow in storage, waxy, crisp, juicy, firm and flavorful-fresh use. A very nice processing fruit. Scale is not evident, little mildew. Leaf acuminate, serrate, rather glabrous, med.-large; petiole 47mm-clubbed. Sometimes aphids at terminal. The contortion may be of gene value is breeding to an up-right, desired, tree form.

The following were developed by USDA, ARS, Georgia Mountain Branch Exp. Sta., Blairsville, Georgia, United States. Donated by James N. Cummins, New York State Agric. Exp. Station, Department of Horticultural Sciences, Geneva, New York 14456-0462, United States. Received 03/25/1994.

PI 590220. Malus domestica Borkh.

Hardy Cumberland. Pedigree - Lyons ? x Detroit Red; Cross made at Blacksburg, VA, 1961. Comments:: Fruit: large, >70mm; shape round-oblate; color 80% washed and striped carmine; flesh cream-colored; flavor balanced aroma and acidity; eating quality excellent; not bitter pit. Harvest season slight ? than Rome Beauty Tree: size 90% the size of Golden Delicious tree; hardy, survived -25 degrees F without injury; no serious disease problems.

The following were donated by Unknown. Received 09/02/1994.

PI 590221. *Malus x atrosanguinea* (Spaeth) C. Schneider

The following were developed by Stoneville Pedigreed Seed Company, United States. Received 05/16/1995.

PI 590222. *Gossypium hirsutum* L.
Cultivar. "BXN58". PVP 9500138.

PI 590223. *Gossypium hirsutum* L.
Cultivar. "BXN57". PVP 9500139.

The following were developed by Vilmorin S.A., France. Received 05/16/1995.

PI 590224. *Phaseolus vulgaris* L.
Cultivar. "SOLEIL". PVP 9500140.

The following were developed by Busch Agricultural Resources, Inc., United States; Western Rice Research, United States. Received 05/16/1995.

PI 590225. *Oryza sativa* L.
Cultivar. "SP211". PVP 9500141.

PI 590226. *Oryza sativa* L.
Cultivar. "SP311". PVP 9500142.

The following were developed by DEKALB Genetics Corporation, United States. Received 05/16/1995.

PI 590227. *Medicago sativa* L.
Cultivar. "DK127". PVP 9500143.

PI 590228. *Zea mays* L. *ssp. mays*
Cultivar. "FBMU". PVP 9500144.

PI 590229. *Zea mays* L. *ssp. mays*
Cultivar. "O1ASB1". PVP 9500145.

PI 590230. *Zea mays* L. *ssp. mays*
Cultivar. "O1IBH2". PVP 9500146.

PI 590231. *Zea mays* L. *ssp. mays*
Cultivar. "PHEI4". PVP 9500147.

The following were developed by FFR Cooperative, United States. Received 05/16/1995.

PI 590232. *Glycine max* (L.) Merr.
Cultivar. "FFR 493". PVP 9500148.

PI 590233. *Glycine max* (L.) Merr.
Cultivar. "FFR 553". PVP 9500149.

PI 590234. *Glycine max* (L.) Merr.
Cultivar. "FFR 583". PVP 9500150.

PI 590235. *Glycine max* (L.) Merr.
Cultivar. "FFR 663". PVP 9500151.

The following were developed by Keith Jones, Delta & Pine Land Company, Scott, Mississippi 38772, United States. Received 05/16/1995.

- PI 590236. *Glycine max* (L.) Merr.
Cultivar. "DP 3640". PVP 9500152.
- PI 590237. *Glycine max* (L.) Merr.
Cultivar. "DP 3681". PVP 9500153.
- PI 590238. *Glycine max* (L.) Merr.
Cultivar. "DP 3519 STS". PVP 9500154.
- PI 590239. *Glycine max* (L.) Merr.
Cultivar. "DP 3571 STS". PVP 9500155.
- PI 590240. *Gossypium hirsutum* L.
Cultivar. "PM 183". PVP 9500156.
- PI 590241. *Gossypium hirsutum* L.
Cultivar. "PM 280". PVP 9500157.
- PI 590242. *Gossypium hirsutum* L.
Cultivar. "PM 330". PVP 9500158.

The following were developed by Pure-Seed Testing, Inc., United States. Received 05/16/1995.

- PI 590243. *Lolium perenne* L.
Cultivar. "WIND STAR". PVP 9500159.

The following were developed by DEKALB Genetics Corporation, United States. Received 05/16/1995.

- PI 590244. *Zea mays* L. *ssp. mays*
Cultivar. "NL054B". PVP 9500160.
- PI 590245. *Zea mays* L. *ssp. mays*
Cultivar. "WDAQ2". PVP 9500161.
- PI 590246. *Zea mays* L. *ssp. mays*
Cultivar. "6F905". PVP 9500162.
- PI 590247. *Zea mays* L. *ssp. mays*
Cultivar. "91CSV-1". PVP 9500163.

The following were developed by Hyperformer Seed Company, United States. Received 05/23/1995.

- PI 590248. *Glycine max* (L.) Merr.
Cultivar. "HY 574". PVP 9500164.

The following were developed by All-Tex Seed, Inc., United States. Received 05/23/1995.

- PI 590249. *Gossypium hirsutum* L.
Cultivar. "ALL-TEX XPRESS". PVP 9500166.

The following were developed by DEKALB Genetics Corporation, United States.

Received 05/23/1995.

PI 590250. *Zea mays* L. ssp. *mays*
Cultivar. "GMLEA". PVP 9500167.

PI 590251. *Zea mays* L. ssp. *mays*
Cultivar. "WDDQ1". PVP 9500168.

PI 590252. *Zea mays* L. ssp. *mays*
Cultivar. "85DGD1". PVP 9500169.

PI 590253. *Zea mays* L. ssp. *mays*
Cultivar. "91DFA-5". PVP 9500170.

The following were developed by N.F. Davis Drier & Elevator, Inc., United States. Received 05/23/1995.

PI 590254. *Oryza sativa* L.
Cultivar. "NED-181". PVP 9500171.

The following were developed by Asgrow Seed Company, Genecorp, Inc., United States. Received 05/23/1995.

PI 590255. *Lactuca sativa* L.
Cultivar. "NINER". PVP 9500172.

The following were developed by DEKALB Genetics Corporation, United States. Received 05/23/1995.

PI 590256. *Glycine max* (L.) Merr.
Cultivar. "CX046". PVP 9500173.

PI 590257. *Glycine max* (L.) Merr.
Cultivar. "CX145". PVP 9500174.

The following were developed by Robert E. Allan, USDA-ARS, WSU, Dept. of Crop & Soil Sci., 209 Johnson Hall, Washington State Univ., Pullman, Washington 99164, United States. Received 05/17/1995.

PI 590258. *Triticum aestivum* L., nom. cons.
Breeding. 92ARS921. Pedigree - Stephens/4/Ae.
juvenalis/6*Chris//9*Selkirk (NDM1)/3/6*Stephens. Euplasmic (E)
equivalent population to alloplasmic (A) population of *Aegilops*
juvenalis with Stephens (CI17596, soft white winter) as nucleus donor.
Similar phenotypically to Stephens for most traits. Averaged over 5
tests A=E for heading date, plant height, lodging %, test wt., spike
no., bioyield, kernel wt. E>A for grain yield, harvest index, and
kernels/spike; A>E for % protein and grain hardness.

PI 590259. *Triticum aestivum* L., nom. cons.
Breeding. 92ARS922. Pedigree - Ae. juvenalis/6*Chris//9*Selkirk
(NDM1)/3/7*Stephens. Alloplasmic (A) population. *Aegilops juvenalis*
cytoplasm donor and Stephens (CI17596, soft white winter) nucleus donor.
Similar phenotypically to Stephens for most traits. Equal to euplasmic
(E) counterpart for heading date, plant height, lodging, test wt., spike
no., bioyield, kernel wt. A<E for grain yield, harvest index and
kernels/spike. A>E for protein content and grain hardness.

PI 590260. *Triticum aestivum* L., nom. cons.
Breeding. 92ARS923. Pedigree - Stephens/4/Ae.

- cylindrical/Chris//10*Selkirk (NDM2)/3/6*Stephens. Euplasmic (E) equivalent population to alloplasmic (A) population of *Aegilops cylindrica* with Stephens (CI17596, soft white winter) as nucleus donor. Similar phenotypically to Stephens for most traits. Over 5 tests A=E for heading date, lodging, plant height, grain yield, test wt., spike no., bioyield, harvest index, kernels/spike, protein content and grain hardness. E>A for kernel wt.
- PI 590261. *Triticum aestivum* L., nom. cons.**
Breeding. 92ARS924. Pedigree - Ae. cylindrical/Chris//10*Selkirk (NDM2)/3/7*Stephens. Alloplasmic (A) population. *Aegilops cylindrica* cytoplasm donor. Stephens (CI17596, soft white winter) nucleus donor. Similar phenotypically to Stephens for most traits. Averaged over 5 tests, A=E for heading date, plant height, lodging, grain yield, test wt., spike no., bioyield, harvest index, kernels/spike, protein content and grain hardness. A<E for kernel wt.
- PI 590262. *Triticum aestivum* L., nom. cons.**
Breeding. 92ARS925. Pedigree - Stephens/4/Ae. variabilis/9*Chris//13*Selkirk (NDM3)/3/6*Stephens. Euplasmic (E) equivalent population to alloplasmic (A) population of *Aegilops variabilis* with Stephens (CI17596, soft white winter) as nucleus donor. Similar phenotypically to Stephens for most traits. Averaged over 5 tests A=E for heading date, plant height, lodging, test wt., harvest index, kernels/spike, protein content and grain hardness. E>A for grain yield and kernel wt.; E<A for spike no. and bioyield.
- PI 590263. *Triticum aestivum* L., nom. cons.**
Breeding. 92ARS926. Pedigree - Ae. variabilis/9*Chris//13*Selkirk (NDM3)/3/7*Stephens. Alloplasmic (A) population with *Aegilops variabilis* as cytoplasm donor. Stephens (CI17596, soft white winter) nucleus donor. Averaged over 5 tests A equal to euplasmic (E) counterpart for heading date, plant height, lodging, test wt., harvest index, kernels/spike, protein content and grain hardness. A<E for grain yield and kernel wt.; A>E for spike no. and bioyield.
- PI 590264. *Triticum aestivum* L., nom. cons.**
Breeding. 92ARS927. Pedigree - Stephens/3/Ae. squarrosa/19*Selkirk (NDM4)//6*Stephens. Euplasmic (E) equivalent population to alloplasmic (A) population of *Aegilops squarrosa* with Stephens (CI17596, s soft white winter) as nucleus donor. Similar phenotypically to Stephens for most traits. Averaged over 5 tests A=E for heading date, plant height, grain yield, test wt., spike no., bioyield, harvest index, kernels/spike, protein content and grain hardness. E>A for lodging and kernel wt.
- PI 590265. *Triticum aestivum* L., nom. cons.**
Breeding. 92ARS928. Pedigree - Ae. squarrosa/19*Selkirk (NDM4)//7*Stephens. Alloplasmic (A) population with *Aegilops squarrosa* as cytoplasm donor. Stephens (CI17596, soft white winter) as nucleus donor. Similar phenotypically to Stephens for most traits. Averaged over 5 tests A=E (euplasmic equivalent) for heading date, plant height, grain yield, test wt., spike no., bioyield, harvest index, kernels/spike, protein content and grain hardness. A<E for lodging and kernel wt.
- PI 590266. *Triticum aestivum* L., nom. cons.**
Breeding. 92ARS929. Pedigree - Stephens/4/Ae. uniaristata/2* T. durum//10*Selkirk(NDM5)/3/6*Stephens. Euplasmic (E) counterpart to alloplasmic (A) population of *Aegilops uniaristata* with Stephens (CI17596, soft white winter) as nucleus donor. Averaged over 5 tests E=A for heading date, plant height, lodging, grain yield, test wt., spike no., bioyield, harvest index, kernels/spike, protein content and grain hardness; E>A for kernel wt.

- PI 590267. *Triticum aestivum* L., nom. cons.
Breeding. 92ARS930. Pedigree - Ae. uniaristata/2*T. durum/10*Selkirk (NDM5)/3/7*Stephens. Alloplasmic (A) population with *Aegilops uniaristata* as cytoplasm donor and Stephens (CI17596, soft white winter) as nucleus donor. Similar phenotypically to Stephens for most traits. A equal to euplasmic (E) counterpart for heading date, plant height, lodging, grain yield, test wt., spike no., bioyield, harvest index, kernels/spike, protein content and grain hardness. A<E for kernel wt.
- PI 590268. *Triticum aestivum* L., nom. cons.
Breeding. 92ARS932. Pedigree - Stephens/4/Ae. ventricosa/T. durum/13*Selkirk (NDM6)/3/6*Stephens. Euplasmic (E) equivalent to alloplasmic (A) population of *Aegilops ventricosa* with Stephens (CI17596, soft white winter) as nucleus donor. Similar phenotypically to Stephens for most traits. Averaged over 5 tests E=A for heading date, plant height, lodging, grain yield, test wt., spike no., bioyield, harvest index, kernels/spike, protein content and grain hardness; E>A for kernel wt.
- PI 590269. *Triticum aestivum* L., nom. cons.
Breeding. 92ARS933. Pedigree - Ae. ventricosa/T. durum//13*Selkirk (NDM6)/3/7*Stephens. Alloplasmic (A) population with *Aegilops ventricosa* as cytoplasm donor and Stephens (CI17596, soft white winter) as nucleus donor. Similar phenotypically to Stephens for most traits. A equal to euplasmic (E) equivalent for heading date, plant height, lodging, grain yield, test wt., spike no., bioyield, harvest index, kernels/spike, protein content and grain hardness; A<E for kernel wt.
- PI 590270. *Triticum aestivum* L., nom. cons.
Breeding. 92ARS934. Pedigree - Stephens/4/H. villosa/T. durum//9*Selkirk (NDM7)/3/6*Stephens. Euplasmic (E) equivalent to alloplasmic (A) population of *Haynaldia villosa* with Stephens (CI17596, soft white winter) as nucleus donor. Phenotypically similar to Stephens for most traits. When averaged over 5 tests, E=A for heading date, lodging, grain yield, test wt., spike no., bioyield, kernel wt., harvest index, protein content and grain hardness. E>A for plant height. A>E for kernels/spike.
- PI 590271. *Triticum aestivum* L., nom. cons.
Breeding. 92ARS935. Pedigree - H. villosa/T. durum//9*Selkirk (NDM7)/3/7*Stephens. Alloplasmic (A) population with *Haynaldia villosa* cytoplasm donor and Stephens (CI17596, soft white winter) as nucleus donor. Phenotypically similar to Stephens for most traits. A equal to euplasmic (E) equivalent for heading date, lodging, grain yield, test wt., spike no., bioyield, kernel wt., harvest index, protein content and grain hardness. A<E for plant height. A>E for kernels/spike.
- PI 590272. *Triticum aestivum* L., nom. cons.
Breeding. 92ARS936. Pedigree - Stephens/3/T. macha/17*Selkirk (NDM8)//6*Stephens. Euplasmic (E) equivalent to alloplasmic (A) population of *Triticum macha* with Stephens (CI17596, soft white winter) as nucleus donor. Phenotypically similar to Stephens for most traits. When averaged across 5 tests, E=A for heading date, plant height, lodging, test wt., spike no., bioyield, kernel wt., kernels/spike, protein content and grain hardness. E>A for grain yield and harvest index.
- PI 590273. *Triticum aestivum* L., nom. cons.
Breeding. 92ARS937. Pedigree - T. macha/17*Selkirk (NDM8)//7*Stephens. Alloplasmic (A) population with *Triticum macha* cytoplasm donor and Stephens (CI17596, soft white winter) as nucleus donor. Phenotypically similar to Stephens for most traits. A equal to euplasmic (E) equivalent for heading date, lodging, test wt., spike no., bioyield, kernel wt., kernels/spike, protein content and grain hardness. A<E for grain yield and harvest index.

- PI 590274. *Triticum aestivum* L., nom. cons.
Breeding. 92ARS938. Pedigree - Stephens/3/T. macha/9*Selkirk (NDM9)//6*Stephens. Euplasmic (E) equivalent to alloplasmic (A) population of *Triticum macha* with Stephens (CI17596, soft white winter) as nucleus donor. Phenotypically similar to Stephens for most traits. When averaged across 5 tests, E=A for heading date, plant height, lodging, grain yield, test wt., spike no., bioyield, kernel wt., harvest index, kernels/spike, protein content and grain hardness.
- PI 590275. *Triticum aestivum* L., nom. cons.
Breeding. 92ARS939. Pedigree - T. macha/9*Selkirk (NDM9)//7*Stephens. Alloplasmic (A) population with *Triticum macha* cytoplasm donor and Stephens (CI17596, soft white winter) as nucleus donor. Phenotypically similar to Stephens for most traits. A equal to euplasmic (E) equivalent for heading date, lodging, plant height, grain yield, test wt., spike no., bioyield, kernel wt., harvest index, kernels/spike, protein content and grain hardness.
- PI 590276. *Triticum aestivum* L., nom. cons.
Breeding. 92ARS940. Pedigree - Stephens/3/T. turgidum/9*Selkirk (NDM10)//6*Stephens. Euplasmic (E) equivalent to alloplasmic (A) population of *Triticum turgidum* with Stephens (CI17596, soft white winter) as nucleus donor. Phenotypically similar to Stephens for most traits. When averaged across 5 tests, E=A for heading date, lodging, grain yield, spike no., bioyield, kernel wt., harvest index, kernels/spike, protein content and grain hardness. E>A for plant height and A>E for test wt.
- PI 590277. *Triticum aestivum* L., nom. cons.
Breeding. 92ARS941. Pedigree - T. turgidum/9*Selkirk (NDM10)//7*Stephens. Alloplasmic (A) population with *Triticum turgidum* cytoplasm donor and Stephens (CI17596, soft white winter) as nucleus donor. Phenotypically similar to Stephens for most traits. A equal to euplasmic (E) equivalent for heading date, lodging, grain yield, spike no., bioyield, kernel wt., harvest index, kernels/spike, protein content and grain hardness. A<E for plant height and A>E for test wt.

The following were developed by S.B. Milligan, Louisiana Agr. Exp. Sta., Louisiana State University, Agronomy Dept., Baton Rouge, Louisiana 70803, United States; Benjamin L. Legendre, USDA, ARS, U.S. Sugarcane Field Laboratory, P.O. Box 470, Houma, Louisiana 70361, United States; F. A. Martin, Louisiana State University, Sugar Station/Audubon Sugar Institute, Louisiana Agricultural Center, Baton Rouge, Louisiana 70803-2109, United States; Jimmie D. Miller, USDA, ARS, Sugarcane Field Station, Star Route Box 8, Canal Point, Florida 33438, United States; E.O. Dufrene, St. Gabriel Res. Sta., U.S. Sugarcane Research, P.O. Box 470, St. Gabriel, Louisiana, United States; K.P. Bischoff, Louisiana Agr. Exp. Sta., Louisiana State University, Agronomy Dept., Baton Rouge, Louisiana 70803, United States; J.W. Hoy, Louisiana State University, Agric. Ctr., Plant Pathology & Crop Physiology Dept., Baton Rouge, Louisiana 70803-2109, United States; T.E. Reagan, Louisiana State University, Agric. Ctr., Entomology Dept., Baton Rouge, Louisiana 70803-2109, United States; K.L. Quebedeaux, Iberia Res. Stn., U.S. Sugarcane Research, Iberia, Louisiana, United States. Received 05/17/1995.

- PI 590278. *Saccharum hybrid*
Cultivar. "LCP 86-454". CV-102. Pedigree - CP 77-310 / CP 69-380. Produces low population of large-diameter stalks. Recoverable sugar content (kg ha⁻¹) similar to check varieties. Milling factor 1.035. Cane fiber content 12.6%. Suited to mechanical harvesting. Resistant to injury by sugarcane borer (*Diatraea saccharalis*). Resistant to smut (*Ustilago scitaminea*). Moderately resistant to leaf scald (*Xanthomonas albilineans*). Susceptible to sugarcane mosaic virus and ratoon stunting

disease (*Clavibacter xyli* subsp. *xyli*).

The following were donated by Int. Crops Res. Inst. for the Semi-Arid Tropics, Patancheru P.O., Andhra Pradesh 502 324, India. Received 05/31/1995.

- PI 590279. *Arachis hypogaea* L.
Landrace. ICG 27; RS 82. Collected in India.
- PI 590280. *Arachis hypogaea* L.
Landrace. ICG 30; RS 101. Collected in India.
- PI 590281. *Arachis hypogaea* L.
Uncertain. ICG 142; 61-A. Collected in Unknown.
- PI 590282. *Arachis hypogaea* L.
Breeding. ICG 183; GO 1068. Collected in India.
- PI 590283. *Arachis hypogaea* L.
Breeding. ICG 239; 13-10. Collected in Senegal.
- PI 590284. *Arachis hypogaea* L.
Breeding. MARIA-B; ICG 243. Collected in Mexico.
- PI 590285. *Arachis hypogaea* L.
Uncertain. ICG 517; AH 6207. Collected in India.
- PI 590286. *Arachis hypogaea* L.
Breeding. ICG 589; 28-206 RR. Collected in Senegal.
- PI 590287. *Arachis hypogaea* L.
Uncertain. ICG 660; 2651. Collected in United States.
- PI 590288. *Arachis hypogaea* L.
Landrace. ICG 800; SAMRALA. Collected in India.
- PI 590289. *Arachis hypogaea* L.
Uncertain. ICG 822; C 27. Collected in India.
- PI 590290. *Arachis hypogaea* L.
Uncertain. ICG 828; C 37(R). Collected in India.
- PI 590291. *Arachis hypogaea* L.
Breeding. ICG 830; C 39. Collected in India.
- PI 590292. *Arachis hypogaea* L.
Breeding. ICG 848; C 102. Collected in India.
- PI 590293. *Arachis hypogaea* L.
Breeding. ICG 851; C 107. Collected in India.
- PI 590294. *Arachis hypogaea* L.
Breeding. ICG 852; C 108. Collected in India.
- PI 590295. *Arachis hypogaea* L.
Breeding. ICG 859; C 116(R). Collected in India.
- PI 590296. *Arachis hypogaea* L.
Breeding. ICG 862; C 121. Collected in India.
- PI 590297. *Arachis hypogaea* L.
Uncertain. ICG 869; C 136. Collected in India.
- PI 590298. *Arachis hypogaea* L.

- Breeding. ICG 885; C 145-12-P-17. Collected in India.
- PI 590299. *Arachis hypogaea* L.
Breeding. ICG 911; C 184. Collected in India.
- PI 590300. *Arachis hypogaea* L.
Breeding. ICG 959; M 395. Collected in India.
- PI 590301. *Arachis hypogaea* L.
Breeding. ICG 1030; AH 7004. Collected in India.
- PI 590302. *Arachis hypogaea* L.
Breeding. ICG 1095; DOHAD 1. Collected in India.
- PI 590303. *Arachis hypogaea* L.
Breeding. ICG 1214; AH 3273. Collected in India.
- PI 590304. *Arachis hypogaea* L.
Breeding. ICG 1225; AH 3533. Collected in India.
- PI 590305. *Arachis hypogaea* L.
Uncertain. ICG 1260; AH 7171. Collected in South Africa.
- PI 590306. *Arachis hypogaea* L.
Breeding. ICG 1291; AK 8-11. Collected in India.
- PI 590307. *Arachis hypogaea* L.
Breeding. ICG 1349; RS 181. Collected in India.
- PI 590308. *Arachis hypogaea* L.
Breeding. ICG 1416; U 2-24-7. Collected in Sudan.
- PI 590309. *Arachis hypogaea* L.
Breeding. ICG 1461; 3-5. Collected in India.
- PI 590310. *Arachis hypogaea* L.
Uncertain. ICG 1602; AH 7729. Collected in Unknown.
- PI 590311. *Arachis hypogaea* L.
Cultivar. ICG 1730; "AK 12-24". Collected in India.
- PI 590312. *Arachis hypogaea* L.
Breeding. ICG 1834; U 4-4-10. Collected in Tanzania.
- PI 590313. *Arachis hypogaea* L.
Uncertain. ICG 1841; U 4-4-3. Collected in Uganda.
- PI 590314. *Arachis hypogaea* L.
Breeding. ICG 1891; EC 37484. Collected in Senegal.
- PI 590315. *Arachis hypogaea* L.
Breeding. ICG 1905; SHORT 3. Collected in India.
- PI 590316. *Arachis hypogaea* L.
Uncertain. ICG 2007; AH 63. Collected in Philippines.
- PI 590317. *Arachis hypogaea* L.
Uncertain. ICG 2008; AH 68. Collected in Unknown.
- PI 590318. *Arachis hypogaea* L.
Breeding. ICG 2036; AH 5144. Collected in India.
- PI 590319. *Arachis hypogaea* L.
Breeding. ICG 2091; 7173. Collected in India.

- PI 590320. *Arachis hypogaea* L.
Breeding. ICG 2127; 278-4-2. Collected in Nigeria.
- PI 590321. *Arachis hypogaea* L.
Landrace. FAIZPUR; ICG 2224. Collected in India.
- PI 590322. *Arachis hypogaea* L.
Landrace. ICG 2432; VRR 25. Collected in India.
- PI 590323. *Arachis hypogaea* L.
Breeding. ICG 2465; A 477-1. Collected in India.
- PI 590324. *Arachis hypogaea* L.
Cultivar. ICG 2738; "GANGAPURI". Collected in India.
- PI 590325. *Arachis hypogaea* L.
Landrace. ICG 2800; MONIR 240-30. Collected in Mexico.
- PI 590326. *Arachis hypogaea* L.
Breeding. ICG 3053; 275. Collected in India.
- PI 590327. *Arachis hypogaea* L.
Uncertain. ICG 3104; AH 6487. Collected in Unknown.
- PI 590328. *Arachis hypogaea* L.
Uncertain. AH 7206; ICG 3115. Collected in Former Soviet Union.
- PI 590329. *Arachis hypogaea* L.
Breeding. ICG 3179; DHARWAR 1. Collected in India.
- PI 590330. *Arachis hypogaea* L.
Landrace. ICG 3242; U 4-4-26. Collected in Tanzania.
- PI 590331. *Arachis hypogaea* L.
Uncertain. ICG 3257; U 4-7-25. Collected in South Africa.
- PI 590332. *Arachis hypogaea* L.
Breeding. ICG 3260; U 4-47-2. Collected in South Africa.
- PI 590333. *Arachis hypogaea* L.
Landrace. ICG 3276; U 2-12-4. Collected in Nigeria.
- PI 590334. *Arachis hypogaea* L.
Breeding. ICG 3365; JH 24. Collected in India.
- PI 590335. *Arachis hypogaea* L.
Breeding. ICG 3386; KG 61-38. Collected in India.
- PI 590336. *Arachis hypogaea* L.
Breeding. ICG 3422; NG 337. Collected in India.
- PI 590337. *Arachis hypogaea* L.
Breeding. ICG 3425; 53. Collected in India.
- PI 590338. *Arachis hypogaea* L.
Breeding. ICG 3454; RS 55. Collected in India.
- PI 590339. *Arachis hypogaea* L.
Breeding. ICG 3542; 2-2. Collected in India.
- PI 590340. *Arachis hypogaea* L.
Uncertain. ICG 3604; K 319 of RUSSIA. Collected in Former Soviet Union.

- PI 590341. *Arachis hypogaea* L.
Breeding. ICG 3647; New Mexico Valenica. Collected in United States.
- PI 590342. *Arachis hypogaea* L.
Breeding. ICG 3685; C 941. Collected in India.
- PI 590343. *Arachis hypogaea* L.
Uncertain. AH 7223; ICG 3700. Collected in Nigeria.
- PI 590344. *Arachis hypogaea* L.
Landrace. ICG 3736; Taluka Harur Local. Collected in India.
- PI 590345. *Arachis hypogaea* L.
Breeding. ICG 3750; R 4-A. Collected in India.
- PI 590346. *Arachis hypogaea* L.
Uncertain. ICG 3762; Spanish peanut. Collected in Unknown.
- PI 590347. *Arachis hypogaea* L.
Uncertain. ICG 3806; AH 7215. Collected in Tanzania.
- PI 590348. *Arachis hypogaea* L.
Uncertain. ICG 3873; 708. Collected in Uganda.
- PI 590349. *Arachis hypogaea* L.
Uncertain. AH 7826; ICG 4106. Collected in Unknown.
- PI 590350. *Arachis hypogaea* L.
Breeding. 7-B; ICG 4422. Collected in India.
- PI 590351. *Arachis hypogaea* L.
Landrace. ICG 4508; S 7-2-14. Collected in Tanzania.
- PI 590352. *Arachis hypogaea* L.
Breeding. ICG 4601; VAR 27. Collected in Cuba.
- PI 590353. *Arachis hypogaea* L.
Breeding. U 4-7-3; ICG 4680. Collected in Nigeria.
- PI 590354. *Arachis hypogaea* L.
Landrace. ICG 4728; Voleta. Collected in Burkina Faso.
- PI 590355. *Arachis hypogaea* L.
Landrace. Ku No.24; ICG 4790. Collected in Argentina.
- PI 590356. *Arachis hypogaea* L.
Uncertain. AH 7174; ICG 4863. Collected in Australia.
- PI 590357. *Arachis hypogaea* L.
Cultivar. "TG 15"; ICG 5341. Collected in India.
- PI 590358. *Arachis hypogaea* L.
Uncertain. AH 6644; ICG 5465. Collected in Unknown.
- PI 590359. *Arachis hypogaea* L.
Landrace. VRR 47; ICG 5791. Collected in India.
- PI 590360. *Arachis hypogaea* L.
Landrace. VRR 77; ICG 5843. Collected in India.
- PI 590361. *Arachis hypogaea* L.
Landrace. VRR 90; ICG 5856. Collected in India.
- PI 590362. *Arachis hypogaea* L.

- Landrace. VRR 91; ICG 5857. Collected in India.
- PI 590363. *Arachis hypogaea* L.
Landrace. VRR 98; ICG 5864. Collected in India.
- PI 590364. *Arachis hypogaea* L.
Breeding. Rhodesia Selection 4; ICG 6400. Collected in Zimbabwe.
- PI 590365. *Arachis hypogaea* L.
Landrace. Sam Col. 231; ICG 6544. Collected in Unknown.
- PI 590366. *Arachis hypogaea* L.
Landrace. Sam Col. 100; ICG 6569. Collected in Unknown.
- PI 590367. *Arachis hypogaea* L.
Landrace. Sam Col. 164; ICG 6757. Collected in Unknown.
- PI 590368. *Arachis hypogaea* L.
Breeding. 312/75; ICG 7237. Collected in Burkina Faso.
- PI 590369. *Arachis hypogaea* L.
Landrace. V 20; ICG 7404. Collected in Zimbabwe.
- PI 590370. *Arachis hypogaea* L.
Breeding. M 6-76 M; ICG 7446. Collected in Nigeria.
- PI 590371. *Arachis hypogaea* L.
Breeding. M 399-72 K; ICG 7454. Collected in Nigeria.
- PI 590372. *Arachis hypogaea* L.
Breeding. M 57-72 K; ICG 7490. Collected in Nigeria.
- PI 590373. *Arachis hypogaea* L.
Landrace. WCG 190; ICG 7630. Collected in Peru.
- PI 590374. *Arachis hypogaea* L.
Breeding. UF 71513; ICG 7633. Collected in United States.
- PI 590375. *Arachis hypogaea* L.
Breeding. M 380-72; ICG 7749. Collected in Nigeria.
- PI 590376. *Arachis hypogaea* L.
Landrace. RG 89; ICG 8472. Collected in Israel.
- PI 590377. *Arachis hypogaea* L.
Landrace. ACC 727; ICG 8662. Collected in India.
- PI 590378. *Arachis hypogaea* L.
Landrace. ACC 731; ICG 8664. Collected in India.
- PI 590379. *Arachis hypogaea* L.
Landrace. 57-275; ICG 9036. Collected in Burkina Faso.
- PI 590380. *Arachis hypogaea* L.
Breeding. ICG 9116; 75-72. Collected in Nigeria.
- PI 590381. *Arachis hypogaea* L.
Uncertain. ICG 9487; 79-86. Collected in Senegal.
- PI 590382. *Arachis hypogaea* L.
Breeding. CGC 4007; ICG 9934. Collected in India.
- PI 590383. *Arachis hypogaea* L.
Landrace. S 4; ICG 10094. Collected in Zimbabwe.

- PI 590384. *Arachis hypogaea* L.
Landrace. SAR 554; ICG 10700. Collected in India.
- PI 590385. *Arachis hypogaea* L.
Landrace. ZFA 3605-1; ICG 11190. Collected in Zimbabwe.
- PI 590386. *Arachis hypogaea* L.
Landrace. ZM 2617-1; ICG 11292. Collected in Zimbabwe.
- PI 590387. *Arachis hypogaea* L.
Breeding. CS 34; ICG 11329. Collected in India. Interspecific derivative.
- PI 590388. *Arachis hypogaea* L.
Breeding. ICG 11340; CS 50. Collected in India. Interspecific derivative.
- PI 590389. *Arachis hypogaea* L.
Breeding. CS 820; ICG 11359. Collected in India. Interspecific derivative.
- PI 590390. *Arachis hypogaea* L.
Breeding. CS 838; ICG 11364. Collected in India. Interspecific derivative.
- PI 590391. *Arachis hypogaea* L.
Breeding. ICG 11369; CS 850-1. Collected in India. Interspecific derivative.
- PI 590392. *Arachis hypogaea* L.
Breeding. ICG 11376; CS 888. Collected in India. Interspecific derivative.
- PI 590393. *Arachis hypogaea* L.
Breeding. CS 965; ICG 11382. Collected in India. Interspecific derivative.
- PI 590394. *Arachis hypogaea* L.
Breeding. ICG 11386; CS 1110. Collected in India. Interspecific derivative.
- PI 590395. *Arachis hypogaea* L.
Breeding. ICG 11395; CS 2118-1. Collected in India. Interspecific derivative.
- PI 590396. *Arachis hypogaea* L.
Breeding. ICG 11416; CS 2377. Collected in India. Interspecific derivative.

The following were donated by Robert H. Dilday, USDA, ARS, Rice Research & Extension Center, P.O. Box 287, Stuttgart, Arkansas 72160, United States. Received 05/17/1995.

- PI 590397. *Oryza latifolia* Desv.
Wild. NSGC 5928; W0018.
- PI 590398. *Oryza latifolia* Desv.
Wild. NSGC 5929.
- PI 590399. *Oryza barthii* A. Chev.
Wild. NSGC 5930; AC101254.

- PI 590400. *Oryza barthii* A. Chev.
Wild. NSGC 5931; PI223065R.
- PI 590401. *Oryza glaberrima* Steudel
Cultivated. NSGC 5932; AC100134.
- PI 590402. *Oryza glaberrima* Steudel
Cultivated. NSGC 5933; AC102213.
- PI 590403. *Oryza glaberrima* Steudel
Cultivated. NSGC 5934; AC103090.
- PI 590404. *Oryza sativa* L.
Wild. NSGC 5935; A101524-1; A101524-2.
- PI 590405. *Oryza sativa* L.
Wild. NSGC 5936; A101510.
- PI 590406. *Oryza sativa* L.
Wild. NSGC 5937; AC102169.
- PI 590407. *Oryza sativa* L.
Wild. NSGC 5938; AC102178.
- PI 590408. *Oryza sativa* L.
Wild. NSGC 5939; AC102842.
- PI 590409. *Oryza sativa* L.
Wild. NSGC 5940; A101510-R; 101510-O.
- PI 590410. *Oryza sativa* L.
Wild. NSGC 5941; A101512-R; 101512-O.
- PI 590411. *Oryza sativa* L.
Wild. NSGC 5942; A101524-1R; A101524-2R.
- PI 590412. *Oryza minuta* J. S. Presl
Wild. NSGC 5943; A101073-R; 101073-O.
- PI 590413. *Oryza rufipogon* Griffith
Wild. NSGC 5944.

The following were collected by Rice Station, Rokupr, Sierra Leone. Donated by Robert H. Dilday, USDA, ARS, Rice Research & Extension Center, P.O. Box 287, Stuttgart, Arkansas 72160, United States. Received 05/17/1995.

- PI 590414. *Oryza sp.*
Wild. NSGC 5945. Collected in Sierra Leone. Pedigree - selection from PI 232855.

The following were donated by Robert H. Dilday, USDA, ARS, Rice Research & Extension Center, P.O. Box 287, Stuttgart, Arkansas 72160, United States. Received 05/17/1995.

- PI 590415. *Oryza sp.*
Wild. NSGC 5946.
- PI 590416. *Oryza sp.*
Wild. NSGC 5947; W106.
- PI 590417. *Oryza rufipogon* Griffith
Wild. NSGC 5948; AC100907.

- PI 590418. *Oryza rufipogon* Griffith
Wild. NSGC 5949; A100923.
- PI 590419. *Oryza rufipogon* Griffith
Wild. NSGC 5950; A100945-1.
- PI 590420. *Oryza rufipogon* Griffith
Wild. NSGC 5951; A100912-R; 100912-O.
- PI 590421. *Oryza rufipogon* Griffith
Wild. NSGC 5952; A100917-R.
- PI 590422. *Oryza rufipogon* Griffith
Wild. NSGC 5953; A100923-R; 100923-O.
- PI 590423. *Oryza rufipogon* Griffith
Wild. NSGC 5954; A100945-R.
- PI 590424. *Oryza rufipogon* Griffith
Wild. NSGC 5955; A100946-R.
- PI 590425. *Oryza rufipogon* Griffith
Wild. NSGC 5956; A100943-R; 100943-O.
- PI 590426. *Oryza rufipogon* Griffith
Wild. NSGC 5957; A100900-R.

The following were developed by USDA, NRCS, Bismarck Plant Materials Center, 3308 University Drive, Bismarck, North Dakota 58504-7564, United States. Received 06/01/1995.

- PI 590427. *Buchloe dactyloides* (Nutt.) Engelm.
Cultivated. BISMARCK; 9057442. Pedigree - Composite of 2 native collections in 1987. One from Dickey Co. (IND2104), and one from Morton Co. (IND2503), North Dakota. Short grass, vigorous stolons, dioecious. Predominately male population. Seed uncommon. Growth habit prostrate. Summer growth season. Coldest plant hardiness zone 3. Growing season in frost free days 120. MLRA potential Northern Great Plains. Adapted to clay, silt soil conditions. Well drained drainage tolerance.

The following were developed by Michael Knudson, USDA, NRCS, Bismarck Plant Materials Center, 3308 University Drive, Bismarck, North Dakota 58504-7564, United States. Received 06/01/1995.

- PI 590428. *Agrostis gigantea* Roth
Cultivated. AGGI2; 9051629. Pedigree - PI 443037 (collected in Orleans County, NY / 9046772 (sel. from common redtop commercial seed lot). Cool season, sod forming grass. Strongly rhizomatous with erect base. Winter hardy. Seedling growth rapid with excellent establishment with spring and fall seedlings. Used primarily as component of critical area plantings. Also used as a forage and for use in low maintenance turf. Can be seeded in mixtures with other cool season plants. Adapted to temperate regions of U.S. with adequate rainfall. Tolerates acid soils down to pH of 4.0. Adapted to excessively well drained to poorly drained soils.

The following were donated by Stanley C. Schank, University of Florida, Institute of Food and Agricultural Sciences, Agronomy Department, Gainesville, Florida 32611-0300, United States. Received 06/06/1995.

- PI 590429. *Arachis pintoii* Krapov. & W. Gregory
Cultivar. "AMARILLO". Collected in Brazil.
- PI 590430. *Urochloa decumbens* (Stapf) R. D. Webster
Uncertain. Collected in Brazil.
- PI 590431. *Urochloa brizantha* (Hochst. ex A. Rich.) R. D. Webster
Cultivar. "MARANDU". Collected in Brazil.
- PI 590432. *Urochloa humidicola* (Rendle) Morrone & Zuloaga
Uncertain. Collected in Brazil.
- PI 590433. *Urochloa ruziziensis* (R. Germ. & C. M. Evrard) Morrone
& Zuloaga
Uncertain. Collected in Brazil.
- PI 590434. *Urochloa brizantha* (Hochst. ex A. Rich.) R. D. Webster
Cultivar. "MG-4". Collected in Brazil.
- PI 590435. *Brachiaria dictyoneura* (Fig. & De Not.) Stapf
Uncertain. Collected in Brazil.

The following were collected by Christian Seignobos, 87 chemin des sables jaunes, Bat. 4, 13012 Marseille, France. Donated by Thierry Otto, 87 chemin des sables jaunes, Bat. 4, 13012 Marseille, France. Received 06/07/1995.

- PI 590436. *Sorghum hybrid*
Cultivated. 1; NAGUE. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. Pedigree - *Sorghum durra*/caudatum or *S. durra*/kaffra.
- PI 590437. *Sorghum hybrid*
Cultivated. 2; LOUGOUBAY. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. Pedigree - *Sorghum guinea*/bicolor.
- PI 590438. *Sorghum hybrid*
Cultivated. 3; TUT BAYE. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. Pedigree - *Sorghum durra* or *guinea*/durra.
- PI 590439. *Sorghum hybrid*
Cultivated. JIEKET TUT; 4. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. Pedigree - *Sorghum guinea*/caudatum.
- PI 590440. *Sorghum hybrid*
Cultivated. 5; TUT LOKOT. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. Pedigree - *Sorghum guinea*/caudatum or *S. guinea*/durra.
- PI 590441. *Sorghum hybrid*
Cultivated. MET BARTA ZAK; 6. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. Pedigree - *Sorghum guinea*/exesertum.
- PI 590442. *Sorghum hybrid*
Cultivated. 7; GBATAP HE. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. Pedigree - *Sorghum guinea*/gambicum.
- PI 590443. *Sorghum hybrid*
Cultivated. GBATAP HE; 7 bis. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. Pedigree - *Sorghum guinea*/exesertum.
- PI 590444. *Sorghum sp.*

Cultivated. 8-1; ZOLOM. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. *Sorghum guinea*, *guineense* or *conspicuum*.

PI 590445. *Sorghum* sp.

Cultivated. 8-2; ZOLOM. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. *Sorghum guinea*, *guineense* or *conspicuum*.

PI 590446. *Sorghum* hybrid

Cultivated. ZOLOM; 8-3. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. Pedigree - *Sorghum guinea/exesertum*.

PI 590447. *Sorghum* sp.

Cultivated. 9; ZOLOM UYE. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. *Sorghum guinea*, *guineense* or *conspicuum*.

PI 590448. *Sorghum* hybrid

Cultivated. ZIKET LONG BAY; 10. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. Pedigree - *Sorghum guinea/bicolor membranaceum*.

PI 590449. *Sorghum* hybrid

Cultivated. ADGOM; ANGOM; 11. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. Pedigree - *Sorghum durra/caudatum*.

PI 590450. *Sorghum* hybrid

Cultivated. ADGOM; ANGOM; 12. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. Pedigree - *Sorghum guinea/caudatum*.

PI 590451. *Sorghum* hybrid

Cultivated. 13; ZIEKET. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. Pedigree - *Sorghum guinea/caudatum*.

PI 590452. *Sorghum* hybrid

Cultivated. 14; NANDATE. Collected 1992 in Cameroon. Between Benoue River and Adamaoua Mountains. Pedigree - *Sorghum durra/caudatum*.

The following were collected by Thierry Otto, 87 chemin des sables jaunes, Bat. 4, 13012 Marseille, France. Received 06/07/1995.

PI 590453. *Sorghum* sp.

Cultivated. 20; MUGUJUDOY. Collected 1990 in Cameroon. Near Maroua. Grown by Guizigua people.

PI 590454. *Sorghum* sp.

Cultivated. 21; MADIGUELE. Collected 1990 in Cameroon. Near Maroua. Grown by Molkwo people.

The following were collected by David E. Williams, USDA, ARS, Natl. Germplasm Resources Laboratory, Building 003, Room 400, BARC-West, Beltsville, Maryland 20705-2350, United States. Donated by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States. Received 07/01/1991.

PI 590455. *Arachis hypogaea* var. *peruviana* Krapov. & W. Gregory

Wild. Grif 977; US 1359; DEW 632; Grif 7430; Mandubi branco. Collected 10/16/1987 in Acre, Brazil. Latitude 7 deg. 38' S. Longitude 72 deg. 36' W. Elevation 300 m. Village of Rodrigues Alves, 10 km S of Cruzeiro do Sul on the shore of the Rio Jurua. Freshly harvested fruits with pronounced longitudinal reticulation, humps and beak, containing 2-4 light pink seeds. Planted on the bank of the Jurua River together with 2 kinds of maize, cowpea, sweet potato, cassava and squash. Seed

collection only.

The following were collected by A.C. Allem; Wantuil L. Werneck, CENARGEN / EMBRAPA, Brasilia, Federal District, Brazil. Donated by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States . Received 12/09/1993.

PI 590456. *Arachis hypogaea* L.

Grif 7393; 3595; US 1365. Collected in Brazil.

The following were donated by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States. Received 12/09/1993.

PI 590457. *Arachis hypogaea* L.

Grif 7394; 027669; US 1366. Collected in Brazil.

The following were collected by Jose F. M. Valls, EMBRAPA, S.A.I.N. Parque Rural - C.P. 10.2372, CEP 70.770, Brasilia, Federal District 70770, Brazil; G.P. Silva, Centro Nacional de Recursos Geneticos, Empresa Brasileira de Pesquisa, Agropecuaria, CEP 70.000, Brasilia, Federal District, Brazil; Dall; Agnol; Boldrini. Donated by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States. Received 12/09/1993.

PI 590458. *Arachis hypogaea* L.

Grif 7395; 10067; US 1367. Collected in Brazil.

The following were collected by Jose F. M. Valls, EMBRAPA, S.A.I.N. Parque Rural - C.P. 10.2372, CEP 70.770, Brasilia, Federal District 70770, Brazil. Donated by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States. Received 12/09/1993.

PI 590459. *Arachis hypogaea* L.

Grif 7396; 10821; US 1368. Collected in Brazil.

PI 590460. *Arachis hypogaea* L.

Grif 7397; 10822; US 1369. Collected in Brazil.

The following were collected by Jose F. M. Valls, EMBRAPA, S.A.I.N. Parque Rural - C.P. 10.2372, CEP 70.770, Brasilia, Federal District 70770, Brazil; V. R. Rao, Int. Crops Res. Inst. for the Semi-Arid Tropics, Patancheru, India ; G.P. Silva, Centro Nacional de Recursos Geneticos, Empresa Brasileira de Pesquisa, Agropecuaria, CEP 70.000, Brasilia, Federal District, Brazil. Donated by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States. Received 12/09/1993.

PI 590461. *Arachis hypogaea* L.

Grif 7398; 10920; US 1370. Collected in Brazil.

PI 590462. *Arachis hypogaea* L.

Grif 7399; 10926; US 1371. Collected in Brazil.

PI 590463. *Arachis hypogaea* L.

Grif 7400; 10927; US 1372. Collected in Brazil.

PI 590464. *Arachis hypogaea* L.

Grif 7401; 10928; US 1373. Collected in Brazil.

PI 590465. *Arachis hypogaea* L.

Grif 7402; 10929; US 1374. Collected in Brazil.

PI 590466. *Arachis hypogaea* L.
Grif 7404; 11029; US 1376. Collected in Brazil.

The following were collected by Renato F.A Veiga, Instituto Agronomico, Av. Barao de Itapura, 1481 -C. Postal 28, Campinas, Sao Paulo, Brazil; G.P. Silva, Centro Nacional de Recursos Geneticos, Empresa Brasileira de Pesquisa, Agropecuaria, CEP 70.000, Brasilia, Federal District, Brazil. Donated by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States. Received 12/09/1993.

PI 590468. *Arachis hypogaea* L.
Grif 7406; 88; US 1378. Collected in Brazil.

PI 590469. *Arachis hypogaea* L.
Grif 7407; 89; US 1379. Collected in Brazil.

PI 590470. *Arachis hypogaea* L.
Grif 7408; 90; US 1380. Collected in Brazil.

PI 590471. *Arachis hypogaea* L.
Grif 7409; 91; US 1381. Collected in Brazil.

PI 590472. *Arachis hypogaea* L.
Grif 7410; 94; US 1382. Collected in Brazil.

PI 590473. *Arachis hypogaea* L.
Grif 7411; 95; US 1383. Collected in Brazil.

PI 590474. *Arachis hypogaea* L.
Grif 7412; 100; US 1384. Collected in Brazil.

PI 590475. *Arachis hypogaea* L.
Grif 7413; 101; US 1385. Collected in Brazil.

PI 590476. *Arachis hypogaea* L.
Grif 7414; 102; US 1386. Collected in Brazil.

PI 590477. *Arachis hypogaea* L.
Grif 7415; 104; US 1387. Collected in Brazil.

PI 590478. *Arachis hypogaea* L.
Grif 7416; 106; US 1388. Collected in Brazil.

PI 590479. *Arachis hypogaea* L.
Grif 7417; 107; US 1389. Collected in Brazil.

PI 590480. *Arachis hypogaea* L.
Grif 7418; 108; US 1390. Collected in Brazil.

PI 590481. *Arachis hypogaea* L.
Grif 7419; 145; US 1391. Collected in Brazil.

PI 590482. *Arachis hypogaea* L.
Grif 7420; 146; US 1392. Collected in Brazil.

PI 590483. *Arachis hypogaea* L.
Grif 7421; 151; US 1393. Collected in Brazil.

PI 590484. *Arachis hypogaea* L.
Grif 7422; 182; US 1394. Collected in Brazil.

PI 590485. *Arachis hypogaea* L.

Grif 7423; 242; US 1395. Collected in Brazil.

PI 590486. *Arachis hypogaea* L.
Grif 7424; 243; US 1396. Collected in Brazil.

PI 590487. *Arachis hypogaea* L.
Grif 7425; 245; US 1397. Collected in Brazil.

The following were collected by David E. Williams, USDA, ARS, Natl. Germplasm Resources Laboratory, Building 003, Room 400, BARC-West, Beltsville, Maryland 20705-2350, United States. Received 12/09/1993.

PI 590488. *Arachis hypogaea* var. *peruviana* Krapov. & W. Gregory

Cultivated. Grif 7427; DEW 631-A; US 1356. Collected 10/13/1987 in Acre, Brazil. Latitude 7 deg. 38' S. Longitude 72 deg. 36' W. Elevation 300 m. Cruzeiro do Sul. Cultivated upriver in the village of Santa Luzia. Fruits with pronounced longitudinal reticulation, containing 3 pinkish white seeds. Plants said to be erect. Seed collection only.

PI 590489. *Arachis hypogaea* L. var. *fastigiata*
Cultivated. Grif 7429; DEW 631-C; US 1358; Mandubi preto. Collected 10/13/1987 in Acre, Brazil. Latitude 7 deg. 38' S. Longitude 72 deg. 36' W. Elevation 300 m. Cruzeiro do Sul. Cultivated upriver in the village of Santa Luzia. Fruits containing 2-3 black of dark purple seeds. Plants said to be erect. Seed collection only.

The following were donated by Ganga Agri Seeds Ltd., 1406 Babukhan Estate, Bashir Bagh, Andhra Pradesh, India. Received 06/15/1995.

PI 590490. *Sorghum bicolor* (L.) Moench
Breeding. GK52A.

PI 590491. *Sorghum bicolor* (L.) Moench
Breeding. GK52B.

PI 590492. *Sorghum bicolor* (L.) Moench
Breeding. GK52R.

PI 590493. *Sorghum bicolor* (L.) Moench
Breeding. GK4002A.

PI 590494. *Sorghum bicolor* (L.) Moench
Breeding. GK4002B.

PI 590495. *Sorghum bicolor* (L.) Moench
Breeding. GK4003A.

PI 590496. *Sorghum bicolor* (L.) Moench
Breeding. GK4003B.

PI 590497. *Zea mays* L. ssp. *mays*
Breeding. 119.

PI 590498. *Zea mays* L. ssp. *mays*
Breeding. 120.

PI 590499. *Zea mays* L. ssp. *mays*
Breeding. 131.

PI 590500. *Zea mays* L. ssp. *mays*
Breeding. 208.

PI 590501. *Zea mays* L. ssp. *mays*
Breeding. 906.

PI 590502. *Zea mays* L. ssp. *mays*
Breeding. 907.

The following were collected by David E. Williams, USDA, ARS, Natl. Germplasm Resources Laboratory, Building 003, Room 400, BARC-West, Beltsville, Maryland 20705-2350, United States. Received 06/06/1995.

PI 590503. *Capsicum pubescens* Ruiz Lopez & Pavon
Cultivated. 1308; locoto. Collected 03/02/1995 in La Paz, Bolivia.
Latitude 16 deg. 22' S. Longitude 67 deg. 32' W. Elevation 1850 m. Sud Yungas. Approx. 10km beyond Huancane on road to San Isidro. Farmer's field on steep hillside. Erect, woody shrub, 1.2m tall. Flowers purple. Fruits green, yellow, then red, to 5cm long, irregularly ovate, thick flesh, black seeds, pungent flavor.

PI 590504. *Capsicum pubescens* Ruiz Lopez & Pavon
Cultivated. 1309; locotito. Collected 03/05/1995 in La Paz, Bolivia.
Latitude 16 deg. 24' S. Longitude 67 deg. 31' W. Elevation 1752 m. Sud Yungas. Chulumani, market. Fruits ovoid, 4-5cm long, green, yellow, then red. Seeds black. Vendor stated sample is mix of 2 varieties. One turns red when ripe, other remains yellow.

PI 590505. *Capsicum baccatum* L.
Cultivated. 1310; aji verde. Collected 03/05/1995 in La Paz, Bolivia.
Latitude 16 deg. 24' S. Longitude 67 deg. 31' W. Elevation 1752 m. Sud Yungas. Chulumani, market. Fruits elongate, pointed, 4-5cm long, yellow-orange when ripe, slightly curved. Seeds yellow-white.

PI 590506. *Capsicum baccatum* L.
Cultivated. 1311; aji. Collected 03/05/1995 in La Paz, Bolivia. Latitude 16 deg. 24' S. Longitude 67 deg. 31' W. Elevation 1752 m. Sud Yungas. Chulumani, market. Fruits elongate, pointed, somewhat triangular in x-section, 4-6cm long, dull red when ripe. Seeds yellow-white.

PI 590507. *Capsicum cardenasii* Heiser & P. G. Smith
Wild. 1312; ulupica. Collected 03/06/1995 in La Paz, Bolivia. Latitude 16 deg. 30' S. Longitude 68 deg. 9' W. Elevation 3636 m. Murillo. La Paz, Mercado Rodriguez, market. Fruits collected from wild and semi-cultivated stands in Collana (16 deg. 41'S, 67 deg. 59'W) on flanks of Mt. Illimani. Fruit globose, 5-10mm diam. green when harvested and consumed, orange-red when fully ripe. Seeds yellow-white. Very piquant.

Unknown source. Received 11/01/1991.

PI 590508. *Zea mays* L. ssp. *mays*
Landrace. Population. ANC -159. Collected 06/1953 in Ancash, Peru.
Latitude 9 deg. S. Longitude 78 deg. W. Elevation 3000 m. Cuzca, Corongo, Ancash.

Unknown source. Received 11/01/1991.

PI 590509. *Zea mays* L. ssp. *mays*
Landrace. Population. HCO -198. Collected 08/1981 in Huanuco, Peru.
Latitude 10 deg. S. Longitude 76 deg. W. Elevation 860 m. Pozuzo, Pachitea, Huanuco.

Unknown source. Received 11/01/1991.

PI 590510. Zea mays L. ssp. mays

Landrace. Population. LBQU-078. Collected 12/1977 in Lambayeque, Peru. Latitude 6 deg. S. Longitude 80 deg. W. Elevation 80 m. Jayanca, Lambayeque, Lambayeque.

Unknown source. Received 11/01/1991.

PI 590511. Zea mays L. ssp. mays

Landrace. Population. LBQU-008. Collected 11/1952 in Lambayeque, Peru. Latitude 6 deg. S. Longitude 80 deg. W. Elevation 50 m. Ferrenafe, Ferrenafe, Lambayeque.

Unknown source. Received 11/01/1991.

PI 590512. Zea mays L. ssp. mays

Landrace. Population. LIB -017. Collected 11/1952 in La Libertad, Peru. Latitude 9 deg. S. Longitude 79 deg. W. Elevation 100 m. Chao, Trujillo, La Libertad.

Unknown source. Received 11/01/1991.

PI 590513. Zea mays L. ssp. mays

Landrace. Population. LIM -090. Collected 08/1978 in Lima, Peru. Latitude 11 deg. S. Longitude 77 deg. W. Elevation 1580 m. S.Miguel A, Huaral, Lima.

Unknown source. Received 11/01/1991.

PI 590514. Zea mays L. ssp. mays

Landrace. Population. M.DI-010. Collected in Madre de Dios, Peru. Latitude 13 deg. S. Longitude 69 deg. W. Elevation 300 m. Tambopata, Tambopata, Madre De Dios.

Unknown source. Received 11/01/1991.

PI 590515. Zea mays L. ssp. mays

Landrace. Population. TUM -014. Collected 03/1980 in Tumbes, Peru. Latitude 4 deg. S. Longitude 80 deg. W. Elevation 80 m. S.P.Incas, Tumbes, Tumbes.

The following were collected by David E. Williams, USDA, ARS, Natl. Germplasm Resources Laboratory, Building 003, Room 400, BARC-West, Beltsville, Maryland 20705-2350, United States. Received 12/09/1993.

PI 590516. Arachis hypogaea L. var. fastigiata

Landrace. Grif 7428; DEW 631-B; US 1357; Mandubi vermelho. Collected 10/13/1987 in Acre, Brazil. Latitude 7 deg. 38' S. Longitude 72 deg. 36' W. Elevation 300 m. Cruzeiro do Sul. Cultivated upriver in the village of Santa Luzia. Fruits containing 3, 2, 1, or 4 red seeds. Plants said to be erect. Seed collection only.

The following were developed by DEKALB Genetics Corporation, United States. Received 06/19/1995.

PI 590517. Glycine max (L.) Merr.

- Cultivar. CX173. PVP 9500175.
- PI 590518. *Glycine max* (L.) Merr.
Cultivar. CX278. PVP 9500176.
- PI 590519. *Glycine max* (L.) Merr.
Cultivar. CX289. PVP 9500177.
- PI 590520. *Glycine max* (L.) Merr.
Cultivar. CX351. PVP 9500178.
- PI 590521. *Glycine max* (L.) Merr.
Cultivar. CX360. PVP 9500179.
- PI 590522. *Glycine max* (L.) Merr.
Cultivar. CX368. PVP 9500180.
- PI 590523. *Glycine max* (L.) Merr.
Cultivar. CX499C. PVP 9500181.

The following were developed by Asgrow Seed Company, Genecorp, Inc., United States. Received 06/19/1995.

- PI 590524. *Lactuca sativa* L.
Cultivar. "BISMARK". PVP 9500182.
- PI 590525. *Lactuca sativa* L.
Cultivar. "GREEN BEAUTY". PVP 9500183.
- PI 590526. *Lactuca sativa* L.
Cultivar. "RUBY GEM". PVP 9500184.
- PI 590527. *Pisum sativum* L.
Cultivar. "ASPIRE". PVP 9500185.
- PI 590528. *Pisum sativum* L.
Cultivar. "FRISTO". PVP 9500186.
- PI 590529. *Pisum sativum* L.
Cultivar. "PALIDIO". PVP 9500187.
- PI 590530. *Pisum sativum* L.
Cultivar. "TALBOT". PVP 9500188.

The following were developed by Ferry-Morse Seed Company, United States. Received 06/19/1995.

- PI 590531. *Phaseolus vulgaris* L.
Cultivar. "NUGGET". PVP 9500189.

The following were developed by Northrup King Company, United States. Received 06/19/1995.

- PI 590532. *Glycine max* (L.) Merr.
Cultivar. S00-66. PVP 9500190.
- PI 590533. *Glycine max* (L.) Merr.
Cultivar. S12-49. PVP 9500191.
- PI 590534. *Glycine max* (L.) Merr.
Cultivar. S20-91. PVP 9500192.

PI 590535. *Glycine max* (L.) Merr.
Cultivar. S29-18. PVP 9500193.

PI 590536. *Glycine max* (L.) Merr.
Cultivar. S59-95. PVP 9500194.

The following were developed by Pioneer Hi-Bred International, Inc., United States. Received 06/19/1995.

PI 590537. *Zea mays* L. *ssp. mays*
Cultivar. PHAG6. PVP 9500195.

PI 590538. *Zea mays* L. *ssp. mays*
Cultivar. PHAJ0. PVP 9500196.

PI 590539. *Zea mays* L. *ssp. mays*
Cultivar. PHAP1. PVP 9500197.

The following were developed by Hans-Henning Mundel, Agriculture Canada, Lethbridge Research Station, Crop Sciences Section, Research Station, Lethbridge, Alberta T1J 4B1, Canada; Gilles Saindon, Agriculture Canada, Lethbridge Research Station, Crop Science Research Station, Lethbridge, Alberta T1J 4B1, Canada; H.C. Huang, Agriculture and Agri-Food Canada, Lethbridge Research Center, P.O. Box 3000, Lethbridge, Alberta T1J 4B1, Canada. Received 06/19/1995.

PI 590540. *Phaseolus vulgaris* L.
Cultivar. Pureline. "AC SKIPPER"; LRS91-1. CV-130. Pedigree - Redcloud/Kentwood*2/2Swan Valley/4/Redcloud/Kentwood*2/2/Swan Valley/3/Kentwood. Flowers 62 days and matures 105 days. Yield 2266kg ha-1 under irrigation and 1962kg ha-1 overall. Performs well in narrow rows, yield 1858kg ha-1. Seed weight average 186mg seed-1. Consistent canning quality and appearance of canned product very good. Growth habit determinate, short bush (CIAT Type 1). Hypocotyl green. Flowers white. Seed coat white, semi-shiny.

The following were developed by Pioneer Hi-Bred International, Inc., United States. Received 06/19/1995.

PI 590541. *Zea mays* L. *ssp. mays*
Cultivar. PHAP8. PVP 9500198.

PI 590542. *Zea mays* L. *ssp. mays*
Cultivar. PHAP9. PVP 9500199.

PI 590543. *Zea mays* L. *ssp. mays*
Cultivar. PHBE2. PVP 9500200.

PI 590544. *Zea mays* L. *ssp. mays*
Cultivar. PHBF0. PVP 9500201.

PI 590545. *Zea mays* L. *ssp. mays*
Cultivar. PH BG4. PVP 9500202.

PI 590546. *Zea mays* L. *ssp. mays*
Cultivar. PHBR2. PVP 9500203.

PI 590547. *Zea mays* L. *ssp. mays*
Cultivar. PHBV8. PVP 9500204.

- PI 590548. *Zea mays* L. *ssp. mays*
Cultivar. PHDP0. PVP 9500205.
- PI 590549. *Zea mays* L. *ssp. mays*
Cultivar. PHGF5. PVP 9500206.
- PI 590550. *Zea mays* L. *ssp. mays*
Cultivar. PHJJ3. PVP 9500207.
- PI 590551. *Zea mays* L. *ssp. mays*
Cultivar. PHKV1. PVP 9500208.
- PI 590552. *Zea mays* L. *ssp. mays*
Cultivar. PHKW3. PVP 9500209.
- PI 590553. *Zea mays* L. *ssp. mays*
Cultivar. PHNB7. PVP 9500210.
- PI 590554. *Zea mays* L. *ssp. mays*
Cultivar. PHNJ2. PVP 9500211.
- PI 590555. *Zea mays* L. *ssp. mays*
Cultivar. PHPM0. PVP 9500212.
- PI 590556. *Zea mays* L. *ssp. mays*
Cultivar. PHPP8. PVP 9500213.
- PI 590557. *Zea mays* L. *ssp. mays*
Cultivar. PHRF5. PVP 9500214.
- PI 590558. *Zea mays* L. *ssp. mays*
Cultivar. PHTE7. PVP 9500215.
- PI 590559. *Zea mays* L. *ssp. mays*
Cultivar. PH TP9. PVP 9500216.
- PI 590560. *Zea mays* L. *ssp. mays*
Cultivar. PHTV7. PVP 9500217.
- PI 590561. *Zea mays* L. *ssp. mays*
Cultivar. PHVB2. PVP 9500218.
- PI 590562. *Zea mays* L. *ssp. mays*
Cultivar. PHVJ5. PVP 9500219.
- PI 590563. *Zea mays* L. *ssp. mays*
Cultivar. PHW61. PVP 9500220.
- PI 590564. *Zea mays* L. *ssp. mays*
Cultivar. PHWT1. PVP 9500221.
- PI 590565. *Zea mays* L. *ssp. mays*
Cultivar. PHW72. PVP 9500222.
- PI 590566. *Zea mays* L. *ssp. mays*
Cultivar. PH54B. PVP 9500223.

The following were developed by ProGene, L.C., United States. Received
06/19/1995.

- PI 590567. *Pisum sativum* L.
Cultivar. "PRO 2100". PVP 9500224.

The following were developed by California Planting Cotton Seed Distributors, California, United States. Received 06/19/1995.

PI 590568. *Gossypium hirsutum* L.
Cultivar. "ACALA NEM-X". PVP 9500225.

The following were developed by Farmers Marketing Corporation, United States. Received 06/19/1995.

PI 590569. *Cynodon dactylon* (L.) Pers.
Cultivar. "FMC-66". PVP 9500226.

PI 590570. *Cynodon dactylon* (L.) Pers.
Cultivar. "FMC-77". PVP 9500227.

PI 590571. *Cynodon dactylon* (L.) Pers.
Cultivar. "FMC-88". PVP 9500228.

The following were developed by Ferry-Morse Seed Company, United States. Received 06/19/1995.

PI 590572. *Phaseolus vulgaris* L.
Cultivar. "SYMPHONY". PVP 9500229.

The following were developed by Enza Zaden De Enkhuizer Zaadhandel B.V., Netherlands. Received 06/19/1995.

PI 590573. *Lactuca sativa* L.
Cultivar. "FOCUS". PVP 9500230.

PI 590574. *Lactuca sativa* L.
Cultivar. "REDINA". PVP 9500231.

PI 590575. *Lactuca sativa* L.
Cultivar. "SENARIA". PVP 9500232.

The following were developed by North Dakota State University, North Dakota Agricultural Exp. Sta., Fargo, North Dakota 58105, United States. Received 06/19/1995.

PI 590576. *Triticum aestivum* L., nom. cons.
Cultivar. "KULM". PVP 9500233.

The following were developed by INTA, Argentina. Received 06/19/1995.

PI 590577. *Triticum aestivum* L., nom. cons.
Cultivar. "TOPAZ". PVP 9500234.

The following were developed by Paul Gibson, Southern Illinois University, Department of Plant and Soil Science, Carbondale, Illinois 62901-4415, United States; Lawrence D. Young, USDA, ARS, West Tennessee Experiment Station, 605 Airways Blvd., Jackson, Tennessee 38301, United States; Edgar E. Hartwig, USDA, ARS, Soybean Production Research, P.O. Box 196, Stoneville, Mississippi 38776, United States. Received 06/09/1995.

PI 590578. *Glycine max* (L.) Merr.
Breeding. Pureline. D83-3349. GP-176. Pedigree - Bedford X F5 line

[Forrest X F5 line (Centennial X Peking)]. Maturity late Group IV. Growth habit determinate. Flowers white. Pubescence tawny. Pod walls tan at maturity. Seed yellow with black hila. Protein and oil content of seed 40.1 and 20.3 percent. Seed size 13.5g per 100. Resistant to bacterial pustule (*Xanthomonas campestris* pv. *glycines*), sudden death syndrome (*Fusarium solani*), soybean cyst nematode (*Heterodera glycines*), common root knot nematode (*Meloidogyne incognita*), and peanut root knot nematode (*M. arenaria*).

The following were developed by Edgar E. Hartwig, USDA, ARS, Soybean Production Research, P.O. Box 196, Stoneville, Mississippi 38776, United States. Received 06/09/1995.

PI 590579. *Glycine max* (L.) Merr.
Breeding. Pureline. D90-7256. GP-177. Pedigree - Forrest X D76-8070. Maturity Group V. Growth habit determinate. Growth type very similar to Forrest. Differs from Forrest in appreciably higher seed protein. Seed yield similar to Forrest.

The following were donated by Utah USDA, ARS, Utah, United States. Received 1961.

PI 590580. *Beta vulgaris* L.
Breeding. US 033. Pedigree - Originated from variety US No. 1. Early multigerm curly-top resistant variety with relatively high sugar percentage. Intermediate degree of curly top resistance makes variety useful as a standard check in comparing other curly-top resistant varieties.

PI 590581. *Beta vulgaris* L.
Breeding. US 015. Developed in United States. First non-bolting curly-top resistant variety.

PI 590582. *Beta vulgaris* L.
Breeding. US 056/2. Pedigree - Selected from variety US 56. Principal variety grown in Imperial Valley of California about 1951 to 1958. Non-bolting behavior makes possible planting in Sept. and harvest the next Spring or early Summer.

PI 590583. *Beta vulgaris* L.
Breeding. US 035. Pedigree - Originated from 16 beets selected from US 22/3. From a very rigid selection in sugar percentage. Hence, recognized as the first high sugar variety which also possesses a high degree of curly-top resistance.

PI 590584. *Beta vulgaris* L.
Breeding. US 035-0. Pedigree - Selection from variety US 35. High in sugar and curly-top resistance. Resembles US 35 from which variety was developed. Segregates for 50% Mendelian (aa) male-sterility.

PI 590585. *Beta vulgaris* L.
Breeding. CT 7. Self-fertile, curly top resistant inbred line which segregates for Mendelian male sterility. SL 3070 segregates to extent of 10% aa Mendelian male steriles. Produces excellent hybrids, is high sugar type, extremely low in Na content but very high in amino nitrogen.

The following were developed by J.S. McFarlane, USDA-ARS, U.S. Agricultural Research Station, P.O. Box 5098, Salinas, California 93915, United States. Donated by Utah USDA, ARS, Utah, United States. Received 1961.

PI 590586. *Beta vulgaris* L.

Breeding. US 075. Pedigree - Selection from variety US 22/3. Resistant to bolting accomplished by a series of severe selections. Has been grown extensively in California but is giving way rapidly to more superior yielding male-sterile hybrids.

The following were donated by Utah USDA, ARS, Utah, United States. Received 1961.

PI 590587. *Beta vulgaris* L.

Breeding. CT 5B. Pedigree - Selected from variety SL 9450. High curly-top resistance and medium-high sugar %. High combining ability and produces excellent hybrids. App. 50% of plants aa, then used for pollin. of MS cytoplasmic female lines.

PI 590588. *Beta vulgaris* L.

Breeding. KLEIN E (KLEINWANZLEBEN E). Pedigree - Parental seed lot SL 8370 obtained from Schneider, Einbeck, Germany, in 1948. SL 4324 rep. 2nd increase made by SL 09. Curly-top-susceptible variety used extensively as a standard check in tests for curly-top resistance. Grown widely in Europe and elsewhere as a commercial sugar beet variety. This particular seed lot is very vigorous yield type.

PI 590589. *Beta vulgaris* L.

Breeding. MUNERATI ANNUAL (SL 9470). Pedigree - Third increase of a lot of seed obtained from Dr. Munerati in 1932. Original annual beet from which all other annuals have been developed at Salt Lake City Lab. One dominant gene for annualness but also accession genes which increase rate of bolting and floral development.

The following were donated by E. State Farmers, United States. Received 1961.

PI 590590. *Beta vulgaris* L.

Cultivar. SMOOTH LEAF CROSBY.

The following were donated by Robson Quality Seeds, Incorporated, Hall, New York, United States. Received 1961.

PI 590591. *Beta vulgaris* L.

Cultivar. SENECA DETROIT. Matures 68 days. Popular variety. Strong top beet, very uniform in size, shape and good deep red color. Ideal for table use, canning and pickling (tender and sweet). Famous for dark red interior, tenderness, and short cooking time.

The following were donated by T.W. Wood & Sons Seed Co., Richmond, Virginia, United States. Received 1961.

PI 590592. *Beta vulgaris* L.

Cultivar. IMPROVED EARLY BLOOD. Matures 55 days. Not as early as the Extra Early Egyptian, but superior in quality. Uniform size, with smooth skin free from fibrous roots. Color rich, dark red. Tender, sweet and crisp. Ideal for planting in May, June and July to make beets for winter. A fine keeper.

The following were donated by Vaughan-Jacklin Corporation, 5300 Katrine Avenue, Downer'S Grove, Illinois 60515, United States. Received 1961.

PI 590593. *Beta vulgaris* L.

Cultivar. IMPROVED EARLY EGYPTIAN.

The following were donated by Joseph Harris Company, Inc., Moreton Farm, Rochester, New York 14624, United States. Received 1961.

PI 590594. Beta vulgaris L.

Cultivar. CROSBY GREEN TOP. Matures 60 days. Best early beet for home or market. Uniform, attractive strain, noted for earliness and high quality for home garden use and for clean, bright green tops on the market. Roots flat, globe shape with fine tap roots, dark red both inside and out. Flesh fine-textured, tender and delicious. Good bunching.

The following were donated by E. State Farmers, United States. Received 1961.

PI 590595. Beta vulgaris L.

Cultivar. EASTERN WONDER.

The following were donated by Dessert Seed Co., Inc, P.O. Box 181, El Centro, California 92243, United States. Received 1961.

PI 590596. Beta vulgaris L.

Cultivar. EXTRA EARLY FLAT EGYPTIAN. Roots flat turnip-shaped with small taproot. Flesh color dark purplish red when young but zones of paler color appear when left too long. Leaf small to medium size. Earliest of all garden beets, can be forced, very sweet and tender in younger stages.

The following were donated by FMC Corporation, California, United States. Received 1961.

PI 590597. Beta vulgaris L.

Cultivar. EARLY WONDER IMPROVED.

The following were donated by Ferry-Morse Seed Company, United States. Received 1961.

PI 590598. Beta vulgaris L.

Cultivar. GREEN TOP EARLY WONDER. Green-topped selection out of the original Early Wonder.

The following were donated by Dessert Seed Co., Inc, P.O. Box 181, El Centro, California 92243, United States. Received 1961.

PI 590599. Beta vulgaris L.

Cultivar. EARLY WONDER GREEN TOP. Very similar to Early Wonder in color of root and flesh, inclined to be a little flatter globe. Chief distinction is leaves, which are of medium size, remain green until maturity.

PI 590600. Beta vulgaris L.

Cultivar. DETROIT PERFECTED. Long season, can be used when quite young but remains tender for a long time. Takes globular form quite early and grows to good size round beet. Flesh is deepest blood red of all the Detroit. Leaves tall and a little coarse. Good for canning and dicing.

PI 590601. Beta vulgaris L.

Cultivar. DETROIT DARK RED SHORT TOP. Roots very round, a little smaller than the original Detroit but flesh even a deeper blood red, no zones. Leaves small to medium in height and medium to dark green in color. Very tender beet, suitable for all purposes, particularly good for canning.

The following were donated by Ferry-Morse Seed Company, United States.
Received 1961.

PI 590602. Beta vulgaris L.

Cultivar. DETROIT DARK RED MORSES STRAIN. Standard home and market garden strain and preferred by canners in the Pacific NW and in some other areas for muck plantings. Roots similar to Detroit Dark Red, Ferry's Strain, interiors being slightly darker red. Resistant to downy mildew. Tops slightly shorter than Detroit Dark Red, Ferry's Strain.

PI 590603. Beta vulgaris L.

Cultivar. DETROIT DARK RED FERRYS STRAIN. Since its introduction, remained the most widely used for market and canning. Produces small, round roots when young. Roots globe shaped, symmetrical, with small tap roots. Interiors deep blood red. Retains excellent quality and clear until roots become large and fully grown. Medium tall tops, erect, collar refined. Adapted to mechanical harvesting.

The following were donated by Seed Research Specialists, California, United States. Received 1961.

PI 590604. Beta vulgaris L.

Cultivar. DETROIT DARK RED MEDIUM TOP.

The following were donated by Dessert Seed Co., Inc, P.O. Box 181, El Centro, California 92243, United States. Received 1961.

PI 590605. Beta vulgaris L.

Cultivar. DETROIT DARK RED. Roots globular and very regular. Flesh deep blood red throughout, of excellent quality. Leaves medium height, dark green. One of the best varieties for general use.

The following were donated by Joseph Harris Company, Inc., Moreton Farm, Rochester, New York 14624, United States. Received 1961.

PI 590606. Beta vulgaris L.

Cultivar. FORDHOOK GIANT.

The following were donated by Christianson Seed, ALF, Washington, United States. Received 1961.

PI 590607. Beta vulgaris L.

Cultivar. EARLY BLOOD TURNIP. Matures 68 days. One of the best for home use or for market gardeners. Tops medium small, fairly coarse. Roots turnip shaped and dark red. Flesh bright red with zones of lighter shade.

The following were donated by Asgrow Seed Company, United States. Received 1961.

PI 590608. Beta vulgaris L.

Cultivar. ASGROW WONDER.

PI 590609. Beta vulgaris L.

Cultivar. EARLY FLAT RED EGYPTIAN.

PI 590610. Beta vulgaris L.

Cultivar. EDMANDS EARLY BLOOD TURNIP.

The following were donated by Seed Research Specialists, California, United States. Received 1962.

PI 590611. *Beta vulgaris* L.
Cultivar. DETROIT DARK RED CANNERS.

The following were donated by Joseph Harris Company, Inc., Moreton Farm, Rochester, New York 14624, United States. Received 1963.

PI 590612. *Beta vulgaris* L.
Cultivar. EARLY WONDER STAYS GREEN. Matures 58 days. Quick-growing, vigorous, handsome beet produces large dark green tops that hold color well most of the season. Smooth-skinned, slightly tapered roots reach marketable size quickly. Flesh tender and sweet, purplish-red with some lighter zoning. Ready to pull very early. Excellent for market and stands and also the garden.

The following were donated by F. Desprez, Nord, France. Received 1963.

PI 590613. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. ELITE TM. Breeding line.

PI 590614. *Beta vulgaris* L. ssp. *vulgaris*
Cultivar. DESPREZ Z.

PI 590615. *Beta vulgaris* L. ssp. *vulgaris*
Cultivar. ELITE DESPREZ TYPE A. Breeding line.

PI 590616. *Beta vulgaris* L. ssp. *vulgaris*
Cultivar. ELITE DESPREZ TYPE R. Breeding line.

The following were donated by Wyoming USDA, ARS, Wyoming, United States. Received 1963.

PI 590617. *Beta vulgaris* L.
Cultivar. CROSBYS EGYPTIAN. Roots rather globular, usually a little flattened at base, with small tap-root. Flesh, deep purplish red, sometimes zoned a little lighter color. Leaves medium height, dark green. One of the best varieties for general use.

PI 590618. *Beta vulgaris* L.
Cultivar. DEWINGS EARLY BLOOD TURNIP.

PI 590619. *Beta vulgaris* L.
Cultivar. EARLY FLAT EGYPTIAN.

PI 590620. *Beta vulgaris* L.
Cultivar. EGYPTIAN. Collected in Canada.

PI 590621. *Beta vulgaris* L.
Cultivar. EXTRA EARLY RED TURNIP.

PI 590622. *Beta vulgaris* L.
Cultivar. LONG SMOOTH BLOOD TURNIP.

PI 590623. *Beta vulgaris* L.
Cultivar. PERFECTED CANNER.

PI 590624. *Beta vulgaris* var. *flavescens* (Lam.) Lam. & DC.
Cultivar. WYOMING NO 02.

The following were donated by Farmer Seed Co., Minnesota, United States.
Received 1964.

PI 590625. *Beta vulgaris* var. *flavescens* (Lam.) Lam. & DC.
Cultivar. BURGUNDY. Developed in Canada. Deep maroon leafed, brilliant red stemmed chard, useful and ornamental. Can be grown in flower borders or vegetable garden. Uniform color, extra rich delicious flavor. Cooked, or raw in salad. Plants yield till frost.

The following were donated by Northrup, King & Company, 1500 Jackson N.E., Minneapolis, Minnesota 55413, United States. Received 1964.

PI 590626. *Beta vulgaris* L.
Cultivar. EARLY WONDER DARK TALL TOP. Root flat. Globe with rounded shoulders, smooth collar and small tap root. Smooth dark red skin. Excellent for washing. Dark red interior with some lighter red zoning. Top 16-18 inches tall, large and uniformly erect, flossy dark green leaves. Very early, sweet and tender, branching. Fast growing tops suited for greens. Better interior color and improvement over older strains of EW.

PI 590627. *Beta vulgaris* L.
Cultivar. SPECIAL CROSBY. Very smooth and round with small tap root. Solid, medium red interior. Top 12-15" tall, dull dark green tinged with maroon. Fine early home and market garden beet. Outstanding for early bunching. Very attractive and refined root shape.

PI 590628. *Beta vulgaris* var. *flavescens* (Lam.) Lam. & DC.
Cultivar. DARK GREEN WHITE RIBBED. Height 18-24 inches, upright. Leaves medium dark green, smooth with broad prominent white ribs. Liked by many gardeners for its crispness.

The following were donated by W. Atlee Burpee Company, United States.
Received 1964.

PI 590629. *Beta vulgaris* var. *flavescens* (Lam.) Lam. & DC.
Cultivar. SPINACH BEET. Variety Trials 1961-1962.

The following were donated by Northrup, King & Company, 1500 Jackson N.E., Minneapolis, Minnesota 55413, United States. Received 1965.

PI 590630. *Beta vulgaris* L.
Cultivar. DETROIT SHORT TOP 36. Vegetable Variety Trials for 1961 & 1962. Cornell University.

PI 590631. *Beta vulgaris* L.
Cultivar. PERFECTED DETROIT 6. Vegetable Variety Trials for 1961-1962, Cornell University.

The following were donated by H.G. Hastings Company, Atlanta, Georgia, United States. Received 1965.

PI 590632. *Beta vulgaris* L.
Cultivar. HASTINGS IMPROVED BLOOD TURNIP. Matures 56 days. Pure bred line unsurpassed in quality, sweetness and tenderness. Tops medium, dark green tinged red and held erect. Roots globular, smooth, uniform,

attractive, with small tap root. Color deep red and flesh dark red with very indistinct zones. Cans beautifully. Bunches well for market. Improved strain.

The following were donated by Idaho Agr. Exp. Sta., Idaho, United States. Received 1966.

PI 590633. *Beta vulgaris* var. *flavescens* (Lam.) Lam. & DC.
Cultivar. PARMA GIANT.

The following were donated by Asgrow Seed Company, United States. Received 1966.

PI 590634. *Beta vulgaris* var. *flavescens* (Lam.) Lam. & DC.
Cultivar. WHITE SILVER. Medium tall with very large, smooth, medium green leaves. Petioles fleshy, broad, white, with greenish tinge.

The following were donated by W. Atlee Burpee Company, United States. Received 1967.

PI 590635. *Beta vulgaris* L.
Cultivar. BURPEES IMPROVED BLOOD TURNIP. Smooth, round, medium size roots with dark red flesh of deep rich color. Quality extra fine. Of quick growth and excellent for summer and winter storing.

PI 590636. *Beta vulgaris* L.
Cultivar. EARLY WONDER/BOSTON CROSBY. Roots quite deep, of uniform size, and of excellent quality. Skin deep red. Flesh also rich dark red color showing little zoning.

The following were donated by Twilley Seed Co, Otis, Maryland, United States. Received 1968.

PI 590637. *Beta vulgaris* L.
Cultivar. DETROIT NO 12. New selection with better color. Matures 60 days. Remarkable new selection that has exceptional color. Exterior most attractive and smooth.

The following were donated by Ferry-Morse Seed Company, United States. Received 1968.

PI 590638. *Beta vulgaris* L.
Cultivar. TALL TOP EARLY WONDER.

The following were donated by Agway Inc., New York, United States. Received 1971.

PI 590639. *Beta vulgaris* L.
Cultivar. EARLY WONDER SMOOTH LEAF. Pedigree - Selection from Smooth Crosby. Improvement on Agway's Smooth Crosby first introduced in 1956. Original selection from Tall Top Wonder. Very early, sweet and tender, bunching variety. Well color. roots, flat with smooth skin, refined tap root, and moderate distinct inter. zon. Leaves distinctive smooth and 16"-18" tall. Fast growing. Tops useful as beet greens.

PI 590640. *Beta vulgaris* L.
Cultivar. DETROIT DARK RED GARNET STRAIN. Crop year 1974.

The following were donated by University of California, California Agr. Exp. Sta., California, United States. Received 1978.

- PI 590641. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. NB3. Multigerm inbred with resistance to bolting and curly top.
- PI 590642. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "C13". PL-5. Self-sterile, multigerm line with resistance to bolting, virus yellows, and curly top.
- PI 590643. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. NB1. Type O multigerm inbred with resistance to bolting and curly top.
- PI 590644. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. NB4. Multigerm inbred with resistance to bolting and curly top.
- PI 590645. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. NB5. Type O multigerm inbred with resistance to bolting and curly top.
- PI 590646. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. NB7. Type O multigerm inbred with resistance to bolting and curly top.
- PI 590647. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "C551". PL-12. Type O selection from the previously released C546 self-fertile, monogerm inbred. Moderate improvements have been made in the curly top and bolting resistance. Line contributes good yield and average sucrose concentration to hybrids. Recommended as a replacement for C546 in bolting-resistant hybrid cultivars.
- PI 590648. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "C569". PL-3. Monogerm inbred with resistance to bolting and curly top.
- PI 590649. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "C546". PL-4. Monogerm line with resistance to bolting and curly top.
- PI 590650. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. S303. Self-sterile tetraploid line with high curly top resistance.
- PI 590651. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. 0834. Yellows resistant line, crop year 1978. Open-pollinated line from the Netherlands with bolting and yellows resistant.
- PI 590652. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. 8420. Tetraploid Janasz, crop year 1978. Tetraploid cultivar from Poland.
- PI 590653. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "C321". GP-5. Composite of multigerm type O self-sterile lines.
- PI 590654. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "C17". PL-6. Self-sterile, multigerm line with resistance to bolting, virus yellows, and curly top.

The following were donated by USDA, ARS, Colorado Agric. Exp. Station, Colorado, United States. Received 1978.

- PI 590655. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "FC 902"; W6 17141. GP-41. Multigerm diploid ($2n = 2X = 18$) and mostly self-fertile, segregating for genetic male sterility (about 11% male sterile plants). Moderate resistance to *Cercospora* leaf spot (*Cercospora beticola* Sacc.) and the curly top virus. Flowers after short photothermal induction.
- PI 590656. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "FC 703". GP-13. Breeding line. Diploid ($2n = 2X = 18$). Resistant to rhizoctonia root rot. Moderate resistance to cercospora leaf spot. Multigerm. Mostly self sterile. Easy bolting.
- PI 590657. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "FC 703(4X)". GP-14. Breeding line. Autotetraploid ($2n = 4X = 36$) equivalent of of FC 703. Resistant to rhizoctonia root rot. Moderate resistance to cercospora leaf spot. Multigerm. Mostly self-sterile. Easy bolting.
- PI 590658. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "FC 702/4". GP-55. Released 02/28/1978. Product of two cycles of recurrent selection for resistance to rhizoctonia root rot following 4 cycles of mass selection for resistance from a synthetic derived from an obsolete variety (GW 359). Breeding line. Diploid ($2n = 2X = 18$). Resistant to rhizoctonia root rot. Moderate resistance to cercospora leaf spot. Multigerm. Mostly self sterile. Easy bolting.
- PI 590659. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "FC 704". GP-54. Pedigree - 3 cycles of mass selection of a heterogen population known as German Red Beet. Roots, petioles, and leaves deep red. Relatively high root yield, but very low sucrose content and thin juice purity. Source population is the only *Beta vulgaris* germplasm found which has a significant amount of inherent resistance to rhizoctonia root rot. *Cercospora* leaf spot susceptible.
- PI 590660. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "FC 705". GP-57. Released 02/28/1978. Breeding line. Diploid ($2n = 2X = 18$). Rhizoctonia root rot resistant. Moderate *Cercospora* leaf spot resistance. Multigerm. Mostly self sterile. Easy bolting.
- PI 590661. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "FC 701". GP-1. Breeding line. Diploid ($2n=2X=18$). Resistant to rhizoctonia root rot. Moderate resistance to cercospora leaf spot. Mostly self sterile. Multigerm. Mostly pink hypocotyl (99.5%) easy bolting.
- PI 590662. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "FC 702". GP-2. Breeding line. Diploid ($2n=2X=18$). Resistant to rhizoctonia root rot. Moderate resistance to cercospora leaf spot. Multigerm. Mostly self sterile. 40% pink hypocotyl. Easy bolting.
- PI 590663. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "FC 701/4". GP-11. Product of two cycles of recurrent selection for resistance following four cycles of mass selection from GW 674-56C (former commercial variety adapted in the irrigated high plains). Breeding line. diploid ($2n=2X=18$). Resistant to rhizoctonia root rot. Moderate resistance to cercospora leaf spot. Multigerm. Mostly self sterile. Easy bolting.
- PI 590664. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "FC 701/4(4X)". GP-12. Breeding line. Autotetraploid ($2n=4X=36$) equivalent of FC 701/4. Resistant to rhizoctonia root rot.

Moderate resistant to cercospora leaf spot. Multigerm. Mostly self-sterile. Easy bolting.

The following were donated by Agricultural Research Service -- USDA, Beltsville Agricultural Research Center, Beltsville, Maryland 20705, United States. Received 1979.

PI 590665. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. SP70641-01. A cytoplasmic male-sterile monogerm line with moderate to good black root resistance, better than USH20. Good leaf spot resistance, equal to USH21. The single-cross hybrid, SP70641-01 x SP6822-0, yielded about 95% as much sugar as USH20 and was slightly lower in percent sucrose and % purity.

PI 590666. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. SP70641-0. A pollen-fertile monogerm maintainer line for the cytoplasmic male-sterile, SP70641-01. Moderate black root resistance, perhaps slightly more resistant than USH20. Good leaf spot resistance, equal to USH21.

PI 590667. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. SP76745-0. A pollen-fertile monogerm maintainer line for the cytoplasmic male-sterile, SP76745-01. Moderate black root resistance, slightly more resistant than USH20.

PI 590668. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. SP76745-01. A cytoplasmic male-sterile monogerm line with moderate black root resistance, slightly more resistant than USH20. Moderate leaf spot resistance, approx. equal to USH20. The hybrid SP76745-01 x SP6822-0, varied considerably between locations. Sugar percentage and purity were about equal to USH20.

PI 590669. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. SP70682-0. A pollen-fertile monogerm maintainer of the cytoplasmic male-sterile SP70682-01. Moderate resistance to black root, about equal to USH20, and good leaf spot resistance, a little less resistance than USH21. Has been a meager pollen producer and somewhat low in seed set. In 1976, however, pollen and seed production showed improvement.

PI 590670. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. SP70682-01. A cytoplasmic male-sterile monogerm line, slightly more vigorous than its maintainer line, SP70682-0. Moderate resistance to leaf spot, approx. equal to USH20, and moderate black root resistance. Hybrids from this male-sterile have been about equal to USH20 in yield in Ohio and Michigan tests. Sucrose percents were slightly less than that of USH20, but their purities almost equaled USH20.

PI 590671. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. SP70756-01. A cytoplasmic male-sterile monogerm line. Good black root resistance, better than US 401. Very good leaf spot resistance equal to US H21. Orig. from SP653465-01 cytoplasmic male-sterile monogerm line. In most locations a 3-way hybrid (SP70756-01 X SP70550-0) X SP6822-0 produced about 90% the root yield of US H20 with sugar percentage and purity equal to US H20.

PI 590672. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. SP73514-0. The monogerm pollen fertile maintainer line of SP 73514-01 CMS (cytoplasmic male-sterile). This maintainer originated from the selfed-progeny of a monogermplant recovered from a cross of FC502 monogerm O-type and multigerm pollen-fertile lines carrying resistance to both *Cercospora* leaf spot and *Aphanomyces* black root. Equal to

SP73514-01 in black root resistance and is slightly more resistant to leaf spot.

PI 590673. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. SP73514-01. A cytoplasmic male sterile monogerm line. Slightly more vigorous than its maintainer line, SP73514-01. Good leaf spot resistance, superior to US H20 and approx. equal to US H21. Very good black root resistance, superior to either of these hybrids. When crossed to SP6822-0, a standard pollin., hybrid produces only about 85-90% as much root yield as USH20 and was lower in raw juice, but higher sucrose %.

The following were donated by Edward J. Ryder, USDA, ARS, 1636 E. Alisal Street, Salinas, California 93905, United States. Received 1979.

PI 590674. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. Y45. Moderate resistance to virus yellows (BYV, BWYV), and powdery mildew. Curly top susceptible. Easy bolting. Introduced from the Netherlands as Acc. 125. Multigerm and self-sterile. Lax type with long petioles.

PI 590675. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C32". GP-75. Released 1978. Moderate resistance to beet mosaic and virus yellows. Moderately susceptible to curly top and bolting. Tonnage type. Multigerm and self-sterile. A low frequency of annualism may still exist.

PI 590676. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. NB1 (S20). Long term inbred (20 generations of selfing) developed from NB1. Possesses resistance to bolting and curly top.

The following were developed by Helen Savitsky. Donated by Edward J. Ryder, USDA, ARS, 1636 E. Alisal Street, Salinas, California 93905, United States. Received 1979.

PI 590677. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. SLC 015. Self-sterile monogerm line.

The following were donated by Edward J. Ryder, USDA, ARS, 1636 E. Alisal Street, Salinas, California 93905, United States. Received 1979.

PI 590678. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. US 201. Breeding line with high leafspot resistance.

PI 590679. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C01". GP-20. Moderately resistant to virus yellows. Moderately low curly top resistance. Multigerm, self-sterile. Good sucrose content.

PI 590680. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C43". GP-74. Released 1978. Moderate resistance to beet mosaic, virus yellows, curly top, Erwinia soft rot, and bolting. Similar to C17 but lower sucrose content. Multigerm, self-sterile. May still possess a low frequency of annualism from mosaic resistant source.

PI 590681. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C02". PL-14. A self-sterile, multigerm, green-hypocotyl line selected from line C13. Derived from 3 cycles of mass selection. In injury-innocul. field tests about 85% of plants were resistant. Slightly less vigorous than C36, but in a preliminary combination ability test showed slightly better combining ability for sugar yield than either C13

or C36. Highly resistant to soft rot. Sister selection to C36.

- PI 590682. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "C36". PL-13. Highly resistant to soft rot incited by *Erwinia*. Moderately resistant to virus yellows, curly top, bolting. Multigerm, self-sterile with green hypocotyls. Plants with male sterile cytoplasm common.
- PI 590683. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "C04". GP-22. Moderately resistant to virus yellows. Moderately low curly top resistance. Multigerm, self-sterile.
- PI 590684. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "C22". GP-23. Moderately resistant to virus yellows and curly top. Multigerm, self-sterile.
- PI 590685. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "C31". GP-21. Moderately resistant to virus yellows (BYV, BWYV) and to *erwinia* soft rot. Moderately high nonbolting tendency. Moderately low curly top resistance. Multigerm, self-sterile. Good sucrose content. Segregates for red and green hypocotyls.
- PI 590686. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. 0740. Monogerm, type-0 composite that segregates for genetic male sterility (a w/underline subscript 1 a w/underline subscript 1). Moderate resistance to curly top.
- PI 590687. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. 0741. Monogerm, type-0 composite that segregates for genetic male sterility (a w/underline subscript 1 a w/underline subscript 1). Moderate resistance to curly top.
- PI 590688. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "C773". GP-17. Multigerm, self-fertile composite that segregates for genetic male sterility (a w/underline subscript 1 a w/underline subscript 1). Moderate resistance to virus yellows. Moderate resistance to curly top and bolting.

The following were donated by J. C. Theurer, Sugarbeet Investigations, Crops Res. Lab., Utah State Univ., Logan, Utah 84322, United States. Received 1980.

- PI 590689. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "L36". GP-33. Pedigree - Derived from a CT5B population. S subscript 4 self-fertile monogerm, Type O line. Resulted from four repeated selections in the greenhouse and field for curly top resistance. Rated 1.5 to 2 on a 1 to 9 disease resistance scale for curly top and shows good combining ability for beet yield.
- PI 590690. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "L19". GP-36. Pedigree - Selected from a collection of misc. high sugar lines crossed with Polish var. Udyca. Multigerm segregating red and green hypocotyl, non-type O, self-fertile inbred. One to 3% higher sugar % in field trials than any other inbred tested. Excellent gen. combining ability and has consistently increased sugar % in all hybrids where it has been used as a parent Equal to US33 in curly top resistant and is susceptible to leaf spot.
- PI 590691. *Beta vulgaris* L. ssp. *vulgaris*
Breeding. "L37". GP-37. Pedigree - Resulted from 5 generations of inbreeding from a cross of SLC129, a parent line of USH20, and a group of nematode selections received from Amer. Crystal Sugar Co. in 1960. Green hypocotyl, near Type O, S subscript 6 multigerm self-fertile inbred with a long, narrow root and prostate growth habit. Excellent

general combining ability for root yield. Equal to US41 in curly top resistance.

PI 590692. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "L38". GP-38. Pedigree - Derived from a synthetic with a complex pedigree that includes CT9 and CT5, curly top resistant selection GW304, a cultivar of Great West. Sugar Co. SP6322-0, a *Cercospora* leaf spot resistant line, and a curly top selection from US22/3. S subscript 3 green hypocotyl, self-fertile, multigerm, near Type O line. Good combining ability for yield and curly top resistant equivalent to cultivar US41.

PI 590693. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "L61". GP-40. Pedigree - Developed by crossing SLC129 CMS to L60, selecting the most fertile pollen marr: dehiscent plants, and backcrossing them to SLC129 CMS for 4 selection cycles. S subscript 4 self-fertile, green hypocotyl monogerm, pollen fertility restorer inbred equivalent to SLC129, a parent of the cultivar USH20. Fair curly top disease resistance. Combining ability equal to SLC129 and can be used as a male parent of 4-way crosses.

The following were donated by G. E. Coe, USDA, ARS, Field Crops Lab., Lab. 6B, Bldg. 009, BARC-West, Beltsville, Maryland 20705, United States. Received 1980.

PI 590694. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. SP78564-0. O-type monogerm maintainer line of cytoplasmic male-sterile SP79564-01. Moderately resistant to black root and highly resistant to leaf spot. Originated from a selection out of SP70B4-31, an O-type monogerm line.

The following were donated by W. M. Bugbee, North Dakota State University, Dept. of Pathology, Walster Hall, Fargo, North Dakota 58105, United States. Received 1980.

PI 590695. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "F1001". GP-15. Pedigree - Selection from the multigerm USSR introduction VNIS F526. High level of resistance to *P. betae* and moderate resistance to *P. claviforme*. Developed by interpollin. of 2 plants highly resistant to *P. betae*, followed by interpollination of 15 resistant plants in the second generation.

PI 590696. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "F1002". GP-16. Pedigree - Selection from multigerm FC701/4, a line devel. by ARS for resistance to *Rhizoctonia* crown rot. High level of resistance to *P. betae* and moderate levels of resistance to *B. cinerea* and *P. claviforme*. Developed from a single plant selection as resistance to *P. betae*, followed by interpollin. of 8 superior plants.

The following were donated by G. E. Coe, USDA, ARS, Field Crops Lab., Lab. 6B, Bldg. 009, BARC-West, Beltsville, Maryland 20705, United States. Received 1980.

PI 590697. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. SP70756-0. Pedigree - Originated from a cross between SP65406-0 monogerm O-type X SP6542-0 multigerm O-type. O-type monogerm line used to maintain the cytoplasmic male-sterility of SP 70756-01. Moderate black root resistance, better than US 401, and good leaf spot resistance, better than US H21.

PI 590698. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "SP6926-01". PL-16. Pedigree - Developed by crossing the progenitor of SP6926-0 to the cytoplasmic male-sterile in SP6020-03 and making subsequent increases to both. A cytoplasmic monogerm male-sterile line. Moderate resistance to *Cercospora* leaf spot and to *Aphanomyces* black root. Inbreeding evidenced by a reduction in root size and foliar bouquet, but is somewhat more vigorous than its maintainer SP 6926-0. Lack of uniform in size of foliar bouquet.

PI 590699. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "SP 8030-0". GP-62. Open-pollinated multigerm breeding line with taproots relatively free from adhering soil. Moderately resistant to *Cercospora* leaf spot and *Aphanomyces* black root, and has sucrose percentage and root yield approximately equal to commercial sugarbeets when grown at Beltsville, MD.

The following were donated by Northrup King & Co., P.O. Box 1406, Woodland, California 95695, United States. Received 1981.

PI 590700. *Beta vulgaris* L.

Cultivar. DETROIT SHORT TOP.

The following were donated by Richard Hecker, USDA, ARS, Crops Research Lab., Colorado State University, Fort Collins, Colorado 80521, United States. Received 1981.

PI 590701. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "FC 706". GP-58. Multigerm, pollen fertile, self-sterile, diploid. Resistant to root rot caused by *Rhizoctonia solani*. Flowers after short induction (easy bolting). Heterogen. strain, mass-selected for resistance from the OP subscript 2 generation of 5 diverse strains, all of which had been subjected to 3-5 cycles of mass selection for *Rhizoctonia* resistance. Potential for the development of diverse *Rhizoctonia* resistant strains.

PI 590702. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "FC 707". GP-59. Multigerm, pollen fertile, self-sterile, diploid. Resistant to root rot caused by *Rhizoctonia solani*. Flowers after short induction (easy bolting). Product of 1 cycle of selection for *Rhizoctonia* resistance from an interpollinated pool of resistant progeny lines, each subjected to 5 cycles of selection. Each source line originated from high production experimental synthetics.

PI 590703. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "FC 702/6". GP-65. Released 02/25/1981. Multigerm, pollen fertile, self-fertile. Resistant to root rot (*Rhizoctonia solani*). Moderate resistance to leaf spot (*Cercospora beticola*). Flowers after short induction (easy bolting). For breeder use as a pollinator to produce *Rhizoctonia* resistant hybrids or as a source of genes for resistance.

The following were donated by Edward J. Ryder, USDA, ARS, 1636 E. Alisal Street, Salinas, California 93905, United States. Received 1981.

PI 590704. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. WB 7. Seed from Japan Sugarbeet Improvement Foundation. Identified as B. cicla. Plants resembled sugarbeet. Variation in type and plant color. Sucrose 10.2%.

PI 590705. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. WB 111. Seed from Japan Sugarbeet Improvement Foundation. Identified as B. rapa. Excellent vigor, light red skin. Sucrose 10.1%.

The following were collected by J.S. McFarlane, USDA-ARS, U.S. Agricultural Research Station, P.O. Box 5098, Salinas, California 93915, United States. Donated by Edward J. Ryder, USDA, ARS, 1636 E. Alisal Street, Salinas, California 93905, United States. Received 1981.

PI 590706. *Beta vulgaris* L. ssp. *vulgaris*

Wild. WB 138. Collected 1954 in California, United States. Roadways and fence rows on outskirts of Milpitas.

PI 590707. *Beta vulgaris* L. ssp. *vulgaris*

Wild. WB 140. Collected 1954 in California, United States. Along Fallon Road, Hollister.

The following were donated by Edward J. Ryder, USDA, ARS, 1636 E. Alisal Street, Salinas, California 93905, United States. Received 1981.

PI 590708. *Beta vulgaris* L. ssp. *vulgaris*

Cultivar. US 22/3. An obsolete commercial variety with high curly top resistance that was widely used in the western states during the late 1940's and early 1950's.

PI 590709. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. 1503. Increase of S (subscript 18) of the multigerm 0503 inbred. Possesses downy mildew and bolting resistance. Sugarbeet breeding lines combining resistance to bolting and diseases.

PI 590710. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. 039. F (subscript 1) hybrid between two open-pollinated tetraploid breeding lines. Both lines have resistance to bolting and curly top.

PI 590711. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. 052T. Tetraploid of a type O selection from bolting resistant, multigerm, open-pollinated variety US 15.

PI 590712. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. 086T. Tetraploid of 586 which is a bolting selection from the high sugar US 35/2 variety.

PI 590713. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. 063T. Tetraploid of 663 which is a high performing open-pollinated, multigerm line that was widely used as pollinator in commercial hybrids during the 1960's.

PI 590714. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. 1401. The tetraploid of the type O multigerm inbred NB1. Combines resistance to bolting and curly top.

PI 590715. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C37". PL-23. Erwinia root rot resistant line selected from C17. Self-sterile, multigerm, green hypocotyl line. Nonbolting and resistant to virus yellows, Erwinia root rot, curly top. GCA similar to C17.

PI 590716. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C42". GP-73. Multigerm, open-pollinated line selected from C04 X C64. Moderately resistant to Erwinia root rot, virus yellows, and curly top. Good GCA for sugar yield.

PI 590717. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C301". GP-102. Self-fertile, monogerm, type-O line that

segregates for male sterility (A subscript 1:a subscript 1 a subscript 1). Derived from one S subscript o plant from 8755 random mating population. Good GCA for sugar yield.

The following were donated by G. J. Hogaboam, USDA-ARS, Sugarbeets & Edible Legumes, PO Box 1633, East Lansing, Michigan 48823, United States. Received 1981.

PI 590718. *Beta vulgaris* L. ssp. *vulgaris*

Cultivar. EL 45. Curly top resistant line with excellent combining ability.

PI 590719. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "EL40". PL-21. Multigerm line selected from one root known as 02 clone, which was self-sterile. Plants from selfed-seed were sib-fertile. Characterized by large root, small crown, rather fine petioles, and small crinkled leaves. Resistance to *Cercospora* leaf spot and to *Aphanomyces* black root. Excellent specific combining ability. Hybrids to this leaf line show excellent leaf spot resistance in central Michigan.

PI 590720. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "EL45/2". PL-22. Monogerm, O-type, selected for improved pollen production in the EL45 line. Selection made during the 1978-79 season in a *Phoma* infested sd field. The line was severely rogued to improve pollen production. More than 200 plants were left so no significant changes anticipated other than pollen production and maybe *Phoma* resistance. Curly top resistant line with excellent combining ability.

PI 590721. *Beta vulgaris* L. ssp. *vulgaris*

Cultivar. EL 46.

The following were donated by Richard Hecker, USDA, ARS, Crops Research Lab., Colorado State University, Fort Collins, Colorado 80521, United States. Received 1982.

PI 590722. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "FC 703/4". GP-84. Released 11/19/1981. Multigerm, pollen fertile, diploid ($2x = 18$), self-sterile, 52% green hypocotyl, resistant to root rot caused by *Rhizoctonia solani*. Moderate resistance to *Cercospora* leaf spot. For breeder use as a pollinator to produce *Rhizoctonia* resistant hybrids or as a source of genes for resistance to *R. solani*. In absence of *Rhizoctonia* root rot, the sugar yield of this germplasm was significantly less than that of commercial variety.

The following were donated by Edward J. Ryder, USDA, ARS, 1636 E. Alisal Street, Salinas, California 93905, United States. Received 1982.

PI 590723. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C554". GP-69. Multigerm inbred possessing resistance to bolting and *Fusarium* stalk blight.

The following were donated by Richard Hecker, USDA, ARS, Crops Research Lab., Colorado State University, Fort Collins, Colorado 80521, United States. Received 1982.

PI 590724. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "FC 702/4(4X)". GP-56. Released 03/09/1978. Multigerm, pollen-fertile, autotetraploid ($4x = 36$), resistant to root rot caused

by *Rhizoctonia solani*. Moderate resistance to leaf spot caused by *Cercospora beticola*. Mostly self sterile. Flowers after short induction (easy bolting), plus/minus 50% pink hypocotyl. For breeder use as a pollinator to produce triploid *rhizoctonia* resistant hybrids. Good combining ability for sucrose production.

The following were donated by J. C. Theurer, Sugarbeet Investigations, Crops Res. Lab., Utah State Univ., Logan, Utah 84322, United States. Received 1982.

PI 590725. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "L34". GP-70. Self-fertile, green hypocotyl, near O-type, multigerm inbred line selected for high resistance to curly top. More vigorous than L35 and has a curly top rating equal to L35. Not been tested extensively for combining ability. Few hybrids w/Logan CMS inbreds have shown root yield and sucrose percentage equal to that of GW-Mono-Hy-D2.

PI 590726. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "L40". GP-71.

PI 590727. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "L50". GP-72.

The following were donated by Cole, USDA, ARS, North Dakota State University, Fargo, North Dakota 58105, United States. Received 1982.

PI 590728. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "F1003". GP-85.

The following were donated by Richard Hecker, USDA, ARS, Crops Research Lab., Colorado State University, Fort Collins, Colorado 80521, United States. Received 1982.

PI 590729. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "FC 711". GP-87. Multigerm, pollen fertile, self sterile sugarbeet. *Rhizoctonia* root rot resistant. Diploid ($2x = 18$) and segregates for pink and green hypocotyl color. Originally from 2 heterogen breeding lines that were the most root rot resistant among 9 accessions from Japan. Has lower sucrose content. Diversity provides breeders the potential use as a pollin. to breed *Rhizoctonia* resistant hybrids.

The following were collected by LeCohec, France. Donated by Robert T. Lewellen, USDA, ARS, U.S. Agricultural Research Station, 1639 E. Alisal St., Salinas, California 93905, United States. Received 1982.

PI 590730. *Beta vulgaris* L. ssp. *vulgaris*

Cultivar. MELANGE S. Collected 02/25/1981 in France. Pedigree - Composite of 7 diploid sugarbeet varieties -- one Danish, two Dutch, two German, and two French.

PI 590731. *Beta vulgaris* L. ssp. *vulgaris*

Cultivar. MELANGE T. Collected 02/25/1981 in France. Pedigree - Composite of three KWS diploid sugarbeet varieties.

The following were donated by Robert T. Lewellen, USDA, ARS, U.S. Agricultural Research Station, 1639 E. Alisal St., Salinas, California 93905, United States. Received 1982.

PI 590732. *Beta vulgaris* L. *ssp. vulgaris*
Cultivar. MELANGE U.

The following were donated by J. C. Theurer, Sugarbeet Investigations, Crops Res. Lab., Utah State Univ., Logan, Utah 84322, United States. Received 1983.

PI 590733. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. CT8 (7827).

PI 590734. *Beta vulgaris* L.
Breeding. SLC125 (8506).

PI 590735. *Beta vulgaris* L.
Breeding. SLC126 (6573).

PI 590736. *Beta vulgaris* L.
Breeding. SLC127 (6576).

PI 590737. *Beta vulgaris* L.
Breeding. SLC130 (0506).

PI 590738. *Beta vulgaris* L.
Breeding. SLC131 (0206).

PI 590739. *Beta vulgaris* L.
Breeding. SLC132 (46121).

PI 590740. *Beta vulgaris* L.
Breeding. SLC133 (7406).

PI 590741. *Beta vulgaris* L.
Breeding. SLC 17.

PI 590742. *Beta vulgaris* L.
Breeding. SLC 18.

PI 590743. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. SLC 19.

PI 590744. *Beta vulgaris* L.
Breeding. SLC 20.

PI 590745. *Beta vulgaris* L.
Breeding. SLC 21.

PI 590746. *Beta vulgaris* L.
Breeding. SLC 22.

PI 590747. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. SLC 23.

PI 590748. *Beta vulgaris* L.
Breeding. SLC 35.

PI 590749. *Beta vulgaris* L.
Breeding. L8.

PI 590750. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. COMPOSITE CARLSON.

The following were donated by Robert T. Lewellen, USDA, ARS, U.S. Agricultural Research Station, 1639 E. Alisal St., Salinas, California 93905,

United States. Received 1984.

PI 590751. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C35/1". GP-88.

PI 590752. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C35/2". GP-89. A green hypocotyl, self-sterile, multigerm line. High resistance to *Erwinia* and moderate resistance to powdery mildew, downy mildew, rust, virus yellows, curly top and bolting.

PI 590753. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C40". GP-90. A green hypocotyl, self-sterile, multigerm line. Very susceptible to *Erwinia* and powdery mildew. Resistant to curly top, virus yellows, and bolting. Derived from C13 by two cycles of mass selection for susceptibility to *Erwinia*. Bolts somewhat easier than C13 or C36. Some of the plants will be male sterile or partial male sterile. Useful in evaluating environmental varieties in field and greenhouse tests, etc.

The following were donated by Richard Hecker, USDA, ARS, Crops Research Lab., Colorado State University, Fort Collins, Colorado 80521, United States. Received 1984.

PI 590754. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "FC 705/1". GP-93. Released 12/15/1983. Multigerm, self sterile, pollen fertile, non-type O. Resistant to root rot caused by *Rhizoctonia solani*. Moderate resistance to *Cercospora* leaf spot, easy bolting, 26% green hypocotyl. For breeder use as a pollinator to produce *Rhizoctonia* resistance hybrids or as a source of resistance.

PI 590755. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "FC 702/7". GP-92. Released 12/15/1983. Multigerm, self-sterile, pollen fertile, non-type O. Resistant to root rot caused by *Rhizoctonia solani*. Moderate resistance to *Cercospora* leaf spot. Easy bolting, 72% green hypocotyl. For breeder use as a pollinator to produce *Rhizoctonia* resistant hybrids or as a source of resistance.

PI 590756. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "FC 701/6". GP-91. Released 12/15/1983. Multigerm, self-sterile, pollen fertile, non-type O. Resistance to root rot caused by *Rhizoctonia solani*. Moderate resistance to *Cercospora* leaf spot. Easy bolting. For breeder use as a pollinator to produce *Rhizoctonia* resistant hybrids or as a source of resistance.

The following were donated by Robert T. Lewellen, USDA, ARS, U.S. Agricultural Research Station, 1639 E. Alisal St., Salinas, California 93905, United States. Received 1984.

PI 590757. *Beta vulgaris* L.

Breeding. "C46". PL-24. Pedigree - Derived from backcross of (C17 x C64) x C17 by mass selection for multiple host-plant resistance. Self-sterile, multigerm, diploid germplasm and parentage line pollinator that combines moderate to high resistance to curly top, virus yellows, *Erwinia*, powdery and downy mildew, and beet rust. High nonbolting tend. Good GCA for root yield and sugar yield.

PI 590758. *Beta vulgaris* L.

Breeding. C031/5. Pedigree - Derived by 8 cycles of mass selection for disease resistance and sugar yield from composite cross made in 1965. Reselected from C31 (C31/2). Self-sterile, multigerm. Moderate resistance to virus yellows and *Erwinia* root rot. High nonbolting tendencies. Fair resistance to curly top. Moderately susceptible to

Erys. polyg. Good combing ability for sugar yield and high percent sucrose for yellow resistance.

PI 590759. Beta vulgaris L.

Breeding. C015. Diploid, self-sterile. Good resistance to powdery mildew. Fair resistance to virus yellows, curly top and bolting. High sugar yield.

PI 590760. Beta vulgaris L.

Breeding. Y26. Pedigree - Selected from US 56/2. Diploid, self-sterile line selected for yellows resistance. Fair resistance to virus yellows, curly top, bolting, powdery mildew. Resistant to Erwinia. Line has high sugar concentration and good GCA for sugar yield.

PI 590761. Beta vulgaris L.

Breeding. C719. Pedigree - A composite of 3 S (subsc. 7) sister lines derived from the 4th backcross of a BMV resistant scc to C17. Diploid, self-compatible (S supersc.f S supersc f) multigerm green hypocotyl line with homozygous resistance (BmBm) to beet mosaic virus (BMV). Developed by bulk population selection for resistance to BMV, virus yellows, Erwinia root rot and powdery mildew and sugar yield. Highly uniform with small dark green leaves and small canopy. Similar in GCA to C37.

PI 590762. Beta vulgaris L.

Breeding. 0747. Multigerm (possibly also segregates for monogerm), diploid, self-fertile population that segregates for genetic ms (A:aa). Genetic ms facilitated random-mating population. Similar to C37. Resistance to curly top, bolting, virus yellows, and Erwinia. Susceptible to powdery mildew. GCA equal to C37 as pollinator. Developed as a potential population for reciprocal recurrent selection studies.

The following were donated by Larry Campbell, USDA, ARS, Northern Crops Research Laboratory, 1307 North 18th Street, Fargo, North Dakota 58105-5677, United States. Received 1984.

PI 590763. Beta vulgaris L. ssp. vulgaris

Breeding. "F1004". GP-94. Pedigree - Produced from 6 cycles of mass selection from VNIS F526, an intro. from the USSR. Resistance to 3 major storage rot pathogens; Phoma betae Frank, Penicillium claviforme Bainier, and Botrytis cinerea L. Multigerm line. Segregates for red and green hypocotyl colors. Developed as a line resistant to storage rot at ND State University.

PI 590764. Beta vulgaris L. ssp. vulgaris

Breeding. "F1005". GP-95. Pedigree - Derived from 5 cycles of mass selection from VNIS F738, an intro. from the USSR. Resistance to 3 major storage rot pathogens; Phoma betae Frank, Penicillium claviform Bainier, and Botrytis cinerea L. Multigerm, green hypocotyl line. First cycle selected for Botrytis resistance only. Subsequent cycles included selection for resistance to the other two fungi. Developed as rot resistant line at ND University.

PI 590765. Beta vulgaris L. ssp. vulgaris

Breeding. "F1006". GP-96. Resistance to 3 important storage rot pathogens: Phoma betae Frank, Penicillium claviforme Bainier, and Botrytis cinerea L. Multigerm, red hypocotyl line selected from a population formed by interpol. 55 rot resistant individuals from the world collection of Beta vulgaris. Concurr. with selection for rot resistance, visual selection was used to eliminate lines with sprang. or color. root.

The following were donated by Richard Hecker, USDA, ARS, Crops Research Lab.,

Colorado State University, Fort Collins, Colorado 80521, United States.
Received 1985.

PI 590766. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "FC 712". GP-97. Resistant to root rot caused by AG-2 strains of *Rhizoctonia solani*. Multi-germ, self sterile, pollen fert., non-type O. Moderate cercospora leaf spot resistance. Easy bolting, segregating for pink and green hypocotyl color. Released for breeder use as a pollinator to produce *Rhizoctonia* resistant hybrids or as a source of genes for resistance.

The following were donated by Garry A. Smith, USDA, ARS, Crops Research Laboratory, Colorado State University, Fort Collins, Colorado 80523, United States. Received 1985.

PI 590767. *Beta vulgaris* L.

Breeding. "FC 606(4X)". GP-98. Monogerm, tetraploid, O-type, breeding line with high resistance to cercospora beticola and moderate resistance to the curly top virus. Line is self-incompatible.

The following were donated by G. E. Coe, USDA, ARS, Field Crops Lab., Lab. 6B, Bldg. 009, BARC-West, Beltsville, Maryland 20705, United States. Received 1986.

PI 590768. *Beta vulgaris* L.

Breeding. SP8540-0. Multigerm pollen fertile with 4 cycles of selection for resistance to southern root rot under artificially induced epiphytotics. Selections were from breeding lines having moderate tolerance to black root and leaf spot. Has been DI rated. Does not produce as much foliage as SP8541-0. Diploid containing about 85% pink hypocotyls and 15% green hypocotyls.

PI 590769. *Beta vulgaris* L.

Breeding. SP8541-0. Multigerm pollen fertile with 3 cycles of selection for resistance to southern root rot (*Sclerotium rolfsii*) under artificial induced epiphytotics. Original selections were from SP7822-0, an increase of the pollen. for USH20, which also has moderate resistance to black root and leaf spot. Plants selected from prog. w/DI rating. A diploid with pink and green seedlings. Greater root yield than SP7822-0.

PI 590770. *Beta vulgaris* L.

Breeding. SP85303-0. Multigerm pollen fertile with excellent resistance to black root disease (*Aphanomyces cochlioides*), and good resistance to leaf spot disease (*Cercospora beticola*). A diploid (2n=18) containing both pink and green hypocotyl color and originates from an increase of plants selected from a single prog. Rated on index for black root resistance and leaf spot disease.

PI 590771. *Beta vulgaris* L.

Breeding. SP85320-0. The pollen fertile monogerm O-type maintainer for SP85320-01 monogerm cytopl. male-sterile line. Derived from a sugarbeet maintainer (O-type) line, SP77756-0, and has green hypocotyl color. Moderate resistance to leaf spot disease (*Cerco. beticola*) with a disease index rating of 4.0 on a scale of 0-9. Moderate resistance to black root disease (*Aphanomyces cochliodes*).

PI 590772. *Beta vulgaris* L.

Breeding. SP85576-0. The pollen fertile monogerm germplasm for maintainer (O-type) for the cytoplasmic male sterile monogerm line SP85576-01. Its characteristics are similar to SP85576-01 except not quite as vigorous.

- PI 590773. *Beta vulgaris* L.
Breeding. SP85590-0. The monogerm pollen-fertile maintainer (O-type) for SP85590-01 cytoplasmic male sterile monogerm line. Similar to the male sterile except resistance to leaf spot (*Cercospora beticola*) is not as good. Disease index rating was only 2.5 compared to 1.75 for the male sterile.
- PI 590774. *Beta vulgaris* L.
Breeding. SP85655-0. The monogerm pollen fertile maintainer (O-type) for the monogerm cytoplasmic male sterile line, SP85655-01. Characteristics similar to that of the male sterile.
- PI 590775. *Beta vulgaris* L.
Breeding. SP85657-0. The pollen-fertile monogerm maintainer (O-type) for SP85657-01 monogerm cytoplasmic male-sterile line. Contains only green hypocotyl color.
- PI 590776. *Beta vulgaris* L.
Breeding. SP85700-0. A diploid multigerm open-pollin. with a somewhat shortened spindle-shaped root. Ancestry can be traced to crosses between sugarbeet and garden beet. Proportionally a little larger at its maximum circum. than ordinary sugarbeet breeding lines and hybrids. Smooth harvestable taproot with few lateral rootlets. Moderate resistance to leaf spot and to black root. 1% lower suc. than USH20.
- PI 590777. *Beta vulgaris* L.
Breeding. SP85800-0. A diploid (2n=18), multigerm pollen fertile germplasm originating from crosses between sugarbeet and fodderbeet. Root yields from 20 to 25 percent greater than the best breeding lines and hybrids at Beltsville, MD. Sugar % is only slightly lower than other Beltsville breeding lines, but has only about 80% as much non-suc. solubles as the best commercial hybrids.
- PI 590778. *Beta vulgaris* L.
Breeding. SP8531-0. A diploid (2n=18), multigerm pollen fertile germplasm with smooth harvestable taproot having few lateral rootlets. Composed of a pool of those progenies with the best "soil-free" characteristics in Beltsville nurs. tests. Similar to SP8030-0 but somewhat better in root type and sucrose %. Moderate resistance to black root (*Aphanomyces cochliodes*) and leaf spot (*Cercospora beticola*).

The following were donated by Robert T. Lewellen, USDA, ARS, U.S. Agricultural Research Station, 1639 E. Alisal St., Salinas, California 93905, United States. Received 1986.

- PI 590779. *Beta vulgaris* L.
Breeding. "C302". GP-103. 2n=2x, mm, s (superscript f) line increased from one s (subscript o) plant from popn-755. Segregates A:aa. Moderate resistance to CTV. Good GCA for sugar yield.
- PI 590780. *Beta vulgaris* L.
Breeding. "C303". GP-104. 2n=2x, mm, s (superscript f) line increased from one s (subscript o) plant from popn-755. Segregates A:aa. Moderate resistance to CTV. Good GCA for sugar yield. Resistant to lettuce infectious yellows.
- PI 590781. *Beta vulgaris* L.
Breeding. "C304". GP-105. 2n=2x, mm, s (superscript f) line increased from one s 2n=2x, mm, (subscript o) plant from popn-755. Segregates A:aa. Moderate resistance to CTV. Good GCA for sugar yield.
- PI 590782. *Beta vulgaris* L.
Breeding. "C305". GP-106. 2n=2x, mm, s (superscript f) line increased

from one s (subscript o) plant from popn-755. Segregates A:aa. Moderate resistance to CTV. Good GCA for sugar yield.

PI 590783. Beta vulgaris L.

Breeding. "C308". GP-109. 2n=2x, mm, s (superscript f) line increased from one S (subscript o) plant from popn-755. Segregates A:aa. Moderate resistance to CTV. Good GCA for sugar yield.

PI 590784. Beta vulgaris L.

Breeding. "C790-2". GP-110. 2n=2x, mm, S (superscript f) line increased from one S (subscript o) plant from popn-790.

PI 590785. Beta vulgaris L.

Breeding. "C790-25". GP-116. 2n=2x, mm, S (superscript f) line developed by single- seed descent from popn-790.

PI 590786. Beta vulgaris L.

Breeding. "C790-41". GP-111. 2n=2x, mm, S (superscript f) line increased from one S (subscript o) plant from popn-790.

PI 590787. Beta vulgaris L.

Breeding. "C790-42". GP-112. 2n=2x, mm, S (superscript f) line increased from one S (subscript o) plant from popn-790.

PI 590788. Beta vulgaris L.

Breeding. "C790-55". GP-113. 2n=2x, mm, S (superscript f) line increased from one S (subscript o) plant from popn-790.

PI 590789. Beta vulgaris L.

Breeding. "C790-65". GP-114. 2n=2x, mm S (superscript f) line increased from one S (subscript o) plant from popn-790.

PI 590790. Beta vulgaris L.

Breeding. "C790-68". GP-115. 2n=2x, mm, S (superscript f) line increased from one S (subscript o) plant from popn-790.

PI 590791. Beta vulgaris L.

Breeding. F2 (Y54rr x B.maritima). Plants from approximately 70 B. maritima accessions were crossed with sugarbeet population Y54 and increased to the F and composited. No selection has been done within this F2 composite and it will be variable for many traits. Many of the plants will be annual (B-). F1 plants were fully pollen fertile.

PI 590792. Beta vulgaris L.

Breeding. MS of NB1. CMS of NB1.

The following were developed by Helen Savitsky. Donated by Robert T. Lewellen, USDA, ARS, U.S. Agricultural Research Station, 1639 E. Alisal St., Salinas, California 93905, United States. Received 1986.

PI 590793. Beta vulgaris L.

Breeding. NR1. Pedigree - Developed from the interspecific hybrid B. vulgaris x B. procumbens. Released 1982. Resistance to the sugarbeet cyst nematode. 85-NR1 is the increase of the 2nd cycle of selection for 100% transmission of resist. to nematodes from family NR55235 released earlier.

PI 590794. Beta vulgaris L.

Breeding. NR2. Similar to NR1.

The following were donated by Robert T. Lewellen, USDA, ARS, U.S. Agricultural Research Station, 1639 E. Alisal St., Salinas, California 93905,

United States. Received 1986.

PI 590795. *Beta vulgaris* L.

Breeding. WB 51. Likely a sister collection of WB 52 and appears to be nearly identical. WB 52 and WB 51 appear to be closely related to WB 41 and WB 42, also accessed from Denmark.

PI 590796. *Beta vulgaris* L.

Breeding. WB 52. Pedigree - An increase of Acc. 113 (Beltsville) of *Beta maritima* that was originally collected by Dr. Viggo Lund at Kalundborg Fjord, Denmark in 1963. Appears highly resistant to rhizomania (BNYVV), dark green, biennial, and may be resistant to powdery mildew and virus yellows. WB 52 & WB 51 also appears to be closely related to WB 41 and WB 42, also accessed from Denmark.

PI 590797. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. C11T. Pedigree - 4n composite derived by mass selection from accessions from Yugoslavia (Yugo -1 thru Yugo -9). MM, O.P., May be variable for chromosome #. (Not chkd during selection procedures). Good %'s with fair resistance to *Erwinia*, powdery mildew and bolting. Susceptible to curly top.

PI 590798. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. C12T. Pedigree - 4n line derived by mass selection from accession Yugo-10. MM, O.P., similar to C11T (4n) but has higher %'s and a narrower base.

PI 590799. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. C31/6. Multigerm, self-fertile line with moderate resistance to VY *Erwinia*, Erysiphe, bolting.

PI 590800. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. C46/2. Multigerm, self-sterile line with moderate resistance to CTV, VY, *Erwinia*, Erysiphe, bolting.

PI 590801. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. C49. Multigerm, self-sterile line with moderate resistance to CTV, VY, *Erwinia* Erysiphe, bolting.

PI 590802. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. C54. Multigerm, self-sterile line that shows moderate resistance to VY, CTV, Erysiphe, *Erwinia*, bolting. Broad based composite derived from C36, C37, C31, C46.

PI 590803. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. C70. Pedigree - Derived from fully fert. plants of cross: [C37, C46, ...x (C37, C46 x Holly Hybrid)]. R770 segregates for Holly source (R subscript z) of resistance to Rhizomania (BNYVV). Primarily multigerm and self-sterile, but may segregate for monogerm and self-fertility. Background of line will be C37, C46, C31 types. Holly hybrid segregated for single-gene resistance to rhizomania.

PI 590804. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. C91. Multigerm, self-sterile line with moderate resistance to VY, *Erwinia*, Erysiphe, bolting, and CTV.

PI 590805. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. C92. Multigerm, self-sterile line with moderate resistance to CTV, VY, *Erwinia*, Erysiphe.

PI 590806. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. C5600. Previously stored in NSSL (June, 1979) as 8600 (NSSL S/N 103031.01). Annual (BB), homozygous (auto- diploid) line closely related to NB 1 (NSSL S/N 98146. It genotypically is rr, S (superscript

f) S (super- script f), MM. Vigorous with nine chromosomes.

The following were donated by Utah USDA, ARS, Utah, United States. Received 1961.

- PI 590807. *Beta vulgaris* L.
Breeding. CT 9 MULTIGERM INBRED. First self-fertile curly-top resistant line of sugar beets to be used for parentage in production of commercial hybrids. Excellent combining ability and still being utilized.
- PI 590808. *Beta vulgaris* L.
Breeding. MS EQUIVALENT OF CT 9 INBRED. MS seed lot A2-90HO represents the 6th backcross to multigerm inbred CT9. Reproduced by Amalgamated Sugar Co. Before the introduction of monogerm MS lines it was the principal MS female line used in making commercial curly-top resistant hybrid sugar beets. Many fine hybrids have been produced with it.
- PI 590809. *Beta vulgaris* L.
Breeding. SLC 122 MONOGERM POLLINATOR. Inbred monogerm pollinator, relatively high in curly-top resistance.
- PI 590810. *Beta vulgaris* L.
Breeding. MS OF SLC 122 MONOGERM. Used extensively for production of commercial monogerm hybrids from about 1959. Approx. 9 lbs of MS seed in mixed with 1 lb. of multigerm pollin. When new seed cross is harvested, seed from multigerm pollin. is scalped off, in the cleaning plant, and monogerm hybrid seed is distributed to sugarbeet industry. Lately this monogerm male-sterile line has been hybrid. with leaf spot resistance multigerm pollin. and highly productive hybrids produced.
- PI 590811. *Beta vulgaris* L.
Breeding. SLC 003 ANN TYPE O POLLINATOR. Annual self-fertile inbred line with 9 generations of selfing "Type O" line because when used as pollinator to cytoplasmically male steriles, all of the offspring have been completely male sterile. Original annual from which this line was developed was produced by Munerati in Italy. Has a high resistance to sugar beet mosaic.
- PI 590812. *Beta vulgaris* L.
Breeding. MS EQUIV OF SLC 03 (MS ANNUAL). Annual MS beet has been sent to breeders all over the world. Used extensively to test breeding behavior of biennial e: pollin. The F (subsc. 1) plants giving the desired reading of 100% sterility are referred to as "type O" and become valuable for MS hybrids.

The following were donated by University of California, California Agr. Exp. Sta., California, United States. Received 1978.

- PI 590813. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "C563". PL-10. Selection for curly top and bolting resistance from the previously released C562 line, which is a type O, self-fertile, monogerm inbred with moderate resistance to curly top and bolting. Used as the maintainer line of its cytoplasmic male sterile C563 CMS.
- PI 590814. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "C563 CMS". PL-11. Pedigree - Developed by crossing the inbred C563 with the previously released C562 CMS and backcrossing to C563. Cytoplasmic male-sterile line. Disease resistance and other qualities of similar to those of C563. The line has been widely used by the Agricultural Research Service and commercial breeders to produce seed of the male sterile F subscript 1 seedbrg parents of hybrid cultivars.

PI 590815. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "C522". GP-7. Type O monogerm inbred with resistance to bolting and curly top.

PI 590816. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "C522 CMS". GP-8. Pedigree - Developed by crossing the inbred C522 with curly top resistant male-sterile line and backcrossing four times to C522. Cytoplasmic male-sterile line.

PI 590817. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "C85". GP-3. Type O self-sterile, open pollinated line with resistance to bolting and curly top.

PI 590818. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "C85 CMS". GP-4. Cytoplasmic male sterile equivalent of C85.

The following were donated by USDA, ARS, Colorado Agric. Exp. Station, Colorado, United States. Received 1978.

PI 590819. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "FC 502/2". GP-44. Monogerm pollen fertile maintainer line of FC 502/2 CMS. Diploid ($2n = 2X = 18$) and inbred. Flowers after short photothermal induction. Moderately high resistance to *Cercospora* leaf spot (*Cercospora beticola* Sacc.). Resistance about equal to US 201.

PI 590820. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "FC 502/2 CMS". GP-45. Cytoplasmic male monogerm equivalent of FC 502/2. Diploid ($2n = 2X = 18$) and inbred. Moderately high resistance to *Cercospora* leaf spot (*Cercospora beticola* Sacc.) and flowers after short photothermal induction.

PI 590821. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "FC 605". GP-50. Monogerm pollen fert. maintainer line (Type O) of FC 605 CMS. Diploid ($2n = 2X = 18$) and flowers after short photothermal induction. High curly top resistance (superior to US 41) and moderately high *Cercospora beticola* resistance (less than US 201).

PI 590822. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "FC 605 CMS". GP-51. Cytoplasmic male sterile monogerm equivalent of FC 605. Diploid ($2n = 2X = 18$) and flowers after short photothermal induction. High curly top resistance (superior to US 41) and moderately high *Cercospora beticola* resistance (less than US 201).

PI 590823. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "FC 504". GP-42. Pedigree - Derived from an original cross of US216 multigerm X SLC 101 monogerm. Monogerm pollen fertile maintainer line (Type O) of FC 504 CMS. Diploid ($2n = 2X = 18$) and inbred line. Flowers after short photothermal induction. Moderately high resistance to *Cercospora* leaf spot (*Cercospora beticola* Sacc.).

PI 590824. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "FC 504 CMS". GP-43. Pedigree - Derived from an original cross of US 216 multigerm X SLC 101 monogerm. Cytoplasmic male sterile monogerm equiv. of FC 504. Diploid ($2n = 2X = 18$) and flower after short photothermal induction. Moderately high resistance to *Cercospora* leaf spot (*Cercospora beticola* Sacc.). Inbred line.

The following were donated by Edward J. Ryder, USDA, ARS, 1636 E. Alisal Street, Salinas, California 93905, United States. Received 1979.

PI 590825. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "C16". GP-76. Released 1978. High frequency of type-O

(nonrestorer) plants. Multigerm, self-sterile, green hypocotyls. Nearly equivalent C17.

PI 590826. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C16 CMS". GP-77. Released 1978. CMS equivalent of C16. Low frequency of partially restored plants occur.

PI 590827. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C19". GP-78. Pedigree - Selected for type-O from C534. Released 1978. High frequency of type-O plants. May be mixed with CMS plants. Multigerm, self-sterile. Moderately resistant to virus yellows. Susceptible to curly top.

PI 590828. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C19 CMS". GP-79. Cytoplasmic male-sterile equivalent of C19 derived from the fourth backcross to the CMS source. Tested as breeding lines designated Y519HO and Y419HO.

PI 590829. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C706". GP-29. Self-fertile (S w/superscript f) monogerm inbred with moderate resistance to virus yellows, curly top, and bolting.

PI 590830. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C706 CMS". GP-30. Cytoplasmic male sterile equivalent of C706.

PI 590831. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. Y18. High frequency of type-O plants. Multigerm, self-sterile. Nearly equivalent to C04.

PI 590832. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. Y18 CMS. CMS equivalent of Y18. Low to moderate frequency of partially restored plants occur.

PI 590833. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. Y20. High frequency of type-O plants. Multigerm, self-sterile. Tonnage type with very smooth roots. Moderately yellows resistant with low curly top resistance. Selected for type-O from C10.

PI 590834. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. Y20 CMS. CMS equivalent of Y20.

PI 590835. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C789". GP-18. Monogerm, self-fertile composite that segregates for genetic male sterility (a w/subscript 1 a w/subscript 1). Low resistance to virus yellows but moderate resistance to curly top and bolting. Most plants are type-O.

PI 590836. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C789 CMS". GP-19. Cytoplasmic male sterile equivalent of C789.

The following were donated by Garry A. Smith, USDA, ARS, Crops Research Laboratory, Colorado State University, Fort Collins, Colorado 80523, United States. Received 1979.

PI 590837. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "FC 607"; A-79-67. GP-60. C subscript 3 colchicine-induced auto-tetraploids of FC 606 and FC 607, and has not been subjected to additional selection. A monogerm sugarbeet germplasm with good resistance to cercospora leaf spot and moderate resistance to the curly top virus. In 3 yrs. of field testing under artificially induced leaf spot

epiphytotics, intended for use as parents of triploid (3x) hybrids.

PI 590838. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "FC 607 CMS"; A-79-68. GP-61. Cytoplasmic male-sterile equivalents of FC 606 (4x) and FC 607 (4x). A monogerm sugarbeet germplasm with good resistance to cercospora leaf spot and moderate resistance to the curly top virus.

The following were donated by J. C. Theurer, Sugarbeet Investigations, Crops Res. Lab., Utah State Univ., Logan, Utah 84322, United States. Received 1980.

PI 590839. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "L35". GP-31. A S subscript 5 self-fertile, green hypocotyl, Type O monogerm line derived from heterogeneous population selected for resistance to curly top. Developed by 3 repeated selections for curly top resistance in an inoc. field nursery and one selection for Type O. Outstanding resistance to all presently known races of curly top virus with 1-9 resistance scale. Used to develop Type O inbreds with high resistance to curly top.

PI 590840. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "L35 CMS". GP-32. A cytoplasmic male-sterile equivalent developed by crossing L35 to a curly top resistant male-sterile line followed by three successive backcrosses to L35.

PI 590841. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "L53". GP-34. Self fertile, red hypocotyl, Type O, multigerm inbred selected from a cross of the curly top selection CT8 to the cultivar US35/2 x (US35/2 x Beta ovana). Has shown high general combining ability for both root yield and sugar %. It is about equal to cultivar US41 in curly top resistance. Excellent combining ability. for low-respir. rate.

PI 590842. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "L53 CMS". GP-35. A cytoplasmic male-sterile equivalent line developed by crossing L53 to a male-sterile line and back-crossing four times to L53. Slightly more vigorous than L53 and has shown excellent performance in hybrid combinations. Hybrids were used as a par. Equal to US33 in curly top resistance.

The following were donated by Garry A. Smith, USDA, ARS, Crops Research Laboratory, Colorado State University, Fort Collins, Colorado 80523, United States. Received 1980.

PI 590843. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "FC 606"; GP NO. 52, A-78-44. GP-52. Resistant to Cercospora leaf spot and the curly top virus. Diploid and flower after short photothermal induct. The monogerm, pollen-fert. maintainer line of FC 606 CMS. Moderately vigorous.

PI 590844. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "FC 606 CMS"; GP NO. 35, A-78-45. GP-53. Cytoplasmic male-sterile monogerm equivalent of FC 606. As the female in experimental hybrids has shown good combining ability for sucrose content as well as disease resistance.

The following were donated by Richard Hecker, USDA, ARS, Crops Research Lab., Colorado State University, Fort Collins, Colorado 80521, United States. Received 1981.

PI 590845. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "FC 708". GP-63. Released 05/21/1980. Inbred (S subscript 3 equivalent), low vigor monogerm, diploid. Resistant to root rot (*Rhizoctonia solani*). Flowers only after long induction (bolting resistant), self-fertile, type O (nonrestorer). A source of genes for *Rhizoctonia* resistance in monogerm type O material. The monogerm type O maintainer of FC 708 CMS.

PI 590846. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "FC 708 CMS". GP-64. Released 05/21/1980. Monogerm, diploid, resistant to root rot (*Rhizoctonia solani*). Flowers only after long induction, bolting resistance, cytoplasmic male sterile equivalent (B subscript 2) of FC 708. Use as a source of gene for *Rhizoctonia* resistance in monogerm CMS material and for use as a female parent in experimental hybrids.

The following were donated by Edward J. Ryder, USDA, ARS, 1636 E. Alisal Street, Salinas, California 93905, United States. Received 1981.

PI 590847. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. 0562. Monogerm, type O inbred that combines resistance to bolting and curly top.

PI 590848. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. 0562HO/C562 (CMS). Cytoplasmic male sterile equivalent of 0562. Resistant to bolting and curly top.

PI 590849. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C718". GP-25. Self-fertile (S with underline superscript f) monogerm inbred with green hypocotyls and moderate resistance to curly top and bolting. High combining ability for root and gross sugar yield. Type-O maintainer of C718 CMS.

PI 590850. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C718 CMS". GP-26. Cytoplasmic male-sterile equivalent of C718.

PI 590851. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C779". GP-82. Self-fertile (S w/underline superscript f) monogerm inbred with green hypocotyls and moderate to good resistance to virus yellows, curly top, powdery mildew, and bolting. Very uniform line with dark green, very small compact canopy. Fair combining ability. Type-O maintainer of C779 CMS.

PI 590852. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C779 CMS". GP-83. Cytoplasmic male-sterile equivalent of C779.

PI 590853. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C758". GP-80. Monogerm, self-fertile, type-O inbred. Moderately resistant to virus yellows, curly top, and bolting. Average GCA. Maintainer of C758 CMS.

PI 590854. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "C758 CMS". GP-81. CMS counterpart of C758 monogerm, self-fertile inbred.

The following were donated by G. J. Hogaboam, USDA-ARS, Sugarbeets & Edible Legumes, PO Box 1633, East Lansing, Michigan 48823, United States. Received 1981.

PI 590855. *Beta vulgaris* L. ssp. *vulgaris*

Breeding. "EL44". PL-19.

PI 590856. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "EL44CMS". PL-20.

The following were donated by Edward J. Ryder, USDA, ARS, 1636 E. Alisal Street, Salinas, California 93905, United States. Received 1982.

PI 590857. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "C566". PL-17. Inbred line possessing resistance to bolting, curly top and Fusarium stalk blight.

PI 590858. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. "C566 CMS". PL-18. Cytoplasmic male sterile equivalent of C566.

The following were donated by J. C. Theurer, Sugarbeet Investigations, Crops Res. Lab., Utah State Univ., Logan, Utah 84322, United States. Received 1983.

PI 590859. *Beta vulgaris* L.
Breeding. SLC128 (0534).

PI 590860. *Beta vulgaris* L.
Breeding. SLC128CMS (9147).

PI 590861. *Beta vulgaris* L.
Breeding. SLC129 (1523).

PI 590862. *Beta vulgaris* L. *ssp. vulgaris*
Breeding. SLC129CMS (0166).

PI 590863. *Beta vulgaris* L.
Breeding. 330.

PI 590864. *Beta vulgaris* L.
Breeding. 330 CMS.

The following were donated by Robert T. Lewellen, USDA, ARS, U.S. Agricultural Research Station, 1639 E. Alisal St., Salinas, California 93905, United States. Received 1984.

PI 590865. *Beta vulgaris* L.
Breeding. 0743. Pedigree - Composite of populations 740, 741, 742, 744 (789) and 745. Diploid, monogerm, self-fertile (S superscript f) population that segregates for genet. ms (A:aa), R:rr, and type-O. Moderate resistance to curly top, virus yellows, bolting, and Erwinia. Susceptible to powdery mildew. Relatively broad base population derived from monogerm and multigerm inbred lines adapted to Calif. GCA approx. equal to C562CMS x C546.

PI 590866. *Beta vulgaris* L.
Breeding. 0743CMS. CMS counterpart of monogerm, self-fertile population 743.

PI 590867. *Beta vulgaris* L.
Breeding. "C306". GP-107. Released 1982. Diploid, monogerm, type-O, self-fertile line increased from S (subscript o) plant from population 755. Segregates for A:aa. Moderate resistance to curly top. Good GCA for sugar yield.

PI 590868. *Beta vulgaris* L.
Breeding. C306CMS. CMS of C306.

PI 590869. *Beta vulgaris* L.
Breeding. "C307". GP-108. Released 1982. Diploid, monogerm, type-O, self-fertile line increased from one S (subscript o) plant from population 755. Segregates for A:aa. Moderately resistant to CTV. Good GCA for sugar yield.

PI 590870. *Beta vulgaris* L.
Breeding. C307CMS. Released 1982. Diploid, monogerm, type-O, self-fertile line increased from population 755. Segregates for A:aa. Moderate resistant to CTV, good GCA for sugar content yield.

The following were donated by Garry A. Smith, USDA, ARS, Crops Research Laboratory, Colorado State University, Fort Collins, Colorado 80523, United States. Received 1985.

PI 590871. *Beta vulgaris* L.
Breeding. "FC 607(4X)". GP-99. Monogerm, tetraploid, O-type, breeding line with high resistance to *Cercospora beticola* and moderate resistance to the curly top virus. Line is self-incompatible.

PI 590872. *Beta vulgaris* L.
Breeding. "FC 607 CMS (4X)". GP-101. Monogerm, tetraploid, cytoplasmic male sterile (CMS), breeding line with high resistance to *Cercospora beticola* and moderate resistance to the curly top virus.

The following were donated by Robert T. Lewellen, USDA, ARS, U.S. Agricultural Research Station, 1639 E. Alisal St., Salinas, California 93905, United States. Received 1986.

PI 590873. *Beta vulgaris* L.
Breeding. C310(C6). Released 1986. Cycle 6 of popn-755. Improved for percent sugar and disease resistance.

PI 590874. *Beta vulgaris* L.
Breeding. C310(C6)CMS. CMS of C310(C6).

PI 590875. *Beta vulgaris* L.
Breeding. "C790-69". GP-117. 2n-2x, mm, S (superscript f) line developed by single-seed descent from popn-790.

PI 590876. *Beta vulgaris* L.
Breeding. C790CMS. CMS of C790.

PI 590877. *Beta vulgaris* L.
Breeding. "C796-22". GP-118. 2n-2x, rr, mm, S (superscript f) line increased from one S (subscript o) plant from popn-796. Segregates for A:aa. Moderate resistance to VY, CTV, Erwinia, bolting.

PI 590878. *Beta vulgaris* L.
Breeding. C796-22CMS. CMS Equivalent of C796-22.

The following were developed by S.L. Dwivedi, Int. Crops Res. Inst. for the Semi-Arid Tropics, Genetic Resources Program, Patancheru P.O., Andhra Pradesh 502 324, India; S.N. Nigam, Int. Crops Res. Inst. for the Semi-Arid Tropics, Legumes Program, Patancheru, Andhra Pradesh 502 324, India; Y.L.C. Rao, Int. Crops Res. Inst. for the Semi-Arid Tropics, Legumes Program, Patancheru, Andhra Pradesh 502324, India; G.V.S. Nagabhushanam, Int. Crops Res. Inst. for the Semi-Arid Tropics, Asia Center, Patancheru P.O., Andhra Pradesh 502 324, India. Received 06/26/1995.

PI 590879. *Arachis hypogaea* L. ssp. *hypogaea*
Cultivar. Pureline. ICGV 86325. CV-54. Pedigree - (ICGS 20 x G 201)
F2-B2-B1-B1-B1-B1. Decumbent 3 growth habit, alternate branching, and
medium to small elliptic dark green leaves. 4-8 primary and 4-9
secondary branches. Mostly 2-seeded pods with moderate to prominent beak
and reticulation, and moderate to deep constriction. Pod ridges absent.
70% meat content with 80% sound mature seeds. Seeds tan with 34g
100-seed mass, and contain, an average, 45% oil and 23% protein. Ratio
of oleic/linoleic fatty acid is 1.55.

The following were donated by International Potato Center, Apartado 5969,
Lima, Lima, Peru. Received 12/05/1994.

- PI 590880. *Solanum commersonii* Dunal ex Poiret
Wild. CIP 761080; FB 4001; Q 35499. Collected in Uruguay.
- PI 590881. *Solanum commersonii* Dunal ex Poiret
Wild. CIP 761084; FB 4005-A; Q 35500. Collected in Uruguay.
- PI 590882. *Solanum commersonii* Dunal ex Poiret
Wild. CIP 761086; FB 4008; Q 35501. Collected in Uruguay.
- PI 590883. *Solanum commersonii* Dunal ex Poiret
Wild. CIP 761092; FB 4025C1.12; Q 35502. Collected in Uruguay.
- PI 590884. *Solanum commersonii* Dunal ex Poiret
Wild. CIP 761098; FB 4025C76.1; Q 35504. Collected in Uruguay.
- PI 590885. *Solanum commersonii* Dunal ex Poiret
Wild. CIP 761101; FB 5078; Q 35505. Collected in Soriano, Uruguay.
- PI 590886. *Solanum commersonii* Dunal ex Poiret
Wild. CIP 761103; FB 5079.2; Q 35507. Collected in Tacuarembó, Uruguay.
- PI 590887. *Solanum commersonii* Dunal ex Poiret
Wild. CIP 761104; FB 5080; Q 35508. Collected in Salto, Uruguay.
- PI 590888. *Solanum albicans* (Ochoa) Ochoa
Wild. CIP 761264; OCH 11698; Q 35509. Collected in Ancash, Peru.
- PI 590889. *Solanum acaule* Bitter
Wild. CIP 761313; OCH 11867; Q 35510. Collected in Junin, Peru.
- PI 590890. *Solanum bukasovii* Juz. ex Rybin
Wild. CIP 761412; OCH 12042; Q 35511. Collected in Cuzco, Peru. Cusco.
- PI 590891. *Solanum albicans* (Ochoa) Ochoa
Wild. CIP 761429; OCH 12062; Q 35512. Collected in Ancash, Peru.
- PI 590892. *Solanum albicans* (Ochoa) Ochoa
Wild. CIP 761455; OCH 13019; Q 35513; OCH 12093. Collected in Ancash,
Peru.
- PI 590893. *Solanum albicans* (Ochoa) Ochoa
Wild. CIP 761474; OCH 13019; Q 35514. Collected in Ancash, Peru.
- PI 590894. *Solanum orophilum* Correll
Wild. CIP 761478; OCH 13023; Q 35515. Collected in Ancash, Peru.
- PI 590895. *Solanum acaule* Bitter
Wild. CIP 761508; OCH 13145; Q 35516. Collected in Lima, Peru.
- PI 590896. *Solanum acaule* Bitter

- Wild. CIP 761513; OCH 13151; Q 35517. Collected in Lima, Peru.
- PI 590897. *Solanum albicans* (Ochoa) Ochoa
Wild. CIP 761558; OCH 13239; Q 35519. Collected in Ancash, Peru.
- PI 590898. *Solanum acaule* Bitter
Wild. CIP 761573; OCH 13277; Q 35520. Collected in Puno, Peru.
- PI 590899. *Solanum colombianum* Dunal
Wild. CIP 761601; OCH 13384; Q 35523. Collected in Ecuador.
- PI 590900. *Solanum colombianum* Dunal
Wild. CIP 761607; OCH 13397; Q 35524. Collected in Ecuador.
- PI 590901. *Solanum colombianum* Dunal
Wild. CIP 761611; OCH 13405; Q 35526. Collected in Narino, Colombia.
- PI 590902. *Solanum acaule* Bitter
Wild. CIP 761612; OCH 13519; Q 35527. Collected in Puno, Peru.
- PI 590903. *Solanum coelestipetalum* Vargas
Wild. CIP 761660; OCH 13596; Q 35528. Collected in Cuzco, Peru.
- PI 590904. *Solanum coelestipetalum* Vargas
Wild. CIP 761661; OCH 13597; Q 35529. Collected in Cuzco, Peru.
- PI 590905. *Solanum coelestipetalum* Vargas
Wild. CIP 761670; OCH 13609; Q 35530. Collected in Cuzco, Peru.
- PI 590906. *Solanum acaule* Bitter
Wild. CIP 761856; OCH 13868; Q 35532. Collected in Pasco, Peru.
- PI 590907. *Solanum acaule* Bitter
Wild. CIP 761860; OCH 13872; Q 35533. Collected in Junin, Peru.
- PI 590908. *Solanum colombianum* Dunal
Wild. CIP 761881; OCH 14113; Q 35534. Collected in Colombia.
- PI 590909. *Solanum colombianum* Dunal
Wild. CIP 761882; OCH 14114; Q 35535. Collected in Colombia.
- PI 590910. *Solanum colombianum* Dunal
Wild. CIP 761883; OCH 14115; Q 35536. Collected in Huila, Colombia.
- PI 590911. *Solanum acaule* Bitter
Wild. CIP 762065; OCH 14519; Q 35542. Collected in Lima, Peru.
- PI 590912. *Solanum* sp.
Wild. CIP 762112; OCH 14732; Q 35543. Collected in Junin, Peru.
- PI 590913. *Solanum coelestipetalum* Vargas
Wild. CIP 762364; OCH 15642; Q 35545. Collected in Cuzco, Peru.
- PI 590914. *Solanum commersonii* Dunal ex Poiret
Wild. CIP 762453; URU 3; Q 35547; URU 03. Collected in Uruguay.
- PI 590915. *Solanum commersonii* Dunal ex Poiret
Wild. CIP 762461; URU 11; Q 35548. Collected in Uruguay.
- PI 590916. *Solanum commersonii* Dunal ex Poiret
Wild. CIP 762463; URU 13; Q 35549. Collected in Uruguay.
- PI 590917. *Solanum commersonii* Dunal ex Poiret
Wild. CIP 762465; URU 15; Q 35550. Collected in Uruguay.

- PI 590918. *Solanum commersonii* Dunal ex Poiret
Wild. CIP 762466; URU 16; Q 35551. Collected in Uruguay.
- PI 590919. *Solanum commersonii* Dunal ex Poiret
Wild. CIP 762468; URU 22; Q 35552. Collected in Uruguay.
- PI 590920. *Solanum commersonii* Dunal ex Poiret
Wild. CIP 762471; URU 25; Q 35553. Collected in Uruguay.
- PI 590921. *Solanum commersonii* Dunal ex Poiret
Wild. CIP 762477; URUGUAY; Q 35554. Collected in Uruguay.
- PI 590922. *Solanum paucissectum* Ochoa
Wild. CIP 761241; OCH 11628; Q 35555. Collected in Piura, Peru.

The following were collected by David Spooner, USDA, ARS, University of Wisconsin - Dept of Hort, Department of Horticulture, Madison, Wisconsin 53706, United States. Received 07/16/1991.

- PI 590923. *Solanum colombianum* Dunal
Wild. 5050; BE-3520; SCLp 5050; Q 28489. Collected 05/06/1991 in Azuay, Ecuador. Latitude 3 deg. 9' S. Longitude 79 deg. 1' W. Elevation 3235 m. Giron. At Chorro Blanco on east side of new road from Cuenca to Loja, 18.2 km south of road junction to Loja and Giron at Estacion Cumbre. In recently cleared forest in moist organic soil. Collected as *Solanum colombianum*. Map location 38.
- PI 590924. *Solanum* sp.
Wild. 5274; BE-4266; CCC 5274; Q 29424. Collected 11/12/1982 in Boyaca, Colombia. Chuta.
- PI 590925. *Solanum colombianum* Dunal
Wild. 5223; BE-4266; CCC 5223; Q 29409. Collected 09/16/1980 in Quindio, Colombia. Salento, km 18 and 23 via Salento to Todie.
- PI 590926. *Solanum tuquerrense* Hawkes
Wild. 5180; BE-4266; CCC 5180; Q 29399. Collected 08/29/1980 in Narino, Colombia. Cumbal, Tambillo, at Llano Grande, farm of Billy Bert.

The following were donated by International Potato Center, Apartado 5969, Lima, Lima, Peru. Received 01/11/1994.

- PI 590927. *Solanum tuberosum* L.
Cultivated. 391007; CIP 391007; Q 32768. Collected in Peru. Pedigree - 387015.12/386206.4.
- PI 590928. *Solanum tuberosum* L.
Cultivated. 391049; CIP 391049; Q 32778. Collected in Peru. Pedigree - 387004.13/387338.3.

The following were collected by Aaron Contreras, Universidad de Guadalajara, Instituto de Botanica, Las Agujas, Nextipac, Zapopan, Jalisco, Mexico. Received 09/14/1993.

- PI 590929. *Solanum polytrichon* Rydb.
Wild. 2493; BE-4893; Q 32520; ROD 2493. Collected 08/09/1993 in Queretaro, Mexico. Latitude 20 deg. 34' N. Longitude 100 deg. 19' W. Elevation 2000 m. Municipality of Queretaro; road Queretaro-Mexico city, just at the junction to El Rosario; E side of Monin Indian Monument.

PI 590930. *Solanum bulbocastanum* Dunal

Wild. 2581; Q 32538; ROD 2581. Collected 08/29/1993 in Jalisco, Mexico. Latitude 20 deg. 1' N. Longitude 102 deg. 59' W. Elevation 1920 m. Rancho Villa Quieta, road from Cuquio to Yahualica, municipality of Cuquio. Deciduous tropical forest.

The following were developed by Todd Pfeiffer, University of Kentucky, Department of Agronomy, N-122 Agricultural Science Building, Lexington, Kentucky 40546-0091, United States; C.R. Tutt, Kentucky Agric. Exp. Station, Princeton, Kentucky, United States; L.C. Harris, University of Kentucky, Dept. of Agronomy, Lexington, Kentucky 40546, United States; D.L. Pilcher, University of Kentucky, Dept. of Agronomy, Lexington, Kentucky 40546, United States. Received 07/10/1995.

PI 590931. *Glycine max* (L.) Merr.

Cultivar. Pureline. Lot 86-94-S-5; "CF492". CV-342; PVP 9500235. Pedigree - K1099 x Hutcheson. Growth habit determinate. Relative maturity 4.9. Flowers white. Pubescence gray. Pods tan. Seeds yellow with buff hila, dull seed coat, low seed peroxidase activity with a composition of 410g kg-1 protein and 210g kg-1 oil on a dry weight basis. Resistant to strain G2 of soybean mosaic virus and to southern stem canker (*Diaporthe phaseolorum*). Susceptible to phytophthora rot (*Phytophthora sojae*), soybean cyst nematode (*Heterodera glycines*) and sudden death syndrome (*Fusarium solani* Type A).

The following were developed by Todd Pfeiffer, University of Kentucky, Department of Agronomy, N-122 Agricultural Science Building, Lexington, Kentucky 40546-0091, United States; L.C. Harris, University of Kentucky, Dept. of Agronomy, Lexington, Kentucky 40546, United States; D.L. Pilcher, University of Kentucky, Dept. of Agronomy, Lexington, Kentucky 40546, United States; J.M. Wood, University of Kentucky, Dept. of Agronomy, Lexington, Kentucky 40546, United States. Received 07/10/1995.

PI 590932. *Glycine max* (L.) Merr.

Cultivar. Pureline. Lot 86-94-S-7; "CF461". CV-343; PVP 9500236. Pedigree - Asgrow A4595 x Dekalb-Pfizer CX415. Growth habit indeterminate. Relative maturity 4.6. Flowers white. Pubescence tawny. Pods tan. Seeds yellow with black hila, intermediate seed coat luster and positive seed peroxidase activity. Protein and oil concentrations average, 410g kg-1 protein and 210g kg-1 oil on a dry weight basis. Resistant to Races 1 and 7 of phytophthora rot (*Phytophthora sojae*). Susceptible to soybean cyst nematode (*Heterodera glycines*) and sudden death syndrome (*Fusarium solani* Type A).

The following were developed by Seedco Corporation, United States. Received 07/10/1995.

PI 590933. *Gossypium hirsutum* L.

Cultivar. "9023". PVP 9500237.

The following were developed by Lofts Seed, Inc., United States. Received 07/10/1995.

PI 590934. *Poa trivialis* L.

Cultivar. "LASER II". PVP 9500238.

The following were developed by American Sunmelon, United States. Received 07/10/1995.

PI 590935. *Citrullus lanatus* (Thunb.) Matsum. & Nakai
Cultivar. "ASM 5000". PVP 9500239.

The following were developed by Paragon Seed, Inc., United States. Received 07/10/1995.

PI 590936. *Lactuca sativa* L.
Cultivar. "EARLY QUEEN". PVP 9500240.

The following were developed by Arkansas County Seed Company, Inc., Arkansas, United States. Received 07/10/1995.

PI 590937. *Avena sativa* L.
Cultivar. "HARRISON". PVP 9500241.

The following were developed by S&G/Sandoz Seeds, United States. Received 07/10/1995.

PI 590938. *Verbena x hybrida* Voss
Cultivar. "ROMANCE PINK". PVP 9500242.

The following were developed by B.M. Domingo and A.M. Dessert, United States. Received 07/10/1995.

PI 590939. *Allium cepa* L.
Cultivar. "RED ROBBINS PRR 95": PVP 9500243.

The following were developed by Central Valley Seeds, Inc., United States. Received 07/10/1995.

PI 590940. *Lactuca sativa* L.
Cultivar. "GREEN VISION". PVP 9500244.

The following were developed by Pioneer Hi-Bred International, Inc., United States. Received 07/10/1995.

PI 590941. *Triticum aestivum* L., nom. cons.
Cultivar. "WBC275A6". PVP 9500245.

PI 590942. *Triticum aestivum* L., nom. cons.
Cultivar. "WBE0315X2". PVP 9500246.

PI 590943. *Triticum aestivum* L., nom. cons.
Cultivar. "WBF0666D1". PVP 9500247.

The following were developed by Ivan Buddenhagen, University of California, Department of Agronomy & Range Science, Hunt Hall, Davis, California 95616, United States; Walter Graves, University of California, Cooperative Extension Service, 777 E. Rialto Avenue, San Bernadino, California 92415-0730, United States; Larry R. Teuber, University of California, Department of Agronomy & Range Science, Davis, California 95616-8515, United States; William A. Williams, University of California, Dept. of Agronomy & Range Science, UCD, Davis, California 95616, United States; Daniel H. Putnam, University of California, Cooperative Extension, Dept. of Agronomy and Rance Science, Davis, California 95616-8515, United States; Robert L. Gilbertson, University of California, Dept. of Plant Pathology, Davis, California 95616, United States. Received 06/05/1995.

PI 590944. *Trifolium alexandrinum* L.

Cultivar. Pureline. "JOE BURTON". CV-131. Pedigree - Derived from two sets of 80 plants each, one from seed of bulk virus tolerant Multicut berseem survivors and the second from four plants selected from an adjacent stand. Winter vigorous, late blooming selected from Multicut germplasm for tolerance to several viruses: Clover Yellow Vein Potyvirus, Alfalfa Mosaic Virus, Bean Yellow Mosaic Virus, and Cucumber Mosaic Virus. For use as fall-sown green chop, silage, pasture, hay crop, or cover crop in the irrigated central valley and desert valleys of California, or as a spring-sown annual forage or cover crop in temperate zones. Frost tolerant down to -8 deg. C.

The following were developed by J. G. McLeod, Agriculture Canada, Swift Current Research Station, P. O. Box 1030, Swift Current, Saskatchewan S9H 3X2, Canada. Received 07/03/1995.

PI 590945. X *Triticosecale* sp.

Cultivar. "AC ALTA"; UM8401A-29E1; T122. Pedigree - CIN/CNO//Beagle/3/Merino'S'/4/W74.103-ADX/Beagle'S'-M2A/X/IRA. Adapted to the Canadian Prairie region. High yielding, improved straw strength. Seeds very large averaging 47.2mg. Very resistant to the prevalent races of stem rust (*Puccinia graminis*) and leaf rust (*P. recondita*). Highly resistant to common bunt (*Tilletia laevis* and *T. caries*). Moderately resistant to common root rot (primarily *Bipolaris sorokiniana*).

PI 590946. X *Triticosecale* sp.

Cultivar. "AC CERTA"; 8930-020; T128. Pedigree - Hare 263/CIVET. Adapted to the Canadian Prairie region. Improved hectolitre weight and harvest-time sprouting resistance. Kernels small for triticale, averaging 40.9mg. Very resistant to the prevalent races of stem rust (*Puccinia graminis*) and leaf rust (*P. recondita*). Highly resistant to common bunt (*Tilletia laevis* and *T. caries*). Resistant to common root rot (*Biopolaris sorokiniana*).

The following were developed by J.M. Clarke, Agriculture and Agri-Food Canada, Box 1030, Swift Current, Saskatchewan S9H 3X2, Canada; R. M. De Pauw, Agriculture Canada, Swift Current Research Station, Box 1030, Swift Current, Saskatchewan S9H 3X2, Canada; J. G. McLeod, Agriculture Canada, Swift Current Research Station, P. O. Box 1030, Swift Current, Saskatchewan S9H 3X2, Canada; T.F. Townley-Smith, Agriculture Canada, Research Branch, 195 Dafoe Road, Winnipeg, Manitoba R3T 2M9, Canada. Received 07/03/1995.

PI 590947. X *Triticosecale* sp.

Cultivar. "AC COPIA"; 8432-B1E; T111. CV-13. Pedigree - Juanillo 'S'/3/W74.103-ADX/Beagle 'S'-M2A//IRA. Adapted to the Canadian Prairie region. Improved hectolitre weight. Seeds large averaging 44.2mg. Very resistant to the prevalent races of stem rust (*Puccinia graminis*) and leaf rust (*P. recondita*). Highly resistant to common bunt (*Tilletia laevis* and *T. caries*). Moderately resistant to common root rot (*Bipolaris sorokiniana*).

The following were developed by J. G. McLeod, Agriculture Canada, Swift Current Research Station, P. O. Box 1030, Swift Current, Saskatchewan S9H 3X2, Canada. Received 07/03/1995.

PI 590948. *Secale cereale* L. ssp. *cereale*

Cultivar. "AC RIFLE"; RT152; 8093G. Pedigree - Puma/2D 1125. Semi-dwarf winter rye. Represents 30% reduction in plant height and improved lodging and shattering resistance compared to available commercial cultivars. Kernel weight averaged about 30mg. Low temperature tolerance

excellent.

The following were developed by John Roberts, USDA, ARS, Crop & Soil Sciences, 1109 Experiment Street, Griffin, Georgia 30223-1797, United States. Received 07/05/1995.

- PI 590949. *Triticum aestivum* L., nom. cons.
Breeding. CERUGA-7; 881404-1-5. Pedigree - C93/4/Aepoglom//C762/FL302/3/C762. Resistant to a wide array of leaf rust virulences, particularly those which currently predominate the Southeast leaf rust population. Agronomically acceptable.
- PI 590950. *Triticum aestivum* L., nom. cons.
Breeding. CERUGA-8; 881404-2-2. Pedigree - C983/4/Aepoglom//C762/FL302/3/C762. Resistant to a wide array of leaf rust virulences, particularly those which currently predominate the Southeast leaf rust population. Agronomically acceptable.
- PI 590951. *Triticum aestivum* L., nom. cons.
Breeding. CERUGA-9; 881404-2-5. Pedigree - C93/4/Aepoglom//C762/FL302/3/C762. Resistant to a wide array of leaf rust virulences, particularly those which currently predominate the Southeast leaf rust population. Agronomically acceptable.
- PI 590952. *Triticum aestivum* L., nom. cons.
Breeding. CERUGA-10; 881405-1-18. Pedigree - C762/Hahn/Redcoat/4/Aepoglom//C762/FL302/3/C762. Resistant to a wide array of leaf rust virulences, particularly those which currently predominate the Southeast leaf rust population. Agronomically acceptable.
- PI 590953. *Triticum aestivum* L., nom. cons.
Breeding. CERUGA-11; 881419-1-34. Pedigree - C9835/4/Aepoglom//C762/FL302/3/Severn. Resistant to a wide array of leaf rust virulences, particularly those which currently predominate the Southeast leaf rust population. Agronomically acceptable.
- PI 590954. *Triticum aestivum* L., nom. cons.
Breeding. CERUGA-12; 881419-1-35. Pedigree - C9835/4/Aepoglom//C762/FL302/3/Severn. Resistant to a wide array of leaf rust virulences, particularly those which currently predominate the Southeast leaf rust population. Agronomically acceptable.
- PI 590955. *Triticum aestivum* L., nom. cons.
Breeding. CERUGA-13; 87583-1-4. Pedigree - GA781176-1/Lani//GA808-03-2. Resistant to a wide array of leaf rust virulences, particularly those which currently predominate the Southeast leaf rust population. Agronomically acceptable.
- PI 590956. *Triticum aestivum* L., nom. cons.
Breeding. CERUGA-14; 87558-5-7. Pedigree - GA78116-1/Lani//GA808-03-2. Resistant to a wide array of leaf rust virulences, particularly those which currently predominate the Southeast leaf rust population. Agronomically acceptable.
- PI 590957. *Triticum aestivum* L., nom. cons.
Breeding. CERUGA-15; 87558-4-1. Pedigree - Labrador "Inta"/GA 100. Resistant to a wide array of leaf rust virulences, particularly those which currently predominate the Southeast leaf rust population. Agronomically acceptable.
- PI 590958. *Triticum aestivum* L., nom. cons.
Breeding. CERUGA-16; 87558-5-7. Pedigree - Labrador "Inta"/GA 100.

Resistant to a wide array of leaf rust virulences, particularly those which currently predominate the Southeast leaf rust population. Agronomically acceptable.

PI 590959. *Triticum aestivum* L., nom. cons.
Breeding. CERUGA-17; 881418-1-8. Pedigree - SW78-111/4/Aepoglom//C762/FL302/3/Severn. Resistant to a wide array of leaf rust virulences, particularly those which currently predominate the Southeast leaf rust population. Agronomically acceptable.

PI 590960. *Triticum aestivum* L., nom. cons.
Breeding. CERUGA-18; 881403-1-2. Pedigree - FL301/4/Aepoglom//C762/FL302/3/C762. Resistant to a wide array of leaf rust virulences, particularly those which currently predominate the Southeast leaf rust population. Agronomically acceptable.

The following were collected by David Spooner, USDA, ARS, University of Wisconsin - Dept of Hort, Department of Horticulture, Madison, Wisconsin 53706, United States. Developed by Kabre Hill Crop Research Station, Zone Janakpur, District Dolakh, Nepal. Received 07/17/1995.

PI 590961. *Eleusine coracana* (L.) Gaertner
Cultivar. "KORAK-1"; 7060; BE 7430. Collected in Nepal. Advanced line.

PI 590962. *Eleusine coracana* (L.) Gaertner
Cultivar. 7061; "OKHALE-1"; BE 7430. Collected in Nepal. Advanced line.

PI 590963. *Eleusine coracana* (L.) Gaertner
Cultivar. "DALLE-1"; 7062; BE 7430. Collected in Nepal. Advanced line.

The following were donated by Cynthia Edwards, 21650 Keeney Road, Freeland, Maryland 21053, United States. Received 07/17/1995.

PI 590964. *Eleusine coracana* (L.) Gaertner
Uncertain. KOURPA; BE 7081. Collected in Nepal.

The following were collected by Plant Research Institute, Ministry of Agriculture, Ottawa, Ontario, Canada; International Plant Genetic Resources Institute, Via delle Sette Chiese 142, Rome, Italy. Received 07/17/1995.

PI 590965. *Eleusine coracana* (L.) Gaertner
Landrace. GMN 147; 0600949; BE 7209. Collected 06/08/1989 in Shaba, Zaire. Latitude 70 deg. 52' S. Longitude 26 deg. 46' E. Elevation 900 m. Plateau 29km Likasi, Keyi 5, Basanga, Shaba.

PI 590966. *Eleusine coracana* (L.) Gaertner
Landrace. GMN 172; 0600974; BE 7209. Collected 06/09/1989 in Shaba, Zaire. Latitude 11 deg. 36' S. Longitude 26 deg. 55' E. Elevation 1100 m. Plateau 42km Likasi, Kidimudilo, Shaba.

PI 590967. *Eleusine coracana* (L.) Gaertner
Landrace. GMN 230; 0601032; BE 7209. Collected 06/13/1989 in Shaba, Zaire. Latitude 70 deg. 44' S. Longitude 25 deg. 37' E. Elevation 900 m. Plateau 15km Kolweei, Kasola, Luilu, Shaba.

PI 590968. *Eleusine coracana* (L.) Gaertner
Landrace. GMN 249; 0601051; BE 7209. Collected 06/14/1995 in Shaba, Zaire. Latitude 70 deg. 30' S. Longitude 24 deg. 33' E. Elevation 900 m. Plateau NE 22km Mutshasha, Pita, Shaba.

PI 590969. *Eleusine coracana* (L.) Gaertner

Landrace. CMN 275; 0601077; BE 7209. Collected 06/19/1989 in Shaba, Zaire. Latitude 12 deg. 22' S. Longitude 28 deg. 29' E. Elevation 900 m. Plateau, Cite de Mukambo, Pralambo, Shaba.

PI 590970. *Eleusine coracana* (L.) Gaertner
Landrace. GMN 278; 0601080; BE 7209. Collected 06/19/1989 in Shaba, Zaire. Latitude 12 deg. 11' S. Longitude 27 deg. 33' E. Elevation 900 m. Plateau, 55km Lubumbami, Lamata, Kaponha, Shaba.

PI 590971. *Eleusine coracana* (L.) Gaertner
Landrace. GMN 286; 0601088; BE 7209. Collected 06/25/1989 in Shaba, Zaire. Latitude 8 deg. 6' S. Longitude 26 deg. 25' E. Elevation 900 m. Plateau, 58km Malembankulu, Kinkonja Marche, Kinkonja, Shaba.

PI 590972. *Pennisetum glaucum* (L.) R. Br.
Uncertain. GMN 16; 1600818; BE 7209. Collected 05/15/1989 in Kasai-Oriental, Zaire. Latitude 6 deg. 32' S. Longitude 23 deg. 20' E. Elevation 410 m. 22km SW Kamiji, Mission Kamiji, Kasai-oriental.

PI 590973. *Pennisetum glaucum* (L.) R. Br.
Landrace. GMN 83; 1600885; BE 7209. Collected 05/19/1989 in Kasai-Oriental, Zaire. Latitude 6 deg. 22' S. Longitude 24 deg. E. Elevation 200 m. Katanja, Bakua Uonji, Lukangu, Kasai-oriental.

PI 590974. *Pennisetum glaucum* (L.) R. Br.
Landrace. GMN 91; 1600893; BE 7209. Collected 05/25/1989 in Kasai-Occidental, Zaire. Latitude 6 deg. 28' S. Longitude 22 deg. 55' E. Elevation 750 m. 19km N Thimbulu, Kabundi, Kasangedi, Kasai-Occidental.

PI 590975. *Pennisetum glaucum* (L.) R. Br.
Uncertain. GNM 126; 1600928; BE 7209. Collected 05/31/1989 in Zaire. Latitude 6 deg. 3' S. Longitude 22 deg. 8' E. Elevation 700 m. 46km S Kananga, Ngomba, Musuawa.

PI 590976. *Pennisetum glaucum* (L.) R. Br.
Uncertain. GMN 158; 1600960; BE 7209. Collected 06/08/1989 in Shaba, Zaire. Latitude 10 deg. 52' S. Longitude 26 deg. 46' E. Elevation 900 m. 26km NW Likasa, Keyi 6, Shaba.

The following were developed by Ma Yuansheng, Institute of Crop Germplasm Resources, Chinese Academy of Agricultural Sciences, Beijing 100081, Beijing, China; Fan Chuanzhu, Institute of Crop Germplasm Resources, Chinese Academy of Agric. Sciences, 30 Bai Shi Qiao Road, Beijing, China. Donated by Joseph Sanders, Southern California Association of Science Specialists, P.O. Box 91598, Long Beach, California 90809-1598, United States. Received 07/21/1995.

PI 590977. *Oryza sativa* L.
Cultivar. 056; "WU FENG LANG SHUI ZHAN"; 170773. Collected in Hubei, China. Elevation 500 m. Originated from Wufeng County, Hubei Province. Cold water areas at an altitude of over 500-1000 meters above sealevel. Indica, glutinous, mid-season. Plant height 127cm. 1000-grain weight 27.4g. Seed extraction easy. Chaff and apiculi straw colored, short awn, white rice, elliptic grain. Per cent of brown rice 76.2% and milled rice 67.3%. Protein, lysine, total starch, amylose and amylopectin content 7.4%, 0.3%, 74.1%, 25.6% and 56.7%, respectively. Gel consistency soft 28mm, gelatinization temperature code 2. Moderate resistance to seedling blast (*Pyricularia oryzae*), and susceptible to *Xanthomonas oryzae*, *Sogatella furcifera*, coded 3, 7 and 7, salt resistance 9, respectively, on a scale of 0=immune, 9=maximum susceptible. Sown April 20. Days to maturity 119.

The following were developed by Sheng Jinshan, Institute of Crop Germplasm

Resources, Chinese Academy of Agricultural Sciences, Beijing 100081, Beijing, China. Donated by Joseph Sanders, Southern California Association of Science Specialists, P.O. Box 91598, Long Beach, California 90809-1598, United States . Received 07/21/1995.

PI 590978. *Oryza sativa* L.

Cultivar. "BINYANG ZHAN"; 057; 171095. Collected in Hubei, China. Originated from Laifeng County. Indica, glutinous, mid-season. Plant height 131cm. 1000-grain weight 26.9g. Seed extraction easy. Chaff and apiculi straw colored, without awn, white rice, elliptic grain. Resistance to seedling blast (*Pyricularia oryzae*), *Xanthomonas oryzae*, *Nilaparvata bugens*, *Sogatella furcifera*, salt, coded 5, 5, 5, 5, and 9, respectively, on a scale of 0=immune, 9=maximum susceptible. Sown April 20. Days to maturity 117. Good adaptiveness.

PI 590979. *Oryza sativa* L.

Cultivar. "SHANGYING GU"; 058; 160884. Collected in Guangxi, China. Originated from Tiandeng County. Indica, glutinous, late-season. Plant height 125cm. Panicle length 17cm. 89 spiklets per panicle. Seed setting percentage 74%. Grain long, elliptic, white rice. Chaff straw colored, apiculi hyaline. Resistance to seedling blast (*Pyricularia oryzae*), *Xanthomonas oryzae*, *Nilaparvata bugens*, *Sogatella furcifera* have ratings at 5, 9, 7, and 9, respectively, while resistance to salt is 9, on a scale of 0=immune, 9=maximum susceptible. Sown on May 30. Days to maturity 130.

PI 590980. *Oryza sativa* L.

Cultivar. "JING GUZHI"; 059; 170780. Collected in Hubei, China. Originated from Enshi City. Indica, glutinous, mid-season. Plant height 138cm. 1000-grain weight 28.3g, seed extraction easy. Chaff and apiculi straw colored, red rice, elliptic grain. Resistance to seedling blast (*Pyricularia oryzae*), *Xanthomonas oryzae*, *Sogatella furcifera* at rating of 5, 3, and 7 and resistance to salt 5, on a scale of 0=immune, 9=maximum susceptible. Sown April 20. Days to maturity 111. Can be use in extensive farming areas.

The following were developed by Sheng Jinshan, Institute of Crop Germplasm Resources, Chinese Academy of Agricultural Sciences, Beijing 100081, Beijing, China; Li Daoyuan, Guangxi Academy of Agricultural Sciences, Guangxi, China. Donated by Joseph Sanders, Southern California Association of Science Specialists, P.O. Box 91598, Long Beach, California 90809-1598, United States . Received 07/21/1995.

PI 590981. *Oryza minuta* J. S. Presl

Wild. YD2-1605; 064. Collected in Guangxi, China. Originated from Heng County. Medical variety. Sheathes purple striae. Ligule circle or flat top. First heading date Oct. 1. Purple stigma, anther length 3.1mm, partly short awn, grain length 5.6mm, grain width 2.4mm. Floriglum has black spot. 1000-grain weight 9.1g, red seedcoat, middle quality. Resistance to rice blast (*Pyricularia oryzae*).

PI 590982. *Oryza minuta* J. S. Presl

Wild. YD2-1695; 065. Collected in Guangxi, China. Originated from Teng County. Medical variety. First heading date Sept. 29. Anther length 3.1mm. Grain length 5.6mm, grain width 2.4mm, 1000-grain weight 7.7g. Medium susceptible to rice blast (*Pyricularia oryzae*). Other characteristics similar to YD2-1605.

PI 590983. *Oryza minuta* J. S. Presl

Wild. YD2-1736; 066. Collected in Guangxi, China. Originated from Wuzhou City. Medical variety. First heading date Oct. 6. Anther length 2.5mm. Grain length 5.2mm, grain width 2.3mm, 1000-grain weight 8.3g. Resistance to rice blast (*Pyricularia oryzae*). Other characteristics

similar to YD2-1605.

The following were collected by Sheng Jinshan, Institute of Crop Germplasm Resources, Chinese Academy of Agricultural Sciences, Beijing 100081, Beijing, China; Liang Neng, Guangdong Academy of Agricultural Science, Shipa, Guangzhou, Guangdong, China. Donated by Joseph Sanders, Southern California Association of Science Specialists, P.O. Box 91598, Long Beach, California 90809-1598, United States. Received 07/21/1995.

PI 590984. *Oryza rufipogon* Griffith

Wild. Y01-0674; 067. Collected in Guangdong, China. Originated from Huaxian. No rhizome. Growth habit semi-erect. First flowering Oct. 3. Light purple basal leaf sheath. Ligule acuminate shape, purple stigma, anther length 3.3mm, glumes length 8.0mm, glumes width 2.6mm and black glumes. Red seed coat. 100-grain weight 2.0g short and partly awn.

PI 590985. *Oryza rufipogon* Griffith

Wild. Y01-0675; 068. Collected in Guangdong, China. Originated from Huaxian. No rhizome. Growth habit semi-erect. First flowering date Oct. 3. Light purple basal leaf sheath. Ligule acuminate shape purple stigma, long and full and straw awn. Anther length 3.2mm, glumes length 7.5mm, glumes width 2.5mm and black glumes. Red seed coat, 100-grain weight 1.45g.

PI 590986. *Oryza rufipogon* Griffith

Wild. 069; Y01-0680. Collected in Guangdong, China. Originated from Huaxian. No rhizome. Growth habit semi-erect. First flowering date Oct. 3. Light purple basal leaf sheath. Ligule acuminate shape, purple stigma, long and full and red awn. Anther length 4.1mm. Glumes length 8.8mm, width 2.4 and straw glumes. Red seed coat, 100-grain weight 1.4g.

PI 590987. *Oryza rufipogon* Griffith

Wild. 071; Y01-0683. Collected in Guangdong, China. Originated from Huaxian. No rhizome. Growth habit semi-erect. First flowering date Oct. 6. Light purple sheath, ligule acuminate shape, purple stigma, short and fully awn. Anther length 4.6mm. Glumes length 9.3mm, width 2.1mm, and glumes black. Red seedcoat, 100-grain weight 2.0g.

The following were developed by Yang Keli, Institute of Crop Germplasm Resources, Chinese Academy of Agric. Sciences, 30 Bai Shi Qiao Road, Beijing, China. Donated by Joseph Sanders, Southern California Association of Science Specialists, P.O. Box 91598, Long Beach, California 90809-1598, United States . Received 07/21/1995.

PI 590988. *Fagopyrum esculentum* Moench

Cultivated. YUQIAO NO. 2; 044. Plant height 95cm. 14 nodes on main stem above ground, 3-4 first branches and 1-6 secondary branches. Plant shape loose. Leaf color dark green, stem color red, flower color pink and grain color brown. Elongated grains weigh 3-4g per plant and 35g per 1000-seeds. Medium maturity, around 85-90 days. Strongly resistant to diseases and drought. Relatively resistant to lodging. Grain contains 12.5% protein, 2.6% fat, 69.7% starch, and 0.64% lysine. Graining rate 72%. Suitable to grow in hilly, dry fields in northern part of Shaanxi, eastern part of Inner Mongolia, northwest of Shanxi, Ningxia, Gansu, etc., (35 deg.-42 deg. N) with annual rain fall of 350-600mm. Normal yield 1125-1500kg/ha, and highest 2250-2700kg/ha.

PI 590989. *Fagopyrum esculentum* Moench

Cultivated. 045; CHASELIMADAO. Plant height 70cm. Plant shape tight. Number of first branches 3.2. Grain color brown. 1000-seed weight 30-32g, shelling rate 18.2%, graining rate 75%. Grain contains 10.66% of protein, 2.59% fat, 54.6% starch, 0.59% lysine. Characterized by

resisting to drought, lodging and diseases, requiring no high soil fertility, and having strong adaptability. Mainly grown in areas with annual rain fall of 350-500mm and accumulated >10 deg. C temperature of 2000-2700 deg. C in Inner Mongolia (40 deg.-43 deg. N). Average yield 1095kg/ha, and highest 2570kg/ha.

The following were collected by Lu Ping, Institute of Crop Germplasm Resources, CAAS, Beijing 100081, Beijing, China. Donated by Joseph Sanders, Southern California Association of Science Specialists, P.O. Box 91598, Long Beach, California 90809-1598, United States. Received 07/21/1995.

PI 590990. *Amaranthus* sp.

Cultivated. S-F-15-11; PING LI; 048. Collected in China. Pingli County, Shanxi Province. Plant height 177cm. Length of main inflorescence 37cm. Period of duration 144 days. Stems purple. Leaves green. Seeds brown, big and full. 1000-seed weight 0.889g. Many close branches. Seed production high. Suitable for high density.

The following were collected by Wang Tianyun, Institute of Crop Germplasm Resources, CAAS, Beijing 100081, Beijing, China; Yang Qingwen, Institute of Crop Germplasm Resources, CAAS, Beijing 100081, Beijing, China; Lu Ping, Institute of Crop Germplasm Resources, CAAS, Beijing 100081, Beijing, China. Donated by Joseph Sanders, Southern California Association of Science Specialists, P.O. Box 91598, Long Beach, California 90809-1598, United States. Received 07/21/1995.

PI 590991. *Amaranthus* sp.

Cultivated. 049; ZHEN PING; S-G-15-20. Collected in Shanxi, China. Zhenping County. Plant height 169cm. Length of main inflorescence 27cm. Stems and leaves purple. Seeds yellow, big and full. 1000-seed weight 0.985g. Has characteristics of disease resistance and close branches. Seed production high. Suitable for both food and forage.

The following were collected by Wang Tianyun, Institute of Crop Germplasm Resources, CAAS, Beijing 100081, Beijing, China. Developed by Wang Tianyun, Institute of Crop Germplasm Resources, CAAS, Beijing 100081, Beijing, China; Yang Qingwen, Institute of Crop Germplasm Resources, CAAS, Beijing 100081, Beijing, China; Lu Ping, Institute of Crop Germplasm Resources, CAAS, Beijing 100081, Beijing, China. Donated by Joseph Sanders, Southern California Association of Science Specialists, P.O. Box 91598, Long Beach, California 90809-1598, United States. Received 07/21/1995.

PI 590992. *Amaranthus* sp.

Cultivated. 050; "TIBET". Collected in China. Plant height 220cm. Inflorescence length 89.1cm, 569g weight. Plant weight 2418.6g each. Spikes purple. Seeds yellow. 1000-seed weight 0.7g. Has no disease and has characteristics of lodging resistance. Period of duration 97 days. Potential for food and feed crops.

The following were developed by Ma Yuansheng, Institute of Crop Germplasm Resources, Chinese Academy of Agricultural Sciences, Beijing 100081, Beijing, China; Fan Chuanzhu, Institute of Crop Germplasm Resources, Chinese Academy of Agric. Sciences, 30 Bai Shi Qiao Road, Beijing, China. Donated by Joseph Sanders, Southern California Association of Science Specialists, P.O. Box 91598, Long Beach, California 90809-1598, United States. Received 07/21/1995.

PI 590993. *Coix lacryma-jobi* L.

Cultivated. 054; "TALYAN". Flower monogamous and monoecism. Cross pollination by wind medium. Shell color brown. Coleoptile purple. Plant height 157cm. Number tiller 8.8. Spike position height 84cm. Number of

ear branchlet 4.5. Leaf height and width 30.6cm, and 3.3cm. Number of main stem node 10.2. Main stem diameter 1.1cm. 100-kernel weight 9.2g. Ratio of kernel length and width 1.79. Sowing date April 24, maturity date Sept.3. Days from seeding to maturity 121.

PI 590994. *Coix lacryma-jobi* L.

Cultivar. 055; "XIANXIAN". Flower monogamous and monoecism. Cross pollination by wind medium. Shell color black. Coleoptile green. Plant height 128cm. Number tiller 7.2. Spike position height 85cm. Number of ear branches 6.1. Leaf length and width 12.5cm, and 4.4cm. Number of main stem node 10.9. Main stem diameter 1.1cm. 100-kernel weight 31.9g. Ratio of kernel length and width 1.17. Sowing date April 24, maturity date Sept. 12. Days from seedling to maturity 140.

The following were developed by Institute of Vegetables & Flowers, Chinese Academy of Agricultural Sciences, Beijing 100081, Beijing, China. Donated by Joseph Sanders, Southern California Association of Science Specialists, P.O. Box 91598, Long Beach, California 90809-1598, United States. Received 07/21/1995.

PI 590995. *Brassica rapa* ssp. *pekinensis* (Lour.) Hanelt

Cultivar. "FANG SHAN FAN XIN HUANG"; 099. Maturity more early than other Fang Xin Huang varieties. Has uniformity and resistance to disease. Head shape cylindrical with terminal leaves curved outward. 60-65 days from sowing to harvest. Plant height 43cm, 60cm width. Outer leaves 19 in number, green, elliptic with whitish green petiole. Leaf has slight savory surface, crenate margin and no hairs on both upper side and underside. Yellowish green head with yellowish white curled leaves weighs 1.5kg, 37.4cm in height and 16.5cm in width. Edible part contains 94.6% water, 1.58% soluble sugar, 0.88% acid pickling cellulose and 25.27mg vitamin C/100g fresh weight.

The following were developed by Zhong Huihong, Institute of Vegetables & Flowers, Chinese Academy of Agricultural Sciences, Beijing 100081, Beijing, China; Zhen Xianghong, Institute of Vegetables & Flowers, Chinese Academy of Agricultural Sciences, Beijing 100081, Beijing, China; Li Zhenshan, Institute of Vegetables & Flowers, Chinese Academy of Agricultural Sciences, Beijing 100081, Beijing, China. Donated by Joseph Sanders, Southern California Association of Science Specialists, P.O. Box 91598, Long Beach, California 90809-1598, United States. Received 07/21/1995.

PI 590996. *Lactuca sativa* L.

Cultivar. 100; "DUO KOU JIAN YE". Grows strongly, about 50cm in plant height, exposure 40cm, and erect leaf bunch. Leaf lance-shaped as willow leaf, level leaf surface, little wax-powder, light green color. Largest leaf 43cm in length, 9cm in width. Stem is length- cylinder, thick and straight, 28cm in length 6cm in diameter, average internode length 3.5cm. Outer bark of succulent stem white-green, flesh green, fine quality, brittle and tender, sweet, and delicate fragrance. Good for long keeping, and market. Early maturity about 60 days from transplant to harvest. Tolerant to heat and cold. Late bolting. Tolerant to sclerotinia rot, soft rot and powdery mildew. Yield high, about 30,000-37,500kg/ha.

The following were developed by A.M. Townsend, USDA, ARS, U.S. National Arboretum, 3501 New York Avenue, NE, Washington, District of Columbia 20002, United States. Received 07/25/1995.

PI 590997. *Ulmus americana* L.

Cultivar. "VALLEY FORGE"; NA 57842. Pedigree - Seedling selection made in Ohio at the former Ohio Research Site of the U.S. National Arboretum.

Unusually high levels of tolerance to both aggressive and non-aggressive strains of the fungus causing Dutch elm disease. Superior horticultural characteristics. Upright, arching, broad vase-shaped branching structure with full, dense canopy of leaves. Propagules off original parent tree are 7.9 meters tall with average crown spread of 9.1 meters after 12 growing seasons. Summer leaves average 119mm long x 74mm wide and are green but gradually turn yellow in autumn. Bark divided into grayish, flat-topped ridges, separated by roughly diamond-shaped fissures, and is typical of the species. In adaptability trials, performed well in Ohio, Maryland, and the District of Columbia. Adaptable from USDA Zone 5 to 7. Easy to propagate. Excellent for planting in urban and suburban sites, large yards, and recreational and industrial parks. Good street trees where there is wide tree lawn, and where high arching effect is desired.

PI 590998. *Ulmus americana* L.

Cultivar. "NEW HARMONY"; NA 57844. Pedigree - Seedling selection made in Ohio at the former Ohio Research Site of the U.S. National Arboretum. Unusually high levels of disease tolerance to both aggressive and non-aggressive strains of the fungus causing Dutch elm disease. Superior horticultural characteristics. Broadly, vase-shaped crown, with main trunk dividing about 9 meters from the ground into several erect limbs which strongly arch above and which terminate in numerous slender, often drooping branchlets. Parent tree is 20.7 meters tall, with an average crown spread of 21.9 meters. Leaves average 107mm long and 63mm wide, and turn yellow in autumn. Bark is typical of species. Grows well in Georgia, Maryland, Minnesota, New Jersey, Ohio, Oklahoma, Pennsylvania, and Tennessee. Adaptable from USDA Zone 5 to 7, with possible cold hardiness into Zone 4. Easy to propagate. Excellent for planting in urban and suburban sites, large yards, and recreational and industrial parks. Good street trees where there is wide tree lawn, and where high arching effect is desired.

The following were developed by Dennis E. Rowe, USDA, ARS, Crop Science Research Lab., Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States; R.G. Pratt, USDA, ARS, Forage Research Unit, Mississippi State, Mississippi 39762, United States. Received 07/10/1995.

PI 590999. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. MSR; Mississippi Sclerotinia Resistant. GP-300. Pedigree - Second-generation synthetic from polycross of 9 plants selected for resistance to *Sclerotinia trifoliorum* out of 2,772 polycross progeny evaluated from 25 plants selected from 1,675 plants of cultivar Delta. First germplasm of alfalfa developed with a high level of resistance to *Sclerotinia trifoliorum*. Derived from Delta by two or three cycles of screening for resistance in excised leaf and stem tissues. In whole-plant inoculation experiments under controlled conditions, had significantly ($P < 0.01$) greater survival than Delta, Vernal (the resistant standard), and 24 other alfalfa cultivars. Also had less disease severity than five cultivars in the field when disease pressure was strong.

The following were developed by Dan Bland, University of Georgia, Crop & Soil Sciences, 1109 Experiment Street, Griffin, Georgia 30223-1797, United States; Jerry Johnson, University of Georgia, Department of Agronomy, 1109 Experiment Street, Griffin, Georgia 30223-1797, United States; B.M. Cunfer, Georgia Agr. Exp. Sta., University of Georgia, Department of Plant Pathology, Griffin, Georgia 30223, United States; G.D. Buntin, Georgia Agric. Exp. Station, Dept. of Entomology, Georgia Station, Griffin, Georgia, United States; J.J. Roberts, University of Georgia, Georgia Agr. Exp. Sta., Dept. of Plant Pathology, Griffin, Georgia 30223-1797, United States. Received 07/10/1995.

PI 591000. *Triticum aestivum* L., nom. cons.

Cultivar. Pureline. "GA-DOZIER"; 84438-4. CV-823; PVP 9500254. Pedigree - FL74265/Saluda. Developed by a modified pedigree method of breeding with plant selection made in the F2, F3, F4, F5, and F7 generations. High-yielding, late maturing, semi-dwarf, and awned. One day earlier than Saluda in maturity. Excellent test-weight and straw strength. Excellent resistance to biotypes E, G, M and O of Hessian fly (*Mayetiola destructor*) and leaf rust (*Puccinia recondita*) gene Lr24 and Lr26. Resistant to powdery mildew except for the virulence to Pm8. Soft milling and baking quality rated excellent.

PI 591001. *Triticum aestivum* L., nom. cons.

Cultivar. Pureline. "GA-STUCKEY"; 83228-1. CV-824; PVP 9500255. Pedigree - MD73055/GA73-1-2-5//Coker 797/Caldwell. Developed by a modified pedigree method of breeding with plant selections made in the F2, F3, F4, F5, and F7 generations. Early maturing, semi-dwarf, and awnleted. One day later than GA-Andy in maturity and similar test weight. Resistant to biotypes E, G, M, and O of Hessian fly (*Mayetiola destructor*). Adult plant resistance to leaf rust (*Puccinia recondita*) and good resistance to powdery mildew (*Erysiphe graminis*).

The following were developed by Gabesa Ejeta, Purdue University, Dept. of Agronomy, Life Sciences Building, West Lafayette, Indiana 47907-7899, United States. Received 05/30/1995.

PI 591002. *Sorghum bicolor* (L.) Moench

Cultivar. Pureline. "P9401". Pedigree - (SRN39 x P954063)-39-3-bk-2-bk-bk-bk-bk-bk. Plant height 155cm, color tan. Midrib white. Glume brown with awnless lemmas covering less than 25% of the grain. Panicle length 25cm, semi-compact, elliptic in shape, well-exserted, thresh easily. Days to 50% flowering 78. 100-seed weight 3.30g. Seeds large, white and translucent with non-pigmented testa. Normal, white endosperm with intermediate hardness, colorless epicarp, and thin mesocarp. High yield. Resistance to striga and rust. Moderately resistant to anthracnose.

PI 591003. *Sorghum bicolor* (L.) Moench

Cultivar. Pureline. "P9402". Pedigree - (SRN39 x P954063)-53-2-1-1-bk-bk-bk-bk-bk. Plant height 160cm, color tan. Midrib white. Glume brown with awnless lemmas covering less than 25% of the grain. Panicle length 25cm, semi-compact, elliptic in shape, well-exserted, thresh easily. Days to 50% flowering 83. 100-seed weight 2.95g. Seeds large, white and translucent with non-pigmented testa. Normal, white endosperm with intermediate hardness, colorless epicarp, and thin mesocarp. High yield. Resistance to striga, rust, and anthracnose.

PI 591004. *Sorghum bicolor* (L.) Moench

Cultivar. Pureline. "P9403". Pedigree - (SRN39 x P954063)-54-7-bk-3-bk-bk-bk-bk-bk. Plant height 170cm, color tan. Midrib white. Glume brown with awnless lemmas covering less than 25% of the grain. Panicle length 28cm, semi-compact, elliptic in shape, well-exserted, thresh easily. Days to 50% flowering 80. 100-seed weight 3.57. Seeds large, white and translucent with non-pigmented testa. Normal, white endosperm with intermediate hardness, colorless epicarp, and thin mesocarp. High yield. Resistance to striga, rust, and anthracnose.

PI 591005. *Sorghum bicolor* (L.) Moench

Cultivar. Pureline. "P9404". Pedigree - (SRN39 x P954063)-60-1-bk-4-bk-bk-bk-bk-bk. Plant height 185cm, color tan. Midrib white. Glume brown with awnless lemmas covering less than 25% of the grain. Panicle length 26cm, semi-compact, elliptic in shape, well-exserted, thresh easily. Days to 50% flowering 80. 100-seed weight

3.44g. Seeds large, white and translucent with non-pigmented testa. Noram, white endosperm with intermediate hardness, colorless epicarp, and thin mesocarp. High yield. Resistance to striga and rust. Susceptible to anthracnose.

PI 591006. *Sorghum bicolor* (L.) Moench
Cultivar. Pureline. "P9405". Pedigree - (SRN39 x P954063)-83-1-bk-3-bk-bk-bk-bk-bk. Plant height 150cm, color tan. Midrib white. Glume brown with awnless lemmas covering less than 25% of the grain. Panicle length 26cm, semi-compact, elliptic in shape. Days to 50% flowering 82. 100-seed weight 3.39g. Seeds large, white and translucent with non-pigmented testa. Normal, white endosperm with intermediate hardness, colorless epicarp, and thin mesocarp. High yield. Resistance to striga. Moderately resistant to rust. Resistance to anthracnose.

PI 591007. *Sorghum bicolor* (L.) Moench
Cultivar. Pureline. "P9406". Pedigree - (SRN39 x P954063)-86-2-1-2-bk-bk-bk-bk-bk. Plant height 140cm, color tan. Midrib white. Glume brown with awnless lemmas covering less than 25% of the grain. Panicle length 26cm, semi-compact, elliptic in shape, well-exserted, thresh easily. Days to 50% flowering 84. 100-seed weight 2.97g. Seeds large, white and translucent with non-pigmented testa. Normal, white endosperm with intermediate hardness, colorless epicarp, and thin mesocarp. High yield. Resistance to striga, rust, and anthracnose.

PI 591008. *Sorghum bicolor* (L.) Moench
Cultivar. Pureline. "P9407". Pedigree - (SRN39 x P954063)-16-3-bk-3-bk-bk-bk-bk-bk. Plant height 165cm, color tan. Midrib dull green. Glume purple with awnless lemmas covering less than 25% of the grain. Panicle length 25cm, semi-compact, elliptic in shape, well-exserted, thresh easily. Days to 50% flowering 75. 100-seed weight 3.59g. Seeds large, white and translucent with non-pigmented testa. Normal, white endosperm with intermediate hardness, colorless epicarp, and thin mesocarp. High yield. Resistance to striga. Moderately resistant to rust.

PI 591009. *Sorghum bicolor* (L.) Moench
Cultivar. Pureline. "P9408". Pedigree - (SRN39 x P954063)-91-2-bk-3-bk-bk-bk-bk. Plant height 135cm, color red. Midrib dull green. Glume brown with awnless lemmas covering less than 25% of the grain. Panicle length 25cm, semi-compact, elliptic in shape, well-exserted, thresh easily. Days to 50% flowering 83. 100-seed weight 3.05g. Seeds large, white and translucent with non-pigmented testa. Normal, white endosperm with intermediate hardness, colorless epicarp, and thin mesocarp. High yield. Resistance to striga. Moderately resistant to rust.

The following were donated by H.O. Gevers, Summer Grain Sub-Centre, University of Natal, P.O. Box 375, Pietermaritzburg, South Africa. Received 07/19/1995.

PI 591010. *Zea mays* L. *ssp. mays*
Breeding. DO620Y; OS3P624. Yellow inbred, M line. High combiner. Resistance to ear rot. Maturity medium to late.

PI 591011. *Zea mays* L. *ssp. mays*
Breeding. KO301Y; OS3P641. Yellow inbred, M line. High combiner. Resistance to ear rot. Major leaf blight resistance gene. Maturity medium to late.

PI 591012. *Zea mays* L. *ssp. mays*
Breeding. KO315Y; OS3P646. Yellow inbred. Best M line. High combiner.

Resistance to ear rot. Major leaf blight resistance gene. Maturity medium to late.

PI 591013. *Zea mays* L. ssp. *mays*

Breeding. K0326Y; OS3P648. Yellow inbred, M line. High combiner. Resistance to ear rot. Major leaf blight resistance gene. Maturity medium to late.

PI 591014. *Zea mays* L. ssp. *mays*

Breeding. B0385Y; OS3P614. Yellow inbred, F line. High combiner. Poor pollen. Resistance to ear rot. Maturity medium to late.

PI 591015. *Zea mays* L. ssp. *mays*

Breeding. B0394Y; OS3P620. Yellow inbred, F line. High combiner. Best F line. Resistance to ear rot. Maturity medium to late.

PI 591016. *Zea mays* L. ssp. *mays*

Breeding. K0537Y; OS3P651. Yellow inbred, F line. High combiner. Some Eto. Resistance to ear rot. Maturity medium to late.

PI 591017. *Zea mays* L. ssp. *mays*

Breeding. K0679Y; OS3P653. Yellow inbred, F line. High combiner. Resistance to gray leaf spot and ear rot. Maturity medium to late.

PI 591018. *Zea mays* L. ssp. *mays*

Breeding. K0800Y; OS3P656. Yellow inbred, FI line. High combiner. Resistance to ear rot. Maturity medium to late.

PI 591019. *Zea mays* L. ssp. *mays*

Breeding. K0823Y; OS3P658. Yellow inbred, FIM line. High combiner. Resistance to gray leaf spot. Maturity medium to late.

PI 591020. *Zea mays* L. ssp. *mays*

Breeding. B0155W; OS3P4. White inbred, F line. High combiner. Resistance to ear rot. Maturity medium to late.

PI 591021. *Zea mays* L. ssp. *mays*

Breeding. B0165W; OS3P5. White inbred, F line. High combiner. Resistance to ear rot. Maturity very late.

PI 591022. *Zea mays* L. ssp. *mays*

Breeding. B046W; OS3P1. White inbred, M line. High combiner. Off-white. Maturity medium to late.

PI 591023. *Zea mays* L. ssp. *mays*

Breeding. B059W; OS3P2. White inbred, M line. High combiner. Off-white. Maturity medium to late.

The following were developed by Donald M. Ball, Auburn University, Extension Hall, Auburn, Alabama 36849-5633, United States; M.M. Eichorn, Hill Farm Research Station, Louisiana Agric. Exp. Sta., Louisiana State University Agric. Ctr., Homer, Louisiana 71040, United States; R.A. Burdett, Alabama Crop Improvement Assoc., Donahue Drive, Auburn University, Auburn University, Alabama 36849, United States; D.M. Bice, Russell County Extension Office, P.O. Drawer 1128, Phenix City, Alabama 36868, United States. Received 09/06/1995.

PI 591024. *Cynodon dactylon* (L.) Pers.

Cultivar. "RUSSELL". CV-28. Pedigree - Developed naturally on a farm near Seale, Russell County, Alabama. Believed to be either the result of a mutation of Callie bermudagrass, to which the field was originally planted, or a natural hybrid (in which case it most likely is a cross between Callie and a common bermudagrass ecotype). Highly stoloniferous,

slightly rhizomatous perennial with overall appearance similar to a robust common bermudagrass ecotype. Leaf color light green, narrow (approx. 3mm). Stem size at recommended harvest intervals of 4-5 weeks small (approx. 2mm) relative to most commonly grown bermudagrass hybrids. Internodes short (approx. 42mm), normally resulting in height of 45cm at harvest, but forage dense allowing for excellent yields. Greens up about 2 weeks earlier, and typically yields higher at first harvest than most hybrid bermudagrasses. Can be propagated by clippings as well as rhizomes. Rate of spread excellent. Winterhardy enough to be grown throughout Alabama and areas of similar climate. No rust disease (*Puccinia cynodontia*) has been detected. Highly resistant to leafspot disease (*Helminthosporium cynodontis*).

The following were collected by Barbara Zach, J.W. Goethe-Universität of Frankfurt, Seminar für Vor- und Frühgeschichte, Archäologie und Archäobotanik Afrikas, Frankfurt am Main, Germany. Donated by K. Neumann, J.W. Goethe-Universität of Frankfurt, Seminar für Vor- und Frühgeschichte, Archäologie und Archäobotanik Afrikas, Frankfurt am Main, Germany. Received 08/01/1995.

- PI 591025. *Sorghum bicolor* (L.) Moench
Cultivated. Sweet Ajama. Collected 01/07/1995 in Nigeria. Latitude 14 deg. 15' 35'' N. Longitude 12 deg. 15' 32'' W. Mege, Balge Area, south of Ngala, Borno State, NE Nigeria. Farm, heavy clay soil. Fields surrounded by ditches (half a meter deep) and little walls (half a meter high).
- PI 591026. *Sorghum bicolor* (L.) Moench
Cultivated. Njielgo. Collected 01/10/1995 in Nigeria. Latitude 14 deg. 15' 35'' N. Longitude 12 deg. 15' 35'' W. Between Mege and Ndulu, south of Ngala, NE Nigeria.
- PI 591027. *Sorghum bicolor* (L.) Moench
Cultivated. Jessowa. Collected 01/07/1995 in Nigeria. Latitude 14 deg. 15' 32'' N. Longitude 12 deg. 15' 35'' W. Mege, Balge Area, south of Ngala, Borno State, NE Nigeria. Farm, heavy clay soil. Field surrounded by ditches (half a meter deep) and little walls (half a meter high).
- PI 591028. *Sorghum bicolor* (L.) Moench
Cultivated. Burku lara. Collected 01/07/1995 in Nigeria. Latitude 14 deg. 15' 35'' N. Longitude 12 deg. 15' 32'' W. Mege, Balge Area, south of Ngala, Borno State, NE Nigeria. Farm, heavy clay soil. Fields surrounded by ditches (half a meter deep) and little walls (half a meter high).
- PI 591029. *Sorghum bicolor* (L.) Moench
Cultivated. Sweet Burku. Collected 01/07/1995 in Nigeria. Latitude 14 deg. 15' 35'' N. Longitude 12 deg. 15' 32'' W. Mege, Balge Area, south of Ngala, Borno State, NE Nigeria. Farm, heavy clay soil. Fields surrounded by ditches (half a meter deep) and little walls (half a meter high).
- PI 591030. *Sorghum bicolor* (L.) Moench
Cultivated. Burku. Collected 01/07/1995 in Nigeria. Latitude 14 deg. 15' 35'' N. Longitude 12 deg. 15' 32'' W. Mege, Balge Area, south of Ngala, Borno State, NE Nigeria. Farm, heavy clay soil. Fields surrounded by ditches (half a meter deep) and little walls (half a meter high).
- PI 591031. *Sorghum bicolor* (L.) Moench
Cultivated. Sweet Burku open head. Collected 01/07/1995 in Nigeria. Latitude 14 deg. 15' 35'' N. Longitude 12 deg. 15' 32'' W. Mege, Balge Area, south of Ngala, Borno State, NE Nigeria. Farm, heavy clay soil. Fields surrounded by ditches (half a meter deep) and little walls (half a meter high). Open head.

- PI 591032. *Sorghum bicolor* (L.) Moench
Cultivated. Tambuna. Collected 01/07/1995 in Nigeria. Latitude 14 deg. 15' 35'' N. Longitude 12 deg. 15' 32'' W. Mege, Balge Area, south of Ngala, Borno State, NE Nigeria. Farm, heavy clay soil. Fields surrounded by ditches (half a meter deep) and little walls (half a meter high).
- PI 591033. *Sorghum bicolor* (L.) Moench
Uncertain. Dry season sorghum. Collected 10/1994 in Nigeria. Between Mege and Ndufu, south of Ngala, NE Nigeria. Field. May be Jessowa.
- PI 591034. *Sorghum bicolor* (L.) Moench
Uncertain. Dry season sorghum short head. Collected 10/1994 in Nigeria. Between Mege and Ndufu, south of Ngala, NE Nigeria. Field.
- PI 591035. *Sorghum bicolor* (L.) Moench
Uncertain. Dry season sorghum. Collected 10/1994 in Nigeria. Between Mege and Ndufu, south of Ngala, NE Nigeria. Field. Short yellow head.
- PI 591036. *Sorghum bicolor* (L.) Moench
Wild. Wild sorghum. Collected 10/1994 in Nigeria. Between Mege and Ndufu, south of Ngala, NE Nigeria. Beside field.
- PI 591037. *Sorghum bicolor* (L.) Moench
Landrace. Dungoi. Collected 10/27/1994 in Nigeria. Near Kirenowa (near New Marte), northwest of Ngala, Borno State. Field.
- PI 591038. *Sorghum bicolor* (L.) Moench
Landrace. Sweet sorghum. Collected 10/27/1994 in Nigeria. Near Kirenowa (near New Marte), northwest of Ngala, Borno State. Field.
- PI 591039. *Sorghum bicolor* (L.) Moench
Landrace. Kolbier. Collected 10/27/1994 in Nigeria. Near Kirenowa (near New Marte), northwest of Ngala, Borno State. Field.
- PI 591040. *Sorghum bicolor* (L.) Moench
Wild. Wild sorghum. Collected 10/27/1994 in Nigeria. Near Kirenowa (near New Marte), northwest of Ngala, Borno State. Beside field.

The following were collected by Karin Koppers. Donated by K. Neumann, J.W. Goethe -University of Frankfurt, Seminar fur Vor- und Fruhgeschichte, Archaologie und Archasobotanik Afrikas, Frankurt Am Main, Germany. Received 08/01/1995.

- PI 591041. *Sorghum bicolor* (L.) Moench
Uncertain. Sorgho rouge. Collected in Burkina Faso. Latitude 0 deg. 2' 48'' N. Longitude 14 deg. 3' 39'' W. Market place of Dori, 100km southeast of Oursi. Taken from a site shortly north of Dori.
- PI 591042. *Sorghum bicolor* (L.) Moench
Uncertain. White sorghum. Collected in Burkina Faso. Latitude 0 deg. 2' 48'' N. Longitude 14 deg. 3' 39'' W. Market place of Dori, 100km southeast of Oursi. Taken from a site shortly north of Dori. White sorghum.

The following were collected by Barbara Zach, J.W. Goethe-Universitiy of Frankfurt, Seminar fur Vor- und Fruhgeschichte, Archaologie und Archasobotanik Afrikas, Frankurt Am Main, Germany. Donated by K. Neumann, J.W. Goethe -University of Frankfurt, Seminar fur Vor- und Fruhgeschichte, Archaologie und Archasobotanik Afrikas, Frankurt Am Main, Germany. Received 08/01/1995.

- PI 591043. *Sorghum bicolor* (L.) Moench

Uncertain. Mere. Collected 10/20/1994 in Nigeria. Between Mege and Ndufu, south of Ngala, NE Nigeria. Field.

The following were developed by Coastal Seeds, Inc., United States. Received 08/02/1995.

PI 591044. *Lactuca sativa* L.
Cultivar. "MUSTANG". PVP 9500248.

The following were developed by Idaho Agr. Exp. Sta.. Received 08/02/1995.

PI 591045. *Triticum aestivum* L., nom. cons.
Cultivar. "IDO377s". PVP 9500250.

The following were developed by Barenburg Holland B.V., United States. Received 08/02/1995.

PI 591046. *Festuca arundinacea* Schreber
Cultivar. "LEXUS". PVP 9500251. Turf type.

The following were developed by Brownfield Seed & Delinting Company, Inc., United States. Received 08/02/1995.

PI 591047. *Gossypium hirsutum* L.
Cultivar. "TEJAS". PVP 9500252.

The following were developed by Paragon Seed, Inc., United States. Received 08/02/1995.

PI 591048. *Lactuca sativa* L.
Cultivar. "MID QUEEN". PVP 9500253.

The following were developed by Svalof Weibull AB, Sweden. Received 08/02/1995.

PI 591049. *Poa pratensis* L.
Cultivar. "EVA". PVP 9500256.

The following were developed by Terral-Norris Seed Company, Inc., United States. Received 08/02/1995.

PI 591050. *Glycine max* (L.) Merr.
Cultivar. "Terral TV 5495". PVP 9500257.

PI 591051. *Glycine max* (L.) Merr.
Cultivar. "Terral TV 5797". PVP 9500258.

The following were developed by Vilmorin S.A., France. Received 08/02/1995.

PI 591052. *Lactuca sativa* L.
Cultivar. "LOMA". PVP 9500259.

PI 591053. *Lactuca sativa* L.
Cultivar. "602". PVP 9500260.

The following were developed by Del Monte Corporation, United States.
Received 08/02/1995.

PI 591054. *Phaseolus vulgaris* L.
Cultivar. "DMC 04-28". PVP 9500261.

The following were developed by G & P Seed Company, Inc., United States.
Received 08/02/1995.

PI 591055. *Gossypium hirsutum* L.
Cultivar. "G & P 785". PVP 9500262.

The following were developed by Paul Beuselinck, USDA, ARS, University of Missouri, Department of Agronomy, Columbia, Missouri 65211, United States; J. Stougaard, Aarhus University, Dept. of Molecular Biology, Gustav Wiedsvej 10, Aarhus C, Denmark. Received 06/29/1995.

PI 591056. *Lotus corniculatus* var. *japonicus* Regel
Breeding. Pureline. GIFU B-129-S9. GP-158. Pedigree - Accession B-129 from Gifu, Japan, was inbred to produce S1, then increased through the S9. Through the S3 generation, seed of a maximum 10 plants were bulked. S4-S7 was single seed descent. S8 and S9 were bulked increases. Diploid ($2n=2X=12$) perennial autogamous legume with good seed set, and a sexual regeneration time of approx. 3 months. Relatively small haploid genome size of approx. 0.5pg. per haploid complement. Susceptible to *Agrobacterium tumefaciens* and transgenic plants can be regenerated.

The following were developed by Richard P. Bates, The Samuel Roberts Nobel Foundation, Inc., P. O. Box 2180, 2510 Highway 199 East, Ardmore, Oklahoma 73402, United States; Jerry L. Baker, The Samuel Roberts Noble Foundation, Inc., P. O. Box 2180, 2510 Highway 199 East, Ardmore, Oklahoma 73402, United States; Lloyd R. Nelson, Texas Agricultural Experiment Station, The Texas A&M University System, Agricultural Research and Extension Center, Overton, Texas 75684-0290, United States. Received 07/21/1995.

PI 591057. *Secale cereale* L. ssp. *cereale*
Cultivar. Population. "BATES". CV-15. Pedigree - Maton/Insave. Very similar to half-parent Maton in many phenotypic and agronomic traits. No consistent differences observed in plant height, lodging, disease and insect resistance. Heads approx. one day earlier. Growth habit, tillering, and most vegetative and seed characteristics so similar to Maton cannot be distinguished in most environments. Primary advantage of increased total annual production in North and East Texas and Southern Oklahoma, along with improved fall and winter (early) production under some environmental conditions.

The following were developed by J.M. Clarke, Agriculture and Agri-Food Canada, Box 1030, Swift Current, Saskatchewan S9H 3X2, Canada. Received 07/24/1995.

PI 591058. *Triticum durum* Desf.
Genetic. Pureline. 8982-SF-L. Pedigree - Kyle/Nile. Low (plant and grain) cadmium concentration. Germination 88%.

PI 591059. *Triticum durum* Desf.
Genetic. Pureline. 8982-SF-H. Pedigree - Kyle/Nile. High (plant and grain) cadmium concentration. Germination 95%.

PI 591060. *Triticum durum* Desf.
Genetic. Pureline. 8982-TL-L. Pedigree - Kyle/Nile. Low (plant and

grain) cadmium concentration. Germination 96%.

PI 591061. *Triticum durum* Desf.

Genetic. Pureline. 8982-TL-H. Pedigree - Kyle/Nile. High (plant and grain) cadmium concentration. Germination 96%.

PI 591062. *Triticum durum* Desf.

Genetic. Pureline. W9260-BC-L. Pedigree - DT 617/DT 471. Low (plant and grain) cadmium concentration. Germination 94%.

PI 591063. *Triticum durum* Desf.

Genetic. Pureline. W9260-BC-H. Pedigree - DT 617/DT 471. High (plant and grain) cadmium concentration. Germination 98%.

PI 591064. *Triticum durum* Desf.

Genetic. Pureline. W9261-BG-L. Pedigree - DT 630/DT 471. Low (plant and grain) cadmium concentration. Germination 92%.

PI 591065. *Triticum durum* Desf.

Genetic. Pureline. W9261-BG-H. Pedigree - DT 630/DT 471. High (plant and grain) cadmium concentration. Germination 90%.

PI 591066. *Triticum durum* Desf.

Genetic. Pureline. W9262-339A-L. Pedigree - Kyle*2/Biodur. Low (plant and grain) cadmium concentration. Germination 98%.

PI 591067. *Triticum durum* Desf.

Genetic. Pureline. W9262-339A-H. Pedigree - Kyle*2/Biodur. High (plant and grain) cadmium concentration. Germination 97%.

The following were developed by C.T. Hash, Int. Crops Res. Inst. for the Semi-Arid Tropics, Patancheru, Andhra Pradesh 502 324, India. Received 08/09/1995.

PI 591068. *Pennisetum glaucum* (L.) R. Br.

Cultivar. Population. "ICMV 221"; MP 221; ICMV 88904. Pedigree - Random mating 124 high yielding, drought tolerant S1 progenies selected from the Bold Seeded Early Composite (BSEC) C3 cycle S1 progenies drought screening trail in 1987. Early maturing, bold grained with two to four tillers. Panicles compact to semi-compact, lanceolate or cylindrical, nonbristled with slight taper towards tip. Glumes mostly nonpigmented. Anther color variable from yellow to brown. Grain obovate to globular, dark gray in color and large (10-15g 1000-1). Large size of grain is most important identifying characteristics. Plants flower in 38-50 days. Mature in 70-80 days. Good resistance to downy mildew (*Sclerospora graminicola*). Less affected than hybrids by ergot (*Claviceps fusiformis*) and smut (*Moesziomyces penicillariae*).

The following were donated by A. El Ahmed, Int. Center for Agricultural Research in the Dry Areas, P.O. Box 5466, Aleppo, Syria. Received 08/02/1995.

PI 591069. *Triticum durum* Desf.

Breeding. 1.

PI 591070. *Triticum durum* Desf.

Breeding. 2.

PI 591071. *Triticum durum* Desf.

Breeding. 3.

PI 591072. *Triticum durum* Desf.

Breeding. 4.

- PI 591073. *Triticum durum* Desf.
Breeding. 5.
- PI 591074. *Triticum durum* Desf.
Breeding. 6.
- PI 591075. *Triticum durum* Desf.
Breeding. 7.
- PI 591076. *Triticum durum* Desf.
Breeding. 8.
- PI 591077. *Triticum durum* Desf.
Breeding. 9.
- PI 591078. *Triticum durum* Desf.
Breeding. 10.
- PI 591079. *Triticum durum* Desf.
Breeding. 11.
- PI 591080. *Triticum durum* Desf.
Breeding. 12.
- PI 591081. *Triticum durum* Desf.
Breeding. 13.
- PI 591082. *Triticum durum* Desf.
Breeding. 14.
- PI 591083. *Triticum durum* Desf.
Breeding. 15.
- PI 591084. *Triticum durum* Desf.
Breeding. 16.
- PI 591085. *Triticum durum* Desf.
Breeding. 17.
- PI 591086. *Triticum durum* Desf.
Breeding. 18.
- PI 591087. *Triticum durum* Desf.
Breeding. 19.
- PI 591088. *Triticum durum* Desf.
Breeding. 20.
- PI 591089. *Triticum durum* Desf.
Breeding. 21.
- PI 591090. *Triticum durum* Desf.
Breeding. 22.
- PI 591091. *Triticum durum* Desf.
Breeding. 23.
- PI 591092. *Triticum durum* Desf.
Breeding. 24.
- PI 591093. *Triticum durum* Desf.
Breeding. 25.

PI 591094. *Triticum durum* Desf.
Breeding. 26.

PI 591095. *Triticum durum* Desf.
Breeding. 27.

PI 591096. *Triticum durum* Desf.
Breeding. 28.

PI 591097. *Triticum durum* Desf.
Breeding. 29.

PI 591098. *Triticum durum* Desf.
Breeding. 30.

PI 591099. *Triticum durum* Desf.
Breeding. 31.

PI 591100. *Triticum durum* Desf.
Breeding. 32.

PI 591101. *Triticum durum* Desf.
Breeding. 33.

PI 591102. *Triticum durum* Desf.
Breeding. 34.

PI 591103. *Triticum durum* Desf.
Breeding. 35.

PI 591104. *Triticum durum* Desf.
Breeding. 36.

PI 591105. *Triticum durum* Desf.
Breeding. 37.

PI 591106. *Triticum durum* Desf.
Breeding. 38.

PI 591107. *Triticum durum* Desf.
Breeding. 39.

PI 591108. *Triticum durum* Desf.
Breeding. 40.

PI 591109. *Triticum durum* Desf.
Breeding. 41.

PI 591110. *Triticum durum* Desf.
Breeding. 42.

PI 591111. *Triticum durum* Desf.
Breeding. 43.

PI 591112. *Triticum durum* Desf.
Breeding. 44.

PI 591113. *Triticum durum* Desf.
Breeding. 45.

PI 591114. *Triticum durum* Desf.
Breeding. 46.

PI 591115. *Triticum durum* Desf.

Breeding. 47.

PI 591116. *Triticum durum* Desf.
Breeding. 48.

PI 591117. *Triticum durum* Desf.
Breeding. 49.

PI 591118. *Triticum durum* Desf.
Breeding. 50.

PI 591119. *Triticum durum* Desf.
Breeding. 51.

PI 591120. *Triticum durum* Desf.
Breeding. 52.

PI 591121. *Triticum durum* Desf.
Breeding. 53.

PI 591122. *Triticum durum* Desf.
Breeding. 54.

PI 591123. *Triticum durum* Desf.
Breeding. 55.

PI 591124. *Triticum durum* Desf.
Breeding. 56.

PI 591125. *Triticum durum* Desf.
Breeding. 57.

PI 591126. *Triticum durum* Desf.
Breeding. 58.

PI 591127. *Triticum durum* Desf.
Breeding. 59.

PI 591128. *Triticum durum* Desf.
Breeding. 60.

PI 591129. *Triticum durum* Desf.
Breeding. 61.

PI 591130. *Triticum durum* Desf.
Breeding. 62.

PI 591131. *Triticum durum* Desf.
Breeding. 63.

PI 591132. *Triticum durum* Desf.
Breeding. 64.

PI 591133. *Triticum durum* Desf.
Breeding. 65.

PI 591134. *Triticum durum* Desf.
Breeding. 66.

PI 591135. *Triticum durum* Desf.
Breeding. 67.

PI 591136. *Triticum durum* Desf.
Breeding. 68.

PI 591137. *Triticum durum* Desf.
Breeding. 69.

PI 591138. *Triticum durum* Desf.
Breeding. 70.

PI 591139. *Triticum durum* Desf.
Breeding. 71.

PI 591140. *Triticum durum* Desf.
Breeding. 72.

PI 591141. *Triticum durum* Desf.
Breeding. 73.

PI 591142. *Triticum durum* Desf.
Breeding. 74.

PI 591143. *Triticum durum* Desf.
Breeding. 75.

PI 591144. *Triticum durum* Desf.
Breeding. 76.

PI 591145. *Triticum durum* Desf.
Breeding. 77.

PI 591146. *Triticum durum* Desf.
Breeding. 78.

PI 591147. *Triticum durum* Desf.
Breeding. 79.

PI 591148. *Triticum durum* Desf.
Breeding. 80.

PI 591149. *Triticum durum* Desf.
Breeding. 81.

PI 591150. *Triticum durum* Desf.
Breeding. 82.

PI 591151. *Triticum durum* Desf.
Breeding. 83.

PI 591152. *Triticum durum* Desf.
Breeding. 84.

PI 591153. *Triticum durum* Desf.
Breeding. 85.

PI 591154. *Triticum durum* Desf.
Breeding. 86.

PI 591155. *Triticum durum* Desf.
Breeding. 87.

PI 591156. *Triticum durum* Desf.
Breeding. 88.

PI 591157. *Triticum durum* Desf.
Breeding. 89.

PI 591158. *Triticum durum* Desf.
Breeding. 90.

PI 591159. *Triticum durum* Desf.
Breeding. 91.

PI 591160. *Triticum durum* Desf.
Breeding. 92.

PI 591161. *Triticum durum* Desf.
Breeding. 93.

PI 591162. *Triticum durum* Desf.
Breeding. 94.

PI 591163. *Triticum durum* Desf.
Breeding. 95.

PI 591164. *Triticum durum* Desf.
Breeding. 96.

PI 591165. *Triticum durum* Desf.
Breeding. 97.

PI 591166. *Triticum durum* Desf.
Breeding. 98.

PI 591167. *Triticum durum* Desf.
Breeding. 99.

PI 591168. *Triticum durum* Desf.
Breeding. 100.

PI 591169. *Triticum durum* Desf.
Breeding. 101.

PI 591170. *Triticum durum* Desf.
Breeding. 102.

PI 591171. *Triticum durum* Desf.
Breeding. 103.

PI 591172. *Triticum durum* Desf.
Breeding. 104.

PI 591173. *Triticum durum* Desf.
Breeding. 105.

PI 591174. *Triticum durum* Desf.
Breeding. 106.

PI 591175. *Triticum durum* Desf.
Breeding. 107.

PI 591176. *Triticum durum* Desf.
Breeding. 108.

PI 591177. *Triticum durum* Desf.
Breeding. 109.

PI 591178. *Triticum durum* Desf.
Breeding. 110.

PI 591179. *Triticum durum* Desf.

Breeding. 111.

PI 591180. *Triticum durum* Desf.
Breeding. 112.

PI 591181. *Triticum durum* Desf.
Breeding. 113.

PI 591182. *Triticum durum* Desf.
Breeding. 114.

PI 591183. *Triticum durum* Desf.
Breeding. 115.

PI 591184. *Triticum durum* Desf.
Breeding. 116.

PI 591185. *Triticum durum* Desf.
Breeding. 117.

PI 591186. *Triticum durum* Desf.
Breeding. 118.

PI 591187. *Triticum durum* Desf.
Breeding. 119.

PI 591188. *Triticum durum* Desf.
Breeding. 120.

PI 591189. *Triticum durum* Desf.
Breeding. 121.

PI 591190. *Triticum durum* Desf.
Breeding. 122.

PI 591191. *Triticum durum* Desf.
Breeding. 123.

PI 591192. *Triticum durum* Desf.
Breeding. 124.

PI 591193. *Triticum durum* Desf.
Breeding. 125.

PI 591194. *Triticum durum* Desf.
Breeding. 126.

PI 591195. *Triticum durum* Desf.
Breeding. 127.

PI 591196. *Triticum durum* Desf.
Breeding. 128.

PI 591197. *Triticum durum* Desf.
Breeding. 129.

PI 591198. *Triticum durum* Desf.
Breeding. 130.

PI 591199. *Triticum durum* Desf.
Breeding. 131.

PI 591200. *Triticum durum* Desf.
Breeding. 132.

PI 591201. *Triticum durum* Desf.
Breeding. 133.

PI 591202. *Triticum durum* Desf.
Breeding. 134.

PI 591203. *Triticum durum* Desf.
Breeding. 135.

PI 591204. *Triticum durum* Desf.
Breeding. 136.

PI 591205. *Triticum durum* Desf.
Breeding. 137.

PI 591206. *Triticum durum* Desf.
Breeding. 138.

PI 591207. *Triticum durum* Desf.
Breeding. 139.

PI 591208. *Triticum durum* Desf.
Breeding. 140.

PI 591209. *Triticum durum* Desf.
Breeding. 141.

PI 591210. *Triticum durum* Desf.
Breeding. 142.

PI 591211. *Triticum durum* Desf.
Breeding. 143.

PI 591212. *Triticum durum* Desf.
Breeding. 144.

PI 591213. *Triticum durum* Desf.
Breeding. 145.

PI 591214. *Triticum durum* Desf.
Breeding. 146.

PI 591215. *Triticum durum* Desf.
Breeding. 147.

PI 591216. *Triticum durum* Desf.
Breeding. 148.

PI 591217. *Triticum durum* Desf.
Breeding. 149.

PI 591218. *Triticum durum* Desf.
Breeding. 150.

PI 591219. *Triticum durum* Desf.
Breeding. 151.

PI 591220. *Triticum durum* Desf.
Breeding. 152.

PI 591221. *Triticum durum* Desf.
Breeding. 153.

PI 591222. *Triticum durum* Desf.
Breeding. 154.

PI 591223. *Triticum durum* Desf.
Breeding. 155.

PI 591224. *Triticum durum* Desf.
Breeding. 156.

PI 591225. *Triticum durum* Desf.
Breeding. 157.

PI 591226. *Triticum durum* Desf.
Breeding. 158.

PI 591227. *Triticum durum* Desf.
Breeding. 159.

PI 591228. *Triticum durum* Desf.
Breeding. 160.

PI 591229. *Triticum durum* Desf.
Breeding. 161.

PI 591230. *Triticum durum* Desf.
Breeding. 162.

PI 591231. *Triticum durum* Desf.
Breeding. 163.

PI 591232. *Triticum durum* Desf.
Breeding. 164.

PI 591233. *Triticum durum* Desf.
Breeding. 165.

PI 591234. *Triticum durum* Desf.
Breeding. 166.

PI 591235. *Triticum durum* Desf.
Breeding. 167.

PI 591236. *Triticum durum* Desf.
Breeding. 168.

PI 591237. *Triticum durum* Desf.
Breeding. 169.

PI 591238. *Triticum durum* Desf.
Breeding. 170.

PI 591239. *Triticum durum* Desf.
Breeding. 171.

PI 591240. *Triticum durum* Desf.
Breeding. 172.

PI 591241. *Triticum durum* Desf.
Breeding. 173.

PI 591242. *Triticum durum* Desf.
Breeding. 174.

PI 591243. *Triticum durum* Desf.

Breeding. 175.

PI 591244. *Triticum durum* Desf.
Breeding. 176.

PI 591245. *Triticum durum* Desf.
Breeding. 177.

PI 591246. *Triticum durum* Desf.
Breeding. 178.

PI 591247. *Triticum durum* Desf.
Breeding. 179.

PI 591248. *Triticum durum* Desf.
Breeding. 180.

PI 591249. *Triticum durum* Desf.
Breeding. 181.

PI 591250. *Triticum durum* Desf.
Breeding. 182.

PI 591251. *Triticum durum* Desf.
Breeding. 183.

PI 591252. *Triticum durum* Desf.
Breeding. 184.

PI 591253. *Triticum durum* Desf.
Breeding. 185.

PI 591254. *Triticum durum* Desf.
Breeding. 186.

PI 591255. *Triticum durum* Desf.
Breeding. 187.

PI 591256. *Triticum durum* Desf.
Breeding. 188.

PI 591257. *Triticum durum* Desf.
Breeding. 189.

PI 591258. *Triticum durum* Desf.
Breeding. 190.

PI 591259. *Triticum durum* Desf.
Breeding. 191.

PI 591260. *Triticum durum* Desf.
Breeding. 192.

PI 591261. *Triticum durum* Desf.
Breeding. 193.

PI 591262. *Triticum durum* Desf.
Breeding. 194.

PI 591263. *Triticum durum* Desf.
Breeding. 195.

PI 591264. *Triticum durum* Desf.
Breeding. 196.

PI 591265. *Triticum durum* Desf.
Breeding. 197.

PI 591266. *Triticum durum* Desf.
Breeding. 198.

PI 591267. *Triticum durum* Desf.
Breeding. 199.

PI 591268. *Triticum durum* Desf.
Breeding. 200.

PI 591269. *Triticum durum* Desf.
Breeding. 201.

PI 591270. *Triticum durum* Desf.
Breeding. 202.

PI 591271. *Triticum durum* Desf.
Breeding. 203.

PI 591272. *Triticum durum* Desf.
Breeding. 204.

PI 591273. *Triticum durum* Desf.
Breeding. 205.

PI 591274. *Triticum durum* Desf.
Breeding. 206.

PI 591275. *Triticum durum* Desf.
Breeding. 207.

PI 591276. *Triticum durum* Desf.
Breeding. 208.

PI 591277. *Triticum durum* Desf.
Breeding. 209.

PI 591278. *Triticum durum* Desf.
Breeding. 210.

PI 591279. *Triticum durum* Desf.
Breeding. 211.

PI 591280. *Triticum durum* Desf.
Breeding. 212.

PI 591281. *Triticum durum* Desf.
Breeding. 213.

PI 591282. *Triticum durum* Desf.
Breeding. 214.

PI 591283. *Triticum durum* Desf.
Breeding. 215.

PI 591284. *Triticum durum* Desf.
Breeding. 216.

PI 591285. *Triticum durum* Desf.
Breeding. 217.

- PI 591286. *Triticum durum* Desf.
Breeding. 218.
- PI 591287. *Triticum durum* Desf.
Breeding. 219.
- PI 591288. *Triticum durum* Desf.
Breeding. 220.
- PI 591289. *Triticum durum* Desf.
Breeding. 221.
- PI 591290. *Triticum durum* Desf.
Breeding. 222.
- PI 591291. *Triticum durum* Desf.
Breeding. 223.
- PI 591292. *Triticum durum* Desf.
Breeding. 224.
- PI 591293. *Triticum durum* Desf.
Breeding. 225.
- PI 591294. *Triticum durum* Desf.
Breeding. 226.
- PI 591295. *Triticum durum* Desf.
Breeding. 227.
- PI 591296. *Triticum durum* Desf.
Breeding. 228.
- PI 591297. *Triticum durum* Desf.
Breeding. 229.
- PI 591298. *Triticum durum* Desf.
Breeding. 230.
- PI 591299. *Triticum durum* Desf.
Breeding. 231.
- PI 591300. *Triticum durum* Desf.
Breeding. 232.
- PI 591301. *Triticum durum* Desf.
Breeding. 233.
- PI 591302. *Triticum durum* Desf.
Breeding. 234.
- PI 591303. *Triticum durum* Desf.
Breeding. 235.
- PI 591304. *Triticum durum* Desf.
Breeding. 236.
- PI 591305. *Triticum durum* Desf.
Breeding. 237.
- PI 591306. *Triticum durum* Desf.
Breeding. 238.
- PI 591307. *Triticum durum* Desf.

Breeding. 239.

PI 591308. *Triticum durum* Desf.
Breeding. 240.

PI 591309. *Triticum durum* Desf.
Breeding. 241.

PI 591310. *Triticum durum* Desf.
Breeding. 242.

PI 591311. *Triticum durum* Desf.
Breeding. 243.

PI 591312. *Triticum durum* Desf.
Breeding. 244.

PI 591313. *Triticum durum* Desf.
Breeding. 245.

PI 591314. *Triticum durum* Desf.
Breeding. 246.

PI 591315. *Triticum durum* Desf.
Breeding. 247.

PI 591316. *Triticum durum* Desf.
Breeding. 248.

PI 591317. *Triticum durum* Desf.
Breeding. 249.

PI 591318. *Triticum durum* Desf.
Breeding. 250.

PI 591319. *Triticum durum* Desf.
Breeding. 251.

PI 591320. *Triticum durum* Desf.
Breeding. 252.

PI 591321. *Triticum durum* Desf.
Breeding. 253.

PI 591322. *Triticum durum* Desf.
Breeding. 254.

PI 591323. *Triticum durum* Desf.
Breeding. 255.

PI 591324. *Triticum durum* Desf.
Breeding. 256.

PI 591325. *Triticum durum* Desf.
Breeding. 257.

PI 591326. *Triticum durum* Desf.
Breeding. 258.

PI 591327. *Triticum durum* Desf.
Breeding. 259.

PI 591328. *Triticum durum* Desf.
Breeding. 260.

- PI 591329. *Triticum durum* Desf.
Breeding. 261.
- PI 591330. *Triticum durum* Desf.
Breeding. 262.
- PI 591331. *Triticum durum* Desf.
Breeding. 263.
- PI 591332. *Triticum durum* Desf.
Breeding. 264.
- PI 591333. *Triticum durum* Desf.
Breeding. 265.

The following were developed by Lee Panella, USDA, ARS, Colorado State University, Sugarbeet Research, Crops Research Lab., Fort Collins, Colorado 80536-2083, United States; Earl G. Ruppel, USDA-ARS, Crops Research Laboratory, 1701 Center Avenue, Fort Collins, Colorado 80526, United States. Received 07/28/1995.

- PI 591334. *Beta vulgaris* L.
Breeding. Population. FC725; 921008. GP-167. Pedigree - C37 / FC707/2. An F2 population of 25 individuals was random mated and followed by four cycles of mass selection for resistance to *Rhizoctonia* root rot. Multigerm, non O-type, self-sterile, and 44% green hypocotyls. Excellent resistance to *Rhizoctonia* root rot (*Rhizoctonia solani*) when tested under strong disease pressure and also shows some tolerance to the *Cercospora* leaf spot. Can be used as a pollinator for making *Rhizoctonia* root rot- and *Cercospora* leaf spot-resistant hybrids or as a source population from which such pollinators can be selected.
- PI 591335. *Beta vulgaris* L.
Breeding. Population. FC726; 931010. GP-168. Pedigree - FC703/3 / Permano. White roots selected in F2 generation followed by four generations of mass selection for resistance to *Rhizoctonia* and three simultaneous generations of mass selection for high sucrose. Multigerm, non O-type, self-sterile, and 46% green hypocotyls. Low sugar but considerable vigor, excellent *Rhizoctonia* root rot resistance. Moderate resistance to *Cercospora* leaf spot. No tolerance to Curly Top.
- PI 591336. *Beta vulgaris* L.
Breeding. Population. FC728; 921025. GP-169. Pedigree - Derived of equal numbers of F1 plants (90) from three crosses Mono-Hy A4 / FC708, Mono-Hy D2 / FC708, and Mono-Hy 309 / FC708. These F1s were inter-pollinated and underwent five generations of mass selection for resistance to *Rhizoctonia* root rot. Multigerm, non O-type, self-sterile, sterile-cytoplasm and 26% green hypocotyls. Low frequency of segregants for monogermity and O-type. Less than 15% male sterility. Vigorous and relatively high sucrose. Excellent resistance to *Rhizoctonia* root rot. Moderate resistance to *Cercospora* leaf spot. Should be good source of high combining ability. Should be possible to isolate monogerm, O-type, and CMS genotypes.

The following were developed by B.S. Talukdar, Int. Crops Res. Inst. for the Semi-Arid Tropics, Cereals Program, Patancheru, Andhra Pradesh 502 324, India . Received 08/10/1995.

- PI 591337. *Pennisetum glaucum* (L.) R. Br.
Breeding. Inbred. ICMR 356. Pedigree - B 282 / J 104. Bulk method up to F12 generation. The F12 progeny random mated twice in isolation plots.

Restorer line of single cross grain hybrid ICMH 356. Height medium (109 to 172cm) with 3 to 7 basal tillers per plant. Flowers 49 to 54 days from planting. Panicles compact, candle shape, short (14-16cm). Grains medium sized (8.5g 1000-1), obovate in shape, and slate gray in color. Downy mildew severity ranged from 0 to 4% in India compared with 0 to 20% for P7-04, the resistant control. Grain yield from 1477 to 3373kg ha-1 in the rainy season 1993 and dry season 1994.

The following were collected by University of Toronto, Toronto, Ontario, Canada. Donated by Paul Salon, USDA, NRCS, Big Flats Plant Materials Center, Box 360A, Corning, New York 14830, United States. Received 08/11/1995.

PI 591338. *Salix exigua* Nutt.

Clone. 9051639; INT-61. Collected in Ontario, Canada. Duffins Creek, Ajax, Southern Ontario. Delta and flood plain. Female clone with robust growth and profuse root suckering ability. Shrub up to 3-4 meters in height, growing in colonies with many stems, spreading by underground stolons. Branchlets slender, reddish-brown, at first silky-hairy, soon becoming smooth. Bark of older stems brown to grayish. Leaves alternate simple and deciduous, 5-12cm long, 5-15mm wide. Potential use for shoreline and streambank stabilization riparian zones. Useful in soil bioengineering projects as long as sufficient moisture is available.

PI 591339. *Salix exigua* Nutt.

Clone. 9051650; INT-60. Collected in Ontario, Canada. Baseline Road, Ajax, Southern Ontario. Along Duffins Creek, flood plain. Female clone with robust growth and profuse root suckering ability. Shrub up to 3-4 meters in height, growing in colonies with many stems, spreading by underground stolons. Branchlets slender, reddish-brown, at first silky-hairy, soon becoming smooth. Bark of older stems brown to grayish. Leaves alternate simple and deciduous, 5-12cm long, 5-15mm wide. Potential use for shoreline and streambank stabilization riparian zones. Useful in soil bioengineering projects as long as sufficient moisture is available.

PI 591340. *Salix exigua* Nutt.

Clone. 9051652; INT-66. Collected in Ontario, Canada. Regional Road 4, Whitby. Lynde Creek, flood plain. Male clone with robust growth and profuse root suckering ability. Shrub up to 3-4 meters in height, growing in colonies with many stems, spreading by underground stolons. Branchlets slender, reddish-brown, at first silky-hairy, soon becoming smooth. Bark of older stems brown to grayish. Leaves alternate simple and deciduous, 5-12cm long, 5-15mm wide. Potential use shoreline and streambank stabilization riparian zones. Useful in soil bioengineering projects as long as sufficient moisture is available.

PI 591341. *Salix exigua* Nutt.

Clone. 9051643; 4-1BR. Collected in Ontario, Canada. Hwy 7, Green River. Wide flood plain with wet meadows. Pedigree - 9051639 / INT-63 (from University of Toronto). Male clone with robust growth and profuse root suckering ability. Shrub up to 3-4 meters in height, growing in colonies with many stems, spreading by underground stolons. Branchlets slender, reddish-brown, at first silky-hairy, soon becoming smooth. Bark of older stems brown to grayish. Leaves alternate simple and deciduous, 5-12cm long, 5-15mm wide. Potential use for shoreline and streambank stabilization riparian zones. Useful in soil bioengineering projects as long as moisture is available.

The following were collected by Jose F. M. Valls, EMBRAPA, S.A.I.N. Parque Rural - C.P. 10.2372, CEP 70.770, Brasilia, Federal District 70770, Brazil; Roy N. Pittman, USDA, ARS, University of Georgia, Plant Genetic Resources Conservation Unit, Griffin, Georgia 30223-1797, United States; G.P. Silva,

Centro Nacional de Recursos Geneticos, Empresa Brasileira de Pesquisa, Agropecuaria, CEP 70.000, Brasilia, Federal District, Brazil. Donated by Roy N. Pittman, USDA, ARS, University of Georgia, Plant Genetic Resources Conservation Unit, Griffin, Georgia 30223-1797, United States. Received 12/09/1993.

PI 591342. *Arachis decora*

Wild. Grif 7436; VPmSv 12900; BRA-029882. Collected in Goias, Brazil. Latitude 13 deg. 26' S. Longitude 47 deg. 8' W. Elevation 390 m. Terezina de Goias.

PI 591343. *Arachis sylvestris* (A. Chev.) A. Chev.

Wild. Grif 7437; VPmSv 12901; BRA-029891. Collected in Goias, Brazil. Latitude 13 deg. 26' S. Longitude 47 deg. 8' W. Elevation 390 m. Terezina de Goias.

PI 591344. *Arachis sylvestris* (A. Chev.) A. Chev.

Wild. Grif 7447; VPmSv 13022; BRA-030040. Collected in Tocantins, Brazil. Latitude 7 deg. 26' S. Longitude 47 deg. 41' W. Elevation 220 m. Filadelfia.

PI 591345. *Arachis* sp.

Grif 7451; 13056. Collected in Brazil.

PI 591346. *Arachis sylvestris* (A. Chev.) A. Chev.

Wild. Grif 7450; VPmSv 13044. Collected in Maranhao, Brazil. Latitude 8 deg. 30' S. Longitude 45 deg. 47' W. Elevation 310 m. Tasso Fragoso.

PI 591347. *Arachis* sp.

Grif 7453; 13061. Collected in Brazil.

PI 591348. *Arachis* sp.

Grif 7454; 13064. Collected in Brazil.

The following were collected by Jose F. M. Valls, EMBRAPA, S.A.I.N. Parque Rural - C.P. 10.2372, CEP 70.770, Brasilia, Federal District 70770, Brazil; C.M. Pizarro, Ministerio de Agricultura, Santiago, Chile; Wantuil L. Werneck, CENARGEN / EMBRAPA, Brasilia, Federal District, Brazil; R.O. Vanni. Donated by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States; Roy N. Pittman, USDA, ARS, University of Georgia, Plant Genetic Resources Conservation Unit, Griffin, Georgia 30223-1797, United States; David E. Williams, USDA, ARS, Natl. Germplasm Resources Laboratory, Building 003, Room 400, BARC-West, Beltsville, Maryland 20705-2350, United States. Received 12/09/1993.

PI 591349. *Arachis pusilla* Benth.

Wild. Grif 7472; VPzVaW 13189; BRA-030571. Collected in Minas Gerais, Brazil. Latitude 15 deg. 57' S. Longitude 44 deg. 53' W. Elevation 510 m. Sao Francisco.

The following were collected by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States; Renato F.A. Veiga, Instituto Agronomico, Av. Barao de Itapura, 1481 -C. Postal 28, Campinas, Sao Paulo, Brazil; Roy N. Pittman, USDA, ARS, University of Georgia, Plant Genetic Resources Conservation Unit, Griffin, Georgia 30223-1797, United States; David E. Williams, USDA, ARS, Natl. Germplasm Resources Laboratory, Building 003, Room 400, BARC-West, Beltsville, Maryland 20705-2350, United States; G.P. Silva, Centro Nacional de Recursos Geneticos, Empresa Brasileira de Pesquisa, Agropecuaria, CEP 70.000, Brasilia, Federal District, Brazil. Donated by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States; Roy N. Pittman, USDA, ARS, University of Georgia, Plant Genetic Resources Conservation Unit, Griffin,

Georgia 30223-1797, United States; David E. Williams, USDA, ARS, Natl. Germplasm Resources Laboratory, Building 003, Room 400, BARC-West, Beltsville, Maryland 20705-2350, United States. Received 12/09/1993.

PI 591350. *Arachis stenosperma*
Grif 7481; 13258. Collected in Brazil.

The following were collected by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States; Jose F. M. Valls, EMBRAPA, S.A.I.N. Parque Rural - C.P. 10.2372, CEP 70.770, Brasilia, Federal District 70770, Brazil; Roy N. Pittman, USDA, ARS, University of Georgia, Plant Genetic Resources Conservation Unit, Griffin, Georgia 30223-1797, United States; David E. Williams, USDA, ARS, Natl. Germplasm Resources Laboratory, Building 003, Room 400, BARC-West, Beltsville, Maryland 20705-2350, United States; G.P. Silva, Centro Nacional de Recursos Geneticos, Empresa Brasileira de Pesquisa, Agropecuaria, CEP 70.000, Brasilia, Federal District, Brazil. Donated by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States; Roy N. Pittman, USDA, ARS, University of Georgia, Plant Genetic Resources Conservation Unit, Griffin, Georgia 30223-1797, United States; David E. Williams, USDA, ARS, Natl. Germplasm Resources Laboratory, Building 003, Room 400, BARC-West, Beltsville, Maryland 20705-2350, United States. Received 12/09/1993.

PI 591351. *Arachis stenosperma*
Wild. Grif 7483; VSPmWiSv 13262; BRA-030856. Collected in Sao Paulo, Brazil. Latitude 24 deg. 16' S. Longitude 46 deg. 56' W. Elevation 3 m. Peruibe.

PI 591352. *Arachis stenosperma*
Grif 7484; 13267. Collected in Brazil.

The following were collected by Jose F. M. Valls, EMBRAPA, S.A.I.N. Parque Rural - C.P. 10.2372, CEP 70.770, Brasilia, Federal District 70770, Brazil; A. Krapovickas, Facultad de Agronomia y Veterinaria, Genetic Gardens, Universidad Nacional del Nordeste, Corrientes, Corrientes, Argentina; V. R. Rao, Int. Crops Res. Inst. for the Semi-Arid Tropics, Patancheru, India; G.P. Silva, Centro Nacional de Recursos Geneticos, Empresa Brasileira de Pesquisa, Agropecuaria, CEP 70.000, Brasilia, Federal District, Brazil. Donated by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States. Received 12/09/1993.

PI 591353. *Arachis sylvestris* (A. Chev.) A. Chev.
Wild. Grif 7519; VKRSv 6547; BRA-014435. Collected in Tocantins, Brazil. Latitude 8 deg. 51' S. Longitude 48 deg. 31' W. Elevation 280 m. Guarai.

The following were collected by Jose F. M. Valls, EMBRAPA, S.A.I.N. Parque Rural - C.P. 10.2372, CEP 70.770, Brasilia, Federal District 70770, Brazil; A. Krapovickas, Facultad de Agronomia y Veterinaria, Genetic Gardens, Universidad Nacional del Nordeste, Corrientes, Corrientes, Argentina; Renato F.A Veiga, Instituto Agronomico, Av. Barao de Itapura, 1481 -C. Postal 28, Campinas, Sao Paulo, Brazil; G.P. Silva, Centro Nacional de Recursos Geneticos, Empresa Brasileira de Pesquisa, Agropecuaria, CEP 70.000, Brasilia, Federal District, Brazil. Donated by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States. Received 12/09/1993.

PI 591354. *Arachis sylvestris* (A. Chev.) A. Chev.
Wild. Grif 7528; VKVeSv 7071; BRA-015776. Collected in Bahia, Brazil. Latitude 11 deg. 20' S. Longitude 44 deg. 56' W. Elevation 580 m. Santa Rita de Cassia.

The following were collected by Jose F. M. Valls, EMBRAPA, S.A.I.N. Parque Rural - C.P. 10.2372, CEP 70.770, Brasilia, Federal District 70770, Brazil; Renato F.A Veiga, Instituto Agronomico, Av. Barao de Itapura, 1481 -C. Postal 28, Campinas, Sao Paulo, Brazil; G.P. Silva, Centro Nacional de Recursos Geneticos, Empresa Brasileira de Pesquisa, Agropecuaria, CEP 70.000, Brasilia, Federal District, Brazil. Donated by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States. Received 12/09/1993.

- PI 591355. *Arachis sylvestris* (A. Chev.) A. Chev.
Wild. Grif 7611; VVeSv 8386; BRA-018716. Collected in Maranhao, Brazil. Latitude 7 deg. 24' S. Longitude 46 deg. 53' W. Elevation 240 m. Riachao
- PI 591356. *Arachis sylvestris* (A. Chev.) A. Chev.
Wild. Grif 7622; VVeSv 8458. Collected in Maranhao, Brazil. Latitude 6 deg. 46' S. Longitude 4 deg. 31' W. Elevation 140 m. Barao do Grajau.
- PI 591357. *Arachis sylvestris* (A. Chev.) A. Chev.
Wild. Grif 7623; VVeSv 8461. Collected in Piaui, Brazil. Latitude 6 deg. 45' S. Longitude 42 deg. 56' W. Floriano.
- PI 591358. *Arachis dardani*
Wild. Grif 7624; VVeSv 8462. Collected in Piaui, Brazil. Latitude 7 deg. 6' S. Longitude 41 deg. 17' W. Near Picos.

The following were collected by Jose F. M. Valls, EMBRAPA, S.A.I.N. Parque Rural - C.P. 10.2372, CEP 70.770, Brasilia, Federal District 70770, Brazil; G.P. Silva, Centro Nacional de Recursos Geneticos, Empresa Brasileira de Pesquisa, Agropecuaria, CEP 70.000, Brasilia, Federal District, Brazil; D.M.S. Rocha, CENARGEN, EMPRAPA, Brasilia, Brazil; M.L. Galgaro, UNESP, Boutueatu, Sao Paulo, Brazil. Donated by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States. Received 12/09/1993.

- PI 591359. *Arachis stenosperma*
Wild. Grif 7776; VGaRoSv 12575; BRA-030767. Collected in Mato Grosso, Brazil. Latitude 15 deg. 41' S. Longitude 52 deg. 46' W. Elevation 360 m. General Carneiro.

The following were collected by Jose F. M. Valls, EMBRAPA, S.A.I.N. Parque Rural - C.P. 10.2372, CEP 70.770, Brasilia, Federal District 70770, Brazil; Roy N. Pittman, USDA, ARS, University of Georgia, Plant Genetic Resources Conservation Unit, Griffin, Georgia 30223-1797, United States; G.P. Silva, Centro Nacional de Recursos Geneticos, Empresa Brasileira de Pesquisa, Agropecuaria, CEP 70.000, Brasilia, Federal District, Brazil. Donated by Roy N. Pittman, USDA, ARS, University of Georgia, Plant Genetic Resources Conservation Unit, Griffin, Georgia 30223-1797, United States. Received 12/09/1993.

- PI 591360. *Arachis sylvestris* (A. Chev.) A. Chev.
Wild. Grif 7441; VPmSv 12940-1; BRA-029947. Collected in Tocantins, Brazil. Latitude 12 deg. 36' S. Longitude 47 deg. 52' W. Elevation 280 m. Parana. Tall main stem.
- PI 591361. *Arachis sylvestris* (A. Chev.) A. Chev.
Wild. VPmSv 12940-2; Grif 7441; BRA-029947. Collected in Tocantins, Brazil. Latitude 12 deg. 36' S. Longitude 47 deg. 52' W. Elevation 280 m. Parana. Short main stem.
- PI 591362. *Arachis* sp.

Grif 7452; 13060-1. Collected in Brazil. Tall main stem.

PI 591363. *Arachis* sp.

13060-2; Grif 7452. Collected in Brazil. Short main stem.

The following were collected by Jose F. M. Valls, EMBRAPA, S.A.I.N. Parque Rural - C.P. 10.2372, CEP 70.770, Brasilia, Federal District 70770, Brazil; V. R. Rao, Int. Crops Res. Inst. for the Semi-Arid Tropics, Patancheru, India; G.P. Silva, Centro Nacional de Recursos Geneticos, Empresa Brasileira de Pesquisa, Agropecuaria, CEP 70.000, Brasilia, Federal District, Brazil. Donated by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States. Received 12/09/1993.

PI 591364. *Arachis dardani*

Wild. Grif 7751; VRSv 10981-1; BRA-025666. Collected in Rondonia, Brazil. Latitude 5 deg. 7' S. Longitude 37 deg. 20' W. Elevation 30 m. Mossoro. Tall main stem.

The following were collected by V.S.P. Rao, National Bureau of Plant Genetics Res., IARI Campus, New Delhi, India; Jose F. M. Valls, EMBRAPA, S.A.I.N. Parque Rural - C.P. 10.2372, CEP 70.770, Brasilia, Federal District 70770, Brazil; G.P. Silva, Centro Nacional de Recursos Geneticos, Empresa Brasileira de Pesquisa, Agropecuaria, CEP 70.000, Brasilia, Federal District, Brazil. Donated by Charles E. Simpson, Texas A&M University, P. O. Box 292, Stephenville, Texas 76401, United States. Received 12/09/1993.

PI 591365. *Arachis dardani*

Wild. VRSv 10981-2; Grif 7751; BRA-025666. Collected in Rondonia, Brazil. Latitude 5 deg. 7' S. Longitude 37 deg. 20' W. Elevation 30 m. Mossoro. Short main stem.

Unknown source. Received 04/1993.

PI 591366. *Sorghum bicolor* (L.) Moench

HYDERABAD 1672; IS 2747. GROUP_NM =S. VIRGATUM
GROUP_NO = 62 IS 2747.

Unknown source. Received 04/1993.

PI 591367. *Sorghum bicolor* (L.) Moench

HYDERABAD 1675; IS 2752. GROUP_NM =CAUDATUM
GROUP_NO = 33 IS 2752.

Unknown source. Received 04/1993.

PI 591368. *Sorghum bicolor* (L.) Moench

HYDERABAD 1705; IS 3721. Pedigree - No. 109. GROUP_NM =DURRA
GROUP_NO = 41 IS 3721.

Unknown source. Received 04/1993.

PI 591369. *Sorghum bicolor* (L.) Moench

HYDERABAD 1899; IS 526. Pedigree - RFYE 1935-2-1-2. GROUP_NM =
CAUDATUM-KAFIR GROUP_NO = 38 IS 526.

Unknown source. Received 04/1993.

PI 591370. *Sorghum bicolor* (L.) Moench
HYDERABAD 1990; IS 1289. GROUP_NM =CAUDATUM
GROUP_NO = 33 IS 1289.

Unknown source. Received 04/1993.

PI 591371. *Sorghum bicolor* (L.) Moench
HYDERABAD 2173; IS 2914. GROUP_NM =CAUDATUM
GROUP_NO = 33 IS 2914.

Unknown source. Received 04/1993.

PI 591372. *Sorghum bicolor* (L.) Moench
HYDERABAD 2285; IS 3244. GROUP_NM =SUDANENSE
GROUP_NO = 52 IS 3244.

Unknown source. Received 04/1993.

PI 591373. *Sorghum bicolor* (L.) Moench
HYDERABAD 2297; IS 3267. GROUP_NM =SUDANENSE
GROUP_NO = 52 IS 3267.

Unknown source. Received 04/1993.

PI 591374. *Sorghum bicolor* (L.) Moench
HYDERABAD 4019; IS 5550. GROUP_NM =DURRA
GROUP_NO = 41 IS 5550.

Unknown source. Received 04/1993.

PI 591375. *Sorghum bicolor* (L.) Moench
HYDERABAD 4022; IS 5553. GROUP_NM =DURRA
GROUP_NO = 41 IS 5553.

Unknown source. Received 04/1993.

PI 591376. *Sorghum bicolor* (L.) Moench
HYDERABAD 4210; IS 5753. GROUP_NM =DOCHNA-ROXBURGHII
GROUP_NO = 17 IS 5753.

Unknown source. Received 04/1993.

PI 591377. *Sorghum bicolor* (L.) Moench
HYDERABAD 4220; IS 5763. Pedigree - Karkatia Salimpur. GROUP_NM =DURRA
GROUP_NO = 41 IS 5763.

Unknown source. Received 04/1993.

PI 591378. *Sorghum bicolor* (L.) Moench
HYDERABAD 4312; IS 5855. GROUP_NM =DURRA
GROUP_NO = 41 IS 5855.

Unknown source. Received 04/1993.

PI 591379. *Sorghum bicolor* (L.) Moench

HYDERABAD 4380; IS 5925. GROUP_NM =ROXBURGHII
GROUP_NO = 1 IS 5925.

Unknown source. Received 04/1993.

PI 591380. *Sorghum bicolor* (L.) Moench
HYDERABAD 4405; IS 5950. GROUP_NM =DURRA
GROUP_NO = 41 IS 5950.

Unknown source. Received 04/1993.

PI 591381. *Sorghum bicolor* (L.) Moench
HYDERABAD 4462; IS 6009. GROUP_NM =DURRA
GROUP_NO = 41 IS 6009.

Unknown source. Received 04/1993.

PI 591382. *Sorghum bicolor* (L.) Moench
HYDERABAD 4574; IS 6130. GROUP_NM =DURRA
GROUP_NO = 41 IS 6130.

Unknown source. Received 04/1993.

PI 591383. *Sorghum bicolor* (L.) Moench
HYDERABAD 4676; IS 6235. GROUP_NM =ROXBURGHII
GROUP_NO = 1 IS 6235.

Unknown source. Received 04/1993.

PI 591384. *Sorghum bicolor* (L.) Moench
HYDERABAD 5061; IS 6878. GROUP_NM =DOCHNA
GROUP_NO = 12 IS 6878.

Unknown source. Received 04/1993.

PI 591385. *Sorghum bicolor* (L.) Moench
HYDERABAD 5302; IS 7134. GROUP_NM =CAUDATUM
GROUP_NO = 33 IS 7134.

Unknown source. Received 04/1993.

PI 591386. *Sorghum bicolor* (L.) Moench
HYDERABAD 5384; IS 6987. GROUP_NM =CAUDATUM
GROUP_NO = 33 IS 6987.

Unknown source. Received 04/1993.

PI 591387. *Sorghum bicolor* (L.) Moench
HYDERABAD 5530; IS 7289. GROUP_NM =CAUDATUM
GROUP_NO = 33 IS 7289.

Unknown source. Received 04/1993.

PI 591388. *Sorghum bicolor* (L.) Moench
HYDERABAD 1874.

Unknown source. Received 04/1993.

PI 591389. *Sorghum bicolor* (L.) Moench
HYDERABAD 2206.

Unknown source. Received 04/1993.

PI 591390. *Sorghum bicolor* (L.) Moench
HYDERABAD 3297.

Unknown source. Received 04/1993.

PI 591391. *Sorghum bicolor* (L.) Moench
HYDERABAD 3601.

Unknown source. Received 04/1993.

PI 591392. *Sorghum bicolor* (L.) Moench
HYDERABAD 3612.

Unknown source. Received 04/1993.

PI 591393. *Sorghum bicolor* (L.) Moench
HYDERABAD 3881.

Unknown source. Received 04/1993.

PI 591394. *Sorghum bicolor* (L.) Moench
HYDERABAD 4456.

Unknown source. Received 04/1993.

PI 591395. *Sorghum bicolor* (L.) Moench
HYDERABAD 4567.

Unknown source. Received 04/1993.

PI 591396. *Sorghum bicolor* (L.) Moench
HYDERABAD 4713.

Unknown source. Received 04/1993.

PI 591397. *Sorghum bicolor* (L.) Moench
HYDERABAD 4764.

Unknown source. Received 04/1993.

PI 591398. *Sorghum bicolor* (L.) Moench
HYDERABAD 5282.

Unknown source. Received 04/1993.

PI 591399. *Sorghum bicolor* (L.) Moench
HYDERABAD 5335.

Unknown source. Received 04/1993.

PI 591400. *Sorghum bicolor* (L.) Moench
HYDERABAD 5541.

Unknown source. Received 04/1993.

PI 591401. *Sorghum bicolor* (L.) Moench
HYDERABAD 5679.

Unknown source. Received 04/1993.

PI 591402. *Sorghum bicolor* (L.) Moench
HYDERABAD 5750.

Unknown source. Received 04/1993.

PI 591403. *Sorghum bicolor* (L.) Moench
HYDERABAD 6009.

Unknown source. Received 04/1993.

PI 591404. *Sorghum bicolor* (L.) Moench
HYDERABAD 6293.

Unknown source. Received 04/1993.

PI 591405. *Sorghum bicolor* (L.) Moench
HYDERABAD 6392.

Unknown source. Received 04/1993.

PI 591406. *Sorghum bicolor* (L.) Moench
HYDERABAD 7742.

Unknown source. Received 04/1993.

PI 591407. *Sorghum bicolor* (L.) Moench
HYDERABAD C-10.

Unknown source. Received 04/1993.

PI 591408. *Sorghum bicolor* (L.) Moench
HYDERABAD C-11.

Unknown source. Received 04/1993.

PI 591409. *Sorghum bicolor* (L.) Moench
HYDERABAD C-18.

Unknown source. Received 04/1993.

PI 591410. *Sorghum bicolor* (L.) Moench
HYDERABAD C-3.

Unknown source. Received 04/1993.

PI 591411. *Sorghum bicolor* (L.) Moench
HYDERABAD C-4.

Unknown source. Received 04/1993.

PI 591412. *Sorghum bicolor* (L.) Moench
HYDERABAD C-5.

Unknown source. Received 04/1993.

PI 591413. *Sorghum bicolor* (L.) Moench
HYDERABAD C-6.

Unknown source. Received 04/1993.

PI 591414. *Sorghum bicolor* (L.) Moench
HYDERABAD C-7.

Unknown source. Received 04/1993.

PI 591415. *Sorghum bicolor* (L.) Moench
HYDERABAD C-8.

Unknown source. Received 04/1993.

PI 591416. *Sorghum bicolor* (L.) Moench
HYDERABAD C-9.

The following were developed by Lloyd May, USDA, ARS, Coastal Plains Soil, Water, and Plant Res., P.O. BOX 3039, Florence, South Carolina SC, United States. Received 08/01/1995.

PI 591417. *Gossypium hirsutum* L.
Breeding. Pureline. PD-3-14. Pedigree - Selection from PD-3. Fiber stronger, longer, and finer than popular southeastern cultivar Deltapine 90. Yarn strength 2% higher than PD-3, with other fiber properties being similar. Lint yield superior to PD-3 and Deltapine 90.

PI 591418. *Gossypium hirsutum* L.
Breeding. Pureline. PD 93007. Pedigree - PD 5285/PD 5485. Early maturity and good fiber and spinning performance when tested in late-planted production system, averaging 164 days across 3 yrs. Averages 20% higher lint yield with similar fiber properties and yard strength when compared with full-season cultivar PD-3.

PI 591419. *Gossypium hirsutum* L.
Breeding. Pureline. PD 93009. Pedigree - PD 5286/PD 5485. Combines yield stability and good fiber and spinning properties when tested in full-season and late-planted trials. Averages 12% higher yield with similar fiber and yarn properties when compared to PD-3.

- PI 591420. *Gossypium hirsutum* L.
Breeding. Pureline. PD 93019. Pedigree - PD 5285/PD 5377. Combines yield stability and good fiber and spinning properties when tested in full-season and late-planted trials. Averages 8% higher yield with similar fiber and spinning properties when compared with PD-3.
- PI 591421. *Gossypium hirsutum* L.
Breeding. Pureline. PD 93021. Pedigree - PD 5286/PD 5377. Combines yield stability and good fiber and spinning properties when tested in full-season and late-planted trials. Averages 5% higher yield in 3 yrs. of testing and 3% higher yarn strength than PD-3.
- PI 591422. *Gossypium hirsutum* L.
Breeding. Pureline. PD 93030. Pedigree - PD 5358/PD 5485. Averages 2% higher lint yield, similar fiber properties and 4% higher yarn strength than PD-3 in full-season trials averaging 170 days across 3 yrs.
- PI 591423. *Gossypium hirsutum* L.
Breeding. Pureline. PD 93034. Pedigree - PD 5285/PD 5485. Averages 9% higher lint yield than PD-3 in full-season trials averaging 170 days across 3 yrs. Similar fiber properties to PD-3 yet averages 4% higher yarn strength.
- PI 591424. *Gossypium hirsutum* L.
Breeding. Pureline. PD 93043. Pedigree - PD 5265/PD 5576. Averages 27% higher lint yield than the full season cultivar PD-3 when tested in late-planted production system, averaging 164 days across 3 yrs. Similar fiber and spinning properties to PD-3.
- PI 591425. *Gossypium hirsutum* L.
Breeding. Pureline. PD 93046. Pedigree - PD 5358/PD 5485. Combines early maturity, high lint yield, and good fiber and spinning properties when grown in late-planted production system. Averages 21% higher lint yield and similar fiber and spinning performance when tested in late-planted production system compared to full-season cultivar PD-3.
- PI 591426. *Gossypium hirsutum* L.
Breeding. Pureline. PD 93057. Pedigree - PD 5265/PD 5485. Averages 10% higher lint yield than PD-3 in full-season trials averaging 170 days across 3 yrs. Only minor differences in fiber properties exist. Averages 3% higher yarn strength than PD-3.

The following were developed by Wayne W. Hanna, USDA, ARS, Coastal Plains Experiment Station, P.O. Box 748, Tifton, Georgia 31793, United States.
Received 08/07/1995.

- PI 591427. *Pennisetum glaucum* (L.) R. Br.
Genetic. Inbred. Tift 85D2A4. GS-1. Pedigree - A4 cytoplasm was transferred from a wild subspecies of pearl millet (Tifton no. PS34) subspecies *monodii* from Senegal. Tift PS34 was pollinated with Tift 23B and then back-crossed to Tift 23B (as male parent) until the BC9 generation. A cytoplasmic-nuclear male sterile BC9 plant was pollinated with Tift 85D2B1 and then backcrossed to Tift 85D2B1 (as male parent) until the BC5 generation. A4 male-sterility inducing cytoplasm produced no male-fertile revertants in a 3 yr. replicated study where 424,000 inflorescences were observed. Since this study, no male fertile revertants have been observed in over 500,000 inflorescences. During the same period, similar numbers of plants in adjacent plots exhibited quantities of fertile revertants similar to those previously observed. The A1 male-sterility inducing cytoplasm is used to produce all commercial pearl millet forage and grain hybrids around the world. The A1 cytoplasm produces male fertile revertants that can contaminate

hybrid production fields if not carefully rogued. The A4 cytoplasm makes available a stable, male-sterility inducing cytoplasm for commercial hybrid seed production.

The following were developed by Jerry Johnson, University of Georgia, Department of Agronomy, 1109 Experiment Street, Griffin, Georgia 30223-1797, United States. Received 08/22/1995.

PI 591428. *Triticum aestivum* L., nom. cons.
Cultivar. Pureline. "MOREY". PVP 9500288. Pedigree - FL 8172-G116/FL 303 (FL8172 is sister of FL 304). Early maturing, medium height, awned. One day later than GA-Andy in maturity and similar test weight. Resistant to biotypes E, G, M, and O of Hessian fly (*Mayetiola destructor*). Resistant to leaf rust (*Puccinia recondita*) and to powdery mildew (*Erysiphe graminis*).

The following were developed by Gilles Saindon, Agriculture Canada, Lethbridge Research Station, Crop Science Research Station, Lethbridge, Alberta T1J 4B1, Canada; Harvey D. Voldeng, Agriculture Canada, Ottawa Research Station, Plant Research Center, CEF, Ottawa, Ontario K1A 0C6, Canada; Malcolm Morrison, Agriculture and Agri-Food Canada, Plant Research Centre, CEF, Bldg. 75, Ottawa, Ontario K1A 0C6, Canada; E.R. Cober, Agriculture and Agri-Food Canada, Plant Research Center, Ottawa, Ontario K1A 0C6, Canada. Received 08/14/1995.

PI 591429. *Glycine max* (L.) Merr.
Genetic. Pureline. OT93-26. GS-30. Pedigree - OT89-5/L71-802. Harosoy near-isogenic line with alternative maturity alleles and earlier maturity than the recurrent parent Harosoy. Genotype T E1 e2 e3 e4 e5 Dt1.

PI 591430. *Glycine max* (L.) Merr.
Genetic. Pureline. OT93-28. GS-31. Pedigree - OT89-5/L71-802. Harosoy near-isogenic line with alternative maturity alleles and earlier maturity than the recurrent parent Harosoy. Genotype t E1 e2 e3 e4 e5 Dt1.

PI 591431. *Glycine max* (L.) Merr.
Genetic. Pureline. OT94-49. GS-32. Pedigree - OT89-5/L71-802//OT89-6. Harosoy near-isogenic line with alternative maturity alleles and earlier maturity than the recurrent parent Harosoy. Genotype T E1 e2 e3 e4 e5 dt1.

PI 591432. *Glycine max* (L.) Merr.
Genetic. Pureline. OT94-51. GS-33. Pedigree - OT89-5/L71-802//OT89-6. Harosoy near-isogenic line with alternative maturity alleles and earlier maturity than the recurrent parent Harosoy. Genotype t E1 e2 e3 e4 e5 dt1.

PI 591433. *Glycine max* (L.) Merr.
Genetic. Pureline. OT94-37. GS-34. Pedigree - PI 438477/Evans (K613-5-2)//7*L62-667/3/L67-153. Harosoy near-isogenic line with alternative maturity alleles and earlier maturity than the recurrent parent Harosoy. Genotype t e1 e2 e3 E4 e5 dt1.

PI 591434. *Glycine max* (L.) Merr.
Genetic. Pureline. OT94-39. GS-35. Pedigree - PI 438477/Evans (K613-5-2)//7*L62-667/3/L67-153. Harosoy near-isogenic line with alternative maturity alleles and earlier maturity than the recurrent parent Harosoy. Genotype t e1 e2 E3 e4 e5 dt1.

PI 591435. *Glycine max* (L.) Merr.

Genetic. Pureline. OT94-41. GS-36. Pedigree - PI 438477/Evans (K613-5-2)//7*L62-667/3/L67-153. Harosoy near-isogenic line with alternative maturity alleles and earlier maturity than the recurrent parent Harosoy. Genotype t e1 e2 E3 e4 e5 Dt1.

The following were developed by Larry R. Teuber, University of California, Department of Agronomy & Range Science, Davis, California 95616-8515, United States. Received 08/14/1995.

- PI 591436. *Medicago sativa* L. ssp. *sativa*
Breeding. Population. UC-1146; UCRD-A(L)2. Pedigree - UCRD-A(L)2.
Germplasm pool selected from CUF101 for decreased receptacle diameter through 2 cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed in each cycle.
- PI 591437. *Medicago sativa* L. ssp. *sativa*
Breeding. Population. UC-1145; UCRD-A(H)2. Pedigree - UC RD-A(H)2.
Germplasm pool selected from CUF101 for increased receptacle diameter through 2 cycles of phenotypic recurrent selection. Approx. 45 plants were intercrossed in each cycle.
- PI 591438. *Medicago sativa* L. ssp. *sativa*
Breeding. Population. UC-1154; UCRD-B(L)2. Pedigree - UC RD-B(L)2.
Germplasm pool selected from Team for decreased receptacle diameter through 2 cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed in each cycle.
- PI 591439. *Medicago sativa* L. ssp. *sativa*
Breeding. Population. UC-1153; UCRD-B(H)2. Pedigree - UC RD-B(H)2.
Germplasm pool selected from Team for increased receptacle diameter through 2 cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed in each cycle.
- PI 591440. *Medicago sativa* L. ssp. *sativa*
Breeding. Population. UC-1159; UCRD-C(H)2. Pedigree - UC RD-C(H)2.
Germplasm pool selected from CUF101 for large receptacle diameter through 2 cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed in each cycle.
- PI 591441. *Medicago sativa* L. ssp. *sativa*
Breeding. Population. UC-1164; UCWSS/P-A(L)2. Pedigree - UC WSS/P-A(H)2.
Germplasm pool selected from CUF101 for decreased number of seeds per pod through 2 cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed in each cycle.
- PI 591442. *Medicago sativa* L. ssp. *sativa*
Breeding. Population. UC-1150; UCWSS/P-A(H)2. Pedigree - UC WSS/P-A(H)2.
Germplasm pool selected from CUF101 for increased seed yield through 2 cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed in each cycle.
- PI 591443. *Medicago sativa* L.
Breeding. Population. UC-1170; UCWSS/P-B(M)2. Pedigree - UC WSS/P-B(H)2.
Germplasm pool selected from Team for increased number of seeds per pod through 2 cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed in each cycle.
- PI 591444. *Medicago sativa* L. ssp. *sativa*
Breeding. Population. UC-1162; UCWSS/P-C(H)2. Pedigree - UC WSS/P-C(H)2.
Germplasm pool selected from Vernal for increased number of seeds per pod through 2 cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed in each cycle.

- PI 591445. *Medicago sativa* L. *ssp. sativa*
Breeding. Population. UC-1148; UCDS/P-A(H)2. Pedigree - UCD S/P-A(H)2.
Germplasm pool selected from CUF101 for increased number of seeds per
pod through 2 cycles of phenotypic recurrent selection. Approx. 45
plants intercrossed in each cycle.
- PI 591446. *Medicago sativa* L. *ssp. sativa*
Breeding. Population. UC-1280; UCDS/P-B(H)2. Pedigree - UCD S/P-B(H)2.
Germplasm pool selected from Team for increased number of seeds per pod
through 2 cycles of phenotypic recurrent selection. Approx. 45 plants
intercrossed in each cycle.
- PI 591447. *Medicago sativa* L. *ssp. sativa*
Breeding. Population. UC-1167; UCWSS-B(L)2. Pedigree - UC WSS-B(L)2.
Germplasm pool selected from Team for decreased seed yield through 2
cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed
in each cycle.
- PI 591448. *Medicago sativa* L. *ssp. sativa*
Breeding. Population. UC-1168b; UCWSS-B(H)2. Pedigree - UC WSS-B(H)2.
Germplasm pool selected from Team for increased seed yield through 2
cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed
in each cycle.
- PI 591449. *Medicago sativa* L. *ssp. sativa*
Breeding. Population. UC-1175; UCWSS-C(H)2. Pedigree - UC WSS-C(H)2.
Germplasm pool selected from Vernal for increased seed yield through 2
cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed
in each cycle.
- PI 591450. *Medicago sativa* L. *ssp. sativa*
Breeding. Population. UC-1155; UCDS-B(H)2. Pedigree - UC DS-B(H)2.
Germplasm pool selected from Team for increased seed yield through 2
cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed
in each cycle.
- PI 591451. *Medicago sativa* L. *ssp. sativa*
Breeding. Population. UC-1161; UCDS-C(H)2. Pedigree - UC DS-C(H)2.
Germplasm pool selected from Vernal for increased seed yield through 2
cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed
in each cycle.

The following were developed by Larry R. Teuber, University of California, Department of Agronomy & Range Science, Davis, California 95616-8515, United States; W.L. Green, University of California, Agronomy and Range Science, Davis, California 95616-8515, United States. Received 08/14/1995.

- PI 591452. *Medicago sativa* L. *ssp. sativa*
Breeding. Population. UC-1269; UCNE-A(L)2. GP-281. Pedigree -
UCNE-A(L)2. Germplasm pool selected from CUF101 for decreased nectar
production through 2 cycles of phenotypic recurrent selection. Approx.
45 plants intercrossed in each cycle.
- PI 591453. *Medicago sativa* L. *ssp. sativa*
Breeding. Population. UC-1270; UCNE-A(H)2. GP-282. Pedigree - UC
NE-A(H)2. Germplasm pool selected from CUF101 for increased nectar
production through 2 cycles of phenotypic recurrent selection. Approx.
45 plants intercrossed in each cycle of selection.
- PI 591454. *Medicago sativa* L. *ssp. sativa*
Breeding. Population. UC-1272; UCNE-B(L)2. GP-283. Pedigree - UC
NE-B(L)2. Germplasm pool selected from Team for decreased nectar
production through 2 cycles of phenotypic recurrent selection. Approx.

45 plants intercrossed in each cycle.

PI 591455. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. UC-1151; UCNE-B(H)2. GP-284. Pedigree - UC NE-B(H)2. Germplasm pool selected from Team for increased nectar production through 2 cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed in each cycle.

PI 591456. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. UC-1275; UCNE-C(L)2. GP-285. Pedigree - UC NE-C(L)2. Germplasm pool selected from Vernal for decreased nectar production through 2 cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed in each cycle.

PI 591457. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. UC-1276; UCNE-C(H)2. GP-286. Pedigree - UC NE-C(H)2. Germplasm pool selected from CUF101 for increased nectar production through 2 cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed in each cycle.

The following were developed by Larry R. Teuber, University of California, Department of Agronomy & Range Science, Davis, California 95616-8515, United States; W.L. Green, University of California, Agronomy and Range Science, Davis, California 95616-8515, United States; D.A. Phillips, University of California, Agronomy and Range Science Dept., Davis, California 95616-8515, United States. Received 08/14/1995.

PI 591458. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. UC-1377; UCNP-A3(2). GP-295. Pedigree - UC NP-A3(2). Germplasm pool selected from African for increased dry weight and increased N-concentration through 2 cycles of phenotypic recurrent selection. Approx. 125 plants intercrossed in each cycle.

PI 591459. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. UC-1380; UCNP-HP3(2). GP-296. Pedigree - UCNP-HP3. Germplasm pool selected from Hairy Peruvian for increased forage dry weight and forage N-concentration through 2 cycles of phenotypic recurrent selection. Approx. 125 plants intercrossed in each cycle.

PI 591460. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. UC-1429; UCNP-M69-3(2). GP-297. Pedigree - UC NP-M69-3(2). Germplasm pool selected from Moapa 69 for increased forage dry weight through 2 cycles of phenotypic recurrent selection. Approx. 125 plants intercrossed in each cycle.

PI 591461. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. UC-1459; UCNP-M69(N2+NO3)2. GP-298. Pedigree - UC NP-M69(N2+NO3)2. Germplasm pool selection from Moapa 69 for increased forage N-concentration and forage dry weight through 2 cycles of phenotypic recurrent selection. Approx. 25 plants intercrossed in each cycle.

PI 591462. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. UC-1530; UCNP-M69-3(3). GP-299. Pedigree - UC NP-M69-3(3). Germplasm pool selected from Moapa 69 for increased forage dry weight and increased forage N-concentration through 3 cycles of phenotypic recurrent selection. Approx. 125 plants intercrossed in each cycle.

PI 591463. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. UC-1618; UCNF-M69(I-0)2. GP-291. Pedigree - UC NF-M69(I-0)2. Germplasm pool selection from Moapa 69 for increased forage dry weight and increased forage N-concentration in the absence of

N-fertilization through 2 cycles of phenotypic recurrent selection.
Approx. 25 plants intercrossed in each cycle.

PI 591464. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. UC-1619; UCNF-M69(I-33)2. GP-292. Pedigree - UC NF-M69(I-33)2. Germplasm pool selected from Moapa 69 for increased dry weight and N-concentration under 33 kilograms per hectare of ammonium nitrate fertilization through 2 cycles of phenotypic recurrent selection. Approx. 25 plants intercrossed in each cycle.

PI 591465. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. UC-1620; UCNF-M69(I-66)2. GP-293. Pedigree - UC NF-M69(I-66)2. Germplasm pool selected from Moapa 69 for increased forage dry weight and increased N-concentration under 66 kilograms per hectare of ammonium nitrate fertilization through 2 cycles of phenotypic recurrent selection. Approx. 25 plants intercrossed in each cycle.

PI 591466. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. UC-1621; UCNF-M69(I-100)2. GP-294. Pedigree - UC NF-M69(I-100)2. Germplasm pool selected from Moapa 69 for increased dry weight and N-concentration under 100 kilograms per hectare of ammonium nitrate fertilization through 2 cycles of phenotypic recurrent selection. Approx. 25 plants intercrossed in each cycle.

The following were developed by Larry R. Teuber, University of California, Department of Agronomy & Range Science, Davis, California 95616-8515, United States; W.L. Green, University of California, Agronomy and Range Science, Davis, California 95616-8515, United States; Eric E. Knapp, University of California, Agronomy and Range Science Dept., Davis, California 95616-8515, United States. Received 08/14/1995.

PI 591467. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. UC-1661; UCSAR-ET(L)2. GP-287. Pedigree - UC SAR-ET(L)2. Germplasm pool selected from Saranac for hard floret tripping through 2 cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed in each cycle.

PI 591468. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. UC-1662; UCSAR-ET(H)2. GP-288. Pedigree - UC SAR-ET(H)2. Germplasm pool selected from Saranac for easy floret tripping through 2 cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed in each cycle.

PI 591469. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. UC-1663; UCCUF-ET(L)2. GP-289. Pedigree - UC CUF-ET(L)2. Germplasm pool selected from CUF101 for hard floret tripping through 2 cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed in each cycle.

PI 591470. *Medicago sativa* L. ssp. *sativa*

Breeding. Population. UC-1664; UCCUF-ET(H)2. GP-290. Pedigree - UC CUF-ET(H)2. Germplasm pool selected from CUF101 for hard tripping of florets through 2 cycles of phenotypic recurrent selection. Approx. 45 plants intercrossed in each cycle.

The following were developed by Cascade International Seed Company, Jonathan Green & Sons, Inc., United States. Received 08/24/1995.

PI 591471. *Festuca rubra* L. ssp. *rubra*

Cultivar. "SALEM". PVP 9500263.

PI 591472. *Festuca rubra* var. *commutata* Gaudin

Cultivar. "SOUTHPORT". PVP 9500264.

PI 591473. *Festuca longifolia* Thuill.
Cultivar. "WARWICK". PVP 9500265.

The following were developed by Pure Seed Testing, Inc., United States.
Received 08/24/1995.

PI 591474. *Poa trivialis* L.
Cultivar. "WINTERPLAY". PVP 9500266.

The following were developed by Bredemeyer Brothers, United States. Received
08/24/1995.

PI 591475. *Triticum aestivum* L., nom. cons.
Cultivar. "WINMASTER 135". PVP 9500267.

The following were developed by Jeff Ehlers, Nor-Cal Seed Company, P.O. Box
940, Woodland, California 95695, United States. Received 08/24/1995.

PI 591476. *Vigna unguiculata* (L.) Walp.
Cultivar. "KUNDE ZULU". PVP 9500268.

The following were developed by Dansk Planteformaedling A/S, Boelshot, Denmark
. Received 08/24/1995.

PI 591477. *Poa pratensis* L.
Cultivar. "PLATINI". PVP 9500269.

The following were developed by Turf Merchants, Inc., United States. Received
08/24/1995.

PI 591478. *Festuca arundinacea* Schreber
Cultivar. "MIRAGE". PVP 9500270.

The following were developed by Carl A. Griffey, Virginia Polytechnic
Institute & State University, Dept. of Crop, Soil, & Environmental Sciences,
334-A Smyth Hall, Blacksburg, Virginia 24061-0404, United States. Received
08/24/1995.

PI 591479. *Triticum aestivum* L., nom. cons.
Cultivar. Pureline. "JACKSON"; VA88-54-479. PVP 9500271. Pedigree -
Saluda / Coker 762. Awnletted soft red winter winter. High yielding,
moderately winter hardy, and mid-season maturity similar to Saluda.
Average plant height 96cm. Straw strength moderate. Satisfactory milling
and baking properties. Spikes tapering to strap and middense. Kernels
red, soft, midlong, and oval with narrow and middeep crease, rounded
cheeks, and midlong brush. Moderately resistant to powdery mildew
(*Blumeria graminis*). Moderately susceptible to leaf rust (*Puccinia
recondita*). Susceptible to race TNM of stem rust (*Puccinia graminis*).
Does not possess any known resistance to Hessian fly (*Mayetiola
destructor*) and is moderately susceptible wheat spindle streak virus.
Moderate level of tolerance to septoria leaf blotch (*Septoria tritici*)
and to glume blotch (*Stagonospora nodorum*).

The following were developed by Carl A. Griffey, Virginia Polytechnic
Institute & State University, Dept. of Crop, Soil, & Environmental Sciences,

334-A Smyth Hall, Blacksburg, Virginia 24061-0404, United States; A.M. Price, VPI & SU, Crop & Soil Environmental Sciences, Blacksburg, Virginia, United States; W.L. Sisson, VPI & SU, Crop & Soil Environmental Sciences, Blacksburg, Virginia, United States; D.E. Brann, VPI & SU, Crop & Soil Environmental Sciences, Blacksburg, Virginia, United States. Received 08/24/1995.

PI 591480. *Hordeum vulgare* L.

Cultivar. Pureline. "STARLING"; VA 85-44-226. CV-262; PVP 9500272. Pedigree - Derived from one of six populations. 1) CI 11550/4/Harrison/3/Cebada Capa/Wong//Awnleted Hudson/5/VA77-42-35, 2) CI 11550/4/Harrison/3/Cebada Capa/Wong//Awnleted Hudson/5/VA77-42-37, 3) CI 11550/Surry//Monroe, 4) CI 11550/Surry//VA77-12-39, 5) CI 11550/Surry//VA76-44-72, 6) CI 11550/5/Harrison/3/Cebada Capa/Wong/2/Awnleted Hudson/4/*3 C.I. 3515/6/Henry. Six-row, midseason, medium tall winter barley with compact spikes. Spikes slightly waxy, dense, parallel and frequently overlapping lateral kernels. Spikes usually awnless, but occasionally have short, semi-smooth awns on the central spikelets. At maturity, neck straight to gently curved and spikes nodding. Seed long, covered, white, semi-wrinkled with long-haired rachillas. Moderate level of adult-plant resistance to powdery mildew (*Blumeria graminis*) and leaf rust (*Puccinia hordei*). Resistance to net blotch (*Pyrenophora teres*), scald (*Rhynchosporium secalis*), spot blotch (*Cochliobolus sativus*), septoria leaf blotch (*Septoria passerinii*), and barley yellow dwarf. Moderately winterhardy and moderate straw strength. Excellent yield potential and fair grain volume weight.

The following were developed by Asgrow Seed Company, United States. Received 08/24/1995.

PI 591481. *Glycine max* (L.) Merr.

Cultivar. "A6711". PVP 9500273.

The following were donated by Paul Salon, USDA, NRCS, Big Flats Plant Materials Center, Box 360A, Corning, New York 14830, United States. Received 08/28/1995.

PI 591482. *Tripsacum dactyloides* (L.) L.

Breeding. 9051766. Pedigree - Artificially induced to the tetraploid level by the use of Amiprofos methyl, in tissue culture. Accession 904993, which was the starting material, was a selection from Manhattan Kansas Plant Materials Center, of clonal material of PI 483447, a gynomonoecious variant grown from seed collected in Ottawa County, Kansas. Leaf and inflorescence characteristics same as original germplasm 9049993. Leaf width medium, dark green leaves, semi-upright and normal gynomonoecious inflorescence. Has $2n=4X=72$ chromosomes, the tetraploid level. Test crosses with a known diploid resulted in triploid progeny indicating reproduces by sexual reproduction. Will be used in breeding work at the tetraploid level utilizing the gynomonoecious trait and to manipulate apomixis in gamagrass breeding programs. Potential area of adaptation northeastern, midatlantic and midwestern states. Grows on moderately well drained to excessively well drained soils. Can tolerate soils with seasonally high water table.

PI 591483. *Tripsacum dactyloides* (L.) L.

Breeding. 9051764. Collected in Maryland, United States. Roadside, Beltsville. Pedigree - A composite of 5 tetraploid accessions: 9038565, 9038566, 9038567, 9038568, 9038569 from Maryland. These 5 accessions selected from a collection of 450 collected in the Midwest and Midatlantic region of the U.S. Reproduces by apomixis. Leaves wide. Stems thick. Leaves light green. Growth habit upright. Flowers 3 weeks

later than the diploids and has monoecious inflorescence. For use as perennial forage crop in the Northeast. Adapted to Northeastern, midatlantic and midwestern states. Grows on moderately well drained to excessively well drained soils. Tolerates soils with seasonally high water table.

The following were developed by USDA, ARS, Soybean Germplasm Collection, 180 EASB, Urbana, Illinois 61801, United States; Illinois Agr. Exp. Sta., University of Illinois, Urbana, Illinois 61801, United States. Received 09/01/1995.

- PI 591484. *Glycine max* (L.) Merr.
Breeding. "L92-7229". Pedigree - C6 x PI 317.334B. Gene: rmd.
- PI 591485. *Glycine max* (L.) Merr.
Breeding. "L92-7259". Pedigree - L63-3117 e26 x PI 317.334B. Gene: e2 rmd.
- PI 591486. *Glycine max* (L.) Merr.
Breeding. "L82-2249". Pedigree - L70-4478 dt1 E1 t e2 Rps1 rxp x L71-920 e2 e3. Gene: dt1 e1 t e2 e3 Rps1 rxp.
- PI 591487. *Glycine max* (L.) Merr.
Breeding. "L91-8052". Pedigree - L6 Rps1 rxp6 x Soysota. Gene: dt1-? Rps1 rxp.
- PI 591488. *Glycine max* (L.) Merr.
Breeding. "L91-8060". Pedigree - L6 Rps1 rxp6 x Peking. Gene: dt1-? Rps1 rxp.
- PI 591489. *Glycine max* (L.) Merr.
Breeding. "L92-1166". Pedigree - C6 x PI 297.550, Urosajnaja. Gene: e4.
- PI 591490. *Glycine max* (L.) Merr.
Breeding. "L92-1195". Pedigree - C x ancestor of L94-1110. Gene: E5.
- PI 591491. *Glycine max* (L.) Merr.
Breeding. "L94-1110". Pedigree - L63-3117 e26 x L64-4830 (Harosoy6 x PI 80.837). Gene: e2 E5.
- PI 591492. *Glycine max* (L.) Merr.
Breeding. "L74-854". Pedigree - L69-4663 d1 d2 x L69-4659 G1 d1. Gene: d1.
- PI 591493. *Glycine max* (L.) Merr.
Breeding. "L76-1162". Pedigree - C x L69-4666 G1 d2. Gene: G1.
- PI 591494. *Glycine max* (L.) Merr.
Breeding. "L93-2748". Pedigree - L62-1027 cyt-G1 x L64-2545 G1 d1 d2. Gene: G1 d1 d2 cyt-G1.
- PI 591495. *Glycine max* (L.) Merr.
Breeding. "L93-2740". Pedigree - L69-4663 d1 d2 x L63-2346 y3. Gene: d1 d2 y3.
- PI 591496. *Glycine max* (L.) Merr.
Breeding. "L93-2677". Pedigree - L63-3117 e26 x PI 65.388. Gene: B1 e2.
- PI 591497. *Glycine max* (L.) Merr.
Breeding. "L81-5122". Pedigree - L70-4497 i t w16 x T136. Gene: i t-r w1
- PI 591498. *Glycine max* (L.) Merr.

- Breeding. "L72-1971". Pedigree - L67-3484 i r Rps1 rxp2 x (L65-1914 r Rps1 rxp4 x T16). Gene: R* Rps1 rxp.
- PI 591499. **Glycine max** (L.) Merr.
Breeding. "L72-1950". Pedigree - L67-3484 i r Rps1 rxp2 x (L65-1914 r Rps1 rxp4 x T16). Gene: i R* Rps1 rxp.
- PI 591500. **Glycine max** (L.) Merr.
Breeding. "L92-9511". Pedigree - L67-3483 k2 x L67-3479 k1. Gene: k1 k2.
- PI 591501. **Glycine max** (L.) Merr.
Breeding. "L92-9515". Pedigree - L67-3483 k2 x L67-3469 i. Gene: i k2.
- PI 591502. **Glycine max** (L.) Merr.
Breeding. "L94-1365". Pedigree - L67-3483 k2 x L83-930 i r t. Gene: i k2 r t.
- PI 591503. **Glycine max** (L.) Merr.
Breeding. "L90-7978". Pedigree - Wm6 x Jefferson. Gene: rmd.
- PI 591504. **Glycine max** (L.) Merr.
Breeding. "L87-0174". Pedigree - Wm6 x PI 88.788. Gene: Rpm2.
- PI 591505. **Glycine max** (L.) Merr.
Breeding. "L88-8470". Pedigree - Wm2 x Union, BC4 Wm with Rps1 from Mukden. Gene: Rps1.
- PI 591506. **Glycine max** (L.) Merr.
Breeding. "L93-3312". Pedigree - Wm6 x PI 103.091. Gene: Rps1-d.
- PI 591507. **Glycine max** (L.) Merr.
Breeding. "L89-1541". Pedigree - Wm6 x PI 82.312N. Gene: Rps3-b.
- PI 591508. **Glycine max** (L.) Merr.
Breeding. "L89-1550". Pedigree - Wm6 x PI 82.312N. Gene: e2 Rps3-b.
- PI 591509. **Glycine max** (L.) Merr.
Breeding. "L91-8347". Pedigree - Wm6 x PI 172.901. Gene: Rps3-b.
- PI 591510. **Glycine max** (L.) Merr.
Breeding. "L92-7857". Pedigree - Wm6 x PI 340.046. Gene: Rps3-c.
- PI 591511. **Glycine max** (L.) Merr.
Breeding. "L89-1581". Pedigree - Wm6 x Altona. Gene: Rps6.
- PI 591512. **Glycine max** (L.) Merr.
Breeding. "L93-3258". Pedigree - Wm6 x Harosoy. Gene: Rps7.
- PI 591513. **Glycine max** (L.) Merr.
Breeding. "L84-2112". Pedigree - Wm x (Will6 x Marshall). Gene: Rsv1-m.
- PI 591514. **Glycine max** (L.) Merr.
Breeding. "L84-2157". Pedigree - Wm x (Will6 x Marshall e2 Rsv1-m).
Gene: e2 Rsv1-m.
- PI 591515. **Glycine max** (L.) Merr.
Breeding. "L93-3327". Pedigree - Wm6 x Ogden. Gene: rsv1-t.
- PI 591516. **Glycine max** (L.) Merr.
Breeding. "L92-8580". Pedigree - Wm6 x PI 483.084, Suweon 97. Gene: Rsv2
- PI 591517. **Glycine max** (L.) Merr.
Breeding. "L92-7963". Pedigree - Wm6 x PI 86.972-1. Gene: rmd Rps3.

- PI 591518. *Glycine max* (L.) Merr.
Breeding. "L91-8915". Pedigree - L76-1988 Rps2 Rmd-c Rj2 x L82-2024 rmd
Ti-b. Gene: Rps2 rmd (rj2).
- PI 591519. *Glycine max* (L.) Merr.
Breeding. "L91-8765". Pedigree - L76-1988 Rps2 Rmd-c Rj2 x L82-2024 rmd
Ti-b. Gene: (rps2) rmd Rj2.
- PI 591520. *Glycine max* (L.) Merr.
Breeding. "L91-8839". Pedigree - L76-1988 Rps2 Rmd-c Rj2 x L82-2024 rmd
Ti-b. Gene: (rps2) Rmd-c Rj2.
- PI 591521. *Glycine max* (L.) Merr.
Breeding. "L82-1657". Pedigree - L75-6141 Rpm1 Rps1 x L76-1988 Rps2
Rmd-c Rj2. Gene: Rpm1 Rps1 Rps2 Rmd-c Rj2.
- PI 591522. *Glycine max* (L.) Merr.
Breeding. "L88-8153". Pedigree - Wm6 x Altona. Gene: e2.
- PI 591523. *Glycine max* (L.) Merr.
Breeding. "L89-1553". Pedigree - Wm6 x PI 82.312N. Gene: e2.
- PI 591524. *Glycine max* (L.) Merr.
Breeding. "L92-7647". Pedigree - Wm6 x L63-3117 (Clark6 x PI 86.024 e2.
Gene: e2.
- PI 591525. *Glycine max* (L.) Merr.
Breeding. "L92-7677". Pedigree - Wm 826 x L63-3117 (Clarke x PI 86.024
e2). Gene: e2 Rps1-k.
- PI 591526. *Glycine max* (L.) Merr.
Breeding. "L82-951". Pedigree - Will6 x Marshall Rsv1-m. Gene: Dt2
Rsv1-m.

The following were developed by USDA, ARS, Soybean Germplasm Collection, 180
EASB, Urbana, Illinois 61801, United States. Received 09/01/1995.

- PI 591527. *Glycine max* (L.) Merr.
Breeding. "L88-8629". Pedigree - Will6 x Marshall e2 Rsv1-m. Gene: Dt2
e2 Rsv1-m.

The following were developed by USDA, ARS, Soybean Germplasm Collection, 180
EASB, Urbana, Illinois 61801, United States; Illinois Agr. Exp. Sta.,
University of Illinois, Urbana, Illinois 61801, United States. Received
09/01/1995.

- PI 591528. *Glycine max* (L.) Merr.
Breeding. "L91-8520". Pedigree - Wm 826 x Columbia. Gene: Eu1-a Rps1-k.
- PI 591529. *Glycine max* (L.) Merr.
Breeding. "L93-3423". Pedigree - Wm 826 x Columbia. Gene: G1 Rps1-k.
- PI 591530. *Glycine max* (L.) Merr.
Breeding. "L93-3103". Pedigree - Wm6 x Ogden. Gene: G2.
- PI 591531. *Glycine max* (L.) Merr.
Breeding. "L89-2415". Pedigree - Wm6 x (Harosoy5 x D54-2437). Gene: I.
- PI 591532. *Glycine max* (L.) Merr.
Breeding. "L93-7333". Pedigree - L76-1994 I Rps2 Rmd-c Rj2 x L88-8440 r
Rsv2. Gene: I r Rsv2.

- PI 591533. *Glycine max* (L.) Merr.
Breeding. "L93-3539". Pedigree - L76-1994 I Rps2 Rmd-c Rj2 x L88-8440 r Rsv2. Gene: I r Rsv2 Rmd-c Rj2.
- PI 591534. *Glycine max* (L.) Merr.
Breeding. "L90-8047". Pedigree - Wm 826 x Wilson Five. Gene: le Rps1-k.
- PI 591535. *Glycine max* (L.) Merr.
Breeding. "L93-7290". Pedigree - Wm 826 x PI 417.458, Wase Natus. Gene: Rps1-k.
- PI 591536. *Glycine max* (L.) Merr.
Breeding. "L90-8003". Pedigree - Wm 826 x T293, Altona. Gene: spl Rps1-k
- PI 591537. *Glycine max* (L.) Merr.
Breeding. "L89-2621". Pedigree - Wm 826 x Chestnut. Gene: Sp1-an Rps1-k.
- PI 591538. *Glycine max* (L.) Merr.
Breeding. "L89-2634". Pedigree - Wm 826 x Chestnut. Gene: i Sp1-an Rps1-k.
- PI 591539. *Glycine max* (L.) Merr.
Breeding. "L91-8558". Pedigree - Kunitz(Wm 826 x PI 157.440, Kum Du) x L85-2196 (Wm6 x PI 229.324, Itachi). Gene: sun ti Rps1-k.
- PI 591540. *Glycine max* (L.) Merr.
Breeding. "L92-7600". Pedigree - Wm6 x Clark. Gene: W1.
- PI 591541. *Glycine max* (L.) Merr.
Breeding. "L74-102". Pedigree - [(H6 x T204 e3) x (H6 x PI 196.166 E1 T)] x [(H6 x PI 196.166 E1 T) x (H6 x Higan dt1)]. Gene: dt1 E1 T e3.
- PI 591542. *Glycine max* (L.) Merr.
Breeding. "L64-1067". Pedigree - (H6 x T117 Dt2) x (H6 x PI 86.024 Lf1). Gene: Dt2 Lf1.
- PI 591543. *Glycine max* (L.) Merr.
Breeding. "L64-1061". Pedigree - (H6 x T117 Dt2) x (H6 x T204 1n). Gene: Dt2 1n.
- PI 591544. *Glycine max* (L.) Merr.
Breeding. "L90-7656". Pedigree - H6 x PI 81.763. Gene: G1.
- PI 591545. *Glycine max* (L.) Merr.
Breeding. "L64-2511". Pedigree - H6 x Columbia. Gene: G1 d1 d2 E1.
- PI 591546. *Glycine max* (L.) Merr.
Breeding. "L90-4683". Pedigree - H6 x D54-2437. Gene: Rps2 Rmd-c (rj2).
- PI 591547. *Glycine max* (L.) Merr.
Breeding. "L90-4711". Pedigree - H6 x D54-2437. Gene: (rps2) Rmd-c Rj2.
- PI 591548. *Glycine max* (L.) Merr.
Breeding. "L93-2589". Pedigree - H6 x L67-3243 e2 s-t from (C6 x PI 86.024 e2) x (C6 x Chief s-t). Gene: s-t.

The following were collected by K.L. Mehra, International Board for Plant Genetic Resources, Rome, Italy; W. Mahle, Mount Makulu Research Station, Chilanga, Zambia; G. Mulega, Mount Makulu Research Station, Chilanga, Zambia. Received 11/1981.

- PI 591549. *Hibiscus sabdariffa* L.
Wild. Collected 05/17/1981 in Zambia. Latitude 15 deg. S. Longitude 22 deg. 4' E. Sikongo, Kalabo District, Western Province. Selected from PI 500725.
- PI 591550. *Hibiscus mechowii* Garcke
Wild. Collected 05/17/1981 in Zambia. Latitude 15 deg. S. Longitude 22 deg. 4' E. Sikongo, Kalabo District, Western Province. Selected from PI 500725.
- PI 591551. *Hibiscus sabdariffa* L.
Cultivated. Collected 05/17/1981 in Zambia. Latitude 14 deg. 56' S. Longitude 22 deg. 39' E. Chingenge, Kalabo District, Western Province. Selected from PI 500728.
- PI 591552. *Hibiscus acetosella* Welw. ex Hiern
Cultivated. Collected 11/1981 in Zambia. Latitude 14 deg. 56' S. Longitude 22 deg. 39' E. Chingenge, Kalabo District, Western Province. Selected from PI 500728.

The following were developed by Herbert W. Ohm, Purdue University, Agronomy Department, 1150 Lilly Hall, West Lafayette, Indiana 47907-1150, United States. Received 08/29/1995.

- PI 591553. *Triticum aestivum* L., nom. cons.
Breeding. Pureline. PR143. Pedigree - T. timopheevi/3*Marquis//cms Monon/Primepi. Early heading soft red winter R-line developed in a Monon background with *Triticum timopheevi* cytoplasm and a possible combination of restorer genes from T. timopheevi and Primepi. Resistant to powdery mildew and susceptible to leaf rust in the adult-plant stage. Awnletted, about 105cm tall, and 3 days later than Monon in heading. Selected for ability to restore male fertility in F1 hybrids with cms Monon, cms Arthur, and cms Redcoat.
- PI 591554. *Triticum aestivum* L., nom. cons.
Breeding. Pureline. PR189. Pedigree - cms Abe*4/ND R5. Soft red winter R-line developed in an Abe background with *Triticum timopheevi* cytoplasm and restorer genes from the North Dakota R5 restorer line, which had three genes for restoration of male fertility. Awnless and similar to Abe in heading date. Moderately susceptible to powdery mildew in the adult-plant stage. Selected for ability to restore male fertility in F1 hybrids with cms Monon and cms Redcoat.
- PI 591555. *Triticum aestivum* L., nom. cons.
Breeding. Pureline. PR267. Pedigree - cms Arthur*3/TBR26-6-4. Soft red winter R-line developed in a cms Arthur background with *Triticum timopheevi* cytoplasm and restorer gene(s) from TBR26-6-4. The TBR (Texas bulk restorer) line has an unknown source of male fertility restorer genes. Awnletted and 1 day later than Monon and 2 days earlier than Abe in heading. Resistant to powdery mildew. Selected for ability to restore male fertility in F1 hybrids with cms Monon and cms Redcoat.
- PI 591556. *Triticum aestivum* L., nom. cons.
Breeding. Pureline. PR270. Pedigree - cms Arthur*3/TBR76-1-3. Soft red winter R-line developed in a cms Arthur background with cytoplasm from *Triticum timopheevi* and male fertility restorer gene(s) from TBR76-1-3. The TBR (Texas bulk restorer) R-line has restorer genes of unknown source. Awnletted and about 1 day later in heading than Arthur. Moderately resistant to powdery mildew in the adult plant stage. Selected for ability to restore male fertility in F1 hybrids from crosses with cms Monon and cms Redcoat.
- PI 591557. *Triticum aestivum* L., nom. cons.

Breeding. Pureline. PR302. Pedigree - cms Arthur// (PR1-1=TBR24-6/Primepi). Soft red winter R-line with cytoplasm from *Triticum timopheevi* and a possible combination of genes for male fertility restoration from TBR24-6 and Primepi. Awnletted and similar to Arthur in date of heading. Moderately resistant to powdery mildew in the adult plant stage. Selected for ability to restore male fertility of F1 hybrids in crosses with cms Monon and cms Redcoat.

The following were donated by C. E. Townsend, USDA, ARS, Crops Research Laboratory, 1701 Center Avenue, Fort Collins, Colorado 80526, United States. Received 1980.

PI 591558. *Astragalus cicer* L.

Cultivar. "MONARCH". CV-20. Pedigree - 40-clone synthetic. Improved seed emergence. Area of adaptation similar to Lutana which includes high elevation meadows, irrigated pastures at lower elevations, and dryland areas with an annual precipitation of 40cm or more. Forage yields equal to or greater than Lutana. Average plant spread from rhizomes for the component progenies under spaced conditions range from 92 to 133% of that of Lutana with a mean of 117%. Forage quality as measured by percentage crude protein, in vitro dry matter digestibility, and cell wall constituents similar to more commonly grown forage legumes. No case of bloat reported. Maturity and seed yields similar to those of Lutana.

The following were developed by Shamrock Seed Company, United States. Received 09/13/1995.

PI 591559. *Allium cepa* L.

Cultivar. SSC 8367. PVP 9500275.

The following were developed by HybriTech Seed International, Inc., United States. Received 09/13/1995.

PI 591560. *Triticum aestivum* L., nom. cons.

Cultivar. "COLBY 94". PVP 9500276.

The following were developed by Asgrow Seed Company, United States. Received 09/13/1995.

PI 591561. *Glycine max* (L.) Merr.

Cultivar. "A3313". PVP 9500277.

PI 591562. *Glycine max* (L.) Merr.

Cultivar. "A4341". PVP 9500278.

The following were developed by Waller Flowerseed Company, United States. Received 09/13/1995.

PI 591563. *Catharanthus roseus* (L.) G. Don

Cultivar. "PACIFICA LILAC". PVP 9500280.

The following were developed by G & P Seed Company, Inc., United States. Received 09/13/1995.

PI 591564. *Gossypium hirsutum* L.

Cultivar. "G & P 1068". PVP 9500282.

The following were developed by Asgrow Seed Company, United States. Received 09/13/1995.

PI 591565. *Glycine max* (L.) Merr.
Cultivar. "A5545". PVP 9500286.

PI 591566. *Glycine max* (L.) Merr.
Cultivar. "A5843". PVP 9500287.

The following were developed by Ziller Seed Company, Inc., United States. Received 09/13/1995.

PI 591567. *Glycine max* (L.) Merr.
Cultivar. "BT 2911". PVP 9500289.

The following were developed by Sakata Seed Corporation, Japan. Received 09/13/1995.

PI 591568. *Brassica oleracea* L.
Cultivar. "94-96". PVP 9500290.

PI 591569. *Brassica oleracea* L.
Cultivar. "SBC 4406". PVP 9500291.

PI 591570. *Brassica oleracea* L.
Cultivar. "SBC-4407". PVP 9500292.

PI 591571. *Brassica oleracea* L.
Cultivar. "SC1-305". PVP 9500293.

PI 591572. *Brassica oleracea* L.
Cultivar. "TRIATHLON". PVP 9500294.

The following were collected by William J. Kenworthy, University of Maryland, Department of Agronomy, H.J. Patterson Hall, College Park, Maryland 20742, United States; A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; J. Grace, CSIRO, Division of Plant Industry, GPO Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; M.J. Doyle, CSIRO, Canberra, Austr. Capital Terr., Australia. Donated by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Received 09/14/1995.

PI 591573. *Glycine canescens* F. J. Herm.
Wild. IL 0948; G 2192. Collected 08/18/1985 in Queensland, Australia.
Latitude 26 deg. 25' S. Longitude 146 deg. 53' E. Elevation 400 m.
Angellala Creek, 65km east of Charleville. Chromosome number I.

The following were collected by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; J. Grace, CSIRO, Division of Plant Industry, GPO Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; J. Grant, CSIRO, Canberra, Austr. Capital Terr., Australia. Donated by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Received 09/14/1995.

PI 591574. *Glycine canescens* F. J. Herm.
Wild. IL 0949; G 2351. Collected 10/21/1985 in Victoria, Australia.
Latitude 34 deg. 45' S. Longitude 142 deg. 20' E. Elevation 10 m. 400m
north of Lake Hattah National Park Office, "Glycine enclosure".
Chromosome number I.

The following were collected by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; J. Grace, CSIRO, Division of Plant Industry, GPO Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; Theodore Hymowitz, University Illinois, Department of Crop Sciences, Urbana, Illinois 61801, United States. Donated by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Received 09/14/1995.

PI 591575. *Glycine canescens* F. J. Herm.
Wild. IL 1284; G 2961. Collected 09/30/1993 in Western Australia, Australia. Latitude 25 deg. 12' S. Longitude 119 deg. 20' E. Elevation 520 m. Gascoyne River, Middle Branch, 65.6km south of Kumarina. Chromosome number I.

The following were collected by William J. Kenworthy, University of Maryland, Department of Agronomy, H.J. Patterson Hall, College Park, Maryland 20742, United States; A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; J. Grace, CSIRO, Division of Plant Industry, GPO Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; M.J. Doyle, CSIRO, Canberra, Austr. Capital Terr., Australia. Donated by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Received 09/13/1995.

PI 591576. *Glycine clandestina* Wendl.
Wild. IL 0955; G 2142. Collected 08/10/1985 in Queensland, Australia. Latitude 25 deg. 41' S. Longitude 149 deg. 13' E. Elevation 300 m. Dawson River, 73.6km west of Taroom. Chromosome number I.

PI 591577. *Glycine clandestina* Wendl.
Wild. IL 0963; G 2150. Collected 08/12/1985 in Queensland, Australia. Latitude 24 deg. 38' S. Longitude 148 deg. 20' E. Elevation 213 m. Sandy Creek, 40km west southwest of Rolleston. Chromosome number I.

PI 591578. *Glycine clandestina* Wendl.
Wild. IL 0965; G 2152. Collected 08/15/1985 in Queensland, Australia. Latitude 23 deg. 39' S. Longitude 147 deg. 17' E. Elevation 350 m. Medway Creek, 95.6km west of Emerald. Chromosome number 040.

PI 591579. *Glycine clandestina* Wendl.
Wild. IL 0969; G 2156. Collected 08/18/1985 in Queensland, Australia. Latitude 26 deg. 27' S. Longitude 147 deg. 33' E. Elevation 440 m. Mungallala Creek, 42.9km east of Morven. Chromosome number I.

PI 591580. *Glycine clandestina* Wendl.
Wild. IL 0970; G 2157. Collected 08/18/1985 in Queensland, Australia. Latitude 26 deg. 29' S. Longitude 147 deg. 59' E. Elevation 340 m. Maranoa River, 0.5km from Mitchell. Chromosome number I.

PI 591581. *Glycine clandestina* Wendl.
Wild. IL 0971; G 2158. Collected 08/18/1985 in Queensland, Australia. Latitude 26 deg. 26' S. Longitude 148 deg. 47' E. Elevation 350 m. Chromosome number I.

PI 591582. *Glycine clandestina* Wendl.
Wild. IL 0972; G 2159. Collected 08/19/1985 in Queensland, Australia. Latitude 25 deg. 39' S. Longitude 148 deg. 45' E. Elevation 290 m. Bungewoorai Creek, 8km south of Roma. Chromosome number I.

PI 591583. *Glycine clandestina* Wendl.
Wild. IL 0977; G 2164. Collected 08/20/1985 in Queensland, Australia. Latitude 26 deg. 50' S. Longitude 151 deg. 45' E. Elevation 567 m.

Middle Creek, 3.2km west of Maidenwell. Chromosome number I.

PI 591584. *Glycine clandestina* Wendl.

Wild. IL 0983; G 2170. Collected in Queensland, Australia. Latitude 26 deg. 9' S. Longitude 152 deg. 31' E. Elevation 80 m. Caves Walk, Brootar Forest Drive, 8.3km from entrance. Chromosome number I.

The following were collected by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; J. Grace, CSIRO, Division of Plant Industry, GPO Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Donated by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Received 09/13/1995.

PI 591585. *Glycine clandestina* Wendl.

Wild. IL 0986; G 2173. Collected 08/23/1985 in Queensland, Australia. Latitude 27 deg. 50' S. Longitude 153 deg. 13' E. Elevation 500 m. Mount Tambourine, 14.7km west of Oxenford. Chromosome number I.

The following were collected by William J. Kenworthy, University of Maryland, Department of Agronomy, H.J. Patterson Hall, College Park, Maryland 20742, United States; A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; J. Grace, CSIRO, Division of Plant Industry, GPO Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; M.J. Doyle, CSIRO, Canberra, Austr. Capital Terr., Australia. Donated by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Received 09/13/1995.

PI 591586. *Glycine clandestina* Wendl.

Wild. IL 0990; G 2350. Collected 08/11/1985 in Queensland, Australia. Latitude 25 deg. 23' S. Longitude 148 deg. 38' E. Elevation 500 m. Dawson River, second crossing, 56.4km north of Injune. Chromosome number I.

The following were collected by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; J. Grace, CSIRO, Division of Plant Industry, GPO Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; J. Grant, CSIRO, Canberra, Austr. Capital Terr., Australia. Donated by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Received 09/13/1995.

PI 591587. *Glycine clandestina* Wendl.

Wild. IL 1002; G 2369. Collected 10/26/1985 in South Australia, Australia. Latitude 30 deg. 30' S. Longitude 139 deg. 15' E. Elevation 250 m. Weetootla Gorge, 9km northwest of Balcanoona headquarters. Chromosome number I.

PI 591588. *Glycine clandestina* Wendl.

Wild. IL 1004; G 2371. Collected 10/27/1985 in South Australia, Australia. Latitude 30 deg. 20' S. Longitude 139 deg. 20' E. Elevation 450 m. Conservation Hill, Arkaroola Village. Chromosome number I.

The following were collected by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; J. Grace, CSIRO, Division of Plant Industry, GPO Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; J. Grant, CSIRO, Canberra, Austr. Capital Terr., Australia. Developed by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Received 09/13/1995.

PI 591589. *Glycine clandestina* Wendl.

Wild. IL 1005; G 2372. Collected 10/27/1985 in South Australia, Australia. Latitude 30 deg. 34' S. Longitude 139 deg. 11' E. Elevation 200 m. Italowie Gorge, 15.5km from Balcanoona Headquarters. Growing in creek. Chromosome number I.

The following were collected by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; J. Grace, CSIRO, Division of Plant Industry, GPO Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; J. Grant, CSIRO, Canberra, Austr. Capital Terr., Australia. Donated by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Received 09/13/1995.

PI 591590. *Glycine clandestina* Wendl.

Wild. IL 1006; G 2373. Collected 10/27/1985 in South Australia, Australia. Latitude 30 deg. 33' S. Longitude 138 deg. 46' E. Elevation 400 m. Camel Gap, 8.2km east of Depot Springs Homestead. Chromosome number I.

PI 591591. *Glycine clandestina* Wendl.

Wild. IL 1017; G 2384. Collected 10/29/1985 in South Australia, Australia. Latitude 33 deg. 42' S. Longitude 136 deg. 32' E. Elevation 190 m. Poonana Creek, 3.3km east of Cleve. Chromosome number I.

PI 591592. *Glycine clandestina* Wendl.

Wild. IL 1018; G 2385. Collected 10/29/1985 in South Australia, Australia. Latitude 33 deg. 26' S. Longitude 136 deg. 15' E. Elevation 200 m. Carappee Hill, 7.2km east of Darke Peake. Chromosome number I.

PI 591593. *Glycine clandestina* Wendl.

Wild. IL 1019; G 2386. Collected 10/30/1985 in South Australia, Australia. Latitude 32 deg. 26' S. Longitude 136 deg. 3' E. Elevation 180 m. Mount Ive Homestead, growing on east side of Mount Ive. Chromosome number I.

PI 591594. *Glycine clandestina* Wendl.

Wild. IL 1027; G 2394. Collected 11/02/1985 in South Australia, Australia. Latitude 35 deg. 8' S. Longitude 139 deg. 14' E. Elevation 80 m. Kinchina Gorge, 15km west of Murry Bridge, Schuberts Farm Museum. Chromosome number I.

PI 591595. *Glycine clandestina* Wendl.

Wild. IL 1028; G 2395. Collected 11/02/1985 in South Australia, Australia. Latitude 35 deg. 5' S. Longitude 139 deg. 3' E. Elevation 230 m. Bremer Scarp, Disher Hill, 7.6km north of Collington. Chromosome number I.

The following were collected by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; J. Grace, CSIRO, Division of Plant Industry, GPO Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; Theodore Hymowitz, University Illinois, Department of Crop Sciences, Urbana, Illinois 61801, United States. Donated by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Received 09/13/1995.

PI 591596. *Glycine clandestina* Wendl.

Wild. IL 1254; G 2940. Collected 09/21/1993 in Western Australia, Australia. Latitude 27 deg. 53' S. Longitude 114 deg. 38' E. Elevation 220 m. Warribanna Chimney, 5.2km from Kalbarri Road. Chromosome number I.

The following were collected by William J. Kenworthy, University of Maryland, Department of Agronomy, H.J. Patterson Hall, College Park, Maryland 20742, United States; A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; J. Grace, CSIRO, Division of Plant Industry, GPO Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; M.J. Doyle, CSIRO, Canberra, Austr. Capital Terr., Australia . Donated by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Received 09/13/1995.

- PI 591597. *Glycine latifolia* (Benth.) C. Newell & Hymowitz
Wild. IL 1051; G 2118. Collected 08/13/1985 in Queensland, Australia.
Latitude 23 deg. 58' S. Longitude 148 deg. 7' E. Elevation 250 m.
"Minerva", 17km north of Springsure. Chromosome number I.
- PI 591598. *Glycine tabacina* (Labill.) Benth.
Wild. IL 1081; G 2181. Collected 08/10/1985 in Queensland, Australia.
Latitude 25 deg. 50' S. Longitude 149 deg. 49' E. Elevation 400 m. Mount
Hutton, 125km west of Taroom. Chromosome number I.
- PI 591599. *Glycine tabacina* (Labill.) Benth.
Wild. IL 1094; G 2197. Collected 08/10/1985 in Queensland, Australia.
Latitude 25 deg. 40' S. Longitude 149 deg. 27' E. Elevation 250 m.
Broken Creek, 37.2km west of Taroom. Chromosome number I.
- PI 591600. *Glycine tabacina* (Labill.) Benth.
Wild. IL 1097; G 2200. Collected 08/11/1985 in Queensland, Australia.
Latitude 24 deg. 59' S. Longitude 148 deg. 23' E. Elevation 280 m.
Ingelara, 13.6km from Wyesby towards the Gorge. Chromosome number I.
- PI 591601. *Glycine tabacina* (Labill.) Benth.
Wild. IL 1104; G 2207. Collected 08/14/1985 in Queensland, Australia.
Latitude 23 deg. 36' S. Longitude 148 deg. 32' E. Elevation 140 m. Comet
River Bridge, 2km west of Comet. Chromosome number I.
- PI 591602. *Glycine tabacina* (Labill.) Benth.
Wild. IL 1191; G 2740. Collected 08/20/1985 in Queensland, Australia.
Latitude 26 deg. 36' S. Longitude 151 deg. 46' E. Elevation 457 m.
Stuart River, 15km southwest of Kingaroy. Chromosome number I.

The following were collected by Theodore Hymowitz, University Illinois, Department of Crop Sciences, Urbana, Illinois 61801, United States. Received 09/13/1995.

- PI 591603. *Glycine tomentella* Hayata
Wild. IL 0873. Collected 04/05/1988 in Taiwan. On sandy ridge, Paisha.
Chromosome number 080.

The following were donated by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Received 09/13/1995.

- PI 591604. *Glycine tomentella* Hayata
Wild. IL 0938; G 1821. Collected 08/04/1983 in Queensland, Australia.
Latitude 20 deg. 31' S. Longitude 148 deg. 37' E. Elevation 200 m. In
Plantation Creek, 11km from Bloomsbury toward Proserpine. Chromosome
number 040.
- PI 591605. *Glycine tomentella* Hayata
Wild. IL 0939; G 1929. Collected 07/23/1984 in Northern Territory,
Australia. Latitude 14 deg. 5' S. Longitude 131 deg. 59' E. Elevation

250 m. Fergusson River, 56km north of Katherine bridge. Chromosome number 040.

The following were collected by P.G. Harrison, Department of Primary Production, Darwin, Northern Territory, Australia. Donated by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Received 09/13/1995.

PI 591606. *Glycine tomentella* Hayata

Wild. IL 0944; G 1957. Collected 07/01/1984 in Northern Territory, Australia. Latitude 13 deg. 47' S. Longitude 131 deg. 17' E. Elevation 50 m. Douglas Daly Experimental Station, Douglas River. Chromosome number I.

The following were collected by I.B. Staples, Department of Primary Industry, Marceba, Queensland, Australia. Donated by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Received 09/13/1995.

PI 591607. *Glycine tomentella* Hayata

Wild. IL 1229; G 1394. Collected 05/21/1964 in Queensland, Australia. Latitude 16 deg. 42' S. Longitude 145 deg. 37' E. Elevation 40 m. 3.4km northwest of Ellis beach, on Captain Cook Highway. Chromosome number I.

PI 591608. *Glycine tomentella* Hayata

Wild. IL 1230; G 1403. Collected 05/07/1975 in Queensland, Australia. Latitude 16 deg. 45' S. Longitude 145 deg. 20' E. Elevation 380 m. Yalkula, DPI experimental plot, Southlodge station. Chromosome number 040.

The following were collected by G.P. Wilson, Grafton Experiment Station, Grafton, New South Wales, Australia. Donated by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Received 09/13/1995.

PI 591609. *Glycine tomentella* Hayata

Wild. IL 1237; G 1469. Collected 05/01/1982 in Queensland, Australia. Latitude 17 deg. 29' S. Longitude 140 deg. 50' E. Elevation 5 m. Karumba, growing on sand dune. Chromosome number I.

The following were collected by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; J. Grace, CSIRO, Division of Plant Industry, GPO Box 1600, Canberra, Austr. Capital Terr. 2601, Australia; Theodore Hymowitz, University Illinois, Department of Crop Sciences, Urbana, Illinois 61801, United States. Donated by A.D.H. Brown, CSIRO, Division of Plant Industry, G.P.O. Box 1600, Canberra, Austr. Capital Terr. 2601, Australia. Received 09/13/1995.

PI 591610. *Glycine tomentella* Hayata

Wild. IL 1264; G 2954. Collected 09/27/1993 in Western Australia, Australia. Latitude 17 deg. 57' S. Longitude 122 deg. 14' E. Elevation 10 m. Frederick Street, Broome, drain along street near airport outside high school. Chromosome number 040.

The following were developed by Herbert W. Ohm, Purdue University, Agronomy Department, 1150 Lilly Hall, West Lafayette, Indiana 47907-1150, United States. Received 08/30/1995.

PI 591611. *Avena sativa* L.

Cultivar. Pureline. "CLASSIC"; P88122E1-4-5-1-X-5. Pedigree - Ogle/INO9201/4/Noble/Accession 1575/3/Jaycee//Clintford/IowaX434-II. Maturity midseason. Carries resistance to *Puccinia coronata* and barley yellow dwarf viruses. Juvenile growth habit erect. Upper culm node hairless. Mature stem color yellow. Leaves at heading dark green, flag leaf erect, leaf margins glabrous, ligules present, and leaf sheath hairless. Panicles equilateral, lower whorl of branches attached at first node. Rachis erect and second floret rachilla segment hairless. Spikelets separate by abscission and florets separate by disarticulation. Glumes and lemma yellow at maturity. Awns infrequent, nontwisted, and up to 17mm long. Glumes nonfluorescent under ultraviolet light, and basal hairs absent.

The following were developed by Don F. Salmon, Alberta Agriculture, Field Crops Section, 5718-56 Avenue, Lacombe, Alberta T0C 1S0, Canada; W. Stewart, Alberta Agriculture, Bag Service #47, 5718-56 Avenue, Lacombe, Alberta T0C 1S0, Canada; Jim Helm, Alberta Agriculture, Field Crop Development Centre, 5030 50 Street, Lacombe, Alberta T4L 1W8, Canada; Manuel Cortez, Alberta Agriculture, Field Crop Development Centre, 5030-50 Street, Lacombe, Alberta T4L 1W8, Canada; Patricia E. Jedel, Alberta Agriculture, Field Crop Development Centre, 5050-50 Street, Lacombe, Alberta T4L 1W8, Canada. Received 08/31/1995.

PI 591612. *Hordeum vulgare* L. ssp. *vulgare*

Cultivar. Pureline. "FALCON"; HB 501. CV-253; PVP 9500315. Pedigree - 11012.2/Tern//Tulelake. Six-row, hulless feed type. Semidwarf, smooth awned, and yellow aleurone. Flag leaf dark green, medium wide, short, and semi-erect. Spike moderately dense, medium long, and of nodding attitude. Kernel medium wide and long. Rachilla long with long hairs. Maturity medium. Best adapted to central Alberta black soils. Yields 17% more than Condor, a two-row hulless cultivar. High digestible energy and protein for pigs. Resistant to lodging and scald (*Rhynchosporium secalis*).

PI 591613. *Hordeum vulgare* L. ssp. *vulgare*

Cultivar. Pureline. "TUKWA"; SD 503. CV-254. Pedigree - I74161/Hiproly. Six-row, semi-dwarf, feed type. Awns smooth, yellow aleurone. Flag leaf narrow, short, upright with white-auricles, and waxy sheath. Spike medium dense, short, and of semi-erect attitude. Kernel medium wide and medium long. Rachilla medium long with long hairs. Maturity medium. Best adapted to central Alberta black soils. Yields 6% more than the semi-dwarf check Duke and is 3 days earlier. Moderately resistant to scald (*Rhynchosporium secalis*), the surface borne smuts (*Ustilago hordei*) and IL Nigra Tapke.

The following were developed by Zeneca Ltd., United States. Received 09/18/1995.

PI 591614. *Zea mays* L. ssp. *mays*

Cultivar. "ZS1022". PVP 9500295.

PI 591615. *Zea mays* L. ssp. *mays*

Cultivar. "ZS0541". PVP 9500296.

PI 591616. *Zea mays* L. ssp. *mays*

Cultivar. "ZS1202". PVP 9500297.

The following were developed by Dolores W. Mornhinweg, USDA, ARS, Plant Science Research Laboratory, 1301 N. Western Street, Stillwater, Oklahoma 74075, United States. Received 09/29/1995.

PI 591617. *Hordeum vulgare* L. ssp. *vulgare*

Breeding. STARS-9577B. Pedigree - Selection from CI 4165. Six-row spring barley with average maturity and plant height. Stands well under low input conditions but will lodge under high inputs of nitrogen and water. Some favorable malting characteristics. Resistant to RWA, *Diuraphis noxia*, both as a seedling in greenhouse and in the field under constant RWA infestation. Mode of resistance is tolerance with a damage rating of 3 on Webster's scale of 1-9. Multiple gene control resistance - two dominant genes with recessive epistasis. Inheritance differs from STARS-9301B.

The following were developed by Zeneca Ltd., United States. Received 09/18/1995.

PI 591618. *Zea mays* L. ssp. *mays*

Cultivar. "ZS1284". PVP 9500298.

PI 591619. *Zea mays* L. ssp. *mays*

Cultivar. "ZS1791". PVP 9500299.

PI 591620. *Zea mays* L. ssp. *mays*

Cultivar. "ZS1679". PVP 9500300.

PI 591621. *Zea mays* L. ssp. *mays*

Cultivar. "ZS1783". PVP 9500301.

The following were developed by Goertzen Seed Research, United States. Received 09/18/1995.

PI 591622. *Triticum aestivum* L., nom. cons.

Cultivar. "G1878". PVP 9500304.

The following were developed by AgriPro Biosciences Inc., United States. Received 09/18/1995.

PI 591623. *Triticum aestivum* L., nom. cons.

Cultivar. "NORLANDER". PVP 9500305.

PI 591624. *Triticum aestivum* L., nom. cons.

Cultivar. "ROWDY". PVP 9500306.

PI 591625. *Triticum aestivum* L., nom. cons.

Cultivar. "CORONADO". PVP 9500307.

PI 591626. *Triticum aestivum* L., nom. cons.

Cultivar. "ELKHART". PVP 9500308.

PI 591627. *Triticum aestivum* L., nom. cons.

Cultivar. "SHILOH". PVP 9500310.

PI 591628. *Triticum aestivum* L., nom. cons.

Cultivar. "HAMER". PVP 9500311.

PI 591629. *Triticum aestivum* L., nom. cons.

Cultivar. "LARS". PVP 9500312.

The following were developed by Asgrow Seed Company, United States. Received 09/18/1995.

PI 591630. *Glycine max* (L.) Merr.

Cultivar. "A1923". PVP 9500313.

The following were developed by University of Rhode Island, Rhode Island Agr. Exp. Sta., Rhode Island, United States. Received 1978.

PI 591631. *Festuca rubra* var. *commutata* Gaudin
Cultivar. "JAMESTOWN". PVP 7200085.

The following were developed by Oklahoma Agr. Exp. Sta., Oklahoma, United States. Received 1971.

PI 591632. *Eragrostis curvula* (Schrader) Nees
Cultivar. "MORPA". CV-20; PVP 7200119.

The following were developed by Texas Agric. Exp. Station, Texas, United States. Received 1971.

PI 591633. *Eragrostis curvula* (Schrader) Nees
Cultivar. "RENNER". CV-67; PVP 7100071.

The following were developed by Turf-Seed, Inc., New Jersey, United States. Received 1977.

PI 591634. *Lolium perenne* L.
Cultivar. "OMEGA". CV-57; PVP 7600028.

The following were developed by Pennsylvania State University, Pennsylvania Agr. Exp. Sta., Pennsylvania, United States. Received 1977.

PI 591635. *Lolium perenne* L.
Cultivar. "PENNFINE". CV-26; PVP 7200019.

The following were developed by Rutgers University, New Jersey Agr. Exp. Sta., New Jersey, United States. Received 1977.

PI 591636. *Festuca rubra* L.
Cultivar. "FORTRESS". CV-11; PVP 7500036.

The following were developed by C. R. Funk, Rutgers University, Cook College, Dept. of Soils and Crops, New Brunswick, New Jersey 08903, United States; A.W. Jacklin, Jacklin Seed Company, West 5300 Riverbend Avenue, Post Falls, Idaho 83854-9499, United States; J.H. Thorne; R.E. Engel; W.K. Dickson, New Jersey Agr. Exp. Sta., Cook College, Rutgers University, Plant Science Department, New Brunswick, New Jersey 08903, United States. Donated by Rutgers University, New Jersey Agr. Exp. Sta., New Jersey, United States. Received 1977.

PI 591637. *Poa pratensis* L.
Cultivar. "GLADE"; Plant Patent 3151; NJE P-29. CV-12; Plant Patent 3151 . Pedigree - Selected from an old lawn in Albany, NY in spring 1963. Very leafy, turf-type, moderate dark green color, medium- fine texture and moderate slow rate of vertical growth. Rather large seed and good seedling vigor. Persistent, good density and vigor in New Jersey. Excellent resistance to leaf rust and stripe smut. Good resistance to most races of powdery mildew. Moderate resistance to leaf spot and crown rot disease. Adapted to regions where Kentucky bluegrass is grown.

The following were developed by Rutgers University, New Jersey Agr. Exp. Sta., New Jersey, United States. Received 1977.

PI 591638. *Festuca rubra* var. *commutata* Gaudin
Cultivar. "BANNER". CV-10; PVP 7500043.

The following were developed by R.H. Hurley, Lofts Seed Inc., P.O. Box 146, Bound Brook, New Jersey 08805, United States; H. Ghijsen. Donated by Loft's Great Western Seed Company, Inc., 810 S.E. Jackson Street, P.O. Box 387, Albany, Oregon 97321-0112, United States. Received 1971.

PI 591639. *Poa pratensis* L.
Cultivar. "BARON"; Plant Patent 3186. CV-20; Plant Patent 3186; PVP 7200117. Collected in Gelderland, Netherlands. Pedigree - Clonal selection from a meadow in eastern Holland. Dense, medium texture, dark green, persistent, winterhardy turf. Semi-dwarf. Tolerates close cutting, provides good wear tolerance and competitive against *Poa annua* invasion. Excellent seedling vigor, fast seed germination and establishment. Relatively large seed and excellent yield. Good resistance to *Fusarium* blight, stem rust and leaf rust. Moderately resistant to powdery mildew and *Helminthosporium* leaf spot. Adapted to regions where cool season grasses are suited.

The following were donated by S. J. Baluch, FFR Cooperative, 4112 East State Road 225, West Lafayette, Indiana 47906, United States. Received 1980.

PI 591640. *Phleum pratense* L.
Cultivar. "MOHAWK"; LOT NUMBER TS 38-50-. CV-63; PVP 8000018.

The following were developed by International Seeds Inc., P.O. Box 168, Halsey, Oregon 97348, United States. Donated by G. Pepin, International Seeds, Inc., P. O. Box 168, Halsey, Oregon 97348, United States. Received 1981.

PI 591641. *Lolium perenne* L.
Cultivar. "DERBY"; LOT M12-0-43 (OREGON). CV-77; PVP 7500009.

The following were collected by Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591642. *Trifolium affine* C. Presl
Wild. 93-113; 92 13 42a. Collected 11/29/1993 in Bulgaria. Latitude 41 deg. 52' N. Longitude 26 deg. 16' E. Elevation 250 m. 1 km east of Levka in Tundza. Hilly region.

The following were collected by Ken H. Quesenberry, University of Florida, Department of Agronomy, 304 Newell Hall, Gainesville, Florida 32611-0500, United States; Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States; Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Siyka Angelova, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Datcho P. Shamov, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United

States. Received 09/26/1995.

- PI 591643. *Trifolium angustifolium* L.
Wild. 93-12. Collected 08/01/1993 in Bulgaria. Latitude 42 deg. 3' N.
Longitude 24 deg. 15' E. Elevation 550 m. 5km north of Brazigovo. Sandy
clay loam-clay loam, hilly, mixed grasses. Frequent.
- PI 591644. *Trifolium angustifolium* L.
Wild. 93-60. Collected 08/05/1993 in Bulgaria. Latitude 41 deg. 35' 11''
N. Longitude 23 deg. 41' 39'' E. Elevation 840 m. 5km northwest of Goce
Delchev on road to Pirin. Sandy loam--loam. Hillside along road in dry
grasses. Rare.
- PI 591645. *Trifolium arvense* L.
Wild. 93-42. Collected 08/04/1993 in Bulgaria. Latitude 42 deg. 2' 19''
N. Longitude 23 deg. 54' 8'' E. Elevation 1140 m. 8-10km west of
Velingrad on road to Jundola. Sandy clay loam. Grasses and forbes. Open
mountain meadows. Occasional.
- PI 591646. *Trifolium arvense* L.
Wild. 93-99. Collected 08/10/1993 in Bulgaria. Latitude 42 deg. 27' 28''
N. Longitude 23 deg. 33' 29'' E. Elevation 880 m. 1-2km south of Kalkovo
along road on west side of Lake Iskar. Mostly rocks. Growing in cracks
of rocks along shoreline. Occasional.
- PI 591647. *Trifolium aureum* Pollich
Wild. 93-29. Collected 08/03/1993 in Bulgaria. Latitude 41 deg. 39' 17''
N. Longitude 24 deg. 42' 22'' E. Elevation 1540 m. Pamporovo Ski Resort
near Pamporovo. Sandy loam. Grasses and legumes surrounded by forest.
Mountain meadow. Occasional.
- PI 591648. *Trifolium aureum* Pollich
Wild. 93-44. Collected 08/04/1993 in Bulgaria. Latitude 42 deg. 0' N.
Longitude 23 deg. 38' E. Elevation 900 m. 5km west of Jakoruda near
water fountain. Rare. Seed pink.
- PI 591649. *Trifolium aureum* Pollich
Wild. 93-47. Collected 08/04/1993 in Bulgaria. Latitude 41 deg. 59' 13''
N. Longitude 23 deg. 31' 50'' E. Elevation 1050 m. 7km northwest of
Belica in woods behind monument. Loam. Oak scrub. Mountain side.
Frequent. Maturity early. All seed heads dry. Stems large. Plants tall.
- PI 591650. *Trifolium aureum* Pollich
Wild. 93-58. Collected 08/05/1993 in Bulgaria. Latitude 41 deg. 46' 44''
N. Longitude 23 deg. 26' 42'' E. Elevation 1790 m. Short ski slop near
lodge in Pirin National Park near Bansko. Sandy loam. Grasses and
forbes. Mountainous. Occasional.
- PI 591651. *Trifolium bocconeii* var. *tenuifolium* (Ten.) Griseb.
Wild. 93-74. Collected 08/06/1993 in Bulgaria. Latitude 41 deg. 22' 16''
N. Longitude 23 deg. 7' 38'' E. Elevation 420 m. 2-3km west of Belasica.
Sandy clay loam. Closely grazed dry grasses. Low valley along road.
Occasional. Leaves lancolate. Seed yellow.
- PI 591652. *Trifolium campestre* Schreber
Wild. 93-1. Collected 08/01/1993 in Bulgaria. Latitude 42 deg. 3' N.
Longitude 24 deg. 21' E. Elevation 400 m. 3km west of Novosal at base of
hill just off road. Sandy loam. Dry grassland. Low mountains. Frequent.
- PI 591653. *Trifolium diffusum* Ehrh.
Wild. 93-8. Collected 08/01/1993 in Bulgaria. Latitude 42 deg. 2' N.
Longitude 24 deg. 15' E. Elevation 500 m. 5km west of Brazigovo. Sandy
loam. Mixed grasses and forbes. Hills, limestone rock. Frequent.

- PI 591654. *Trifolium diffusum* Ehrh.
Wild. 93-17. Collected 08/02/1993 in Bulgaria. Latitude 41 deg. 59' 29'' N. Longitude 24 deg. 51' 10'' E. Elevation 736 m. 9-10km south of Asenovgrad near Backovski. Clay loam. Shrubby high plateau with grasses and forbes. Sloping. Rare. Seed yellow.
- PI 591655. *Trifolium diffusum* Ehrh.
Wild. 93-66. Collected 08/06/1993 in Bulgaria. Latitude 41 deg. 31' 51'' N. Longitude 23 deg. 25' 37'' E. Elevation 650 m. Vacent lot east of Hotel Melnik in Melnik. Sandy loam. Grasses and weeds. Hilly. Rare. Seeds purple and yellow.
- PI 591656. *Trifolium diffusum* Ehrh.
Wild. 93-87. Collected 08/07/1993 in Bulgaria. Latitude 41 deg. 44' 15'' N. Longitude 23 deg. 8' 19'' E. Elevation 350 m. 4-5km west of Kresna on east slope of Western Frontier mountains. Sandy loam. Dry grasses and forbes. Low mountains. Occasional. Seeds purple and yellow.
- PI 591657. *Trifolium dubium* Sibth.
Wild. 93-97. Collected 08/09/1993 in Bulgaria. Latitude 42 deg. 20' N. Longitude 23 deg. 32' E. Elevation 975 m. 5km northeast of Sowokovo along edge of small stream in overgrazed area. Small stream. Mountain valley. Rare.
- PI 591658. *Trifolium glomeratum* L.
Wild. 93-69. Collected 08/06/1993 in Bulgaria. Latitude 41 deg. 31' 51'' N. Longitude 23 deg. 25' 37'' E. Elevation 650 m. Grounds of Rozen Monastery near Rozen. Sandy loam. Dry grasslands. Mountainous. Rare.
- PI 591659. *Trifolium glomeratum* L.
Wild. 93-82. Collected 08/07/1993 in Bulgaria. Latitude 41 deg. 44' 15'' N. Longitude 23 deg. 8' 19'' E. Elevation 350 m. 4-5km west of Kresna on east slope of Western Frontier mountains. Sandy loam. Dry grasses and forbes. Low mountains. Occasional.
- PI 591660. *Trifolium grandiflorum* Schreber
Wild. 93-86. Collected 08/07/1993 in Bulgaria. Latitude 41 deg. 44' 15'' N. Longitude 23 deg. 8' 19'' E. Elevation 350 m. 4-5km west of Kresna on east slope of Western Frontier mountains. Sandy loam. Dry grasses and forbes. Low mountains. Rare. Hop type head but purple flowers. All seed from one plant.

The following were collected by Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

- PI 591661. *Trifolium grandiflorum* Schreber
Wild. 93-116; 91 E 29. Collected 11/29/1993 in Bulgaria. Latitude 41 deg. 39' N. Longitude 25 deg. 22' E. Elevation 370 m. 15km west of Kardzali in east Rhodope mountains.

The following were collected by Ken H. Quesenberry, University of Florida, Department of Agronomy, 304 Newell Hall, Gainesville, Florida 32611-0500, United States; Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States; Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Siyka Angelova, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Datcho P. Shamov, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv,

Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591662. *Trifolium haussknechtii* Boiss.

Wild. 93-77. Collected 08/07/1993 in Bulgaria. Latitude 41 deg. 37' 45'' N. Longitude 23 deg. 20' 11'' E. Elevation 645 m. 6-8km east of Sandanski on road to Jane Sandanski. Sandy loam-silt loam. Meadow grasses. Narrow valley with stream. Rare. Heads very fuzzy. Seed yellow. Bulgarians classify this as *Trifolium smyrnaeum* according to the description in Kuzuharov (Bulgarian Flora 1976).

PI 591663. *Trifolium hirtum* All.

Wild. 93-14. Collected 08/01/1993 in Bulgaria. Latitude 42 deg. 4' N. Longitude 24 deg. 14' E. Elevation 600 m. 7-8km north of Brazigovo. Sandy loam-loam. Open area between clumps of scrub oaks. Hilly. Occasional.

PI 591664. *Trifolium hirtum* All.

Wild. 93-54. Collected 08/05/1993 in Bulgaria. Latitude 41 deg. 52' 12'' N. Longitude 23 deg. 31' 6'' E. Elevation 870 m. 1 km northeast of Banja on road from Belica. Sandy loam. Dry annual grasses. Hilly edge of valley. Occasional.

PI 591665. *Trifolium hirtum* All.

Wild. 93-63. Collected 08/05/1993 in Bulgaria. Latitude 41 deg. 31' 44'' N. Longitude 23 deg. 33' 35'' E. Elevation 970 m. On road from Pirin to Melnik. Sandy loam. Dry grasses and forbes. Mountainous hillsides. Frequent.

PI 591666. *Trifolium incarnatum* var. *molineri* (Balb. ex Hornem.)

Ser.

Wild. 93-64. Collected 08/05/1993 in Bulgaria. Latitude 41 deg. 31' 44'' N. Longitude 23 deg. 33' 35'' E. Elevation 970 m. On road from Pirin to Melnik. Sandy loam. Dry grasses and forbes. Mountainous hillsides. Occasional. Flowers white (cream).

The following were collected by Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591667. *Trifolium incarnatum* var. *molineri* (Balb. ex Hornem.)

Ser.

Wild. 93-118; 92 42 181. Collected 11/29/1993 in Bulgaria. Latitude 42 deg. 36' N. Longitude 25 deg. 2' E. Elevation 630 m. South of Kalofer in Sredna Gora region.

PI 591668. *Trifolium lappaceum* L.

Wild. 93-117; 91 E 85. Collected 11/29/1993 in Bulgaria. Latitude 42 deg. 4' N. Longitude 27 deg. 39' E. Elevation 250 m. West of Gramatikovo in Strandza mountains.

The following were collected by Ken H. Quesenberry, University of Florida, Department of Agronomy, 304 Newell Hall, Gainesville, Florida 32611-0500, United States; Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States; Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Siyka Angelova, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Datcho P. Shamov, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv,

Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591669. *Trifolium leucanthum* M. Bieb.

Wild. 93-68. Collected 08/06/1993 in Bulgaria. Latitude 41 deg. 31' 51'' N. Longitude 23 deg. 25' 37'' E. Elevation 650 m. On grounds of Rozen Monastery near Rozen. Sandy loam. Dry grasslands. Mountainous. Occasional. Open calyx with long teeth. Approx. 15-20 flower heads. Plants deteriorated. Long thin leaves with round points. Stipules pointed, long, thin.

The following were collected by Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591670. *Trifolium leucanthum* M. Bieb.

Wild. 93-112; 92 E-OP. Collected 11/29/1993 in Bulgaria. Latitude 42 deg. 25' N. Longitude 27 deg. 41' E. Elevation 25 m. 2km south of Sozopol on the Black Sea coast.

PI 591671. *Trifolium ligusticum* Balb. ex Lois.

Wild. 93-110; 92 E-S. Collected 11/29/1993 in Bulgaria. Latitude 42 deg. 5' N. Longitude 27 deg. 47' E. Elevation 50 m. West of Kostin in Strandza mountains. Few seeds.

The following were collected by Ken H. Quesenberry, University of Florida, Department of Agronomy, 304 Newell Hall, Gainesville, Florida 32611-0500, United States; Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States; Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Siyka Angelova, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Datcho P. Shamov, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591672. *Trifolium nigrescens* Viv.

Wild. 93-9. Collected 08/01/1993 in Bulgaria. Latitude 42 deg. 2' N. Longitude 24 deg. 15' E. Elevation 500 m. 5km west of Brazigovo. Sandy loam. Mixed grasses and forbes. Hills, limestone rock. Occasional.

PI 591673. *Trifolium nigrescens* Viv.

Wild. 93-83. Collected 08/07/1993 in Bulgaria. Latitude 41 deg. 44' 15'' N. Longitude 23 deg. 8' 19'' E. Elevation 1480 m. 4-5km west of Kresna on east slope on Western Frontier mountains. Sandy loam. Dry grasses and forbes. Low mountains. Occasional.

PI 591674. *Trifolium patens* Schreber

Wild. 93-38. Collected 08/06/1993 in Bulgaria. Latitude 41 deg. 57' 13'' N. Longitude 24 deg. 8' 51'' E. Elevation 1150 m. Orbita tourist complex near Batak along edge of mown field where mower missed some heads. Sandy clay loam. Mixed grasses and forbes. Sloping hillside. Occasional. Florets more dark brown than other hops.

The following were collected by Ken H. Quesenberry, University of Florida, Department of Agronomy, 304 Newell Hall, Gainesville, Florida 32611-0500, United States; Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage

Research Unit, Mississippi State, Mississippi 39762-5367, United States; Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Siyka Angelova, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Datcho P. Shamov, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Received 09/26/1995.

PI 591675. *Trifolium patens* Schreber

Wild. 93-43. Collected 08/04/1993 in Bulgaria. Latitude 42 deg. 1' 37'' N. Longitude 23 deg. 41' 2'' E. Elevation 970 m. East edge of Jakoruda on edge of field. T. repens and ryegrass field. Mountain valley. Rare.

The following were collected by Ken H. Quesenberry, University of Florida, Department of Agronomy, 304 Newell Hall, Gainesville, Florida 32611-0500, United States; Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States; Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Siyka Angelova, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Datcho P. Shamov, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591676. *Trifolium patens* Schreber

Wild. 93-49. Collected 08/04/1993 in Bulgaria. Latitude 41 deg. 59' 13'' N. Longitude 23 deg. 31' 50'' E. Elevation 1050 m. 7km northwest of Belica in wood behind monument. Loam. Gully on mountainside. Oak scrub. Occasional.

The following were collected by Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591677. *Trifolium pauciflorum* Urv.

Wild. 93-122; SA5257; 82 302 199. Collected 11/29/1993 in Bulgaria.

The following were collected by Ken H. Quesenberry, University of Florida, Department of Agronomy, 304 Newell Hall, Gainesville, Florida 32611-0500, United States; Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States; Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Siyka Angelova, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Datcho P. Shamov, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591678. *Trifolium phleoides* Pourret ex Willd.

Wild. 93-10. Collected 08/01/1993 in Bulgaria. Latitude 42 deg. 2' N. Longitude 24 deg. 15' E. Elevation 500 m. 5km west of Brazigovo. Sandy loam. Mixed grasses and forbes. Hills, limestone rock. Rare.

PI 591679. *Trifolium phleoides* Pourret ex Willd.

Wild. 93-65. Collected 08/05/1993 in Bulgaria. Latitude 41 deg. 31' 44'' N. Longitude 23 deg. 33' 35'' E. Elevation 970 m. Road from Pirin to Melnik. Sandy loam. Dry grasses and forbes. Mountainous hillsides. Occasional.

The following were collected by Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591680. *Trifolium pilulare* Boiss.
Wild. 93-120; 424. Collected 11/29/1993 in Bulgaria.

The following were collected by Ken H. Quesenberry, University of Florida, Department of Agronomy, 304 Newell Hall, Gainesville, Florida 32611-0500, United States; Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States; Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Siyka Angelova, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Datcho P. Shamov, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591681. *Trifolium purpureum* Lois.
Wild. 93-71. Collected 08/06/1993 in Bulgaria. Latitude 41 deg. 31' 51'' N. Longitude 23 deg. 25' 37'' E. Elevation 650 m. On grounds of Rozen Monastery near Rozen. Sandy loam. Dry grasslands. Mountainous. Occasional.

PI 591682. *Trifolium purpureum* Lois.
Wild. 93-85. Collected 08/07/1993 in Bulgaria. Latitude 41 deg. 44' 15'' N. Longitude 23 deg. 8' 19'' E. Elevation 350 m. 4-5km west of Kresna on east slope of Western Frontier mountains. Sandy loam. Dry grasses and forbes. Low mountains. Occasional.

PI 591683. *Trifolium scabrum* L.
Wild. 93-2. Collected 08/01/1993 in Bulgaria. Latitude 42 deg. 3' N. Longitude 24 deg. 21' E. Elevation 400 m. 3km west of Novosa at base of hill just off road. Sandy loam. Dry grassland. Low mountains. Frequent.

PI 591684. *Trifolium scabrum* L.
Wild. 93-76. Collected 08/06/1993 in Bulgaria. Latitude 41 deg. 42' 11'' N. Longitude 23 deg. 21' 40'' E. Elevation 180 m. Edge of village Chuchulega near creek. Silt loam. Dry grassland. Low valley. Frequent.

PI 591685. *Trifolium setiferum* Boiss.
Wild. 93-59. Collected 08/05/1993 in Bulgaria. Latitude 41 deg. 35' 11'' N. Longitude 23 deg. 41' 39'' E. Elevation 840 m. 5km northwest of Goce Delchev on road to Pirin. Sandy loam-loam. Dry grasses at roadside. Hillside along road. Rare. Only 3 small plants. Plants dried up but heads intact. Only longitudinal nerves not lateral. Possibly *T. vesiculosum*.

The following were collected by Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591686. *Trifolium setiferum* Boiss.
Wild. 93-115; 93 11 3. Collected 11/29/1993 in Bulgaria. Elevation 350 m. West of Michiltci in Sredna Gora region.

The following were collected by Ken H. Quesenberry, University of Florida, Department of Agronomy, 304 Newell Hall, Gainesville, Florida 32611-0500, United States; Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States; Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Siyka Angelova, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Datcho P. Shamov, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591687. *Trifolium spadiceum* L.

Wild. 93-33. Collected 08/03/1993 in Bulgaria. Latitude 41 deg. 39' 3'' N. Longitude 24 deg. 41' 47'' E. Elevation 1570 m. Bus station near Pamporovo tourist complex near Pamporovo. Clay loam-clay. Trees, grasses, forbes. Sloping hillside. Rare. Florets turn very dark brown as they mature.

PI 591688. *Trifolium spadiceum* L.

Wild. 93-34. Collected 08/03/1993 in Bulgaria. Latitude 41 deg. 48' 14'' N. Longitude 24 deg. 7' 35'' E. Elevation 1550 m. Along roadside above Lake Vasil Kolarov near Cukura on road from Dospat to Batak. Sandy clay loam. Roadside bank and ditch. Mountainous. Rare.

PI 591689. *Trifolium spadiceum* L.

Wild. 93-53. Collected 08/04/1993 in Bulgaria. Latitude 42 deg. 2' 48'' N. Longitude 23 deg. 31' 30'' E. Elevation 1560 m. Mountain meadow near Hotel Bor in Semkovo. Sandy loam. In clumps of soil in small creek. Grasses and forbes. Rare. Mature florest turn brown. Small type.

PI 591690. *Trifolium spadiceum* L.

Wild. 93-81. Collected 08/07/1993 in Bulgaria. Latitude 41 deg. 39' 55'' N. Longitude 23 deg. 24' 5'' E. Elevation 1480 m. Turetska Checkva tourist hut. Sand. Along stream bed. Mountainous. Rare.

PI 591691. *Trifolium spadiceum* L.

Wild. 93-96. Collected 08/05/1993 in Bulgaria. Latitude 42 deg. 16' 1'' N. Longitude 23 deg. 36' 16'' E. Elevation 1390 m. Base of practice ski jump in wet area near Samokov Hotel in Samokov. Pine forest, Mountainous. Rare.

The following were collected by Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591692. *Trifolium spadiceum* L.

Wild. 93-114; 93 11 31. Collected 11/29/1993 in Bulgaria. Elevation 1530 m. 8km west of Zlatni Mostove near Vitosha mountain.

The following were collected by Ken H. Quesenberry, University of Florida, Department of Agronomy, 304 Newell Hall, Gainesville, Florida 32611-0500, United States; Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States; Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Siyka Angelova, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Datcho P. Shamov, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv,

Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591693. *Trifolium squamosum* L.

Wild. 93-70. Collected 08/06/1993 in Bulgaria. Latitude 41 deg. 31' 51'' N. Longitude 23 deg. 25' 37'' E. Elevation 650 m. Grounds of Rozen Monastery near Rozen. Sandy loam. Dry grasslands. Mountainous. Frequent. No leaf mark. Calyx throat closed.

The following were collected by Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591694. *Trifolium squarrosum* L.

Wild. 93-119; 205. Collected 11/29/1983 in Bulgaria.

The following were collected by Ken H. Quesenberry, University of Florida, Department of Agronomy, 304 Newell Hall, Gainesville, Florida 32611-0500, United States; Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States; Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Siyka Angelova, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Datcho P. Shamov, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591695. *Trifolium striatum* L.

Wild. 93-55. Collected 08/05/1993 in Bulgaria. Latitude 41 deg. 52' 12'' N. Longitude 23 deg. 31' 6'' E. Elevation 870 m. 1 km northeast of Banja on road from Belica. Sandy loam. Dry annual grasses. Hilly edge of valley. Rare.

PI 591696. *Trifolium striatum* L.

Wild. 93-62. Collected 08/08/1993 in Bulgaria. Latitude 41 deg. 33' 11'' N. Longitude 23 deg. 38' 15'' E. Elevation 1460 m. 1-2km southeast of Pirin on road from Goce Delchev. Sandy clay loam. Edge of pine forest along road. Mountainous. Occasional. Numerous double heads.

The following were collected by Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591697. *Trifolium strictum* L.

Wild. 93-16. Collected 08/01/1993 in Bulgaria. Strandza mountains, Sadovo. Plants glabrous. Calyx 10 nerves. Leaves glandular.

The following were collected by Ken H. Quesenberry, University of Florida, Department of Agronomy, 304 Newell Hall, Gainesville, Florida 32611-0500, United States; Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States; Yana K. Guteva, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Siyka Angelova, Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria; Datcho P. Shamov,

Institute of Introduction and Plant Genetic Resources, 4122 Sadovo, Plovdiv, Bulgaria. Donated by Gary A. Pederson, USDA, ARS, Crop Sci. Research Lab, Forage Research Unit, Mississippi State, Mississippi 39762-5367, United States. Received 09/26/1995.

PI 591698. *Trifolium strictum* L.

Wild. 93-39. Collected 08/04/1993 in Bulgaria. Latitude 42 deg. 2' 19'' N. Longitude 23 deg. 54' 8'' E. Elevation 1140 m. 8-10km west of Velingrad on road to Jundola. Sandy clay loam. Grasses and forbes. Open mountain meadows. Occasional.

PI 591699. *Trifolium vesiculosum* Savi

Wild. 93-84. Collected 08/07/1993 in Bulgaria. Latitude 41 deg. 44' 15'' N. Longitude 23 deg. 8' 19'' E. Elevation 350 m. 4-5km west of Kresna on east slope of Western Frontier mountains. Sandy loam. Dry grasses and forbes. Low mountains. Frequent. Seeds brown.

The following were donated by Paul Salon, USDA, NRCS, Big Flats Plant Materials Center, Box 360A, Corning, New York 14830, United States. Received 10/03/1995.

PI 591700. *Prunus pumila* var. *depressa* (Pursh) Bean

Wild. 9051508. Collected in New York, United States. Sullivan County. Stand of sand cherry growing along the Delaware River. Pedigree - Collected as open pollinated seed. Selected for prostrate growth habit. Potential use for shoreline and streambank stabilization where short vegetation is needed and areas with ice flow problems. Also urban conservation uses in low maintenance, droughty landscapes. Prefers calcareous soils. Adapted to sandy and gravelly soils but performs well on silt loam.

The following were developed by R. Pickering, Crop & Food Research, Private Bag 4704, Christchurch, New Zealand. Received 09/18/1995.

PI 591701. *Hordeum vulgare* L. ssp. *vulgare*

Genetic. 81882/83; NSGC 5981. Pedigree - 2087 selfed seeds were obtained from a tetraploid hybrid Vada VB1, produced by colchicine treatment of a powdery mildew resistant diploid hybrid plant from *H. vulgare* 'Vada' x *H. bulbosum* 'S1'. The seeds were x-irradiated. Less spike glaucosity and greater resistance to powdery mildew race AB14 than 'Vada'.

The following were developed by Seed Research, Inc., United States. Received 1977.

PI 591702. *Triticum aestivum* L., nom. cons.

Cultivar. "PLAINSMAN V". PVP 7500082.

The following were donated by Suketoshi Taba, International Maize & Wheat Improvement Center, Lisboa 27, Apdo. Postal 6-641, 06600 Mexico, Federal District 06600, Mexico. Received 09/29/1995.

PI 591703. *Zea mays* L. ssp. *mays*

Cultivated. CUBA T-1. Collected in Cuba.

PI 591704. *Zea mays* L. ssp. *mays*

Cultivated. CUBA T-2. Collected in Cuba.

PI 591705. *Zea mays* L. ssp. *mays*

Cultivated. CUBA T-4. Collected in Cuba.

- PI 591706. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-5. Collected in Cuba.
- PI 591707. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-6. Collected in Cuba.
- PI 591708. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-7. Collected in Cuba.
- PI 591709. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-8. Collected in Cuba.
- PI 591710. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-9. Collected in Cuba.
- PI 591711. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-10. Collected in Cuba.

The following were collected by Suketoshi Taba, International Maize & Wheat Improvement Center, Lisboa 27, Apdo. Postal 6-641, 06600 Mexico, Federal District 06600, Mexico. Received 09/29/1995.

- PI 591712. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-11. Collected in Cuba.

The following were donated by Suketoshi Taba, International Maize & Wheat Improvement Center, Lisboa 27, Apdo. Postal 6-641, 06600 Mexico, Federal District 06600, Mexico. Received 09/29/1995.

- PI 591713. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-12. Collected in Cuba.
- PI 591714. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-13. Collected in Cuba.
- PI 591715. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-17. Collected in Cuba.
- PI 591716. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-18. Collected in Cuba.
- PI 591717. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-19. Collected in Cuba.
- PI 591718. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-20. Collected in Cuba.
- PI 591719. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-22. Collected in Cuba.
- PI 591720. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-23. Collected in Cuba.
- PI 591721. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-24. Collected in Cuba.
- PI 591722. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-25. Collected in Cuba.
- PI 591723. *Zea mays* L. **ssp. mays**
Cultivated. CUBA T-27. Collected in Cuba.

- PI 591724. *Zea mays* L. *ssp. mays*
Cultivated. CUBA T-28. Collected in Cuba.
- PI 591725. *Zea mays* L. *ssp. mays*
Cultivated. CUBA T-29. Collected in Cuba.
- PI 591726. *Zea mays* L. *ssp. mays*
Cultivated. CUBA T-30. Collected in Cuba.
- PI 591727. *Zea mays* L. *ssp. mays*
Cultivated. CUBA T-34. Collected in Cuba.
- PI 591728. *Zea mays* L. *ssp. mays*
Cultivated. CUBA T-35. Collected in Cuba.
- PI 591729. *Zea mays* L. *ssp. mays*
Cultivated. CUBA T-36. Collected in Cuba.
- PI 591730. *Zea mays* L. *ssp. mays*
Cultivated. CUBA T-38. Collected in Cuba.
- PI 591731. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-39. Collected in Cuba.
- PI 591732. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-40. Collected in Cuba.
- PI 591733. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-41. Collected in Cuba.
- PI 591734. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-42. Collected in Cuba.
- PI 591735. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-43. Collected in Cuba.
- PI 591736. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-44. Collected in Cuba.
- PI 591737. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-45. Collected in Cuba.
- PI 591738. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-46. Collected in Cuba.
- PI 591739. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-47. Collected in Cuba.
- PI 591740. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-48. Collected in Cuba.
- PI 591741. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-49. Collected in Cuba.
- PI 591742. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-50. Collected in Cuba.
- PI 591743. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-51. Collected in Cuba.
- PI 591744. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-52. Collected in Cuba.
- PI 591745. *Zea mays* L. *ssp. mays*

- Cultivated. CUBA I-55. Collected in Cuba.
- PI 591746. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-56. Collected in Cuba.
- PI 591747. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-57. Collected in Cuba.
- PI 591748. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-58. Collected in Cuba.
- PI 591749. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-59. Collected in Cuba.
- PI 591750. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-60. Collected in Cuba.
- PI 591751. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-62. Collected in Cuba.
- PI 591752. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-63. Collected in Cuba.
- PI 591753. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-64. Collected in Cuba.
- PI 591754. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-65. Collected in Cuba.
- PI 591755. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-67. Collected in Cuba.
- PI 591756. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-68. Collected in Cuba.
- PI 591757. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-70. Collected in Cuba.
- PI 591758. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-71. Collected in Cuba.
- PI 591759. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-72. Collected in Cuba.
- PI 591760. *Zea mays* L. *ssp. mays*
Cultivated. CUBA I-74. Collected in Cuba.

The following were developed by International Maize & Wheat Improvement Center, Apdo. Postal 6-641, Lisboa 27, Mexico City, Federal District 06600, Mexico. Donated by Bent Skovmand, Internat'l Maize & Wheat Improvement Ctr., Wheat Germplasm Bank, Apartado Postal 6-641, Mexico City, Federal District 06600, Mexico. Received 08/04/1992.

- PI 591761. *Triticum durum* Desf.
Cultivar. "ACONCHI 89"; DW 5041. Pedigree - Altar 84/Araos.
- PI 591762. *Triticum aestivum* L., nom. cons.
Cultivar. "CARRIZO 89"; BW 14187. Pedigree - Veery/H499.71A//4*Jupateco 73.
- PI 591763. *Triticum aestivum* L., nom. cons.
Cultivar. "COCORAQUE 75"; BW 661. Pedigree - II12300/Lerma Rojo 64/8156/3/Norteno 67 = II30842.

- PI 591764. *Triticum aestivum* L., nom. cons.
Cultivar. "GUASAVE 81"; BW 2578. Pedigree - Kavkaz//Kalyansona/Bluebird/3/Bonanza.
- PI 591765. *Triticum aestivum* L., nom. cons.
Cultivar. "DELICIAS 81"; BW 1010. Pedigree - Inia 66/Napo 63//Jaral 66.
- PI 591766. *Triticum aestivum* L., nom. cons.
Cultivar. "JUPATECO 73"; BW 660. Pedigree - II12300/Lerma Rojo 64/8156/3/Norteno 67 = II30842.
- PI 591767. *Triticum aestivum* L., nom. cons.
Cultivar. "GALVEZ 87"; BW 3725. Pedigree - Bluebird/Gallo//Carpintero/3/Pavon 76.
- PI 591768. *Triticum aestivum* L., nom. cons.
Cultivar. "MEXICO 82"; BW 11840.
- PI 591769. *Triticum aestivum* L., nom. cons.
Cultivar. "CULIACAN 89"; BW 15887. Pedigree - Hermosillo 77/Sapsucker//Veery.
- PI 591770. *Triticum aestivum* L., nom. cons.
Cultivar. "TESIA 79"; BW 6287. Pedigree - Paloma/3/Inia 66/Ciano//Calidad/4/Bluejay.
- PI 591771. *Triticum aestivum* L., nom. cons.
Cultivar. "IMURIS 79"; BW 6254. Pedigree - Barrigon Yaqui/Maya 74/4/Bluebird//HD832.5.5/Olesen/3/Ciano/ Penjamo 62 = CM31678.
- PI 591772. *Triticum aestivum* L., nom. cons.
Cultivar. "TONICHO 81"; BW 4026. Pedigree - Cargill 422/Anahuac 75.
- PI 591773. *Triticum aestivum* L., nom. cons.
Cultivar. "JAHUARA 77"; BW 6220. Pedigree - Tezanos Pintos Precoz/Paloma//Siete Cerros 66 = CM5287.
- PI 591774. *Triticum aestivum* L., nom. cons.
Cultivar. "SERI 82"; BW 4074. Pedigree - Kavkaz/Buho sib//Kalyansona/Bluebird.
- PI 591775. *Triticum aestivum* L., nom. cons.
Cultivar. "TEPOCA 89"; BW 5041. Pedigree - Buckbuck/4/Tezanos Pintos Precoz//IRN46/Ciano 67/3/Protor.
- PI 591776. *Triticum aestivum* L., nom. cons.
Cultivar. "OPATA 85"; BW 4113. Pedigree - Bluejay/Jupateco 73.
- PI 591777. *Triticum aestivum* L., nom. cons.
Cultivar. "CLEOPATRA 74"; BW 1853. Pedigree - Bluebird/3/2*Inia 66/Napo 63//II20350/4/F2.
- PI 591778. *Triticum aestivum* L., nom. cons.
Cultivar. "NURI 70"; BW 12. Pedigree - Ciano sib//Sonora 64/Klein Rendidor/3/8156 = II23584.
- PI 591779. *Triticum aestivum* L., nom. cons.
Cultivar. "ANGOSTURA 88"; BW 11856. Pedigree - Teeter/Junco.
- PI 591780. *Triticum aestivum* L., nom. cons.
Cultivar. "TEMPORALERA 87"; BW 18542.
- PI 591781. *Triticum aestivum* L., nom. cons.

Cultivar. "NACOSARI 76"; BW 2215. Pedigree - Tezanos Pintos
Precoz/Paloma//Siete Cerros 66 = CM5287.

PI 591782. *Triticum aestivum* L., nom. cons.

Cultivar. "PAPAGO 86"; BW 5012. Pedigree - Buckbuck/Pavon 76.

PI 591783. *Triticum aestivum* L., nom. cons.

Cultivar. "BACANORA 88"; BW 11910. Pedigree - Jupateco 73/Bluejay//Ures.

PI 591784. *Triticum aestivum* L., nom. cons.

Cultivar. "RAYON 89"; BW 13583. Pedigree - Ures*2/Parula.

PI 591785. *Triticum aestivum* L., nom. cons.

Cultivar. "OCORONI 86"; BW 13913. Pedigree - Jupateco 73/Emu//Grajo.

PI 591786. *Triticum aestivum* L., nom. cons.

Cultivar. "CUMPAS 88"; BW 13439. Pedigree - Parula/Veery #6.

PI 591787. *Triticum aestivum* L., nom. cons.

Cultivar. "ANAHUAC 75"; BW 494. Pedigree - II12300//Lerma Rojo
64/8156/3/Norteno 67 = II30842.

PI 591788. *Triticum aestivum* L., nom. cons.

Cultivar. "CUCURPE 86"; BW 4135. Pedigree - Heima/Cocoraque 75//Nacozari
76.

PI 591789. *Triticum aestivum* L., nom. cons.

Cultivar. "ESMERALDA 86"; BW 4201. Pedigree - Buckbuck sib/Bluejay sib.

PI 591790. *Triticum aestivum* L., nom. cons.

Cultivar. "HUASTECO 81"; BW 2279. Pedigree - Hopps/Robin-M//Kalyansona.

PI 591791. *Triticum aestivum* L., nom. cons.

Cultivar. "MOCHIS 88"; BW 14032. Pedigree - Parula/Veery #6.

PI 591792. *Triticum aestivum* L., nom. cons.

Cultivar. "HERMOSILLO 77"; BW 2447. Pedigree - Jaral 66/Napo 63/3/Lerma
Rojo 64//Tezanos Pintos Precoz/ 3*Andes Enano/4/Bluebird/Norteno
67//Ciano/Siete Cerros 66 /3/Calidad.

The following were developed by Don F. Salmon, Alberta Agriculture, Field
Crops Section, 5718-56 Avenue, Lacombe, Alberta T0C 1S0, Canada; W. Stewart,
Alberta Agriculture, Bag Service #47, 5718-56 Avenue, Lacombe, Alberta T0C
1S0, Canada; Jim Helm, Alberta Agriculture, Field Crop Development Centre,
5030 50 Street, Lacombe, Alberta T4L 1W8, Canada; Manuel Cortez, Alberta
Agriculture, Field Crop Development Centre, 5030-50 Street, Lacombe, Alberta
T4L 1W8, Canada; Patricia E. Jedel, Alberta Agriculture, Field Crop
Development Centre, 5050-50 Street, Lacombe, Alberta T4L 1W8, Canada.
Received 09/26/1995.

PI 591793. *Hordeum vulgare* L. ssp. *vulgare*

Cultivar. Pureline. "SEEBE"; TR 621. CV-255. Pedigree -
Masurca//Muller/Heydla. Two-row, spring habit, feed barley. Hulled,
rough awned, and yellow aleurone. Flag leaf medium green, medium wide,
long, and semi-erect. Auricle purple. Spikes medium dense, semi-erect,
and medium long. Awns short and rough with purple tips. Rachilla medium
long. Heterogeneous for rachilla hair length. Maturity medium. Three to
four days later than Bridge and 7cm taller. Best adapted to northern and
central Alberta (black and gray soils). Yield 10% higher than Harrington
and 2% more than Bridge, the highest yielding two-row check. Resistant
to scald (*Rhynchosporium secalis*).

The following were developed by M.D. Lazar, Texas Agricultural Experiment Station, 6500 Amarillo Blvd., Amarillo, Texas 79106, United States. Received 09/29/1995.

- PI 591794. *Triticum aestivum* L., nom. cons.
Genetic. Pureline. TXGBE272. Pedigree - (TAM 105*4/Amigo)*5//Largo. Hard red winter wheat. Semi-dwarf with red chaff, similar in height and maturity to TAM105. Resistant to biotype 'E' greenbug (*Schizaphis graminum*).
- PI 591795. *Triticum aestivum* L., nom. cons.
Genetic. Pureline. TXGBE273. Pedigree - (TAM 105*4/Amigo)*5//Largo. Hard red winter wheat. Semi-dwarf with red chaff, similar in height and maturity to TAM105. Resistant to biotype 'E' greenbug (*Schizaphis graminum*).
- PI 591796. *Triticum aestivum* L., nom. cons.
Genetic. Pureline. TXGBE278. Pedigree - (TAM 105*4/Amigo)*5//Largo. Hard red winter wheat. Semi-dwarf with red chaff, similar in height and maturity to TAM105. Susceptible to biotype 'E' greenbug (*Schizaphis graminum*).
- PI 591797. *Triticum aestivum* L., nom. cons.
Genetic. Pureline. TXGBE280. Pedigree - (TAM 105*4/Amigo)*5//Largo. Hard red winter wheat. Semi-dwarf with red chaff, similar in height and maturity to TAM 105. Susceptible to biotype 'E' greenbug (*Schizaphis graminum*).
- PI 591798. *Triticum aestivum* L., nom. cons.
Genetic. Pureline. TXGBE281. Pedigree - (TAM 105*4/Amigo)*5//Largo. Hard red winter wheat. Semi-dwarf with red chaff, similar in height and maturity to TAM 105. Susceptible to biotype 'E' greenbug (*Schizaphis graminum*).
- PI 591799. *Triticum aestivum* L., nom. cons.
Genetic. Pureline. TXGBE285. Pedigree - (TAM 105*4/Amigo)*5//Largo. Hard red winter wheat. Semi-dwarf with red chaff, similar in height and maturity to TAM 105. Resistant to biotype 'E' greenbug (*Schizaphis graminum*).
- PI 591800. *Triticum aestivum* L., nom. cons.
Genetic. Pureline. TXGBE292. Pedigree - (TAM 105*4/Amigo)*5//Largo. Hard red winter wheat. Semi-dwarf with red chaff, similar in height and maturity to TAM 105. Resistant to biotype 'E' greenbug (*Schizaphis graminum*).
- PI 591801. *Triticum aestivum* L., nom. cons.
Genetic. Pureline. TXGBE307. Pedigree - (TAM 105*4/Amigo)*5//Largo. Hard red winter wheat. Semi-dwarf with red chaff, similar in height and maturity to TAM 105. Susceptible to biotype 'E' greenbug (*Schizaphis graminum*).

The following were developed by AgriPro Seeds, R.R. #2, Box 411, Brookston, Indiana 47923, United States. Received 10/12/1995.

- PI 591802. *Triticum aestivum* L., nom. cons.
Cultivar. "HICKOK". PVP 9500309.

The following were developed by Pennsylvania Agr. Exp. Sta., Pennsylvania, United States. Received 10/12/1995.

- PI 591803. *Poa pratensis* L.

Cultivar. "PENNPRO". PVP 9500314.

The following were developed by Fred C. Elliott, United States; Nancy A. Elliott, United States. Received 10/12/1995.

PI 591804. *X Triticosecale* sp.
Cultivar. "BLIZZARD". PVP 9500316.

PI 591805. *Capsicum annuum* L.
Cultivar. "AUTOPICK". PVP 9500317.

The following were developed by International Seeds, Inc., United States. Received 10/12/1995.

PI 591806. *Lolium perenne* L.
Cultivar. "TOP HAT". PVP 9500323.

The following were developed by Kansas Agr. Exp. Sta., Kansas, United States. Received 10/12/1995.

PI 591807. *Triticum aestivum* L., nom. cons.
Cultivar. "JAGGAR". PVP 9500324.

The following were developed by Mike McMullen, North Dakota State University, Crop and Weed Sciences Department, Fargo, North Dakota 58105-5051, United States; North Dakota Agr. Exp. Sta., North Dakota, United States. Received 10/12/1995.

PI 591808. *Avena sativa* L.
Cultivar. "JERRY"; ND870952. PVP 9600001. Pedigree - Valley/3/RL
3038/Kelsey//M22/Kelsey.

PI 591809. *Avena nuda* L.
Cultivar. "PAUL"; ND862915. PVP 9600002. Pedigree - CI9221/Hudson//RL
3038/Dal/3/RPB120-73/RL 3038//Noble/4/O 2998-22/5/O 2557-A6-100/3/RL
3038/Dal//Noble.

PI 591810. *Avena sativa* L.
Cultivar. "WHITESTONE"; ND870258. PVP 9600003. Pedigree -
Porter/4/M23/RL 3038//Otana/3/Froker/RL 3038//Hudson.

The following were donated by Paul Salon, USDA, NRCS, Big Flats Plant Materials Center, Box 360A, Corning, New York 14830, United States. Received 10/20/1995.

PI 591811. *Sorghastrum nutans* (L.) Nash
Cultivated. 9051751. Pedigree - Synthetic made up of accessions 9046613 (collected in Stueben County, NY), 9046624 (collected in Erie County, PA), and 9046654 (collected in Allegany County, MD). Selected from a collection of 137 indianguass accessions collected in the east and evaluated from 1986-1991. Selected for vigor, early flowering date, and source identified for eastern origin. Grows up to 1.5m tall. Leaf color varies from green to blue. Early flowering, early to mid August. For use in mid-summer rotational grazing systems in the Northeast and where eastern source identified plant material is desired. Soil adaption loam to sandy soils, will tolerate droughty soils.

PI 591812. *Sorghastrum nutans* (L.) Nash
Cultivated. 9051752. Pedigree - Synthetic made up of accessions 9023092

(collected in Madison County, KY), 9046623 (collected in Prince George's County, MD), and PI 477006 (collected in Washington County, VA). Selected from a collection of 137 indianguass accessions collected in the east and evaluated from 1986-1991. Selected for vigor, late flowering date, and source identified for eastern origin. Grows up to 1.5m tall. Leaf color varies from green to blue. Early flowering, early to mid September. For use in mid-summer rotational grazing systems in the Northeast and areas where eastern source identified plant material is desired. Soil adaption loam to sandy soils, will tolerate droughty soils.

The following were donated by Michael Knudson, USDA, NRCS, Bismarck Plant Materials Center, 3308 University Drive, Bismarck, North Dakota 58504-7564, United States. Received 10/20/1995.

PI 591813. *Schizachyrium scoparium* (Michaux) Nash
Cultivated. BADLANDS. Collected 09/1979 in United States. Southwestern North Dakota and western and central South Dakota. Broad array of different range sites, including the "badlands" regions of both states. Pedigree - Composite of 68 accessions. Plants comparable in phenology and rated above the average for vigor, leafiness, seed production, and disease resistance. The goal in plant selection was not to specifically select a few outstanding plants, but to instead select a diverse group of representative little bluestem ecotypes that would have a broad genetic base to facilitate adaptation to the harsh sites typical to this species. This extensive genetic variation is desirable when establishing native plantings and range seedings where species longevity and adaptation to the climatic extremes of the Northern Great Plains is an essential conservation goal.

PI 591814. *Bouteloua gracilis* (Kunth) Lagasca ex Griffiths
Cultivated. BAD RIVER. Collected 1988 in South Dakota, United States. Along the Bad River, southwest of Philip, Haakan County, in south central South Dakota. Pedigree - Single collection made in Haakan County, South Dakota.

The following were developed by A.K. Singh, Int. Crops Res. Inst. for the Semi-Arid Tropics, Patancheru, Andhra Pradesh 502 324, India; S.N. Nigam, Int. Crops Res. Inst. for the Semi-Arid Tropics, Legumes Program, Patancheru, Andhra Pradesh 502 324, India; L.J. Reddy, Int. Crops Res. Inst. for the Semi-Arid Tropics, Legumes Program, Patancheru P.O., Andhra Pradesh 502 324, India; P. Subrahmanyam, SADC/ICRISAT, Groundnut Project, Lilongwe, Malawi; A.G.S. Reddy, Int. Crops Res. Inst. for the Semi-Arid Tropics, Asia Center, Patancheru, Andhra Pradesh 502324, India; D. McDonald, Int. Crops Res. Inst. for the Semi-Arid Tropics, Patancheru, Andhra Pradesh 502 324, India; J. P. Moss, Int. Crops Res. Inst. for the Semi-Arid Tropics, Patancheru, Andhra Pradesh, India. Received 10/16/1995.

PI 591815. *Arachis hypogaea* L. ssp. *hypogaea*
Cultivated. Pureline. ICGV 86699. GP-76. Pedigree - [*Arachis batizocoi* / *A. duranensis* // *A. hypogaea* (CV. NC 2)] - CS 29-P1-B2-B1-B1-B1. Decumbent 3 growth habit, alternate branching, and medium-sized elliptic green leaves. Eight primary and several secondary branches. Matures in about 118 days in the rainy season in India. Slightly reticulated and constricted pods with moderate beak. Pods mostly two-seeded with average meat content of 60%. Seeds red with 38g 100-1 seed weight and contain 48% oil, and 24% protein. Resistant to rust and stem and pod rots (*Sclerotium rolfsii*), tolerant of late leafspot, peanut bud necrosis virus, peanut mottle virus, tobacco caterpillar and jassids (= leaf hoppers).

The following were developed by Robert A. Graybosch, USDA-ARS, University of Nebraska, Dept. of Agronomy, 322 Keim Hall, Lincoln, Nebraska 68583, United States; P.J. Mattern, University of Nebraska, Department of Agronomy, Lincoln, Nebraska, United States; C.J. Peterson, USDA-ARS, University of Nebraska, Dept. of Agronomy, Lincoln, Nebraska 68583, United States. Received 10/13/1995.

- PI 591816. *Triticum aestivum* L., nom. cons.
Genetic. Pureline. N86L090. Pedigree - Brule/3/Atlas 66/Nap Hal//Lancota sib/Aurora. HRWW adapted to Great Plains environments. Flour protein concentrations, based on a minimum of two harvest years, were above average, and equivalent to Lancota. Characterized by a significant loss of flour dough strength and performance. Loaf volume averaged approximately 50% of HRWW of similar flour protein concentrations; gluten strength, as measured by the Mixograph, was markedly reduced, equivalent to that of Chinese Spring. Loss of quality is a direct consequence of the presence of the Glu-D1 null-allele from Nap Hal.
- PI 591817. *Triticum aestivum* L., nom. cons.
Genetic. Pureline. N94L7843. Pedigree - GKF-8261//Nap Hal/CI13449/3/NE78868; GKF-8261 was developed and released in Hungary; NE78868 = Warrior/MinnIII-54-12//NE69559. HRWW adapted to Great Plains environments. Flour protein concentrations, based on results from a minimum of two harvest years, were above average, and equivalent to that of Lancota. Characterized by a significant loss of flour dough strength and performance. SDS sedimentation volumes averaged approximately 50% that of HRWW of similar flour protein concentrations; gluten strength, as measured by the Mixograph, was markedly reduced, equivalent to that of Chinese Spring. Loss of quality is a direct consequence of the presence of the Glu-D1 null-allele from Nap Hal.
- PI 591818. *Triticum aestivum* L., nom. cons.
Genetic. Pureline. N94L7844. Pedigree - GKF-8261//Nap Hal/CI13449/3/NE78868; GKF-8261 was developed and released in Hungary; NE78868 = Warrior/MinnIII-54-12//NE69559. HRWW adapted to Great Plains environments. Flour protein concentrations, based on a minimum of two harvest years, were above average, and equivalent to Lancota. Characterized by a significant loss of flour dough strength and performance. SDS sedimentation volumes averaged approximately 50% that of HRWW of similar flour protein concentrations; gluten strength, as measured by the Mixograph, was markedly reduced, equivalent to that of Chinese Spring. Loss of quality is a direct consequence of the presence of the Glu-D1 null-allele from Nap Hal.
- PI 591819. *Triticum aestivum* L., nom. cons.
Genetic. Pureline. N94L7845. Pedigree - GKF-8261//Nap Hal/CI13449/3/NE78868; GKF-8261 was developed and released in Hungary; NE78868 = Warrior/MinnIII-54-12//NE69559. HRWW adapted to Great Plains environments. Flour protein concentrations, based on a minimum of two harvest years, were above average, and equivalent to Lancota. Characterized by a significant loss of flour dough strength and performance. SDS sedimentation volumes averaged approximately 50% that of HRWW of similar flour protein concentrations; gluten strength as measured by the Mixograph, was markedly reduced, equivalent to that of Chinese Spring. Loss of quality is a direct consequence of the presence of the Glu-D1 null-allele from Nap Hal.
- PI 591820. *Triticum aestivum* L., nom. cons.
Genetic. Pureline. N94L7846. Pedigree - GKF-8261//Nap Hal/CI13449/3/NE78868; GKF-8261 developed and released in Hungary; NE 78868 = Warrior/MinnIII-54-12//NE69559. HRWW adapted to Great Plains environments. Flour protein concentrations, based on a minimum of two harvest years, were above average, and equivalent to Lancota. Characterized by a significant loss of flour dough strength and

performance. SDS sedimentation volumes averaged approximately 50% that of HRWW of similar flour protein concentrations; gluten strength, as measured by the Mixograph, was markedly reduced, equivalent to that of Chinese Spring. Loss of quality is a direct consequence of the presence of the Glu-D1 null-allele from Nap Hal.

The following were collected by D.R. Dewey, USDA-ARS, Forage and Range Research Laboratory, Utah State University, UMC-63, Logan, Utah 84322, United States; Kevin B. Jensen, USDA, ARS, Utah State University, Crops Research Laboratory, Logan, Utah 84322-6300, United States. Received 01/16/1992.

PI 591821. *Hordeum jubatum* L.

Wild. DJ-4011; W6 10405. Collected 08/16/1989 in Russian Federation. Elevation 900 m. Heavily grazed valley. Near the 681km marker on Highway M-52 (15km S of Cheketeman camp) toward Aktash and parallel to the Katun River (Gorno Altay A.O.). Siberia. Awnless.

PI 591822. *Hordeum jubatum* L.

Wild. DJ-4024; W6 10407. Collected 08/19/1989 in Russian Federation. Elevation 1140 m. On a dry, rocky slope off a secondary gravel road. In the vicinity of the Tuetka camp, about 37km W of Tuetka, Gorno Altay A.O. Siberia. Awnless to mucronate.

The following were developed by Laura Oberthur, Montana State University, Dept. of Plant & Soil Sciences, Bozeman, Montana 59717-0002, United States; G.D. Kushnak, Western Triangle Agric. Research Center, P.O. Box 1474, Conrad, Montana 59425, United States; Patrick F. Hensleigh, Montana State University, Dept. of Plant & Soil Sciences, Bozeman, Montana 59717-0002, United States; Thomas K. Blake, Montana State University, Dept. of Plant, Soil, & Environmental Sciences, Bozeman, Montana 59717, United States; E.A. Hockett, USDA, ARS, Montana State University, Plant and Soil Science Department, Bozeman, Montana 59717, United States; G.R. Carlson, Montana Agric. Exp. Station, Northern Agric. Research Center, Havre, Montana 59501, United States; J.L. Eckhoff, Montana Agric. Exp. Station, Eastern Agric. Research Center, Sidney, Montana 59270, United States; D.W. Wichman, Montana Agric. Exp. Station, Central Agric. Exp. Station, Moccasin, Montana, United States; Kenneth M. Gilbertson, USDA-ARS, Montana State University, Bozeman, Montana, United States; H.F. Bowman, Montana State University, Dept. of Plant, Soil & Environmental Sciences, Bozeman, Montana 59717, United States. Received 08/30/1995.

PI 591823. *Hordeum vulgare* L. ssp. *vulgare*

Cultivar. Pureline. "CHINOOK". CV-257. Pedigree - F18 single plant selection from Hector/Klages. Two-row, white kernel, midseason, full stature. Spikes mid-long, midlax, seminodding before maturity and nod at maturity. Spike awns rough. Glume awns equal in length to hair-covered glume. Kernels hulls adhering, finely wrinkled. Rachillas have long hairs. Higher yielding than Klages or Hector. Susceptible to effects of Russian wheat aphid (*Diuraphis noxia*), and shows limited tolerance to scald and net blotch.

The following were developed by Ken P. Vogel, USDA, ARS, University of Nebraska, Dept. of Agronomy, Lincoln, Nebraska 68583-0937, United States. Received 10/12/1995.

PI 591824. *Panicum virgatum* L.

Cultivar. Population. "SHAWNEE". Pedigree - One cycle of restricted, stratified, mass selection for forage yield and in vitro dry matter digestibility from Cave-in-Rock switchgrass. Upland, octaploid switchgrass. Improved forage quality as measured by in vitro dry matter digestibility (IVDMD) in comparison to Cave-in-Rock and improved forage

yield in comparison to Trailblazer. Good persistence and relatively free of diseases. Adapted to USDA hardiness zones 5,6, and 7 east of 100 deg. W. longitude.

The following were developed by Dan Phillips, University of Georgia, Department of Plant Pathology, Georgia Experiment Station, Experiment, Georgia 30223, United States; Richard S. Hussey, University of Georgia, College of Agric. and Envir. Sciences, Department of Plant Pathology, Athens, Georgia 30602-7274, United States; H. Roger Boerma, University of Georgia, Department of Crop & Soil Science, 3111 Plant Sciences Building, Athens, Georgia 30602-7272, United States; E.D. Wood, University of Georgia, Dept. of Crop & Soil Sciences, Athens, Georgia 30602, United States; S.L. Finnerty, University of Georgia, Dept. of Plant Pathology, Athens, Georgia 30602, United States; Bruce M. Luzzi, University of Guelph, Dept. of Crop Science, Guelph, Ontario N1G 2W1, Canada; John P. Tamulonis, University of Georgia, Dept. of Crop and Soil Sciences, Athens, Georgia, United States. Received 10/16/1995.

PI 591825. *Glycine max* (L.) Merr.

Breeding. Pureline. G93-9009. GP-179. Pedigree - F4 derived line from G83-559x(G80-1515(2)xPI 96354). High level of resistance to southern root-knot nematode (*Meloidogyne incognita*). Similar resistance to Mi as PI 96354 but higher seed yield. Maturity Group VI, about 4 days later than PI 96354. 14cm shorter and better lodging resistance than Bryan. Flowers white. Pubescence grey. Pod walls tan. Determinate growth habit. Seed coat yellow, buff hilum. Resistant to peanut (*Meloidogyne arenaria*) and javanese (*Meloidogyne javanica*) root-knot nematodes, race 3 and race 14 of *Heterodera glycines* and bacterial pustule (*Xanthomonas campestris* pv. *glycines*).

The following were collected by L. Pierola, Centro Fitotecnico de Pairumani, Casilla, Cochabamba, Bolivia; P. Gulick, Centro Fitotecnico de Pairumani, Casilla, Cochabamba, Bolivia. Received 10/08/1991.

PI 591826. *Triticum aestivum* L., nom. cons.

Landrace. 78; AMERICANO; MAC9192-8946. Collected 05/13/1983 in Chuquisaca, Bolivia. Latitude 19 deg. 10' S. Longitude 65 deg. 23' W. Elevation 2400 m. Pupahuaycu, Zudanez.

The following were collected by A. Rojas, Centro Fitotecnico de Pairumani, Casilla, Cochabamba, Bolivia; A. Avila, Centro Fitotecnico de Pairumani, Casilla, Cochabamba, Bolivia. Received 10/08/1991.

PI 591827. *Triticum aestivum* L., nom. cons.

Landrace. 82; CRIOLLO; MAC9192-8954. Collected 07/25/1983 in Cochabamba, Bolivia. Latitude 17 deg. 40' S. Longitude 66 deg. 15' W. Elevation 2450 m. Rancho moco, Capinota.

PI 591828. *Triticum aestivum* L., nom. cons.

Landrace. 83; MEXICO; MAC9192-8956. Collected 07/25/1983 in Cochabamba, Bolivia. Latitude 17 deg. 33' S. Longitude 66 deg. 16' W. Elevation 2450 m. Santibanez, Capinota.

PI 591829. *Triticum aestivum* L., nom. cons.

Landrace. 89; FLORENTINO; MAC9192-8968. Collected 07/15/1983 in Cochabamba, Bolivia. Latitude 17 deg. 40' S. Longitude 66 deg. 15' W. Elevation 2750 m. Banda Rancho, Carrasco.

The following were donated by A. Avila, Centro Fitotecnico de Pairumani, Casilla, Cochabamba, Bolivia. Received 10/08/1991.

PI 591830. *Triticum aestivum* L., nom. cons.
Landrace. 110; MAC9192-8998. Collected in Bolivia.

PI 591831. *Triticum durum* Desf.
Landrace. 114; MAC9192-6806. Collected in Bolivia.

The following were collected by A. Rojas, Centro Fitotecnico de Pairumani, Casilla, Cochabamba, Bolivia; P. Gulick, Centro Fitotecnico de Pairumani, Casilla, Cochabamba, Bolivia; A. Avila, Centro Fitotecnico de Pairumani, Casilla, Cochabamba, Bolivia. Received 10/08/1991.

PI 591832. *Hordeum vulgare* L. **ssp. vulgare**
Landrace. 44; MAC9192-8880. Collected 04/20/1983 in Cochabamba, Bolivia.
Latitude 17 deg. 20' S. Longitude 64 deg. 10' W. Elevation 3570 m.
Cotani, Chapare.

The following were developed by LESCO, Inc., United States. Received 10/26/1995.

PI 591833. *Lolium perenne* L.
Cultivar. "ADVANTAGE". PVP 9600004.

The following were developed by Pure Seed Testing, Inc., United States. Received 10/26/1995.

PI 591834. *Lolium perenne* L.
Cultivar. "2CB". PVP 9600005.

The following were developed by Rogers Seed Company, United States. Received 10/26/1995.

PI 591835. *Pisum sativum* L.
Cultivar. "SUPER SUPER SNAP". PVP 9600007.

PI 591836. *Phaseolus vulgaris* L.
Cultivar. "SHADOW". PVP 9600009.

The following were developed by Resource Seeds, Inc., United States. Received 10/26/1995.

PI 591837. *X Triticosecale* sp.
Cultivar. "301". PVP 9600010.

The following were developed by Holden's Foundation Seeds, Inc., United States. Received 10/26/1995.

PI 591838. *Zea mays* L. **ssp. mays**
Cultivar. "LH177". PVP 9600011.

PI 591839. *Zea mays* L. **ssp. mays**
Cultivar. "LH226Ht". PVP 9600012.

PI 591840. *Zea mays* L. **ssp. mays**
Cultivar. "LH262". PVP 9600013.

PI 591841. *Zea mays* L. **ssp. mays**
Cultivar. "LH271". PVP 9600014.

The following were developed by Rogers Seed Company, United States. Received 10/26/1995.

PI 591842. *Phaseolus vulgaris* L.
Cultivar. "BUCKSKIN". PVP 9600015.

PI 591843. *Phaseolus vulgaris* L.
Cultivar. "CRIMSON". PVP 9600016.

PI 591844. *Phaseolus vulgaris* L.
Cultivar. "FARGO". PVP 9600017.

PI 591845. *Phaseolus vulgaris* L.
Cultivar. "NAVIGATOR". PVP 9600018.

PI 591846. *Phaseolus vulgaris* L.
Cultivar. "SANTIAGO". PVP 9600019.

PI 591847. *Phaseolus vulgaris* L.
Cultivar. "VOYAGER". PVP 9600020.

The following were developed by Asgrow Seed Company, Genecorp, Inc., United States. Received 10/26/1995.

PI 591848. *Lactuca sativa* L.
Cultivar. "PATINA". PVP 9600021.

PI 591849. *Lactuca sativa* L.
Cultivar. "SWEET GEM". PVP 9600022.

The following were donated by V. A. Dragavtsev, N. I. Vavilov Research Institute, of Plant Industry, 44 Bolshaya Morskaya Street, St. Petersburg, Leningrad 190000, Russian Federation. Received 01/14/1992.

PI 591850. *Triticum aestivum* L., nom. cons.
Cultivar. "BELGORODSKAJA 5"; WIR 51731; NSGC 19. Developed in Russian Federation.

PI 591851. *Triticum aestivum* L., nom. cons.
Cultivar. "VESELOPODOLIANSKAJA 12"; WIR 51873; NSGC 20. Developed in Russian Federation.

PI 591852. *Triticum aestivum* L., nom. cons.
Cultivar. "FERRUGINEUM 38"; WIR 48694; NSGC 24. Developed in Russian Federation.

PI 591853. *Triticum aestivum* L., nom. cons.
Cultivar. "IVANOVSKAJA 12"; WIR 51736; NSGC 27. Developed in Russian Federation.

PI 591854. *Triticum aestivum* L., nom. cons.
Cultivar. "HAR' KOVSKAJA 69"; WIR 49899; NSGC 31. Developed in Ukraine.

PI 591855. *Triticum aestivum* L., nom. cons.
Cultivar. "LESOSTEPKA 76"; WIR 34782; NSGC 32. Developed in Russian Federation.

PI 591856. *Triticum aestivum* L., nom. cons.
Cultivar. "VELUTINUM 97"; WIR 48071; NSGC 44. Developed in Russian Federation.

The following were developed by Agric. Research Inst. of the Southeast, Saratov, Saratov, Russian Federation. Donated by V. A. Dragavtsev, N. I. Vavilov Research Institute, of Plant Industry, 44 Bolshaya Morskaya Street, St. Petersburg, Leningrad 190000, Russian Federation. Received 01/14/1992.

PI 591857. *Triticum aestivum* L., nom. cons.
Cultivar. "SARATOVSKAJA BELOZERNAJA"; WIR 48674; NSGC 45.

The following were donated by V. A. Dragavtsev, N. I. Vavilov Research Institute, of Plant Industry, 44 Bolshaya Morskaya Street, St. Petersburg, Leningrad 190000, Russian Federation. Received 01/14/1992.

PI 591858. *Triticum aestivum* L., nom. cons.
Cultivar. "PIROTRIKS 50"; WIR 48072; NSGC 49. Developed in Russian Federation.

PI 591859. *Triticum aestivum* L., nom. cons.
Cultivar. "RODINA"; WIR 57030; NSGC 58. Developed in Russian Federation.

PI 591860. *Triticum aestivum* L., nom. cons.
Cultivar. "IRKUTSKAJA 49"; WIR 41087; NSGC 75. Developed in Russian Federation.

PI 591861. *Triticum aestivum* L., nom. cons.
Cultivar. "CAJKA"; WIR 52837; NSGC 80. Developed in Russian Federation.

PI 591862. *Triticum aestivum* L., nom. cons.
Cultivar. "ARTASABI 42"; WIR 40657; NSGC 83. Developed in Russian Federation.

PI 591863. X *Triticosecale* sp.
Cultivar. "NAD-34"; WIR 4; NSGC 108. Developed in Russian Federation. 2n=56.

PI 591864. X *Triticosecale* sp.
Cultivar. "NAD-329"; WIR 16; NSGC 110. Developed in Russian Federation. 2n=56.

PI 591865. X *Triticosecale* sp.
Cultivar. "PUSKINSKOJE I"; WIR 556; NSGC 126. Developed in Russian Federation. 2n=42.

The following were collected by P. Hanelt, Zentralinstitut fur Genetik u. Kultur., Correnstrasse 3, D-O-4325, Gatersleben, Germany; J. Kruse, Botanical Institute, Tblisi, Georgia. Received 12/24/1991.

PI 591866. *Hordeum vulgare* L. ssp. *vulgare*
Landrace. SN-78; HOR 9621; A Hor 9621/82; NSGC 353. Collected 08/09/1981 in Georgia. Elevation 1950 m. Cazasi near Usguli, east-southeast of Mestia, Rayon Mestia (Ober-Svanetien).

PI 591867. *Triticum aestivum* L., nom. cons.
Landrace. SN-Z32c; AW 6637C/86; NSGC 366. Collected 11/17/1984 in Georgia. Botanical Institute, Latali, southwest of Mestia, Rayon Mestia (Ober-Svanetien).

PI 591868. *Triticum dicoccon* Schrank
Landrace. SN-Z6; AW 6627/85; NSGC 373. Collected 08/09/1984 in Georgia. Botanical Institute, Latali, southwest of Mestia, Rayon Mestia, Ober-Svanetien.

- PI 591869. *Triticum aestivum* L., nom. cons.
Landrace. SN-Z14a; AW 6634A/86; NSGC 382. Collected 08/09/1984 in Georgia. Botanical Institute, Latali, southwest of Mestia, Rayon Mestia, Ober-Svanetien; originally from Jeli, Rayon Mestia.
- PI 591870. *Triticum aestivum* L., nom. cons.
Landrace. SN-Z17a; HW 6554/86; NSGC 387. Collected 08/09/1984 in Georgia. Botanical Institute, Latali, southwest of Mestia, Rayon Mestia, Ober-Svanetien; originally from Eceri, Rayon Mestia.
- PI 591871. *Triticum monococcum* L.
Landrace. SN-264; H Tri 13605/87; TRI 13605; NSGC 398. Collected 07/26/1982 in Georgia. Elevation 500 m. Cchuteli, east of Cageri, Rayon Cageri, Lecchuai; college experimental field.
- PI 591872. *Hordeum vulgare* L. ssp. *vulgare*
Landrace. SN-2091; HOR 10642; A Hor 10642/87; NSGC 429. Collected 08/09/1986 in Georgia. Elevation 2050 m. Chone, about 15 km southeast of Satili, Rayon Duseti, historical province Chevsuretien.
- PI 591873. *Hordeum vulgare* L. ssp. *vulgare*
Landrace. SN-2123; HOR 10647; A Hor 10647/87; NSGC 440. Collected 08/11/1986 in Georgia. Elevation 1700 m. Gudani, about 60 km northeast of Duseti, Rayon Duseti, historical province Chevsuretien.
- PI 591874. *Hordeum vulgare* L. ssp. *vulgare*
Landrace. SN-2156; HOR 10649; A Hor 10649/87; NSGC 444. Collected 08/13/1986 in Georgia. Elevation 1650 m. Ukanapsavi (Calachevi), about 13 km east of Suapcho, Rayon Duseti, historical province Psavi.
- PI 591875. *Hordeum vulgare* L. ssp. *vulgare*
Landrace. SN-2171; HOR 10741; A Hor 10741/88; NSGC 447. Collected 08/14/1987 in Georgia. Elevation 1400 m. Satili, about 80 km northwest of Duseti, Rayon Duseti, historical province Chevsuretien; originally from Chone.
- PI 591876. *Hordeum vulgare* L. ssp. *vulgare*
Landrace. SN-2174a; HOR 10742; A Hor 10742/89; NSGC 449. Collected 08/14/1987 in Georgia. Elevation 1400 m. Satili, about 80 km northwest of Duseti, Rayon Duseti, historical province Chevsuretien.
- PI 591877. *Hordeum vulgare* L. ssp. *vulgare*
Landrace. SN-2216a; HOR 10752; A Hor 10752/88; NSGC 457. Collected 08/22/1987 in Georgia. Elevation 2050 m. Diklo, northeast of Osalo, jenseits der Pirikita Alazani, Hochbecken, Rayon Achaeta, historical province Tuschetien.
- PI 591878. *Hordeum vulgare* L. ssp. *vulgare*
Landrace. SN-2217a; HOR 10754; A Hor 10754/88; NSGC 458. Collected 08/22/1987 in Georgia. Elevation 2050 m. Diklo, northeast of Osalo, jenseits der Pirikita Alazani, Hochbecken, Rayon Achaeta, historical province Tuschetien.
- PI 591879. *Hordeum vulgare* L. ssp. *vulgare*
Landrace. SN-2224; HOR 10758; A Hor 10758/89; NSGC 460. Collected 08/24/1987 in Georgia. Elevation 2050 m. Ivelurta, Oberhang in Mittellauf der Tusetskaja Alazani, northwest of Osalo, Rayon Achaeta, historical province Tuschetien.
- PI 591880. *Hordeum vulgare* L. ssp. *vulgare*
Landrace. SN-2230; HOR 10775; A Hor 10775/88; NSGC 462. Collected 01/19/1988 in Georgia. Chachabo, southwest of Satili, Rayon Duseti, historical province Chevsuretien.

PI 591881. *Hordeum vulgare* L. ssp. *vulgare*
Landrace. SN-2239a; HOR 10819; H Hor 10819/90; NSGC 467. Collected
09/07/1988 in Georgia. Elevation 740 m. Rayon Sagaredo, historical
province Kachetien.

The following were collected by Kevin Hendricksen, Peace Corps, San Manuel,
Lempira, Honduras. Received 08/20/1992.

PI 591882. *Hordeum vulgare* L. ssp. *vulgare*
Cultivated. NSGC 532. Collected 03/1992 in Lempira, Honduras. Elevation
2000 m. El Cedro, San Manuel. Grown for making pind, a coffee
substitute, and chilate, a non-fermented grain drink.

The following were developed by Northwest Agricultural University, Yangling,
Shaanxi, China. Donated by Chia-Tsang Liu, University of Idaho, Ag. Coop.
Extension, 1214 Joseph St., Moscow, Idaho 83843, United States. Received
07/01/1992.

PI 591883. *Triticum aestivum* L., nom. cons.
Breeding. 10-2; 29; NSGC 574.

The following were donated by N.I. Vavilov All-Russian Scientific Res.,
Institute of Plant Genetic Resources, 44 Bolshaya Morskaya Street, St.
Petersburg, Russian Federation. Received 11/03/1992.

PI 591884. *Triticum aestivum* L., nom. cons.
Cultivar. "LUTESCENS 6028"; WIR 57455; NSGC 1423. Developed in Russian
Federation. Contains 'new' bunt resistance genes.

The following were collected by N.I. Vavilov All-Russian Scientific Res.,
Institute of Plant Genetic Resources, 44 Bolshaya Morskaya Street, St.
Petersburg, Russian Federation. Developed by Webb, Webb Seed Co., Wordsley,
Stourbridge, England, United Kingdom. Received 11/26/1990.

PI 591885. *Triticum aestivum* L., nom. cons.
Cultivar. "CHALLENGE"; WIR 5779; Webb's Challenge White; NSGC 1833.
Collected in Leningrad, Russian Federation. Pedigree - selection from
White Victoria. See CItr 4683, CV-6.

The following were donated by N.I. Vavilov All-Russian Scientific Res.,
Institute of Plant Genetic Resources, 44 Bolshaya Morskaya Street, St.
Petersburg, Russian Federation. Received 11/26/1990.

PI 591886. *Triticum aestivum* L., nom. cons.
Cultivar. "VERHNIACSKAJA 20"; WIR 58524; NSGC 1836. Developed in Russian
Federation.

PI 591887. *Triticum aestivum* L., nom. cons.
Cultivar. "LUTESCENS 278"; WIR 58680; NSGC 1837. Developed in Russian
Federation.

The following were developed by Agric. Research Inst. of the Southeast,
Saratov, Saratov, Russian Federation. Donated by N.I. Vavilov All-Russian
Scientific Res., Institute of Plant Genetic Resources, 44 Bolshaya Morskaya
Street, St. Petersburg, Russian Federation. Received 11/26/1990.

PI 591888. *Triticum aestivum* L., nom. cons.

Cultivar. "SARATOVSKAJA II"; WIR 58858; NSGC 1838.

The following were collected by N.I. Vavilov All-Russian Scientific Res., Institute of Plant Genetic Resources, 44 Bolshaya Morskaya Street, St. Petersburg, Russian Federation. Developed by A.N. Jones, Newark, New York, United States. Received 11/26/1990.

PI 591889. *Triticum aestivum* L., nom. cons.
Cultivar. "OATKA CHIEF"; WIR 22099; NSGC 1839. Collected in Leningrad, Russian Federation. See CItR 1985, CV-118.

The following were donated by D. Stoyanov, Inst. of Intro. & Plant Res. "K. Malkov", Sadovo, Plovdiv, Bulgaria. Received 09/22/1989.

PI 591890. *Triticum spelta* L.
Landrace. 87102334; ROTER BEGRANTER TIROLER; NSGC 1841. Collected in Austria.

PI 591891. *Triticum spelta* L.
Landrace. 87102340; ASTURIEN; NSGC 1842. Collected in Spain.

PI 591892. *Triticum spelta* L.
Landrace. 87102210; WEISSER KOLBENSPELZ; NSGC 1843. Collected in Germany

PI 591893. *Triticum spelta* L.
Landrace. 87102211; BBA 1001304; NSGC 1844. Collected in Germany.

PI 591894. *Triticum spelta* L.
Landrace. 87102202; RUEFENACH 6; NSGC 1845. Collected in Germany.

PI 591895. *Triticum spelta* L.
Landrace. 87102158; WAGGERSHOUSER HOHENHEIMER; NSGC 1846. Collected in Germany.

PI 591896. *Triticum spelta* L.
Landrace. 87102161; FUGGERS BACLENHAUSER ZUCHT; NSGC 1847. Collected in Germany.

PI 591897. *Triticum spelta* L.
Landrace. 87102162; ROTTUREIL FRUHKORN; NSGC 1848. Collected in Germany.

PI 591898. *Triticum spelta* L.
Cultivar. "OBERKULMER 3"; 87102199; NSGC 1849. Collected in Bulgaria.

PI 591899. *Triticum spelta* L.
Landrace. 87102159; WHITE SPELT; NSGC 1850. Collected in England, United Kingdom.

PI 591900. *Triticum spelta* L.
Landrace. 87102339; BBA 1305; NSGC 1851. Collected in Spain.

The following were developed by Heidesand Landw. Wirt. u. Saatz. GMBH, Rotenburg, Lower Saxony, Germany. Donated by D. Stoyanov, Inst. of Intro. & Plant Res. "K. Malkov", Sadovo, Plovdiv, Bulgaria. Received 09/22/1989.

PI 591901. *Triticum spelta* L.
Landrace. 87102201; ROTENBURG 10; NSGC 1852.

The following were donated by D. Stoyanov, Inst. of Intro. & Plant Res. "K.

Malkov", Sadovo, Plovdiv, Bulgaria. Received 09/22/1989.

PI 591902. *Triticum spelta* L.

Landrace. 87102163; STEINERS ROTER TIROLER DINKEL; NSGC 1853. Collected in Germany.

PI 591903. *Triticum spelta* L.

Landrace. 87102200; MURI 6; NSGC 1854. Collected in Germany.

The following were collected by Inst. of Introduction & Plant Genetic Resources "K. Malkov", Sadovo, Plovdiv, Bulgaria. Received 09/22/1989.

PI 591904. *Triticum spelta* L.

Cultivar. "LIESTAL 11"; 87102198; NSGC 1855. Collected in Bulgaria.

The following were developed by J. Reeves, Department of Agriculture, South Perth, Western Australia, Australia; I.R. Barclay, WA Department of Agriculture, Perth, Western Australia, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/06/1993.

PI 591905. *Triticum aestivum* L., nom. cons.

Cultivar. "CADOUX"; AUS 25648; NSGC 1898. Pedigree - Centrifen/Gamenya//Gamenya/3/Jacup.

The following were developed by P. Martin, Department of Agriculture, Victoria, Australia; B.R. Whan, Department of Agriculture, Melbourne, Victoria, Australia; J.A. Davies, Department of Agriculture, Melbourne, Victoria, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/06/1993.

PI 591906. *Triticum aestivum* L., nom. cons.

Cultivar. "KATUNGA"; AUS 25468; NSGC 1899. Pedigree - RD 28*2/Millewa.

The following were developed by P.S. Brennan, Wheat Research Institute, P.O. Box 5282, Toowoomba, Queensland, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/06/1993.

PI 591907. *Triticum aestivum* L., nom. cons.

Cultivar. "HOUTMAN"; AUS 25868; NSGC 1900. Pedigree - Brochis 'S'/Hartog

The following were developed by L. O'Brien, Department of Agriculture, Victoria, Australia; F.W. Ellison, University of Sydney, Sydney, New South Wales, Australia; G. Brown, University of Sydney, Sydney, New South Wales, Australia; D.J. Mares, University of Sydney, Sydney, New South Wales, Australia; S.G. Moore, University of Sydney, Sydney, New South Wales, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/06/1993.

PI 591908. *Triticum aestivum* L., nom. cons.

Cultivar. "SUNMIST"; AUS 25869; NSGC 1901. Pedigree - selection from Miskle.

PI 591909. *Triticum aestivum* L., nom. cons.

Cultivar. "SUNSTATE"; AUS 25870; NSGC 1902. Pedigree -

Hartog*4//5*Cook/VPM 1.

The following were developed by P.S. Brennan, Wheat Research Institute, P.O. Box 5282, Toowoomba, Queensland, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/06/1993.

PI 591910. *Triticum aestivum* L., nom. cons.
Cultivar. "JANZ"; AUS 24794; NSGC 1903. Pedigree - 3AG3/4*Condor//Cook.

The following were developed by D. The, Queensland Dept. of Primary Industries, Queensland, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/06/1993.

PI 591911. *Triticum aestivum* L., nom. cons.
Cultivar. "PEROUSE"; AUS 24793; NSGC 1904. Pedigree - 3AG14/4*Condor//Oxley/3/3*Cook.

The following were developed by K.V. Cooper, Waite Agricultural Research Institute, Adelaide, South Australia, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/06/1993.

PI 591912. X *Triticosecale* sp.
Cultivar. "ABACUS"; AUS 25579; NSGC 1906. Pedigree - K875/Snoopy//T2893/3/Currency. Australian "PVR" variety.

The following were developed by Z. Lin, Henan Academy of Agric. Sciences, Wheat Institute, Zhengzhou, Henan, China. Received 01/07/1993.

PI 591913. *Triticum aestivum* L., nom. cons.
Cultivar. "YUMAI 13"; Zhengzhou 891; NSGC 2016. Pedigree - Bainong 3217/9612-2.

The following were developed by Univ. of Stellenbosch, Stellenbosch, Cape Province, South Africa. Received 02/19/1993.

PI 591914. *Triticum durum* Desf.
Cultivar. "ORANJA"; USD8712; NSGC 2071. Pedigree - Gerardo VZ578//Leeds mutant/Gaviota/3/Fuligula 'S'.

PI 591915. X *Triticosecale* sp.
Cultivar. "USGEN 19"; Anoas 'S'; NSGC 2072.

The following were developed by Small Grain Centre, Private Bag X29, Private Bag X29, Bethlehem 9700, South Africa. Received 01/31/1993.

PI 591916. *Triticum aestivum* L., nom. cons.
Cultivar. "BETTA"; NSGC 2083. Russian Wheat Aphid resistant.

The following were developed by P.S. Brennan, Wheat Research Institute, P.O. Box 5282, Toowoomba, Queensland, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/14/1994.

PI 591917. *Triticum aestivum* L., nom. cons.

Cultivar. "TASMAN"; AUS 25557; QT4546; NSGC 5081. Pedigree - Torres/3/Gaboto/Siete Cerros//Bluebird/Ciano. Hard white spring wheat. High yielding, strong-strawed alterantive to Hartog. Resistant to stem, stripe and leaf rusts and flag smut.

PI 591918. *Triticum aestivum* L., nom. cons.

Cultivar. "PELSART"; AUS 25558; QT4639; NSGC 5082. Pedigree - Potam 70/4*Cook. Hard, white facultative wheat with high level of tolerance to root lesion nematode. Resistant to stem, stripe and leaf rust, common root rot, and flag smut.

The following were developed by P. Martin, Department of Agriculture, Victoria, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/14/1994.

PI 591919. *Triticum aestivum* L., nom. cons.

Cultivar. "BEULAH"; AUS 25567; ED086; NSGC 5083. Pedigree - Cook*2/Millewa//TM56. Hhard white spring, semi-dwarf, similar height to Meering with moderately strong straw and early flowering. Resistant to stem and stripe rust, CCN, and flag smut.

PI 591920. *Triticum aestivum* L., nom. cons.

Cultivar. ED089; "GOROKE"; AUS 25568; NSGC 5084. Pedigree - TM56*2/AUSEN4-21//77-702D [3AG3/4*Condor]. Hard white spring semi-dwarf. Resistant to lodging. Resistant to leaf, stripe, and stem rust, CCN, and flag smut.

The following were developed by L. O'Brien, Department of Agriculture, Victoria, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/14/1994.

PI 591921. *Triticum aestivum* L., nom. cons.

Cultivar. EL254; "OUYEN"; AUS 25571; NSGC 5085. Pedigree - Takari/TM 56//Cocamba. Hard white spring semi-dwarf similar in height to Meering. Resistant to stripe rust, CCN, and flag smut.

The following were developed by G.J. Hollamby, Roseworthy Agricultural College, Roseworthy, South Australia, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/14/1994.

PI 591922. *Triticum aestivum* L., nom. cons.

Cultivar. AUS 25923; "STILETTO"; RAC680; NSGC 5086. Pedigree - Veranopolis/3*RAC177//3*Spear/3/Dagger. Hard white spring type. A backcross derivative of Dagger, with all its desirable attributes as well as possessing Sr13. Resistant to stem rust, flag smut, and bunt.

The following were developed by A.J. Rathjen, Department of Agriculture, Victoria, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/14/1994.

PI 591923. *Triticum aestivum* L., nom. cons.

Cultivar. AUS 25925; ED069; "VECTIS"; NSGC 5088. Pedigree - Mexico 120/Koda//Raven/3/Mexico 22A/Mengavi/4/Gamenya/Jaral//Warriquam. Soft white spring wheat with more superior biscuit making qualities than Wyuna. Early to midseason in flowering. Resistant to stripe rust and flag smut.

The following were developed by P.S. Brennan, Wheat Research Institute, P.O. Box 5282, Toowoomba, Queensland, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/14/1994.

PI 591924. *Triticum aestivum* L., nom. cons.

Cultivar. "ROWAN"; QT4636; AUS 25927; NSGC 5090. Pedigree - Jaral 66/Gamut/4*Hartog. Awnless hard white spring wheat for stock feed or green feed. Resistant to stem, stripe, and leaf rust, yellow spot, and flag smut.

The following were developed by J.A. Fisher, NSW Agriculture, New South Wales, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/14/1994.

PI 591925. *Triticum aestivum* L., nom. cons.

Cultivar. AUS 25928; "SWIFT"; WW879; NSGC 5091. Pedigree - Condor*4/3Ag14//Romany/4189. Hard white spring semi-dwarf for NSW Silo groups 5 and 6 as an alternative to Janz and Dollarbird. Resistant to stem, stripe, and leaf rust, Septoria tritici blotch, flag smut, and bunt.

The following were developed by S. Ellis, Victoria Department of Agriculture, Victoria, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/14/1994.

PI 591926. *Hordeum vulgare* L. ssp. vulgare

Cultivar. "ARAPILES"; AUS 406994; 8727; NSGC 5092. Pedigree - Noyep/Proctor//CI3576/Union/4/Kenia/3/Research//Noyep/Proctor/5/Domen. 2-row spring malting barley. Semi-prostrate growth habit and medium height.

The following were developed by Department of Agriculture, Perth, Western Australia, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/14/1994.

PI 591927. *Hordeum vulgare* L. ssp. vulgare

Cultivar. "MORRELL"; AUS 406995; NSGC 5093. Pedigree - WUM221/P23822 (81S806)/5/Forrest (81S719)/4/Psaknon (80S564)/Dampier//M19 (76T111)/3/Zephyr. 2-row spring naked barley with semi-erect growth habit. Resistant to powdery mildew and spot-type net blotch.

The following were developed by NSW Agriculture, New South Wales, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/14/1994.

PI 591928. *Hordeum vulgare* L. ssp. vulgare

Cultivar. "KAPUTAR"; ARUPO "S"; AUS 406996; NSGC 5094. Pedigree - 5604/1025/3/Emir/Shabet//CM67/4*F3 Bulk HIP. 2-row spring barley with semi-dwarf height and strong straw. Resistant to leaf rust, net blotch, powdery mildew, and covered smut.

PI 591929. *Hordeum vulgare* L. ssp. vulgare

Cultivar. "NAMOI"; CALIDAD MIS 74; AUS 406997; NSGC 5095. Pedigree - Sultan/Nackta//RM1508/Godiva. 2-row spring naked barley. Resistant to

scald.

The following were developed by Department of Agriculture, Perth, Western Australia, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/14/1994.

PI 591930. *Avena sativa* L.

Cultivar. AUS 701646; "CARROLUP"; 81Q346; NSGC 5096. Pedigree - Mortlock/5/Kent (80Q256)/Ballidu (M127)//Curt/3/Cortez (71Q124)/4/TAMO-312 (78Q125)/2*West. Spring oat with non-dwarf plant and mid-season maturity.

The following were developed by G. Roberts, Agricultural Research Station, N.S.W. Department of Agriculture, Temora, New South Wales, Australia. Donated by Michael C. Mackay, Australian Winter Cereals Collection, PMB, RMB 944, Tamworth, New South Wales 2340, Australia. Received 07/14/1994.

PI 591931. *Avena sativa* L.

Cultivar. AUS 701703; "BIMBIL"; MA5027; NSGC 5097. Pedigree - Cooba/TAMO-301. Winter dual purpose oat of medium height and improved straw strength over Cooba. Resistant to crown rust, Septoria leaf blotch, halo blight, and bacterial stripe blight.

The following were developed by H. van Niekerk, Small Grain Centre, Grain Crops Research Institute, Bethlehem, Orange Free State, South Africa. Received 06/23/1994.

PI 591932. *Triticum aestivum* L., nom. cons.

Cultivar. "TUGELA-DN"; NSGC 5115. Russian Wheat Aphid resistant winter wheat.

PI 591933. *Triticum aestivum* L., nom. cons.

Cultivar. "MARICO"; NSGC 5116. Spring wheat for irrigated production.

The following were developed by B. Lombard, Sensako Cooperative, Ltd., P.O. Box 556, Agricultural Research Station, Bethlehem, Orange Free State 9700, South Africa. Received 06/06/1994.

PI 591934. *Triticum aestivum* L., nom. cons.

Cultivar. "DIAS"; NSGC 5126. Spring wheat for the Western Cape.

PI 591935. *Triticum aestivum* L., nom. cons.

Cultivar. "ADAM TAS"; NSGC 5127. Spring wheat for the Western Cape.

PI 591936. *Triticum aestivum* L., nom. cons.

Cultivar. "NANTES"; NSGC 5128. Spring wheat for the Western Cape.

PI 591937. *Triticum aestivum* L., nom. cons.

Cultivar. "SST 55"; NSGC 5129. Spring wheat for the Western Cape.

The following were developed by F. du Toit, Small Grain Centre, Grain Crops Research Institute, Private Bag X29, Bethlehem, 9700, South Africa. Received 06/06/1994.

PI 591938. *Triticum aestivum* L., nom. cons.

Cultivar. "SST 86"; NSGC 5131. Dwarf spring wheat for irrigated production.

- PI 591939. *Triticum aestivum* L., nom. cons.
Cultivar. "SST 822"; NSGC 5132. Spring wheat for irrigated production.
- PI 591940. *Triticum aestivum* L., nom. cons.
Cultivar. "SST 825"; NSGC 5133. Spring wheat for irrigated production.

The following were developed by J. Malan, Sensako Cooperative, Ltd., P.O. Box 556, Bethlehem, Orange Free State 9700, South Africa. Received 06/06/1994.

- PI 591941. *Triticum aestivum* L., nom. cons.
Cultivar. "SST 333"; NSGC 5134. Winter wheat with Russian Wheat Aphid resistance.
- PI 591942. *Triticum aestivum* L., nom. cons.
Cultivar. "SST 124"; NSGC 5135. Winter wheat.
- PI 591943. *Triticum aestivum* L., nom. cons.
Cultivar. "RIEMLAND"; NSGC 5136. Winter wheat.
- PI 591944. *Triticum aestivum* L., nom. cons.
Cultivar. "HUGENOOT"; NSGC 5137. Winter wheat.

The following were developed by J.P. Jordaan, Sensako Co-operative Ltd., Postbus 556, Bethlehem, Orange Free State 9700, South Africa. Received 06/06/1994.

- PI 591945. *Secale cereale* L. ssp. *cereale*
Cultivar. "SSR 727"; NSGC 5138. Russian Wheat Aphid resistant.
- PI 591946. X *Triticosecale* sp.
Cultivar. "SSKR 626"; NSGC 5139.
- PI 591947. X *Triticosecale* sp.
Cultivar. "SSKR 628"; NSGC 5140.
- PI 591948. *Avena sativa* L.
Cultivar. "SSH 421"; NSGC 5141.
- PI 591949. *Avena sativa* L.
Cultivar. "SSH 423"; NSGC 5142.

The following were collected by International Plant Genetic Resources Institute, Via delle Sette Chiese 142, Rome, Italy. Received 05/24/1994.

- PI 591950. *Avena sativa* L.
Landrace. 2730-10; NSGC 5143. Collected in Pakistan.
- PI 591951. *Hordeum vulgare* L. ssp. *vulgare*
Landrace. 2730-11; NSGC 5144. Collected in Pakistan.
- PI 591952. *Hordeum vulgare* L. ssp. *vulgare*
Landrace. 2809-2; NSGC 5145. Collected in Pakistan.
- PI 591953. *Hordeum vulgare* L. ssp. *vulgare*
Landrace. 2748-8; NSGC 5146. Collected in Pakistan.
- PI 591954. *Hordeum vulgare* L. ssp. *vulgare*
Landrace. 2825-1; NSGC 5147. Collected in Pakistan.
- PI 591955. *Hordeum vulgare* L. ssp. *vulgare*
Landrace. 2828-2; NSGC 5149. Collected in Pakistan.

PI 591956. *Hordeum vulgare* L. ssp. *vulgare*

Landrace. 2827-2; NSGC 5153. Collected in North-West Frontier, Pakistan.

The following were donated by Maria Kalevitch, Kerr Center for Sustainable Agric., P.O. Box 588, Poteau, Oklahoma 74953, United States. Received 03/28/1994.

PI 591957. *Triticum aestivum* L., nom. cons.

Cultivar. "INNA"; NSGC 5155. Developed in Russian Federation. Developed in southern Russia.

The following were collected by A. Elings, Wageningen Agricultural University, Department of Plant Breeding, Postbus 386, Wageningen, Gelderland, Netherlands. Donated by Rients E. Niks, Wageningen Agricultural University, Department of Plant Breeding, P.O.B. 386, Wageningen, Gelderland 6700 AJ, Netherlands. Received 05/16/1994.

PI 591958. *Hordeum vulgare* L. ssp. *vulgare*

Landrace. TRIGO BIASA; NSGC 5156. Collected 03/16/1993 in Java, Indonesia.

The following were developed by Constatinos Josephides, Ministry of Agriculture & Natural Resources, Agricultural Research Institute, P.O. Box 2016, Nicosia, Cyprus. Received 03/22/1994.

PI 591959. *Triticum durum* Desf.

Cultivar. "DW 1"; CYD84-313-52D-0P-2P-0P; NSGC 5157. Pedigree - Lloyd/Karpasia.

PI 591960. *Triticum durum* Desf.

Cultivar. CYD84-313-52D-0P-10P-0P; "DW 2"; NSGC 5158. Pedigree - Lloyd/Karpasia.

PI 591961. *Triticum durum* Desf.

Cultivar. CYD84-330-29D-0P-6P-0P; "DW 4"; NSGC 5159. Pedigree - Edmore/Karpasia.

The following were developed by C.N.A. de Sousa, EMBRAPA, Caixa Postal 569, Passo Fundo, Rio Grande do Sul, Brazil. Received 03/04/1994.

PI 591962. *Triticum aestivum* L., nom. cons.

Cultivar. "EMBRAPA 10"; "GUAJA"; NSGC 5160. Pedigree - CNT 8*3/Sonora 64. Spring type. Susceptible to soil acidity/aluminum toxicity.

PI 591963. *Triticum aestivum* L., nom. cons.

Cultivar. "EMBRAPA 15"; NSGC 5161. Pedigree - CNT 10/BR 5//PF 75172/Sel. Tifton 72-59. Spring type. Tolerance to soil acidity/aluminum toxicity. Resistant to powdery mildew, SBMV, and all races of stem rust and leaf rust found in Brazil.

PI 591964. *Triticum aestivum* L., nom. cons.

Cultivar. "EMBRAPA 16"; NSGC 5162. Pedigree - Hulha Negra/CNT 7//Amigo/CNT 7. Spring type. Tolerant to soil acidity/aluminum toxicity. Resistant to powdery mildew, SBMV, and all races of stem rust found in Brazil.

The following were collected by N.I. Vavilov All-Russian Scientific Res., Institute of Plant Genetic Resources, 44 Bolshaya Morskaya Street, St.

Petersburg, Russian Federation. Donated by Walter Goldstein, Michael Fields Agriculture Institute, W 2493 County Road ES, East Troy, Wisconsin 53120, United States. Received 03/25/1994.

- PI 591965. *Triticum aestivum* L., nom. cons.
Cultivar. "DONSKAYA POLUKARLIKOVAYA"; WIR 54647; NSGC 5164. Collected in Leningrad, Russian Federation. Developed in Russian Federation.
- PI 591966. *Triticum aestivum* L., nom. cons.
Cultivar. WIR 53808; "TARASOVSKAYA 29"; NSGC 5166. Collected in Leningrad, Russian Federation. Developed in Russian Federation.
- PI 591967. *Triticum turgidum* L.
Cultivar. "NOVINKA 2"; WIR 56111; NSGC 5168. Collected in Leningrad, Russian Federation. Developed in Russian Federation.
- PI 591968. *Triticum turgidum* L.
Cultivar. "NOVINKA 3"; WIR 58493; NSGC 5169. Collected in Leningrad, Russian Federation. Developed in Russian Federation.
- PI 591969. *Triticum turgidum* L.
Cultivar. "NOVINKA 4"; WIR 61005; NSGC 5170. Collected in Leningrad, Russian Federation. Developed in Russian Federation.

The following were donated by Walter Goldstein, Michael Fields Agriculture Institute, W 2493 County Road ES, East Troy, Wisconsin 53120, United States. Received 03/03/1994.

- PI 591970. *Triticum aestivum* L., nom. cons.
Cultivar. "GOSTYANIA"; NSGC 5171. Developed in Moldova.
- PI 591971. *Triticum aestivum* L., nom. cons.
Cultivar. "BELTSKAYA 5"; NSGC 5173. Developed in Moldova.
- PI 591972. *Triticum aestivum* L., nom. cons.
Cultivar. "BELTSKAYA 7"; NSGC 5174. Developed in Moldova.
- PI 591973. *Triticum aestivum* L., nom. cons.
Cultivar. "BELTSKAYA 32"; NSGC 5175. Developed in Moldova.

The following were collected by Walter Goldstein, Michael Fields Agriculture Institute, W 2493 County Road ES, East Troy, Wisconsin 53120, United States. Received 03/03/1994.

- PI 591974. *Triticum aestivum* L., nom. cons.
Cultivar. "KODRYL"; NSGC 5176. Collected in Moldova.

The following were donated by Walter Goldstein, Michael Fields Agriculture Institute, W 2493 County Road ES, East Troy, Wisconsin 53120, United States. Received 03/03/1994.

- PI 591975. *Triticum aestivum* L., nom. cons.
Cultivar. "KRIMKA"; NSGC 5177. Developed in Ukraine.
- PI 591976. *Triticum aestivum* L., nom. cons.
Breeding. MOSKOVSKAYA NEZKOSTIBILNAYA POP. I; NSGC 5181. Developed in Russian Federation.
- PI 591977. *Triticum aestivum* L., nom. cons.
Cultivar. "PAMIAT FEDINA"; NSGC 5184. Developed in Russian Federation.

PI 591978. *Triticum aestivum* L., nom. cons.
Cultivar. "MOSKOVSKAYA 70"; NSGC 5185. Developed in Russian Federation.

PI 591979. *Triticum aestivum* L., nom. cons.
Cultivar. "KRASNODARSKY DWARF 1"; NSGC 5186. Developed in Russian Federation.

The following were collected by Walter Goldstein, Michael Fields Agriculture Institute, W 2493 County Road ES, East Troy, Wisconsin 53120, United States. Received 03/03/1994.

PI 591980. *Triticum aestivum* L., nom. cons.
Landrace. ULIANOVKA; NSGC 5187. Collected in Ulyanovsk, Russian Federation. Very winterhardy landrace.

The following were donated by Walter Goldstein, Michael Fields Agriculture Institute, W 2493 County Road ES, East Troy, Wisconsin 53120, United States. Received 03/03/1994.

PI 591981. *Triticum aestivum* L., nom. cons.
Cultivar. "NEMCHINOVSKAYA 25"; NSGC 5189. Developed in Russian Federation.

PI 591982. *Triticum aestivum* L., nom. cons.
Cultivar. "MOSKOVSKAYA NEZKOSTIBILNAYA"; NSGC 5190. Developed in Russian Federation.

PI 591983. *Triticum aestivum* L., nom. cons.
Cultivar. "VIMPEL ODESSKIY"; NSGC 5191. Developed in Ukraine.

PI 591984. *Triticum aestivum* L., nom. cons.
Cultivar. "CHERVONA"; NSGC 5192. Developed in Ukraine.

PI 591985. *Triticum aestivum* L., nom. cons.
Cultivar. "CHERSONSKAYA OSTISTAYA"; NSGC 5193. Developed in Ukraine.

The following were developed by Mironovsk Experiment Station, Kiev, Ukraine. Donated by Walter Goldstein, Michael Fields Agriculture Institute, W 2493 County Road ES, East Troy, Wisconsin 53120, United States. Received 03/03/1994.

PI 591986. *Triticum aestivum* L., nom. cons.
Cultivar. "MIRONOVSKAYA 30"; NSGC 5194.

The following were donated by Walter Goldstein, Michael Fields Agriculture Institute, W 2493 County Road ES, East Troy, Wisconsin 53120, United States. Received 03/03/1994.

PI 591987. *Triticum aestivum* L., nom. cons.
Cultivar. "ERYTHROSPERMUM 21"; NSGC 5196. Developed in Ukraine.

PI 591988. *Triticum aestivum* L., nom. cons.
Cultivar. "ODESSKAYA 150"; NSGC 5197. Developed in Ukraine.

PI 591989. *Triticum aestivum* L., nom. cons.
Cultivar. "ODESSKAYA 161"; NSGC 5198. Developed in Ukraine.

PI 591990. *Triticum aestivum* L., nom. cons.
Cultivar. "ODESSKAYA 162"; NSGC 5199. Developed in Ukraine.

- PI 591991. *Triticum aestivum* L., nom. cons.
Cultivar. "RADA"; NSGC 5200. Developed in Russian Federation.
- PI 591992. *Triticum aestivum* L., nom. cons.
Cultivar. "YUCHTEENA"; NSGC 5201. Developed in Russian Federation.
- PI 591993. *Triticum aestivum* L., nom. cons.
Cultivar. "DONCHANKA"; NSGC 5202. Developed in Russian Federation.
- PI 591994. *Triticum aestivum* L., nom. cons.
Cultivar. "RYFA"; NSGC 5204. Developed in Russian Federation.

The following were collected by Qiao-sheng Zhuang, Institute of Crop Breeding & Cultivation, Chinese Academy of Agriculture Science, Beijing 100081, China. Received 03/09/1994.

- PI 591995. *Triticum aestivum* L., nom. cons.
Landrace. DENG LONG HONG; NSGC 5208. Collected in Shanxi, China. Winter wheat. Possibly contains Null allele at the Glu A1 locus.
- PI 591996. *Triticum aestivum* L., nom. cons.
Landrace. HONG HUO MAI; NSGC 5209. Collected in Hebei, China. Winter wheat. Possibly contains Null allele at the Glu A1 locus.
- PI 591997. *Triticum aestivum* L., nom. cons.
Landrace. HONG MANG MAI; NSGC 5210. Collected in Hebei, China. Winter wheat. Possibly contains Null allele at the Glu A1 locus.
- PI 591998. *Triticum aestivum* L., nom. cons.
Landrace. HU LU TOU; NSGC 5211. Collected in Hebei, China. Winter wheat. Possibly contains Null allele at the Glu A1 locus.
- PI 591999. *Triticum aestivum* L., nom. cons.
Landrace. XIAO BAI MANG; NSGC 5212. Collected in Hebei, China. Winter wheat. Possibly contains Null allele at the Glu A1 locus.
- PI 592000. *Triticum aestivum* L., nom. cons.
Landrace. HONG KE HONG; NSGC 5213. Collected in Hebei, China. Winter wheat. Possibly contains Null allele at the Glu A1 locus.
- PI 592001. *Triticum aestivum* L., nom. cons.
Landrace. DA BAI PAO; NSGC 5214. Collected in Shanxi, China. Winter wheat. Possibly contains Null allele at the Glu A1 locus.
- PI 592002. *Triticum aestivum* L., nom. cons.
Landrace. YU LIN BAI; NSGC 5215. Collected in Hebei, China. Facultative wheat. Possibly contains Null allele at the Glu A1 locus.
- PI 592003. *Triticum aestivum* L., nom. cons.
Landrace. XIAO BAI LING; NSGC 5216. Collected in Hebei, China. Winter wheat. Possibly contains Null allele at the Glu A1 locus.
- PI 592004. *Triticum aestivum* L., nom. cons.
Landrace. MA ZHA DU; NSGC 5217. Collected in Hebei, China. Winter wheat. Possibly contains Null allele at the Glu A1 locus.

The following were developed by Selekt Bucany, Czech Republic. Donated by Zdenek Stehno, Research Inst. for Crop Production, Wheat Gene Bank, Drnovska 507, Praha, Central Bohemia 161 06, Czech Republic. Received 02/22/1994.

- PI 592005. *Triticum aestivum* L., nom. cons.
Cultivar. "BLAVA"; NSGC 5218. Pedigree - Viginta/Fundulea 29.

The following were developed by Breeding Station Maly Saris, Czech Republic. Donated by Zdenek Stehno, Research Inst. for Crop Production, Wheat Gene Bank, Drnovska 507, Praha, Central Bohemia 161 06, Czech Republic. Received 02/22/1994.

PI 592006. *Triticum aestivum* L., nom. cons.
Cultivar. "TORYSA"; NSGC 5219. Pedigree - Maris Marksman/Vala.

The following were donated by N.I. Vavilov All-Russian Scientific Res., Institute of Plant Genetic Resources, 44 Bolshaya Morskaya Street, St. Petersburg, Russian Federation. Received 07/29/1994.

PI 592007. *Avena sativa* L.
Cultivar. WIR 14231; "ULOV"; NSGC 5245. Developed in Russian Federation.

PI 592008. *Avena sativa* L.
Cultivar. WIR 14270; "ANGAR"; NSGC 5246. Developed in Russian Federation.

PI 592009. *Avena sativa* L.
Cultivar. "GRACH"; WIR 14237; NSGC 5247. Developed in Russian Federation.

PI 592010. *Avena sativa* L.
Cultivar. WIR 14233; "POKROVSKII 9"; NSGC 5248. Developed in Russian Federation.

PI 592011. *Avena sativa* L.
Cultivar. "MIKU"; WIR 14232; NSGC 5249. Developed in Estonia.

PI 592012. *Avena sativa* L.
Cultivar. "YAUGILA"; WIR 14234; NSGC 5250. Developed in Lithuania.

PI 592013. *Avena sativa* L.
Cultivar. "BITIK"; WIR 14267; NSGC 5251. Developed in Kazakhstan.

The following were developed by Agric. Research Inst. of the Southeast, Saratov, Saratov, Russian Federation. Donated by N.I. Vavilov All-Russian Scientific Res., Institute of Plant Genetic Resources, 44 Bolshaya Morskaya Street, St. Petersburg, Russian Federation. Received 07/29/1994.

PI 592014. *Triticum durum* Desf.
Cultivar. "SARATOVSKAYA 59"; WIR 59071; NSGC 5252. Pedigree - World Seeds MP13/S-1700.

The following were donated by N.I. Vavilov All-Russian Scientific Res., Institute of Plant Genetic Resources, 44 Bolshaya Morskaya Street, St. Petersburg, Russian Federation. Received 07/29/1994.

PI 592015. *Triticum durum* Desf.
Cultivar. "RUBIN"; WIR 59155; NSGC 5253. Developed in Russian Federation.

PI 592016. *Triticum durum* Desf.
Cultivar. "ALTAISKAYA NIVA"; WIR 59831; NSGC 5254. Developed in Russian Federation. Pedigree - Kharkovskaya 51/P-274//P-274/3/Kharkovskaya 46.

PI 592017. *Triticum durum* Desf.
Cultivar. "MRIYA"; WIR 55234; NSGC 5255. Developed in Ukraine.

- PI 592018. *Triticum durum* Desf.
Cultivar. "MIRBASHIRSKAYA 50"; WIR 56817; NSGC 5256. Developed in Azerbaijan.
- PI 592019. *Triticum durum* Desf.
Cultivar. "VATAN"; WIR 54479; NSGC 5257. Developed in Tajikistan.
- PI 592020. *Triticum aestivum* L., nom. cons.
Cultivar. "BUDIMIR"; WIR 59563; NSGC 5258. Developed in Russian Federation.
- PI 592021. *Triticum aestivum* L., nom. cons.
Cultivar. "SPEKTR"; WIR 60456; NSGC 5259. Developed in Russian Federation.
- PI 592022. *Triticum aestivum* L., nom. cons.
Cultivar. "LENINGRADSKAYA 92"; WIR 62252; NSGC 5260. Developed in Russian Federation.
- PI 592023. *Triticum aestivum* L., nom. cons.
Cultivar. "ISHEEVSKAYA"; WIR 61158; NSGC 5261. Developed in Russian Federation. Pedigree - Zhigulevskaya/3/Albidum 21//DR/AE.
- PI 592024. *Triticum aestivum* L., nom. cons.
Cultivar. "BELORUSSKAYA 80"; WIR 59387; NSGC 5262. Developed in Belarus.
- PI 592025. *Triticum aestivum* L., nom. cons.
Cultivar. "ALTAISKAYA 50"; WIR 59569; NSGC 5263. Developed in Russian Federation. Pedigree - Bezostaya 609/Skala//Saratovskaya 46.
- PI 592026. *Triticum aestivum* L., nom. cons.
Cultivar. "TULUNSKAYA 10"; WIR 59568; NSGC 5264. Developed in Russian Federation.
- PI 592027. *Triticum aestivum* L., nom. cons.
Cultivar. "NOVOSIBIRSKAYA 81"; WIR 59460; NSGC 5265. Developed in Russian Federation.
- PI 592028. *Triticum aestivum* L., nom. cons.
Cultivar. "NOVOSIBIRSKAYA 22"; WIR 62255; NSGC 5266. Developed in Russian Federation. Pedigree - Skala (M)/Krasnoyarskaya.
- PI 592029. *Triticum aestivum* L., nom. cons.
Cultivar. "KANTEGIRSKAYA 89"; WIR 62317; NSGC 5267. Developed in Russian Federation.
- PI 592030. *Triticum aestivum* L., nom. cons.
Cultivar. "IRGINA"; WIR 60074; NSGC 5268. Developed in Russian Federation. Pedigree - Vendel (SV-60363)//(E-136)Kometa/Strela.
- PI 592031. *Triticum aestivum* L., nom. cons.
Cultivar. "KAZAKHSTANSKAYA RANNESPELAYA"; WIR 59370; NSGC 5269. Developed in Kazakhstan. Pedigree - Novosibirskaya 67/Omskaya 9.
- PI 592032. *Triticum aestivum* L., nom. cons.
Cultivar. "KOMSOMOL'SKAYA 29"; WIR 59951; NSGC 5270. Developed in Kazakhstan. Pedigree - PV-18/Saratovskaya 29.
- PI 592033. *Triticum aestivum* L., nom. cons.
Cultivar. "ERITROSPERMUM 5"; WIR 57714; NSGC 5271. Developed in Russian Federation. Pedigree - Mexipak/Mironovskaya-Yubileinaya 50/Bezenchukskaya 98.

- PI 592034. *Triticum aestivum* L., nom. cons.
Cultivar. "L-503"; WIR 60620; NSGC 5273. Developed in Russian Federation. Pedigree - Saratovskaya 52/3/Pysar 29/Rescue//Saratovskaya 46.
- PI 592035. *Triticum aestivum* L., nom. cons.
Cultivar. "ALTAICKAYA 88"; WIR 59457; NSGC 5274. Developed in Russian Federation. Pedigree - Uralskaya 52/Omskaya 9.
- PI 592036. *Triticum aestivum* L., nom. cons.
Cultivar. "AMURSKAYA 90"; WIR 61219; NSGC 5275. Developed in Russian Federation.
- PI 592037. *Triticum aestivum* L., nom. cons.
Cultivar. "LUTESCENS 521-2988"; WIR 59024; NSGC 5276. Developed in Russian Federation. Pedigree - Buryatskaya 79/Moronovskaya-Yardvaya.
- PI 592038. *Triticum aestivum* L., nom. cons.
Cultivar. "OMSKAYA 18"; WIR 58220; NSGC 5278. Developed in Russian Federation. Pedigree - Omskaya 11/Gaines.
- PI 592039. *Triticum aestivum* L., nom. cons.
Cultivar. "DIAS 2"; WIR 59025; NSGC 5279. Developed in Russian Federation. Pedigree - Novosibirskaya 67/Rang.
- PI 592040. *Triticum aestivum* L., nom. cons.
Cultivar. "KRASNOUFIMSKAYA 90"; WIR 61001; NSGC 5280. Developed in Russian Federation. Pedigree - K-51483/Bezenchuskaya 98.
- PI 592041. *Triticum aestivum* L., nom. cons.
Cultivar. "DAL'NEVOSTOCHNAYA 10"; WIR 53986; NSGC 5281. Developed in Russian Federation.
- PI 592042. *Triticum aestivum* L., nom. cons.
Cultivar. "KARAGANDINSKAYA 70"; WIR 59038; NSGC 5283. Developed in Kazakhstan. Pedigree - Saratovskaya 36/(Can)K-428010.
- PI 592043. *Triticum aestivum* L., nom. cons.
Cultivar. "LUTESCENS 70"; WIR 62201; NSGC 5284. Developed in Kazakhstan. Pedigree - Novosibirskaya 67/Rang.

The following were developed by Shortandi Research Inst. of Grain Husbandry, Shortandi, Kazakhstan. Donated by N.I. Vavilov All-Russian Scientific Res., Institute of Plant Genetic Resources, 44 Bolshaya Morskaya Street, St. Petersburg, Russian Federation. Received 07/29/1994.

- PI 592044. *Triticum aestivum* L., nom. cons.
Cultivar. "SHORTANDINSKAYA 25"; WIR 48108; NSGC 5285.

The following were donated by N.I. Vavilov All-Russian Scientific Res., Institute of Plant Genetic Resources, 44 Bolshaya Morskaya Street, St. Petersburg, Russian Federation. Received 07/29/1994.

- PI 592045. *Triticum aestivum* L., nom. cons.
Cultivar. "SPARTANKA"; WIR 58801; NSGC 5287. Developed in Russian Federation.
- PI 592046. *Triticum aestivum* L., nom. cons.
Cultivar. "YUNA"; WIR 60690; NSGC 5288. Developed in Russian Federation. Pedigree - Obrii/(ML)Lutescens 2338.
- PI 592047. *Triticum aestivum* L., nom. cons.

- Cultivar. "SKIFYANKA"; WIR 60691; NSGC 5289. Developed in Russian Federation. Pedigree - selection from Spartanka.
- PI 592048. *Triticum aestivum* L., nom. cons.
Cultivar. "SORATNITHA"; WIR 60695; NSGC 5290. Developed in Russian Federation. Pedigree - Odesskaya 66/Partizanka.
- PI 592049. *Triticum aestivum* L., nom. cons.
Cultivar. "L'GOVSKAYA 167"; WIR 58892; NSGC 5291. Developed in Russian Federation. Pedigree - Poleskaya 70/Ivanovskaya S-10-26.
- PI 592050. *Triticum aestivum* L., nom. cons.
Cultivar. "NEMCHINOVSKAYA 86"; WIR 59270; NSGC 5292. Developed in Russian Federation. Pedigree - Mironovskaya 808/Krasnodarskii-Karlik 1.
- PI 592051. *Triticum aestivum* L., nom. cons.
Cultivar. "ZVEZDA"; WIR 59271; NSGC 5293. Developed in Russian Federation. Pedigree - Kharkovskaya 46/Aggl//Mironovskaya 808/Lutescens 329.
- PI 592052. *Triticum aestivum* L., nom. cons.
Cultivar. "ZERNOGRADKA 6"; WIR 57685; NSGC 5294. Developed in Russian Federation. Pedigree - Krasnodarskaya 6/Mironovskaya 808//Bezostaya 1/Moronovskaya 264/3/Bezostaya 4/Odesskaya 16//Avrora/4/Donskaya-Polukarlikovaya.
- PI 592053. *Triticum aestivum* L., nom. cons.
Cultivar. "DON 85"; WIR 58516; NSGC 5295. Developed in Russian Federation.
- PI 592054. *Triticum aestivum* L., nom. cons.
Cultivar. "ZERNOGRADKA 8"; WIR 59987; NSGC 5296. Developed in Russian Federation.
- PI 592055. *Triticum aestivum* L., nom. cons.
Cultivar. "DONSKAYA JUBILEINAYA"; WIR 60718; NSGC 5297. Developed in Russian Federation.
- PI 592056. *Triticum aestivum* L., nom. cons.
Cultivar. "SEVERODONSKAYA 5"; WIR 61970; NSGC 5298. Developed in Russian Federation. Pedigree - Tarasovskaya 29/Belotserkovskaya 47.
- PI 592057. *Triticum aestivum* L., nom. cons.
Cultivar. "TARASOVSKAYA 87"; WIR 61995; NSGC 5299. Developed in Russian Federation. Pedigree - Dnepovskaya 41/Donetskaya 5.
- PI 592058. *Triticum aestivum* L., nom. cons.
Cultivar. "LUTESCENS 72"; WIR 55764; NSGC 5300. Developed in Russian Federation.
- PI 592059. *Triticum aestivum* L., nom. cons.
Cultivar. "LUTESCENS 7"; WIR 58854; NSGC 5301. Developed in Ukraine. Pedigree - Hohenthurmer 4891-67/MK-62//Kiyanka.

The following were developed by Mironovsk Experiment Station, Kiev, Ukraine. Donated by N.I. Vavilov All-Russian Scientific Res., Institute of Plant Genetic Resources, 44 Bolshaya Morskaya Street, St. Petersburg, Russian Federation. Received 07/29/1994.

- PI 592060. *Triticum aestivum* L., nom. cons.
Cultivar. "MIRONOVSKAYA OSTISTAYA"; WIR 58860; NSGC 5302. Pedigree - Norin 59/Mironovskaya 809.

The following were donated by N.I. Vavilov All-Russian Scientific Res., Institute of Plant Genetic Resources, 44 Bolshaya Morskaya Street, St. Petersburg, Russian Federation. Received 07/29/1994.

PI 592061. *Triticum aestivum* L., nom. cons.
Cultivar. "KHERSONSKAYA 86"; WIR 59297; NSGC 5303. Developed in Ukraine.
Pedigree - Obrii/Odesskaya-Polukarlikovaya.

The following were developed by Mironovsk Experiment Station, Kiev, Ukraine. Donated by N.I. Vavilov All-Russian Scientific Res., Institute of Plant Genetic Resources, 44 Bolshaya Morskaya Street, St. Petersburg, Russian Federation. Received 07/29/1994.

PI 592062. *Triticum aestivum* L., nom. cons.
Cultivar. "MIRONOVSKAYA 61"; WIR 57671; NSGC 5305.

The following were donated by N.I. Vavilov All-Russian Scientific Res., Institute of Plant Genetic Resources, 44 Bolshaya Morskaya Street, St. Petersburg, Russian Federation. Received 07/29/1994.

PI 592063. *Triticum aestivum* L., nom. cons.
Cultivar. "YUNNAT"; WIR 57683; NSGC 5306. Developed in Ukraine.

PI 592064. *Triticum aestivum* L., nom. cons.
Cultivar. "YUBILEINAYA 75"; WIR 59219; NSGC 5308. Developed in Ukraine.
Pedigree - TP-114-65-A/Priboi//Odesskaya-Polukarlikovaya/3/Lerma Rojo/2*Kavkaz.

PI 592065. *Triticum aestivum* L., nom. cons.
Cultivar. "ODESSKAYA 117"; WIR 61983; NSGC 5309. Developed in Ukraine.
Pedigree - Odesskaya 66/Odesskaya 51.

PI 592066. *Triticum aestivum* L., nom. cons.
Cultivar. "KHAR'KOVSKAYA 90"; WIR 58543; NSGC 5310. Developed in Ukraine. Pedigree - Akhtyrchanka/Polukalikovaya 49.

PI 592067. *Triticum aestivum* L., nom. cons.
Cultivar. "SUZOR'E"; WIR 59245; NSGC 5311. Developed in Belarus.
Pedigree - Maris Huntsman/Ershovskaya 6//Berezina.

PI 592068. *Triticum aestivum* L., nom. cons.
Cultivar. "SEVERNAYA ZARYA"; WIR 59261; NSGC 5312. Developed in Russian Federation. Pedigree - (S)MV-C-2-30.

PI 592069. *Triticum aestivum* L., nom. cons.
Cultivar. "OMSKAYA OZIMAYA"; WIR 61531; NSGC 5313. Developed in Russian Federation.

PI 592070. *Triticum aestivum* L., nom. cons.
Cultivar. "YUZHNYAYA 12"; WIR 58612; NSGC 5314. Developed in Kazakhstan.
Pedigree - Krasnovodopadskaya 25//Bezostaya 1/Eritropermum 7020.

PI 592071. *Triticum aestivum* L., nom. cons.
Cultivar. "ERITROSPERMUM 35"; WIR 52092; NSGC 5315. Developed in Kazakhstan. Pedigree - Eritropermum 29-70-19/Lutescens 26-67-211 (302)

PI 592072. *Triticum aestivum* L., nom. cons.
Cultivar. "ERITROSPERMUM 13"; WIR 58855; NSGC 5316. Developed in Kyrgyzstan. Pedigree - Red River 68/4/Bezostaya 1//Bezostaya 1/Agel/3/Tom-Puce.

PI 592073. *Triticum aestivum* L., nom. cons.
Cultivar. "FI-400"; WIR 59279; NSGC 5317. Developed in Kyrgyzstan.
Pedigree - Felix/T-2 (FT-9)//Irnerio.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592074. *Avena sativa* L.
Cultivar. 638; "MARIS OMEGA"; NSGC 5318.

PI 592075. *Avena sativa* L.
Cultivar. 1735; "MARIS TABARD"; NSGC 5319. Pedigree - CC4146-4/Condor.

PI 592076. *Avena sativa* L.
Cultivar. 1932; "MARIS TITAN"; NSGC 5320. Pedigree - CC4146-4/Condor.

The following were developed by Welsh Plant Breeding Station, Aberystwyth, Wales, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592077. *Avena sativa* L.
Cultivar. 2004; "ORLANDO"; NSGC 5321.

The following were developed by Rothwell Plant Breeders Ltd., Rothwell, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592078. *Avena sativa* L.
Cultivar. 2009; "BLYTH"; NSGC 5322.

PI 592079. *Avena sativa* L.
Cultivar. 2010; "PINTO"; NSGC 5323.

The following were developed by Welsh Plant Breeding Station, Aberystwyth, Wales, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592080. *Avena sativa* L.
Cultivar. 2013; "MILO"; NSGC 5324.

The following were developed by Rothwell Plant Breeders Ltd., Rothwell, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592081. *Avena sativa* L.
Cultivar. "COLT"; 2015; NSGC 5325.

The following were developed by Welsh Plant Breeding Station, Aberystwyth, Wales, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

- PI 592082. *Avena sativa* L.
Cultivar. "OYSTER"; 2524; NSGC 5326.
- PI 592083. *Avena sativa* L.
Cultivar. "CAMROSE"; 2525; NSGC 5327.
- PI 592084. *Avena sativa* L.
Cultivar. "MENAI"; 2528; NSGC 5328.
- PI 592085. *Avena sativa* L.
Cultivar. "BULWARK"; 2530; NSGC 5329.
- PI 592086. *Avena sativa* L.
Cultivar. "BARDSEY"; 2531; NSGC 5330.
- PI 592087. *Avena nuda* L.
Cultivar. "BRANWEN"; 2532; NSGC 5331.
- PI 592088. *Avena nuda* L.
Cultivar. "RHIANNON"; 2533; NSGC 5332.
- PI 592089. *Avena sativa* L.
Cultivar. "MADOG"; 2534; NSGC 5333.
- PI 592090. *Avena sativa* L.
Cultivar. "LUSTRE"; 2536; NSGC 5334.
- PI 592091. *Avena sativa* L.
Cultivar. "MORLAN"; 2537; NSGC 5335.
- PI 592092. *Avena sativa* L.
Cultivar. "EMRYS"; 2538; NSGC 5336.
- PI 592093. *Avena sativa* L.
Cultivar. "CARON"; 2539; NSGC 5337.
- PI 592094. *Avena sativa* L.
Cultivar. "BONTEGO"; 2540; NSGC 5338.
- PI 592095. *Avena sativa* L.
Cultivar. "TOAST"; 2541; NSGC 5339.
- PI 592096. *Avena sativa* L.
Cultivar. 2542; "SOLVA"; NSGC 5340.

The following were donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom.
Received 10/07/1993.

- PI 592097. *Avena sativa* L.
Cultivar. "CABANA"; 2549; NSGC 5341. Developed in United Kingdom.
Pedigree - Leanda/Maris Titan.

The following were developed by Welsh Plant Breeding Station, Aberystwyth, Wales, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom.
Received 10/07/1993.

- PI 592098. *Avena sativa* L.
Cultivar. "ENVIS"; 2552; NSGC 5342.

PI 592099. *Avena sativa* L.
Cultivar. "MELIN"; 2553; NSGC 5343.

PI 592100. *Avena sativa* L.
Cultivar. 2562; "DAKOTA"; NSGC 5344.

The following were developed by National Seed Development Organization, The Granaries, White House Lane, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592101. *Avena sativa* L.
Cultivar. 2605; "FULMAR"; NSGC 5345.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592102. *Avena sativa* L.
Cultivar. 2607; "ROLLO"; NSGC 5346.

PI 592103. *Triticum aestivum* L., nom. cons.
Cultivar. 574; "MARIS SETTLER"; NSGC 5347. Pedigree - Professeur Marchal/Cappelle.

PI 592104. *Triticum aestivum* L., nom. cons.
Cultivar. "MARIS TOTEM"; 575; NSGC 5348. Pedigree - Hybrid 46/Minister//Nord Desprez.

PI 592105. *Triticum aestivum* L., nom. cons.
Cultivar. 581; "MARIS TEAL"; NSGC 5349. Pedigree - Hybrid 46/Minister.

PI 592106. *Triticum aestivum* L., nom. cons.
Cultivar. 582; "MARIS ENVOY"; NSGC 5350. Pedigree - CI 12633/5*Cappelle//Heine 110/Cappelle/3/Nord/4/Viking.

PI 592107. *Triticum aestivum* L., nom. cons.
Cultivar. 731; "MARIS TEMPLAR"; NSGC 5351. Pedigree - CI 12633/5*Cappelle//Heine 110/Cappelle/3/Nord/4/Viking.

PI 592108. *Triticum aestivum* L., nom. cons.
Cultivar. 733; "MARIS PLOUGHMAN"; NSGC 5352. Pedigree - Cappelle*4/Hybrid 48//2*Maris Widgeon/3/Viking.

PI 592109. *Triticum aestivum* L., nom. cons.
Cultivar. 735; "MARIS HALBERD"; NSGC 5353. Pedigree - Els/4*Jufy 1.

PI 592110. *Triticum aestivum* L., nom. cons.
Cultivar. 736; "MARIS PINION"; NSGC 5354. Pedigree - Minister/Els.

PI 592111. *Triticum aestivum* L., nom. cons.
Cultivar. 2540; "MARIS ARGENT"; NSGC 5355.

PI 592112. *Triticum aestivum* L., nom. cons.
Cultivar. 2591; "MARKSMAN"; NSGC 5356.

PI 592113. *Triticum aestivum* L., nom. cons.
Cultivar. "APOSTLE"; 5549; NSGC 5357.

PI 592114. *Triticum aestivum* L., nom. cons.
Cultivar. "RIBAND"; 5552; NSGC 5358.

- PI 592115. *Triticum aestivum* L., nom. cons.
Cultivar. "ELLAND"; 5554; NSGC 5359.
- PI 592116. *Triticum aestivum* L., nom. cons.
Cultivar. "TURNPIKE"; 5556; NSGC 5360.
- PI 592117. *Triticum aestivum* L., nom. cons.
Cultivar. "DOLLAR"; 5560; NSGC 5361.
- PI 592118. *Triticum aestivum* L., nom. cons.
Cultivar. "CUB"; 5561; NSGC 5362.
- PI 592119. *Triticum aestivum* L., nom. cons.
Cultivar. "BLAZE"; 5566; NSGC 5363.
- PI 592120. *Triticum aestivum* L., nom. cons.
Cultivar. "POET"; 5574; NSGC 5364.
- PI 592121. *Triticum aestivum* L., nom. cons.
Cultivar. 5575; "MOTTO"; NSGC 5365.
- PI 592122. *Triticum aestivum* L., nom. cons.
Cultivar. "VOCAL"; 5576; NSGC 5366.
- PI 592123. *Triticum aestivum* L., nom. cons.
Cultivar. 5578; "SQUADRON"; NSGC 5367.
- PI 592124. *Triticum aestivum* L., nom. cons.
Cultivar. 5579; "SICKLE"; NSGC 5368.
- PI 592125. *Triticum aestivum* L., nom. cons.
Cultivar. 5580; "MANDATE"; NSGC 5369.
- PI 592126. *Triticum aestivum* L., nom. cons.
Cultivar. 5584; "BILBO"; NSGC 5370.

The following were developed by Rothwell Plant Breeders Ltd., Rothwell, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

- PI 592127. *Triticum aestivum* L., nom. cons.
Cultivar. 6583; "ROTHWELL TRIDENT"; NSGC 5371.

The following were developed by Twyford Seeds, Inc., Adderbury, Banbury, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

- PI 592128. *Triticum aestivum* L., nom. cons.
Cultivar. "TWYFORD 76"; 6716; NSGC 5373.
- PI 592129. *Triticum aestivum* L., nom. cons.
Cultivar. 6717; "TWYFORD 71"; NSGC 5374.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

- PI 592130. *Triticum aestivum* L., nom. cons.
Cultivar. "LEO"; 6824; NSGC 5375.
- PI 592131. *Triticum aestivum* L., nom. cons.
Cultivar. "GOVERNOR"; 6825; NSGC 5376.
- PI 592132. *Triticum aestivum* L., nom. cons.
Cultivar. 6826; "ROOSTER"; NSGC 5377.
- PI 592133. *Triticum aestivum* L., nom. cons.
Cultivar. 6827; "KUDU"; NSGC 5378.
- PI 592134. *Triticum aestivum* L., nom. cons.
Cultivar. 6828; "LYNX"; NSGC 5379.
- PI 592135. *Triticum aestivum* L., nom. cons.
Cultivar. 6829; "COXSWAIN"; NSGC 5380.
- PI 592136. *Triticum aestivum* L., nom. cons.
Cultivar. 6831; "DRUID"; NSGC 5381.
- PI 592137. *Triticum aestivum* L., nom. cons.
Cultivar. "TAXI"; 6832; NSGC 5382.
- PI 592138. *Triticum aestivum* L., nom. cons.
Cultivar. 6833; "DEPOT"; NSGC 5383.
- PI 592139. *Triticum aestivum* L., nom. cons.
Cultivar. 6834; "PROTON"; NSGC 5384.

The following were developed by National Institute of Agricultural Botany, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

- PI 592140. *Triticum aestivum* L., nom. cons.
Cultivar. 6903; "BOXER"; NSGC 5385.

The following were donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

- PI 592141. *Triticum aestivum* L., nom. cons.
Cultivar. "AMBASSADOR"; 6905; NSGC 5386. Developed in United Kingdom.
- PI 592142. *Triticum aestivum* L., nom. cons.
Cultivar. "DAUNTLESS"; 6906; NSGC 5387. Developed in United Kingdom.
- PI 592143. *Triticum aestivum* L., nom. cons.
Cultivar. "PARADE"; 6907; NSGC 5388. Developed in United Kingdom.

The following were developed by National Seed Development Organization, The Granaries, White House Lane, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

- PI 592144. *Triticum aestivum* L., nom. cons.
Cultivar. "SANDOWN"; 6913; NSGC 5389.

The following were developed by Plant Breeding Institute, Maris Lane,

Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592145. *Triticum aestivum* L., nom. cons.
Cultivar. "CIVIC"; 6937; NSGC 5390.

PI 592146. *Triticum aestivum* L., nom. cons.
Cultivar. 6938; "GAMBIT"; NSGC 5391.

PI 592147. *Triticum aestivum* L., nom. cons.
Cultivar. "SNIPER"; 6939; NSGC 5392.

PI 592148. *Triticum aestivum* L., nom. cons.
Cultivar. "DRUM"; 6943; NSGC 5393.

PI 592149. *Triticum aestivum* L., nom. cons.
Cultivar. "FRESCO"; 6945; NSGC 5394.

PI 592150. *Triticum aestivum* L., nom. cons.
Cultivar. "HAVEN"; 6957; NSGC 5395.

PI 592151. *Triticum aestivum* L., nom. cons.
Cultivar. 7042; "PATIENCE"; NSGC 5396.

PI 592152. *Triticum aestivum* L., nom. cons.
Cultivar. 7133; "SARSEN"; NSGC 5397.

The following were developed by National Seed Development Organization, The Granaries, White House Lane, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592153. *Triticum aestivum* L., nom. cons.
Cultivar. 7355; "ANGLIA"; NSGC 5398.

PI 592154. *Triticum aestivum* L., nom. cons.
Cultivar. 7356; "BOOTY"; NSGC 5399.

PI 592155. *Triticum aestivum* L., nom. cons.
Cultivar. 7357; "CRAFTSMAN"; NSGC 5400.

PI 592156. *Triticum aestivum* L., nom. cons.
Cultivar. 7358; "HADRIAN"; NSGC 5401.

PI 592157. *Triticum aestivum* L., nom. cons.
Cultivar. "HORNET"; 7359; NSGC 5402.

The following were developed by Welsh Plant Breeding Station, Aberystwyth, Wales, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592158. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. 17246; "CORACLE"; NSGC 5403. Pedigree - CI 3906-1/2*Deba Abed.

The following were developed by Rothwell Plant Breeders Ltd., Rothwell, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592159. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 17257; "DIXIE"; NSGC 5404.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592160. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "GUILDEN"; 17259; NSGC 5405.

PI 592161. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 17260; "BULBECK"; NSGC 5406.

PI 592162. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "MORDEN"; 17264; NSGC 5407.

PI 592163. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "BURWELL"; 18177; NSGC 5408.

PI 592164. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "FINGAL"; 18186; NSGC 5409.

The following were developed by Rothwell Plant Breeders Ltd., Rothwell, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592165. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18254; "ALADDIN"; NSGC 5410.

PI 592166. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18258; "NOMAD"; NSGC 5411.

The following were developed by Scottish Plant Breeding Station, Society for Research in Plant Breeding, Craigs House, Corstorphine, Edinburgh, Scotland, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592167. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "TAY"; 18264; NSGC 5413.

PI 592168. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18265; "TWEED"; NSGC 5414.

The following were developed by Welsh Plant Breeding Station, Aberystwyth, Wales, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592169. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "REGENT"; 18281; NSGC 5415. Pedigree - Athos/Georgie.

PI 592170. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "RAGLAN"; 18335; NSGC 5416. Pedigree - Vada/Zephyr//Midas.

The following were developed by Rothwell Plant Breeders Ltd., Rothwell, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection,

John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom.
Received 10/07/1993.

PI 592171. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "NATASHA"; 18342; NSGC 5417.

The following were developed by Scottish Plant Breeding Station, Society for Research in Plant Breeding, Craigs House, Corstorphine, Edinburgh, Scotland, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592172. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "DONAN"; 18396; NSGC 5418.

The following were developed by Welsh Plant Breeding Station, Aberystwyth, Wales, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592173. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18411; "DOUBLOON"; NSGC 5419.

PI 592174. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18412; "TRUMPET"; NSGC 5420.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592175. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "PORTER"; 18413; NSGC 5421.

The following were developed by Rothwell Plant Breeders Ltd., Rothwell, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592176. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18430; "TURBINE"; NSGC 5422.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592177. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18503; "MEDALLION"; NSGC 5423.

PI 592178. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18552; "WARDEN"; NSGC 5424.

The following were donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592179. *Hordeum vulgare* L. *ssp. vulgare*

Cultivar. 18585; "THURSO"; NSGC 5425. Developed in United Kingdom.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592180. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18616; "SANDPIPER"; NSGC 5426.

PI 592181. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18619; "CASSIDY"; NSGC 5427.

PI 592182. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "SKYLARK"; 18620; NSGC 5428.

PI 592183. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "SERENADE"; 18623; NSGC 5429.

The following were donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592184. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "AYR"; 18630; NSGC 5430. Developed in United Kingdom.

PI 592185. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "ESK"; 18631; NSGC 5431. Developed in United Kingdom.

The following were developed by Welsh Plant Breeding Station, Aberystwyth, Wales, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592186. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "RAINBOW"; 18633; NSGC 5432.

PI 592187. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "MOGUL"; 18635; NSGC 5433.

PI 592188. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "CRESCENT"; 18636; NSGC 5434.

PI 592189. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18637; "SKIPPER"; NSGC 5435.

PI 592190. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18638; "QUADRILLE"; NSGC 5436.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592191. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18646; "BULLION"; NSGC 5437.

PI 592192. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18647; "LYSANDER"; NSGC 5438.

PI 592193. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "PINZA"; 18648; NSGC 5439.

PI 592194. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18656; "ZULU"; NSGC 5440.

PI 592195. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "STINGER"; 18657; NSGC 5441.

The following were donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592196. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18658; "JEM"; NSGC 5442. Developed in United Kingdom.

PI 592197. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "VALIANT"; 18660; NSGC 5443. Developed in United Kingdom.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592198. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "STANZA"; 18671; NSGC 5444.

PI 592199. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "BLENHEIM"; 18673; NSGC 5445.

PI 592200. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18675; "TAVERN"; NSGC 5446.

PI 592201. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "SHERPA"; 18676; NSGC 5447.

The following were developed by Welsh Plant Breeding Station, Aberystwyth, Wales, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592202. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18681; "DANDY"; NSGC 5448.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592203. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18700; "BLUEBIRD"; NSGC 5449.

PI 592204. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18701; "FROLIC"; NSGC 5450.

PI 592205. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18702; "GLEAM"; NSGC 5451.

PI 592206. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 18710; "FINESSE"; NSGC 5452.

- PI 592207. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. 18711; "ARGONAUT"; NSGC 5453.
- PI 592208. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. "WENSUN"; 18713; NSGC 5454.
- PI 592209. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. "CHARADE"; 18715; NSGC 5455.
- PI 592210. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. "JOVE"; 18716; NSGC 5456.
- PI 592211. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. "ETNA"; 18717; NSGC 5457.
- PI 592212. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. "TYNE"; 18765; NSGC 5458.
- PI 592213. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. "CLANSMAN"; 18771; NSGC 5459.
- PI 592214. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. "TARTAN"; 18773; NSGC 5460.
- PI 592215. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. 18785; "BREEZE"; NSGC 5461.
- PI 592216. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. "BARNHAM"; 18797; NSGC 5462.
- PI 592217. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. 18798; "GOLDPIECE"; NSGC 5463.
- PI 592218. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. 18801; "ALTAIR"; NSGC 5464.
- PI 592219. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. "HART"; 18824; NSGC 5465.
- PI 592220. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. "MATTERHORN"; 18831; NSGC 5466.
- PI 592221. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. "PEAK"; 18837; NSGC 5467.
- PI 592222. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. "BRITANNIA"; 19357; NSGC 5468.
- PI 592223. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. "EMERALD"; 19364; NSGC 5469.
- PI 592224. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. "JADE"; 19365; NSGC 5470.
- PI 592225. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. 19366; "PUFFIN"; NSGC 5471.
- PI 592226. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. 19367; "AMETHYST"; NSGC 5472.
- PI 592227. *Hordeum vulgare* L. ssp. *vulgare*
Cultivar. "CASHMIR"; 19368; NSGC 5473.

- PI 592228. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 19370; "REMBRANDT"; NSGC 5474.
- PI 592229. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 19372; "NICKLEBY"; NSGC 5475.
- PI 592230. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 19374; "TROOP"; NSGC 5476.
- PI 592231. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 19375; "TARGET"; NSGC 5477.

The following were donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

- PI 592232. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 19378; "POINTER"; NSGC 5478. Developed in United Kingdom.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

- PI 592233. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 19637; "DENVER"; NSGC 5479.
- PI 592234. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "REVUE"; 19638; NSGC 5480.
- PI 592235. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "FURY"; 19639; NSGC 5481.
- PI 592236. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "CELLO"; 19641; NSGC 5482.
- PI 592237. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "ZEST"; 19642; NSGC 5483.
- PI 592238. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "HARLEQUIN"; 19643; NSGC 5484.
- PI 592239. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "GYPSY"; 19644; NSGC 5485.
- PI 592240. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "PATRIOT"; 19652; NSGC 5486.
- PI 592241. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 19670; "CAPULET"; NSGC 5487.

The following were developed by National Seed Development Organization, The Granaries, White House Lane, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

- PI 592242. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 20056; "CROWN"; NSGC 5488.
- PI 592243. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 20057; "ELECTRA"; NSGC 5489.

PI 592244. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 20058; "TROOPER"; NSGC 5490.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592245. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "TRABANT"; 20072; NSGC 5492.

PI 592246. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 20073; "BRENIN"; NSGC 5493.

PI 592247. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "CYGNET"; 20074; NSGC 5494.

PI 592248. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "MEDI"; 20075; NSGC 5495.

PI 592249. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 20090; "COLLIE"; NSGC 5496.

PI 592250. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 20093; "TOTEM"; NSGC 5497.

PI 592251. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 20094; "ROODEE"; NSGC 5498.

The following were developed by Welsh Plant Breeding Station, Aberystwyth, Wales, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592252. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "CORGI"; 24013; NSGC 5499.

PI 592253. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "SERGEANT"; 24014; NSGC 5500.

PI 592254. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "DAPHNE"; 24015; NSGC 5501.

The following were donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592255. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "ALMOND"; 24077; NSGC 5503. Developed in United Kingdom.

PI 592256. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 24079; "LEITH"; NSGC 5504. Developed in United Kingdom.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592257. *Hordeum vulgare* L. *ssp. vulgare*

Cultivar. "KESTRAL"; 20085; NSGC 5505.

PI 592258. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 20087; "GRIFFIN"; NSGC 5506.

PI 592259. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "MALIBU"; 20112; NSGC 5507.

The following were donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592260. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 24118; "CROMARTY"; NSGC 5508. Developed in United Kingdom.

PI 592261. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 24122; "ELLIOT"; NSGC 5509. Developed in United Kingdom.

PI 592262. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 24123; "HERIOT"; NSGC 5510. Developed in United Kingdom.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592263. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 24153; "GRISANTE"; NSGC 5511.

The following were developed by Welsh Plant Breeding Station, Aberystwyth, Wales, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592264. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 24160; "DOUBLET"; NSGC 5512.

PI 592265. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "RHAPSODY"; 24161; NSGC 5513.

The following were donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592266. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 24168; "KERRY"; NSGC 5514. Developed in United Kingdom.

PI 592267. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "FINDHORN"; 24177; NSGC 5515. Developed in United Kingdom.

The following were developed by Rothwell Plant Breeders Ltd., Rothwell, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592268. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "PANTHER"; 24253; NSGC 5516.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592269. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "PALOMINO"; 24257; NSGC 5517.

The following were developed by Twyford Seeds, Inc., Adderbury, Banbury, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592270. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "LIBRA"; 24266; NSGC 5518.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592271. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "CORONET"; 24279; NSGC 5519.

The following were developed by Guinness Barley Research Station, Codford, Warminster, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592272. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "ANNAT"; 24300; NSGC 5520. Pedigree - selection from Chevalier

PI 592273. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "BEAVANS ARCHER"; 24301; NSGC 5521. Pedigree - selection from Archer.

PI 592274. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "CAMPTON"; 24302; NSGC 5522. Pedigree - Spratt/Archer Goldthorpe 4-51.

PI 592275. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 24304; "D.K.S. BINDER"; NSGC 5523.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592276. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 24501; "FUSILIER"; NSGC 5525.

PI 592277. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 24504; "ICENI"; NSGC 5526.

PI 592278. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 24509; "PIPKIN"; NSGC 5527.

The following were developed by National Seed Development Organization, The

Granaries, White House Lane, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592279. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 24518; "MATELOT"; NSGC 5528.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592280. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "CASINO"; 24519; NSGC 5529.

The following were donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592281. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "DEACON"; 24520; NSGC 5530. Developed in United Kingdom.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592282. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "MERCHANT"; 24524; NSGC 5531.

PI 592283. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "DIGGER"; 24525; NSGC 5532.

PI 592284. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "DUCHESS"; 24526; NSGC 5533.

PI 592285. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "CURLEW"; 24546; NSGC 5534.

PI 592286. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "MALLARD"; 24547; NSGC 5535.

The following were donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592287. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. "FALLON"; 24548; NSGC 5536. Developed in United Kingdom.

The following were developed by Plant Breeding Institute, Maris Lane, Trumpington, Cambridge, England, United Kingdom. Donated by M.J. Ambrose, AFRC Cereals Collection, John Innes Institute, Colney Lane, Norwich, England NR4 7UH, United Kingdom. Received 10/07/1993.

PI 592288. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. 8016; "MARIS YAK"; NSGC 5537. Pedigree - Deba
Abed//Swallow/Emir.

The following were donated by V. A. Dragavtsev, N. I. Vavilov Research Institute, of Plant Industry, 44 Bolshaya Morskaya Street, St. Petersburg, Leningrad 190000, Russian Federation. Received 01/14/1992.

PI 592289. *Secale cereale* L. ssp. *cereale*
Cultivar. "OLIMPIADA 80"; WIR 10806; NSGC 129. Developed in Russian Federation.

PI 592290. *Secale strictum* ssp. *anatolicum* (Boiss.) K. Hammer

Wild. NSGC 151; WIR 10702. Collected in Armenia.

The following were collected by N.I. Vavilov Institute of Plant Industry, 44 Herzen Street, Leningrad, Russian Federation. Donated by V. A. Dragavtsev, N. I. Vavilov Research Institute, of Plant Industry, 44 Bolshaya Morskaya Street, St. Petersburg, Leningrad 190000, Russian Federation. Received 01/14/1992.

PI 592291. *Secale strictum* ssp. *kuprijanovii* (Grossh.) K. Hammer

Wild. NSGC 152; WIR 9584. Collected in Russian Federation. Krasnodar Territory.

PI 592292. *Secale strictum* ssp. *kuprijanovii* (Grossh.) K. Hammer

Wild. WIR 10371; NSGC 153. Collected in Armenia.

PI 592293. *Secale strictum* ssp. *anatolicum* (Boiss.) K. Hammer

Wild. WIR 10884; NSGC 154. Collected in Armenia.

PI 592294. *Secale sylvestre* Host

Wild. WIR 10732; NSGC 155. Collected in Ukraine.

The following were developed by Charles G. Cook, USDA, ARS, Subtrop. Agric. Res. Lab., 2413 E. Hwy 83, Weslaco, Texas 78596, United States. Received 10/31/1995.

PI 592295. *Gossypium hirsutum* L.

Breeding. Pureline. N220-1-91. Pedigree - C104 (a USDA breeding line) / La RN910 (a root-knot and reniform nematode resistant line). Stems and leaves densely pubescent. Plants medium height, normal leaf and bract morphology, dark-green leaves, and nectaried. Excellent resistance to root-knot nematodes (*Meloidogyne incognita* Race 3). Good tolerance to reniform nematode (*Rotylenchulus reniformis*). Superior fiber strength.

PI 592296. *Gossypium hirsutum* L.

Breeding. Pureline. N222-1-91. Pedigree - C105 (a USDA breeding line) / La RN910 (a root-knot and reniform nematode resistant line). Stems and leaves densely pubescent. Plants medium height, normal leaf and bract morphology, dark-green leaves, and nectaried. Compared to Stoneville 453, excellent resistance to root-knot nematode (*Meloidogyne incognita* Race 3), significant resistance to reniform nematode (*Rotylenchulus reniformis*), and a higher micronaire value.

PI 592297. *Gossypium hirsutum* L.

Breeding. Pureline. N320-2-91. Pedigree - C32 (a USDA breeding line) / LA RN-4-4 (a root-knot and reniform nematode resistant line). Stems and leaves densely pubescent. Plants medium height, normal leaf and bract morphology, dark-green leaves, and nectaried. Compared to Stoneville 453, excellent resistance to root-knot (*Meloidogyne incognita* Race 3), significant resistance to reniform nematode (*Rotylenchulus reniformis*),

and a lower micronaire value.

PI 592298. *Gossypium hirsutum* L.

Breeding. Pureline. N419-1-91. Pedigree - C32 (a USDA breeding line) / La RN909 (a root-knot and reniform nematode resistant line). Stems and leaves densely pubescent. Plants medium height, normal leaf and bract morphology, dark-green leaves, and nectaried. Open-type boll. Compared to Stoneville 453, significant resistance to reniform nematode (*Rotylenchulus reniformis*) and a longer fiber length.

PI 592299. *Gossypium hirsutum* L.

Breeding. Pureline. C221-91. Pedigree - Tamcot HQ95 / Deltapine 20. All plant parts glabrous. Flowers with cream pollen. Plants medium height, normal leaf and bract morphology, dark-green leaves, and nectaried. Early for fruit set and crop maturity and the glabrous character may reduce fiber trash content and imparts resistance to several cotton insects.

PI 592300. *Gossypium hirsutum* L.

Breeding. Pureline. C224-91. Pedigree - Tamcot HQ95 / Deltapine 20. Segregates for the glabrous trait and pubescence. Flowers generally have cream pollen. Plants medium height, normal leaf and bract morphology, dark-green leaves, and nectaried. Early for fruit set and crop maturity. Compared to Stoneville 453, excellent tolerance to reniform nematode (*Rotylenchulus reniformis*).

PI 592301. *Gossypium hirsutum* L.

Breeding. Pureline. C300-91. Pedigree - Tamcot HQ95 / S295, followed by a subsequent backcross to Tamcot HQ95. Stems and leaves densely pubescent. Flowers have yellow pollen. Plants medium height, normal leaf and bract morphology, dark green leaves, and nectaried. Early for fruit set and crop maturity. Highly resistant to *Xanthomonas campestris* pv. *malvacearum*, the causal agent of bacterial blight.

PI 592302. *Gossypium hirsutum* L.

Breeding. Pureline. C306-91. Pedigree - (CABCHUS-1-1-86/S295) / CABCHUS-1-1-86. All plant parts glabrous. Flowers with cream pollen. Plants medium-tall, normal leaf and bract morphology, dark green leaves, and nectaried. Medium-early for crop maturity. Highly resistant to *Xanthomonas campestris* pv. *malvacearum* and good tolerance to reniform nematode (*Rotylenchulus reniformis*).

The following were developed by Don F. Salmon, Alberta Agriculture, Field Crops Section, 5718-56 Avenue, Lacombe, Alberta T0C 1S0, Canada; W. Stewart, Alberta Agriculture, Bag Service #47, 5718-56 Avenue, Lacombe, Alberta T0C 1S0, Canada; Jim Helm, Alberta Agriculture, Field Crop Development Centre, 5030 50 Street, Lacombe, Alberta T4L 1W8, Canada; Manuel Cortez, Alberta Agriculture, Field Crop Development Centre, 5030-50 Street, Lacombe, Alberta T4L 1W8, Canada; Patricia E. Jedel, Alberta Agriculture, Field Crop Development Centre, 5050-50 Street, Lacombe, Alberta T4L 1W8, Canada.
Received 10/31/1995.

PI 592303. *Hordeum vulgare* L. ssp. *vulgare*

Cultivar. Pureline. "PHOENIX"; HB 602. CV-256. Pedigree - Betzes/Heines Hanna//Pirolina/3/RB 222-69/4/Scout. Two-row, hullless, feed barley. Mid-season, rough awned, medium stature with yellow aleurone. Green coleoptile and erect juvenile growth. Flag leaf medium green, narrow, medium long, and semi-erect. Auricle white. Spikes lax, semi-nodding, and medium long. Kernels medium long and medium wide. Rachilla medium long with long hairs. Best adapted to dryer areas of Alberta (brown soils). In these areas, yielded 5029 kg/ha, 10% more than Condor, the predominant two-row hullless cultivar. High digestible protein and energy for pigs. Moderate susceptible to scald (*Rhynchosporium secalis*).

Moderate resistance to net blotch (*Pyrenophora teres*).

The following were collected by Mary Brothers, USDA, ARS, Iowa State University, Regional Plant Introduction Station, Ames, Iowa 50011, United States; Gerald Seiler, USDA, ARS, Northern Crop Science Lab., P.O. Box 5677, University Station, Fargo, North Dakota 58105, United States. Donated by Gerald Seiler, USDA, ARS, Northern Crop Science Lab., P.O. Box 5677, University Station, Fargo, North Dakota 58105, United States. Received 09/16/1994.

PI 592304. *Helianthus annuus* L.

Wild. ANN-2294; Ames 22167. Collected 09/07/1994 in Alberta, Canada. Latitude 51 deg. 38' 57'' N. Longitude 112 deg. 41' 43'' W. Elevation 822 m. 6.4 km east of Morrin, Hwy. 9 E. Brown, sandy-loam soil, upper slope of roadside ditch, topography - plain (level), moderate soil nutrient content, low salinity and moderate drainage. Grassland vegetation. Population scattered in roadside ditch along edge of blacktop. Low population variability, effective population size - 100 plants, population area 30 meters square. Plants very short for *H. annuus* but have been cut back, larger *H. annuus* bracts, no white chaff on head, darker green leaves. Past peak flowering, good seed set. No apparent insect or disease problems.

PI 592305. *Helianthus annuus* L.

Wild. ANN-2295; Ames 22168. Collected 09/07/1994 in Alberta, Canada. Latitude 51 deg. 38' 55'' N. Longitude 113 deg. 4' 33'' W. Elevation 805 m. 9.3 km west of Morrin, Hwy. 27 W. Brown, sandy-loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, moderate drainage, tillage not affected by stoniness. Grassland vegetation. Large population along both sides of road in disturbed roadside ditch, recent road construction. Low population variability, effective population size - several hundred plants. More typical *H. annuus*, taller, more branched, darker green. Past peak flowering, good seed set. No apparent insect or disease damage.

PI 592306. *Helianthus annuus* L.

Wild. ANN-2296; Ames 22169. Collected 09/08/1994 in Alberta, Canada. Latitude 49 deg. 57' 8'' N. Longitude 112 deg. 46' 49'' W. Elevation 811 m. 8.0 km north of Picture Butte, Hwy. 25 N. Brown, sandy to loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, moderate to well drained, tillage affected by stoniness. Located along margin of wheat field. Small, scattered population in roadside ditch (by irrigation ditch), along edge of wheat field. Uniform population limited in distribution, effective population size - 100 plants. Most plants past peak flowering, good seed set. No apparent insect or disease damage. Small population so more than one head per plant sampled.

PI 592307. *Helianthus annuus* L.

Wild. ANN-2297; Ames 22170. Collected 09/08/1994 in Alberta, Canada. Latitude 49 deg. 39' 32'' N. Longitude 112 deg. 47' 35'' W. Elevation 926 m. 20.8 km north of Welling, Hwy. 5 N. Brown, sandy to loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, moderate to well drained, tillage affected by stoniness. Located along margin of wheat field. Small, dense population in disturbed roadside ditch, recent road construction. Uniform population, effective population size - 150 plants. Typical plants, many taller. Most plants past peak flowering, good seed set. No apparent insect or disease damage.

PI 592308. *Helianthus annuus* L.

Wild. ANN-2298; Ames 22171. Collected 09/08/1994 in Alberta, Canada.

Latitude 49 deg. 27' 54'' N. Longitude 112 deg. 35' 44'' W. Elevation 991 m. 5.6 km east of Raymond, Hwy. 52 E. Brown, sandy to loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no to low salinity, moderate to well drained, tillage affected by stoniness. Located along margin of wheat field. Few scattered plants in roadside ditch along edge of asphalt. Uniform population, effective population size - 75 plants. Short plants but typical *H. annuus* characteristics. Just past peak flowering, good seed set. Small population so more than one head per plant sampled.

PI 592309. *Helianthus annuus* L.

Wild. ANN-2299; Ames 22172. Collected 09/09/1994 in Alberta, Canada. Latitude 49 deg. 57' 7'' N. Longitude 110 deg. 14' 51'' W. Elevation 800 m. 6.4 km east of Irvine, Hwy. 1 E. Brown, loam soil, level area of disturbed roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, well drained, tillage affected by stoniness. Grassland vegetation. Scattered population in disturbed roadside ditch, near drainage ditch. Uniform population, effective population size - several hundred plants. Plants short, only one to few heads per plant, typical of Canadian *H. annuus* so far. Past peak flowering, good seed set. No insect or disease damage.

PI 592310. *Helianthus annuus* L.

Wild. ANN-2302; Ames 22173. Collected 09/09/1994 in Saskatchewan, Canada. Latitude 50 deg. 36' 47'' N. Longitude 108 deg. 27' 6'' W. Elevation 708 m. 0.2 km south of Cabri, Hwy. 37 S. Brown, loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, low salinity, moderate drainage, tillage affected by stoniness. Located along margin of cropland. Population scattered along edge of harvested wheat field and road, in roadside ditch. Uniform population, effective population size - 75 plants. Past peak flowering, good seed set. No apparent insect damage, rust present.

PI 592311. *Helianthus annuus* L.

Wild. ANN-2303; Ames 22174. Collected 09/09/1994 in Saskatchewan, Canada. Latitude 50 deg. 23' 37'' N. Longitude 108 deg. 28' 49'' W. Elevation 768 m. 32.0 km north of Gull Lake, Hwy. 37 N. Brown, sandy-loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, low salinity, moderate drainage, tillage affected by stoniness. Cropland and grassland vegetation. Large, scattered population along both sides of road in roadside ditch along asphalt. Uniform population, effective population size - several hundred plants. Typical *H. annuus*. Past peak flowering, good seed set. Some grasshopper damage to heads, no apparent disease damage.

PI 592312. *Helianthus annuus* L.

Wild. Ames 22175; ANN-2304. Collected 09/09/1994 in Saskatchewan, Canada. Latitude 49 deg. 57' 42'' N. Longitude 107 deg. 45' 25'' W. Elevation 940 m. 29.0 km north of Cadillac, Hwy. 4 N. Brown, sandy-loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, low salinity, moderate to well drained, tillage affected by stoniness. Cropland vegetation. Scattered population along both sides of road in roadside ditch, along edge of asphalt and edge of oat field, gradient from asphalt to edge of oat field. Uniform population, effective population size - several hundred plants. Typical *H. annuus*. Majority of plants past peak flowering, good seed set. No insect or disease damage.

PI 592313. *Helianthus annuus* L.

Wild. Ames 22176; ANN-2305. Collected 09/09/1994 in Saskatchewan, Canada. Latitude 50 deg. 20' 22'' N. Longitude 107 deg. 28' 15'' W. Elevation 840 m. 24.0 km east on Hwy. 1 and 4.8 km south on Hwy. 628. Brown, sandy-loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, low salinity, moderate to well

drained, tillage affected by stoniness. Located near wheat field, cropland vegetation. Population along both sides of road in rocky, roadside ditch. Uniform population, effective population size - 75 plants. Plants tall, big heads, grayish leaves. Just past peak flowering, good seed set. No insect or disease damage.

PI 592314. *Helianthus annuus* L.

Wild. ANN-2307; Ames 22177. Collected 09/10/1994 in Saskatchewan, Canada . Latitude 50 deg. 44' 51'' N. Longitude 108 deg. 2' 10'' W. Elevation 670 m. 28.0 km north of Stewart Valley, Hwy. 4 N. Brown, sandy-loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, low salinity, moderate to well drained, tillage affected by stoniness. Grassland vegetation. Scattered population in roadside ditch. Moderate population variability, effective population size - 150 plants. Possible mixed population but mostly *H. annuus* type plants (i.e. heads). Past peak flowering, good seed set. No apparent insect or disease damage.

PI 592315. *Helianthus annuus* L.

Wild. ANN-2308; Ames 22178. Collected 09/10/1994 in Saskatchewan, Canada . Latitude 50 deg. 51' 46'' N. Longitude 107 deg. 34' 41'' W. Elevation 656 m. 13.8 km west of Beechy, Hwy. 342 W. Brown, sandy soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, low to moderate salinity, moderate to well drained, tillage affected by stoniness. Grassland vegetation. Two populations combined, 0.8 km apart, not enough plants collected from the first location. Near wheat field in roadside ditch. Uniform population, effective population size -150 plants. Some smaller plants, probably cut off, typical *H. annuus* plants otherwise. Past peak flowering, good seed set. No apparent insect or disease damage. Associated wild species: *Grindelia*, *Tragopogon*, *Linum*, *Aster*, *Solidago*.

PI 592316. *Helianthus annuus* L.

Wild. ANN-2309; Ames 22179. Collected 09/10/1994 in Saskatchewan, Canada . Latitude 50 deg. 39' 36'' N. Longitude 105 deg. 39' 53'' W. Elevation 578 m. 4.8 km southeast of Keeler, Hwy. 42 SE. Brown, sandy-loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, moderate drainage, tillage affected by stoniness. Located along margin of cropland. Large, scattered population in disturbed, rocky roadside ditch. Uniform population, effective population size - several hundred plants. Typical plants, tall, bigger heads, dark green leaves. Well past peak flowering, many plants dead, good seed set. No apparent insect or disease damage.

PI 592317. *Helianthus annuus* L.

Wild. ANN-2310; Ames 22180. Collected 09/10/1994 in Saskatchewan, Canada . Latitude 50 deg. 21' 18'' N. Longitude 105 deg. 32' 1'' W. Elevation 535 m. 4.0 km south of Moose Jaw, Hwy. 2 S. Brown, loam soil, level area and mid-slope of disturbed roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, moderate to well drained, tillage affected by stoniness. Grassland vegetation. Mixed population in disturbed area of roadside ditch. *Helianthus petiolaris* along edge of asphalt, mixed hybrid on slope, and *H. annuus* in disturbed area. Low population variability, effective population size - 100 plants. Well past peak flowering, most plants black, seed shattered but good seed set. No apparent insect damage, moderate rust damage.

PI 592318. *Helianthus annuus* L.

Wild. ANN-2311; Ames 22181. Collected 09/10/1994 in Saskatchewan, Canada . Latitude 50 deg. 9' 47'' N. Longitude 105 deg. 26' 29'' W. Elevation 570 m. 14.3 km west of Briercrest, Hwy. 716 E. Brown, sandy-loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, low salinity, moderate drainage, tillage affected by stoniness. Located along margin of cropland. Small, very dense

population in roadside ditch, along edge and extending into flax field. Low population variability, effective population size - about 500 plants. Plants not too branched and with smaller heads. Past peak flowering, good seed set. No apparent insect or disease damage. One plant with chrysanthemum type head, specimen collected.

PI 592319. *Helianthus annuus* L.

Wild. Ames 22182; ANN-2312. Collected 09/10/1994 in Saskatchewan, Canada . Latitude 50 deg. 10' 5'' N. Longitude 105 deg. 7' 2'' W. Elevation 575 m. 11.0 km east of Clay Bank, Hwy. 334 E. Brown, clay, silt soil, level area of disturbed roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, moderate to well drained, tillage not affected by stoniness. Cropland vegetation. Population extending for several hundred meters in roadside ditch, along edge of row-space planted cultivated sunflower field. Uniform population, effective population size - several hundred plants. More typical *H. annuus* population density, many plants had been cut. Most plants past peak flowering, good seed set. No apparent insect or disease damage. Sunflower Beetle damage in cultivated sunflower field.

PI 592320. *Helianthus annuus* L.

Wild. ANN-2313; Ames 22183. Collected 09/10/1994 in Saskatchewan, Canada . Latitude 50 deg. 2' 51'' N. Longitude 104 deg. 42' 26'' W. Elevation 535 m. 27.4 km east of Avonlea, Hwy. 334 E. Clay, silt soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, low salinity, moderate to well drained, tillage not affected by stoniness. Cropland and grassland vegetation. Large population extending for several hundred meters in disturbed roadside ditch and along edge of wheat field. Uniform population, effective population size - several thousand plants. Regrowth of cut plants along edge of road, more typical *H. annuus* plants on lower slope. More typical *H. annuus* population, dense along edge of field. Well past peak flowering, good seed set.

PI 592321. *Helianthus annuus* L.

Wild. ANN-2315; Ames 22184. Collected 09/11/1994 in Saskatchewan, Canada . Latitude 49 deg. 24' 23'' N. Longitude 104 deg. 17' 28'' W. Elevation 679 m. 6.0 km south of Radville, intersection of Hwy. 28 S and 705 E. Brown, loam to clay, silt soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, low salinity, moderate to well drained, tillage not affected by stoniness. Cropland and grassland vegetation. Large, scattered population along edge of road and in roadside ditch. Population variability - uniform, effective population size - several hundred plants. Some heads had leafy bracts characteristic of *H. petiolaris* ssp. *fallax*. Peak flowering, good seed set. No insect damage, moderate rust damage. Cultivated sunflower field about one km away. Associated wild species: *Lactuca*, *Aster*, *Cirsium*.

PI 592322. *Helianthus annuus* L.

Wild. ANN-2316; Ames 22185. Collected 09/11/1994 in Saskatchewan, Canada . Latitude 49 deg. 8' 45'' N. Longitude 104 deg. 12' 39'' W. Elevation 719 m. 0.5 km west of Lake Alma, Hwy. 18 W. Brown, sandy-loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, low salinity, moderate to well drained, tillage affected by stoniness. Cropland and grassland vegetation. Small, scattered population along edge of road (both sides of road) and in rocky roadside ditch. Uniform population, effective population size - 100 plants. Many plants with smaller heads due to being grown along edge of road. Not typical branched *H. annuus*. Most plants past peak flowering, good seed set.

PI 592323. *Helianthus annuus* L.

Wild. ANN-2317; Ames 22186. Collected 09/11/1994 in Saskatchewan, Canada . Latitude 49 deg. 13' 54'' N. Longitude 103 deg. 15' 43'' W. Elevation

591 m. 8.5 km west of Macoun, Hwy. 606 W. Brown, loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, low salinity, moderate drainage, tillage not affected by stoniness. Cropland and grassland vegetation. Small, scattered population in disturbed roadside ditch along edge of wheat and oat fields. Uniform population, effective population size - 250 plants. Two plant stages: flowering and past peak flowering, good seed set. No apparent insect or disease damage. Associated wild species: *Cirsium*, *Solidago*, *Rumex*.

PI 592324. *Helianthus annuus* L.

Wild. ANN-2318; Ames 22187. Collected 09/12/1994 in Saskatchewan, Canada. Latitude 49 deg. 13' 55'' N. Longitude 102 deg. 59' 57'' W. Elevation 582 m. 8.6 km north of Estevan, Hwy. 47 N. Black-brown, loam to clay, silt soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, low salinity, moderate to well drained, tillage not affected by stoniness. Cropland and grassland vegetation. Large, scattered population in roadside ditch along edge of wheat field. Uniform population, effective population size - 500 plants. Several plants with deformed (folded) heads, multiflorus type heads. Two large plants resembling hybrids present in population, seed sampled but not combined with bulk sample from population. No apparent insect damage, some plants with rust damage.

PI 592325. *Helianthus annuus* L.

Wild. Ames 22188; ANN-2321. Collected 09/12/1994 in Saskatchewan, Canada. Latitude 49 deg. 13' 35'' N. Longitude 101 deg. 38' 26'' W. Elevation 539 m. 0.3 km west and 14.1 km north of Carievale, Hwy. 8 N. Brown, sandy-loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, well drained, tillage not affected by stoniness. Cropland vegetation. Sparse, scattered population along both sides of road and in roadside ditch, population extends several hundred meters. Uniform population, effective population size - 500 plants. Plants short, single-headed. Plants in roadside ditch typical *H. annuus*, plants along roadside not typical *H. annuus*, small heads. Past peak flowering, good seed set. Some leaves damaged.

PI 592326. *Helianthus annuus* L.

Wild. ANN-2327; Ames 22189. Collected 09/13/1994 in Manitoba, Canada. Latitude 49 deg. 10' 40'' N. Longitude 100 deg. 18' 8'' W. Elevation 523 m. 6.4 km south and 19.7 km west of Boissevain, Hwy. 3 W. Brown, sandy-loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, low salinity, moderate to well drained, tillage not affected by stoniness. Cropland and grassland vegetation. Population in disturbed roadside ditch, near edge of cultivated field. Uniform population. One plant with very large head (7.4 cm in diameter), typical wild *H. annuus* otherwise. Cultivated field 5 km west of collection site. Most plants past flowering. Severe insect leaf damage, no rust. Associated wild species: *Cirsium*, *Melilotus*, *Medicago*.

PI 592327. *Helianthus annuus* L.

Wild. ANN-2330; Ames 22191. Collected 09/13/1994 in Manitoba, Canada. Latitude 49 deg. 6' 10'' N. Longitude 100 deg. 44' 48'' W. Elevation 469 m. 4.0 km east of Waskada, Hwy. 251 E. Black, clay, silt soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, moderate to well drained, tillage not affected by stoniness. Located along margin of cropland. Small, dense population in disturbed area along edge of harvested wheat field, also along fence row. Uniform population, effective population size - 100 plants. Typical *H. annuus*, some plants had large heads, probably not hybrids though. Population across the road from cultivated sunflower field. Well past peak flowering, good seed set.

The following were collected by Gerald Seiler, USDA, ARS, Northern Crop Science Lab., P.O. Box 5677, University Station, Fargo, North Dakota 58105, United States. Received 09/16/1994.

PI 592328. *Helianthus maximilianii* Schrader

Wild. MAX-2277; Ames 22192. Collected 09/02/1994 in Manitoba, Canada. Latitude 49 deg. 3' 0'' N. Longitude 99 deg. 20' 0'' W. Elevation 300 m. 4.8 km south of Cartwright, Hwy. 5 S. Brown, loam soil, level area of roadside ditch, topography - flood plain, moderate soil nutrient content, low salinity, imperfect drainage, tillage affected by stoniness. Cropland and grassland vegetation. Population scattered along edge of canola field in roadside ditch. Uniform population, effective population size - approximately 200 plants. Most plants short, red stems. Peak flowering, poor seed set. No disease evident. Associated wild species: *Equisetum*, *Arvense*.

PI 592329. *Helianthus maximilianii* Schrader

Wild. MAX-2279; Ames 22193. Collected 09/02/1994 in Manitoba, Canada. Latitude 49 deg. 11' 32'' N. Longitude 98 deg. 9' 48'' W. Elevation 362 m. 3.2 km west of Morden, Hwy. 3 W. Brown, loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, moderate drainage, tillage not affected by stoniness. Cropland and grassland vegetation. Population in roadside ditch, along edge of wheat field. Uniform population, effective population size - 500 plants. Typical plants, red stems, not robust, darker green leaves, not as branched above. No insect or disease damage evident. Associated wild species: *Equisetum*, *Arvense*.

PI 592330. *Helianthus maximilianii* Schrader

Wild. MAX-2280; Ames 22194. Collected 09/03/1994 in Manitoba, Canada. Latitude 49 deg. 22' 11'' N. Longitude 98 deg. 0' 12'' W. Elevation 339 m. 15.2 km east of Miami, Hwy. 23 W, near Jordan elevator. Brown, loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, imperfect drainage, tillage not affected by stoniness. Agricultural area. Large, scattered population in roadside ditch. Uniform population, effective population size - around 1000 plants, population area 1000 meters square. Most typical *H. maximilianii* seen, grayish stems and leaves. Just past peak flowering, seed set questionable, not filled well. No apparent insect or disease damage.

PI 592331. *Helianthus maximilianii* Schrader

Wild. MAX-2284; Ames 22196. Collected 09/03/1994 in Manitoba, Canada. Latitude 50 deg. 14' 55'' N. Longitude 99 deg. 28' 36'' W. Elevation 478 m. 2.4 km north of Neepawa, Hwy. 5 N. Brown, sandy-loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, moderate drainage, tillage not affected by stoniness. Woodland vegetation. Population scattered along both sides of road in roadside ditch. Low population variability, effective population size - about 500 plants, population area 3000 meters square. Plants look more like *H. maximilianii* but have alot of *H. nuttallii* characteristics, leaves more like *H. nuttallii*, heads like *H. maximilianii*. Peak flowering, seed set appears fair. No apparent insect or disease damage. Associated species: *Populus* (Aspen).

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09/16/1994.

PI 592332. *Helianthus maximilianii* Schrader

Wild. MAX-2323; Ames 22198. Collected 09/12/1994 in Manitoba, Canada. Latitude 49 deg. 58' 53'' N. Longitude 100 deg. 35' 58'' W. Elevation 471 m. 5.4 km west and 0.8 km south of Harding, intersection of Hwy. 259 W and Hwy. 21 S. Brown, sandy-loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, well drained, tillage not affected by stoniness. Cropland vegetation. Dense population in roadside ditch. Uniform population, effective population size - several hundred plants. Mainly single-headed plants. One plant had multiple heads, grayish bracts, narrow, folded leaves, more *H. maximilianii* looking. No apparent insect or disease damage.

PI 592333. *Helianthus maximilianii* Schrader

Wild. MAX-2325; Ames 22199. Collected 09/13/1994 in Manitoba, Canada. Latitude 49 deg. 42' 33'' N. Longitude 99 deg. 57' 44'' W. Elevation 409 m. 14.0 km south of Brandon, Hwy. 10 S. Brown, loam to clay, silt soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, moderate to well drained, tillage not affected by stoniness. Cropland and grassland vegetation. Scattered population in roadside ditch. Uniform population, effective population size - 500 plants. Typical *H. maximilianii* flowering with multiple heads along stem, red stem, folded, gray leaves. Past peak flowering, good seed set. No disease damage.

PI 592334. *Helianthus maximilianii* Schrader

Wild. Ames 22200; MAX-2326. Collected 09/13/1994 in Manitoba, Canada. Latitude 49 deg. 22' 26'' N. Longitude 100 deg. 0' 51'' W. Elevation 478 m. 4.3 km south of Minto, Hwy. 10 S. Black-brown, loam to clay, silt soil, level area of roadside ditch, topography - plain (level), no salinity, moderate to well drained, tillage not affected by stoniness. Cropland and grassland vegetation. Scattered population along both sides of road in roadside ditch, many plants also along edge of wheat field (stubble). Uniform population, effective population size - 175 plants. Many single headed plants, smaller heads. Past peak flowering, good seed set. No apparent insect or disease damage. Associated wild species: *Solidago*, *Aster*, *Cirsium*.

PI 592335. *Helianthus maximilianii* Schrader

Wild. Ames 22201; MAX-2332. Collected 09/13/1994 in Manitoba, Canada. Latitude 49 deg. 29' 10'' N. Longitude 100 deg. 31' 58'' W. Elevation 444 m. 0.3 km northwest of Hartney, intersection of Hwy. 21 N and Hartney exit. Brown, sandy soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, low salinity, well drained, tillage not affected by stoniness. Cropland and grassland vegetation. Scattered population in roadside ditch and along corner of wheat field (stubble). Uniform population, effective population size - several hundred plants. Typical plants but somewhat short, gray, folded leaves, across from cultivated sunflower field. No apparent insect or disease damage. Associated wild species: *Aster*, *Cirsium*, *Medicago*, *Solidago*.

PI 592336. *Helianthus maximilianii* Schrader

Wild. MAX-2333; Ames 22202. Collected 09/13/1994 in Manitoba, Canada. Latitude 49 deg. 44' 20'' N. Longitude 100 deg. 13' 41'' W. Elevation 440 m. 15.6 km south and 18.4 km west of Brandon, Hwy. 349 W. Brown, sandy soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, low salinity, well drained, tillage not affected by stoniness. Cropland and grassland vegetation. Scattered population along both sides of road in roadside ditch, extending for ca. 100 m. Uniform population, effective population size - several hundred plants. Most plants short, single-headed. Past peak flowering, probably good seed set, many seeds already shattered. No apparent insect or

disease damage. Associated wild species: *Cirsium*, *Medicago*, *Solidago*, *Aster*.

PI 592337. *Helianthus maximilianii* Schrader

Wild. MAX-2335; Ames 22203. Collected 09/14/1994 in Manitoba, Canada. Latitude 49 deg. 39' 28'' N. Longitude 99 deg. 45' 27'' W. Elevation 392 m. 6.0 km west of Wawanesa, Hwy. 344 W. Black-brown, sandy-loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, moderate to well drained, tillage not affected by stoniness. Cropland vegetation. Population extending for several hundred meters in roadside ditch, population about 12 m wide. Uniform population. Typical *H. maximilianii* but with mostly single-headed plants. Past peak flowering, good seed set. No apparent insect or disease damage. Associated wild species: *Cirsium*, *Solidago*, *Melilotus*.

PI 592338. *Helianthus maximilianii* Schrader

Wild. MAX-2337; Ames 22204. Collected 09/14/1994 in Manitoba, Canada. Latitude 49 deg. 5' 20'' N. Longitude 99 deg. 17' 22'' W. Elevation 303 m. 4.3 km east of Cartwright, Hwy. 3 E. Black-brown, sandy-loam soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, imperfect to moderate drainage, tillage not affected by stoniness. Cropland vegetation. Large, scattered population along both sides of road in roadside ditch. Uniform population. Few larger flowering plants on back slope of ditch. Most plants past flowering, good seed set. Some heads clippered off, several plants with some rust. Associated wild species: *Cirsium*, *Solidago*, *Aster*.

PI 592339. *Helianthus maximilianii* Schrader

Wild. MAX-2339; Ames 22206. Collected 09/14/1994 in Manitoba, Canada. Latitude 49 deg. 44' 18'' N. Longitude 97 deg. 50' 12'' W. Elevation 256 m. 14.4 km northeast of Elm Creek, Hwy. 2 E. Black-brown, clay, silt soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, imperfect to moderate drainage, tillage not affected by stoniness. Cropland and grassland vegetation. Large population along both sides of road in roadside ditch. Uniform population, effective population size - several hundred plants. Plants more robust than previously seen, more typical *H. maximilianii*. Just past peak flowering, very good seed set. Sunflower beetle on heads, some heads clippered off, many plants with moderate rust. Associated wild species: *Carduus*, *Cirsium*, *Aster*, *Solidago*.

The following were collected by Gerald Seiler, USDA, ARS, Northern Crop Science Lab., P.O. Box 5677, University Station, Fargo, North Dakota 58105, United States. Received 09/16/1994.

PI 592340. *Helianthus nuttallii* Torrey & A. Gray

Wild. MAX-2281; Ames 22195. Collected 09/03/1994 in Manitoba, Canada. Latitude 49 deg. 22' 13'' N. Longitude 98 deg. 17' 25'' W. Elevation 412 m. 4.0 km west of Miami, Hwy. 23 W. Brown, loam soil, level area of swampy roadside ditch, topography - swamp, moderate soil nutrient content, no salinity, moderate drainage, tillage not affected by stoniness. Cropland and grassland vegetation. Small, isolated population in moist roadside ditch. Low population variability, effective population size - 75 plants, population area 100 meters square. Plants look like *H. nuttallii*, red stems, alternate, opposite leaves above, tall (2 m), serrated leaves. Typical *H. nuttallii* habitat. Past peak flowering, seed set questionable. No apparent insect or disease damage.

The following were collected by Mary Brothers, USDA, ARS, Iowa State

University, Regional Plant Introduction Station, Ames, Iowa 50011, United States; Gerald Seiler, USDA, ARS, Northern Crop Science Lab., P.O. Box 5677, University Station, Fargo, North Dakota 58105, United States. Donated by Gerald Seiler, USDA, ARS, Northern Crop Science Lab., P.O. Box 5677, University Station, Fargo, North Dakota 58105, United States. Received 09/16/1994.

PI 592341. *Helianthus nuttallii* Torrey & A. Gray

Wild. MAX-2338; Ames 22205. Collected 09/14/1994 in Manitoba, Canada. Latitude 49 deg. 37' 49'' N. Longitude 98 deg. 20' 45'' W. Elevation 317 m. 2.7 km south of St. Claude, Hwy. 240 S. Brown, sandy soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, well drained, tillage not affected by stoniness. Cropland vegetation. Large, scattered population along both sides of road in roadside ditch, extending several hundred meters. Uniform population. Typical population, few taller plants, multiple heads, upper branching. Past peak flowering, good seed set. No apparent insect damage, many plants with rust on leaves. Associated wild species: *Equisetum*, *Aster*, *Solidago*.

The following were collected by Gerald Seiler, USDA, ARS, Northern Crop Science Lab., P.O. Box 5677, University Station, Fargo, North Dakota 58105, United States. Received 09/16/1994.

PI 592342. *Helianthus nuttallii* ssp. *rydbergii* (Britton) R. Long

Wild. Ames 22207; NUT-2285. Collected 09/03/1994 in Manitoba, Canada. Latitude 50 deg. 36' 53'' N. Longitude 99 deg. 20' 24'' W. Elevation 471 m. 9.6 km north of Riding Mountain, Hwy. 5 N. Brown, loam soil, level area of roadside ditch, topography - swamp, moderate soil nutrient content, no salinity, imperfect drainage, tillage not affected by stoniness. Located near hay field. Small population in swampy roadside ditch, near trees and hay field. Uniform population, effective population size - 120 plants, population area 100 meters square. Plants tall, 3 m or more, larger alternate leaves above, red stems, more typical *H. nuttallii*. Peak flowering, older heads look empty, seed set questionable. No apparent insect or disease damage. Associated wild species: *Scirpus*, *Carex*.

PI 592343. *Helianthus nuttallii* ssp. *rydbergii* (Britton) R. Long

Wild. NUT-2286; Ames 22208. Collected 09/03/1994 in Manitoba, Canada. Latitude 50 deg. 46' 11'' N. Longitude 99 deg. 29' 52'' W. Elevation 427 m. 1.6 km north of McCreary, Hwy. 5 N. Black-brown, sandy-loam soil, level area of roadside ditch, topography - swamp, moderate soil nutrient content, no salinity, imperfect drainage, tillage not affected by stoniness. Located along margin of cultivated field. Dense, localized population in swampy roadside ditch, near stream. Uniform population, effective population size - 100 plants, population area 300 meters square. Plants about 3 m tall, red stems, alternate, serrate leaves, more typical *H. nuttallii*. Peak flowering, seed set questionable. No apparent insect damage, moderate to severe rust.

PI 592344. *Helianthus nuttallii* ssp. *rydbergii* (Britton) R. Long

Wild. NUT-2287; Ames 22209. Collected 09/03/1994 in Manitoba, Canada. Latitude 51 deg. 4' 9'' N. Longitude 99 deg. 56' 23'' W. Elevation 440 m. 14.4 km west of Ochre River, Hwy. 5 W. Brown, sandy-loam soil, level area of roadside ditch, topography - swamp, moderate soil nutrient content, no salinity, imperfect drainage, tillage not affected by stoniness. Located along margin of cultivated field. Small, dense population in swampy area of roadside ditch with standing water, along edge of wheat field and near cultivated field. Low population

variability, effective population size - 220 plants, population area 150 meters square. Plants near stream about 3 m tall, very robust, branched above. Just at peak flowering, too early to determine seed set. No apparent insect damage, moderate to severe rust. Associated wild species: *Scripus*, *Typha*.

PI 592345. *Helianthus nuttallii* ssp. *rydbergii* (Britton) R. Long

Wild. NUT-2289; Ames 22210. Collected 09/04/1994 in Manitoba, Canada. Latitude 52 deg. 6' 5'' N. Longitude 100 deg. 43' 55'' W. Elevation 343 m. 8.0 km north of Cowan, Hwy. 10 N. Black-brown, sandy-loam soil, level area of roadside ditch, topography - swamp, moderate soil nutrient content, no salinity, imperfect drainage, tillage affected by stoniness. Open area, savannah, woodland vegetation. Smaller, scattered population in moist roadside ditch with small stream, by railroad tracks. Uniform population, effective population size - 200 plants. More typical *H. nuttallii*. Past peak flowering. No apparent insect or disease damage. Associated wild species: *Carex*, *Equisetum*, *Crepis*, *Cyperus*, *Typha*.

PI 592346. *Helianthus nuttallii* ssp. *rydbergii* (Britton) R. Long

Wild. NUT-2290; Ames 22211. Collected 09/04/1994 in Saskatchewan, Canada. Latitude 51 deg. 36' 58'' N. Longitude 102 deg. 18' 46'' W. Elevation 518 m. 3.2 km west of Mikado, Hwy. 5 W. Black-brown, sandy-loam soil, level area of roadside ditch, topography - swamp to plain (level), moderate soil nutrient content, no salinity, imperfect drainage, tillage affected by stoniness. Grassland and cropland vegetation. Dense, scattered population in swampy area of roadside ditch along both sides of railroad tracks, near small stream. Population scattered to higher and dryer area. Uniform population, effective population size - approximately 500 plants. Smaller heads. Many older heads black, seed set questionable. No apparent insect or disease damage. Associated wild species: *Rudbeckia*, *Sonchus*, *Cirsium*, *Cyperus*, *Carex*, *Aster*.

The following were collected by Mary Brothers, USDA, ARS, Iowa State University, Regional Plant Introduction Station, Ames, Iowa 50011, United States; Gerald Seiler, USDA, ARS, Northern Crop Science Lab., P.O. Box 5677, University Station, Fargo, North Dakota 58105, United States. Donated by Gerald Seiler, USDA, ARS, Northern Crop Science Lab., P.O. Box 5677, University Station, Fargo, North Dakota 58105, United States. Received 09/16/1994.

PI 592347. *Helianthus nuttallii* ssp. *rydbergii* (Britton) R. Long

Wild. NUT-2314; Ames 22212. Collected 09/11/1994 in Saskatchewan, Canada. Latitude 49 deg. 30' 31'' N. Longitude 104 deg. 17' 35'' W. Elevation 649 m. 4.3 km north of Radville, Hwy. 28 N. Brown, clay, silt soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, imperfect drainage, tillage not affected by stoniness. Cropland and grassland vegetation. Small population clumped by moist area in roadside ditch, along edge of wet area, near bridge. Uniform population, effective population size - 70 plants. Well past peak flowering, good seed set. Severe rust on all plants, some lower leaves dead from rust, most plants without green leaves, too late for assessment of insect damage. Associated wild species: *Solidago*, *Aster*.

PI 592348. *Helianthus nuttallii* ssp. *rydbergii* (Britton) R. Long

Wild. NUT-2319; Ames 22213. Collected 09/12/1994 in Saskatchewan, Canada. Latitude 49 deg. 13' 47'' N. Longitude 102 deg. 13' 33'' W. Elevation 532 m. 3.2 km west of Oxbow, Hwy. 18 W. Brown, sandy soil, level area of moist roadside ditch, topography - plain (level), poor soil nutrient

content, no to low salinity, well drained, tillage impossible due to stoniness. Grassland vegetation. Dense population along both sides of road in moist roadside ditch, near small stream, Moose Mountain Creek and Beaver Dam nearby. Uniform population, effective population size - around 1000 plants. Some heads clippered off possibly by insects, typical population otherwise, red stems. All plants past peak flowering, good seed set. Some rust damage. Associated wild species: Aster, Salix.

PI 592349. *Helianthus nuttallii* Torrey & A. Gray
Wild. NUT-2320; Ames 22214. Collected 09/12/1994 in Saskatchewan, Canada . Latitude 49 deg. 11' 1'' N. Longitude 101 deg. 50' 55'' W. Elevation 550 m. 3.8 km west of Carduff, Hwy. 18 W. Brown, sandy soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, well drained, tillage not affected by stoniness. Cropland vegetation. Large, scattered population in moist roadside ditch. Uniform population, effective population size - several hundred plants. Red stems, green leaves, pubescent bracts, leaves not like *H. maximiliani* but bracts somewhat like *H. maximiliani* (reflexed, long, attenuated). Past flowering and flowering plants, good seed set. Young plants have rust on lower leaves. Associated wild species: Sonchus, Cirsium, Solidago.

PI 592350. *Helianthus nuttallii* ssp. *rydbergii* (Britton) R. Long

Wild. NUT-2322; Ames 22215. Collected 09/12/1994 in Manitoba, Canada. Latitude 49 deg. 50' 31'' N. Longitude 101 deg. 16' 48'' W. Elevation 544 m. 25.6 km west of Virden, Hwy. 257 W. Brown, sandy soil, roadside ditch. Cropland and grassland vegetation. Population in moist roadside ditch. Uniform population. Red stems, serrate leaves, usually only one to three heads per plant, few plants with axial branching, some very young plants have been cut. Past peak flowering, good seed set. Some plants with moderate rust.

The following were collected by Gerald Seiler, USDA, ARS, Northern Crop Science Lab., P.O. Box 5677, University Station, Fargo, North Dakota 58105, United States. Received 09/16/1994.

PI 592351. *Helianthus pauciflorus* Nutt.

Wild. PAU-2283; Ames 22216. Collected 09/03/1994 in Manitoba, Canada. Latitude 49 deg. 37' 35'' N. Longitude 99 deg. 20' 54'' W. Elevation 474 m. 30.4 km north of Glenboro, Hwy. 5 N. Brown, sandy soil, level area of roadside ditch, topography - plain (level), poor soil nutrient content, no salinity, well drained, tillage not affected by stoniness. Located along margin of cultivated field. Scattered population in roadside ditch, near Populus trees. Uniform population, effective population size - 150 plants, population area 100 meters square. Past peak flowering, not many filled heads, seed set questionable. No apparent insect or disease damage. Associated wild species: Populus (Aspen).

The following were collected by Mary Brothers, USDA, ARS, Iowa State University, Regional Plant Introduction Station, Ames, Iowa 50011, United States; Gerald Seiler, USDA, ARS, Northern Crop Science Lab., P.O. Box 5677, University Station, Fargo, North Dakota 58105, United States. Donated by Gerald Seiler, USDA, ARS, Northern Crop Science Lab., P.O. Box 5677, University Station, Fargo, North Dakota 58105, United States. Received 09/16/1994.

PI 592352. *Helianthus pauciflorus* Nutt.

Wild. Ames 22219; PAU-2334. Collected 09/14/1994 in Manitoba, Canada. Latitude 49 deg. 50' 51'' N. Longitude 99 deg. 41' 58'' W. Elevation 369 m. 6.4 km south of Douglas, Hwy. 340 S. Brown, sandy soil, level area of roadside ditch, topography - plain (level), poor soil nutrient content,

no salinity, moderate to well drained, tillage not affected by stoniness. Grassland vegetation. Population scattered along banks of roadside ditch and undisturbed area by fence row. Additional seed collected 0.5 km away. Uniform population, effective population size - several hundred plants. Typical *H. pauciflorus* but with smaller heads, collected multiple heads per plant due to small population size. Well past peak flowering, seed set questionable. No apparent insect or disease damage but plants very mature.

PI 592353. *Helianthus pauciflorus* Nutt.

Wild. PAU-2336; Ames 22220. Collected 09/14/1994 in Manitoba, Canada. Latitude 49 deg. 26' 36'' N. Longitude 99 deg. 37' 49'' W. Elevation 457 m. 5.1 km north of Ninette, Hwy 18 N. Brown, sandy soil, open depression of roadside ditch, topography - plain (level), poor to moderate soil nutrient content, low salinity, well drained, tillage not affected by stoniness. Cropland vegetation. Population located on back-slope of two cut banks in roadside ditch. Two populations collected, separated by 0.3 km. Uniform population, effective population size - several hundred plants. Past peak flowering, seed set questionable. Severe rust on several plants, several heads clipped off.

The following were collected by Gerald Seiler, USDA, ARS, Northern Crop Science Lab., P.O. Box 5677, University Station, Fargo, North Dakota 58105, United States. Received 09/16/1994.

PI 592354. *Helianthus petiolaris* ssp. *petiolaris*

Wild. PET-2292; Ames 22221. Collected 09/05/1994 in Saskatchewan, Canada. Latitude 52 deg. 7' 43'' N. Longitude 106 deg. 57' 45'' W. Elevation 444 m. 14.5 km east of Asquith, Hwy. 14 E. Black-brown, sandy soil, level area and upper slope of roadside ditch, topography - plain (level), poor to moderate soil nutrient content, no salinity, moderate to well drained, tillage affected by stoniness. Grassland (hay meadow) veg. Scattered population along both sides of road, in roadside ditch and along railroad tracks. Uniform population, effective population size - approximately 300 plants, population area 200 meters square. Plants typical of North Dakota *H. petiolaris*, shorter plants near edge of road. Past peak flowering, seed set good. No insect damage but some rust. Associated species: *Sonchus*, *Crepis*.

PI 592355. *Helianthus petiolaris* ssp. *petiolaris*

Wild. PET-2293; Ames 22222. Collected 09/05/1994 in Saskatchewan, Canada. Latitude 52 deg. 3' 23'' N. Longitude 107 deg. 33' 46'' W. Elevation 487 m. 0.8 km west of Perdue, Hwy. 14 W. Brown, sandy soil, level area and upper slope of roadside ditch, topography - plain (level), poor to moderate soil nutrient content, no salinity, moderate to well drained, tillage affected by stoniness. Grassland vegetation (near meadow). Scattered population along edge of road in roadside ditch. Uniform population, effective population size - approximately 75 plants, population area 100 meters square. Plants typical of *H. petiolaris* ssp. *petiolaris*, shorter plants along edge of road. Good seed set. No insect damage, some rust. Associated wild species: *Sonchus*, *Crepis*.

The following were collected by Mary Brothers, USDA, ARS, Iowa State University, Regional Plant Introduction Station, Ames, Iowa 50011, United States; Gerald Seiler, USDA, ARS, Northern Crop Science Lab., P.O. Box 5677, University Station, Fargo, North Dakota 58105, United States. Donated by Gerald Seiler, USDA, ARS, Northern Crop Science Lab., P.O. Box 5677, University Station, Fargo, North Dakota 58105, United States. Received 09/16/1994.

PI 592356. *Helianthus petiolaris* ssp. *petiolaris*

Wild. Ames 22223; PET-2300. Collected 09/09/1994 in Saskatchewan, Canada

. Latitude 50 deg. 0' 11'' N. Longitude 109 deg. 27' 49'' W. Elevation 798 m. 47 km south of Fox Valley, Hwy. 21 S. Brown, sandy soil, level area of roadside ditch, topography - plain (level), poor soil nutrient content, no salinity, well drained, tillage affected by stoniness. Cropland vegetation. Scattered population in disturbed roadside ditch. Two collections bulked due to low seed quantity at first location. Uniform population, effective population size - 150 plants. Typical *H. petiolaris*. Past peak flowering, good seed set. No apparent insect damage, moderate to severe rust on most plants.

PI 592357. *Helianthus petiolaris* ssp. *petiolaris*

Wild. PET-2301; Ames 22224. Collected 09/09/1994 in Saskatchewan, Canada . Latitude 50 deg. 28' 39'' N. Longitude 109 deg. 27' 53'' W. Elevation 745 m. 1.6 km north of Fox Valley, Hwy. 21 N. Brown, sandy soil, level area of roadside ditch, topography - plain (level), poor soil nutrient content, no salinity, well drained, tillage not affected by stoniness. Cropland vegetation. Population scattered along edge of asphalt on both sides of road, in roadside ditch. Uniform population, effective population size - approximately 150 plants. Small diameter heads, short plants, several plants had been cut off. Just past peak flowering, good seed set. No rust apparent.

PI 592358. *Helianthus petiolaris* ssp. *petiolaris*

Wild. PET-2306; Ames 22225. Collected 09/10/1994 in Saskatchewan, Canada . Latitude 50 deg. 29' 45'' N. Longitude 107 deg. 47' 30'' W. Elevation 720 m. 21.6 km north of Swift Current, Hwy. 4 N. Brown, sandy soil, level area of roadside ditch, topography - plain (level), moderate soil nutrient content, no salinity, well drained, tillage not affected by stoniness. Grassland and cropland vegetation. Population scattered along edge of asphalt on both sides of road, in roadside ditch, near wheat field. Uniform population, effective population size - several hundred plants. Small diameter heads but typical *H. petiolaris*. Past peak flowering, good seed set. Rust on many leaves.

PI 592359. *Helianthus petiolaris* ssp. *petiolaris*

Wild. PET-2331; Ames 22226. Collected 09/13/1994 in Manitoba, Canada. Latitude 49 deg. 23' 59'' N. Longitude 100 deg. 57' 36'' W. Elevation 444 m. 22.0 km west of Lauder, Hwy. 345 W. Brown, sandy soil, level area of roadside ditch, topography - plain (level), poor soil nutrient content, no salinity, well drained, tillage not affected by stoniness. Grassland and cropland vegetation. Population extending for 0.8 km along edge of asphalt on both sides of road, in roadside ditch, very dry area. Uniform population. Largest population of *H. petiolaris* seen so far, plants typical but shorter due to position on slope. Cultivated sunflower field 0.8 km away. Peak flowering, good seed set. No insect damage, severe rust on most plants.

The following were donated by USDA, ARS, University of Georgia, Plant Genetic Resources Conservation Unit, Griffin, Georgia 30223-1797, United States. Received 1973.

PI 592360. *Vigna radiata* (L.) R. Wilczek
M-631.

PI 592361. *Vigna radiata* (L.) R. Wilczek
M-632.

PI 592362. *Vigna radiata* (L.) R. Wilczek
NO 643.

The following were donated by USDA, ARS, Georgia Agric. Exp. Sta., Georgia, United States. Received 1963.

PI 592363. *Vigna unguiculata* (L.) Walp.
RED RIPPER.

PI 592364. *Vigna unguiculata* (L.) Walp.
PARAGUAY.

The following were donated by University of Georgia, Georgia Agr. Exp. Sta., Georgia, United States. Received 1963.

PI 592365. *Vigna unguiculata* (L.) Walp.
SUMPTUOUS.

The following were donated by USDA, ARS, Georgia Agric. Exp. Sta., Georgia, United States. Received 1963.

PI 592366. *Vigna unguiculata* (L.) Walp.
CREAM TEXAS NO 14.

PI 592367. *Vigna unguiculata* (L.) Walp.
CREAM TEXAS NO 10.

PI 592368. *Vigna unguiculata* (L.) Walp.
BLACK EYE GEORGIA.

The following were donated by University of Florida, Florida Agr. Exp. Sta., Florida, United States. Received 1965.

PI 592369. *Vigna unguiculata* (L.) Walp.
FLORICREAM.

The following were donated by H.G. Hastings Company, Atlanta, Georgia, United States. Received 1965.

PI 592370. *Vigna unguiculata* (L.) Walp.
SUGAR CROWDER.

PI 592371. *Vigna unguiculata* (L.) Walp.
TINY LADY.

PI 592372. *Vigna unguiculata* (L.) Walp.
LARGE BLACK EYE.

The following were donated by Louisiana State University, Louisiana Agr. Exp. Station, Louisiana, United States. Received 1967.

PI 592373. *Vigna unguiculata* (L.) Walp.
CALHOUN PURPLEHULL.

The following were donated by University of Florida, Florida Agr. Exp. Sta., Florida, United States. Received 1972.

PI 592374. *Vigna unguiculata* (L.) Walp.
ZIPPER CREAM.

The following were donated by USDA, ARS, University of Georgia, Plant Genetic Resources Conservation Unit, Griffin, Georgia 30223-1797, United States.

Received 1979.

PI 592375. *Vigna unguiculata* (L.) Walp.
CREAM TEXAS.

PI 592376. *Vigna unguiculata* (L.) Walp.
CHAMPION.

The following were donated by J. E. Withee, Wanigan Associates Inc., 262 Salem St., Lynnfield, Massachusetts 01940, United States. Received 1979.

PI 592377. *Vigna unguiculata* (L.) Walp.
BLACKEYE; WA-0078.

The following were developed by Jim Helm, Alberta Agriculture, Field Crop Development Centre, 5030 50 Street, Lacombe, Alberta T4L 1W8, Canada. Received 11/13/1995.

PI 592378. *Hordeum vulgare* L. *ssp. vulgare*
Cultivar. Pureline. "KASOTA"; SD 506. Pedigree -
Celaya//Mezquita/godiva/3/Trompillo. Six-row, hulled seed barley.
Semi-dwarf, rough awned, and yellow aleurone. Coleoptile green and erect
juvenile growth habit. Leaves medium green, medium wide, and medium long
with glabrous sheaths and blades. Flag leaf medium green, medium wide,
and medium long, upright. Sheath waxy. Auricle purple. Spikes moderately
dense, semi-nodding, and short. Lemma awns long with purplish tips.
Glumes completely covered with short hairs. Rachilla length varies from
short to long with short hairs. Kernels short, narrow to medium wide
with yellow aleurone. Widely adapted to Alberta. Very good combination
of high yield, early maturity, excellent straw strength, and good
resistance to scald.

The following were developed by DEKALB Genetics Corporation, United States. Received 11/14/1995.

PI 592379. *Zea mays* L. *ssp. mays*
Cultivar. "3AZA1". PVP 9600027.

PI 592380. *Zea mays* L. *ssp. mays*
Cultivar. "3IJI1SR". PVP 9600028.

PI 592381. *Zea mays* L. *ssp. mays*
Cultivar. "85CS01". PVP 9500029.

PI 592382. *Zea mays* L. *ssp. mays*
Cultivar. "FBLASR". PVP 9600030.

PI 592383. *Zea mays* L. *ssp. mays*
Cultivar. "FBLLSR". PVP 9600031.

PI 592384. *Zea mays* L. *ssp. mays*
Cultivar. "FBPN". PVP 9600032.

PI 592385. *Zea mays* L. *ssp. mays*
Cultivar. "MBWZSR". PVP 9600033.

Unknown source. Received 11/14/1995.

PI 592386. *Zea mays* L. *ssp. mays*
Cultivar. "RQAA8". PVP 9600034. Developed in United States.

The following were developed by Northrup King Company, United States.
Received 11/14/1995.

PI 592387. *Zea mays* L. ssp. *mays*
Cultivar. "982". PVP 9600035.

The following were developed by John Bodger & Sons Company, United States.
Received 11/14/1995.

PI 592388. *Lathyrus odoratus* L.
Cultivar. "WINTER ELEGANCE". PVP 9600036.

The following were developed by Minnesota Agr. Exp. Sta., University of
Minnesota, St. Paul, Minnesota 55108, United States. Received 11/14/1995.

PI 592389. *Glycine max* (L.) Merr.
Cultivar. "FREEBORN". PVP 9600037.

The following were donated by Rosemary Chng, International Plant Genetic
Resources Institute, Seed Handling Unit, National University of Singapore,
Dept. of Botany, Singapore. Received 04/10/1995.

PI 592390. *Abelmoschus crinitus* Wallich
Wild. EC-329392; Grif 12451. Collected in Nepal. Kuhlapur, Velganj
District.

The following were developed by Hans-Henning Mundel, Agriculture Canada,
Lethbridge Research Station, Crop Sciences Section, Research Station,
Lethbridge, Alberta T1J 4B1, Canada; F. Kiehn, Agriculture and Agri-Food
Canada, Research Centre, Unit 100 - 101 Route 100, Morden, Manitoba R6M 1Y5,
Canada; H.C. Huang, Agriculture and Agri-Food Canada, Lethbridge Research
Center, P.O. Box 3000, Lethbridge, Alberta T1J 4B1, Canada; J.P. Braun,
Agriculture and Agri-Food Canada, Research Centre, P.O. Box 3000, Lethbridge,
Alberta T1J 4B1, Canada. Received 11/09/1995.

PI 592391. *Carthamus tinctorius* L.
Cultivar. Pureline. "AC SUNSET"; Lesaf 273. CV-20. Pedigree - Mexican
Dwarf/RH4//Gila/3/Saffire*2/5/S-208. Flowers orange to orange-red.
Plants short. Leaves spiny. Maturity early (same as Saffire) and
outyields Saffire by 4%. Oil content higher than Saffire and comparable
to AC Stirling. Iodine value 151.2: C18:2, 82.9% and C18:1, 8.2%. Good
resistance to head rot (*Sclerotinia sclerotiorum*).

The following were developed by Ken P. Vogel, USDA, ARS, University of
Nebraska, Dept. of Agronomy, Lincoln, Nebraska 68583-0937, United States.
Received 11/09/1995.

PI 592392. *Calamovilfa longifolia* (Hook.) Scribner
Cultivar. Population. "PRONGHORN". Pedigree - Synthetic variety produced
by intermating selected plants from three improved germplasm
populations. Heterogeneous variety with broad genetic base. High degree
of rust tolerance. Produces stands and forage yields equivalent or
superior to Goshen. Adapted to use in revegetating sandy sites in
Nebraska Sandhills and Northwest Kansas.

The following were developed by Lawrence D. Young, USDA, ARS, West Tennessee

Experiment Station, 605 Airways Blvd., Jackson, Tennessee 38301, United States; Thomas C. Kilen, USDA, ARS, Soybean Production Research, P.O. Box 196, Stoneville, Mississippi 38776, United States. Received 11/13/1995.

PI 592393. *Glycine max* (L.) Merr.

Breeding. Pureline. D93-8664. GP-178. Pedigree - Bedford(7) x L62-904. Maturity group V. Potential parent to develop multiple pest resistant cultivars. Developed by backcrossing to transfer the gene Rps5 into the cultivar Bedford. After six backcrosses, F3 lines were evaluated for the gene Rps5 conferring resistance to *Phytophthora sojae* and soybean cyst nematode (*Heterodera glycines*). Similar to Bedford for all observable traits, and has same level of resistance to races 3 and 14 of the soybean cyst nematode.

The following were developed by Rafael M. Jimenez-Diaz, Universidad de Cordoba, Departamento de Agronomia - E.T.S.I.A., Apartado de Correos 3048, Cordoba, Spain; K. B. Singh, Int. Center For Agricultural Research in the Dry Areas, P.O. Box 5466, Aleppo, Syria. Received 11/17/1995.

PI 592394. *Cicer arietinum* L.

Breeding. Pureline. ILC 9784. GP-159. Pedigree - Selection from PI 358930. Winter-sown at Tel Hadya, Syria. Days to 50% flowering 130. Flowering duration 28 days. Days to maturity 179. Plant height 35cm. Canopy width 45cm. Growth habit semi-erect, compound leaves. 100-seed weight 20.2g. Seed color beige, shape ram-head, surface owl. Seed protein content 19.3%. Resistant to fusarium wilt (*Fusarium oxysporum*). Susceptible to leaf miner (*Liriomyza cicerina*), ascochyta blight (*Ascochyta rabiei*), bruchids (*Callosobruchus chinensis*), and cyst nematode (*Heterodera ciceri*). Resistant to iron deficiency and pod dehiscence. Tolerant to cold.

PI 592395. *Cicer arietinum* L.

Breeding. Pureline. ILC 9785. GP-160. Pedigree - Selection from PI 268376. Winter-sown at Tel Hadya, Syria. Days to 50% flowering 140. Flowering duration 31 days. Days to maturity 182. Plant height 61cm. Canopy width 51cm. Growth habit semi-spreading. Leaves compound. 100-seed weight 33g. Seed color beige, shape rams-head, surface owl. Seed protein content 23.3%. Resistant to fusarium wilt (*Fusarium oxysporum*). Susceptible to cold, leaf miner (*Liriomyza cicerina*), bruchids (*Callorobruchus chinensis*), ascochyta blight (*Ascochyta rabiei*), and cyst nematode (*Heterodera ciceri*). Resistant to iron deficiency and pod dehiscence.

PI 592396. *Cicer arietinum* L.

Breeding. Pureline. ILC 9786. GP-161. Pedigree - Selection from PI 339196. Winter-sown at Tel Hadya, Syria. Days to 50% flowering 130. Flowering duration 34 days. Days to maturity 185. Plant height 66cm. Canopy width 69cm. Growth habit semi-spreading. Leaves compound. 100-seed weight 40g. Seed color beige, shape rams-head, surface owl. Seed protein content 23.4%. Resistant to fusarium wilt (*Fusarium oxysporum*). Fair tolerance to cold and cyst nematode (*Heterodera ciceri*). Susceptible to ascochyta blight (*Ascochyta rabiei*), leaf miner (*Liriomyza cicerina*), and bruchids (*Callorobruchus chinensis*). Resistant to iron deficiency and pod dehiscence.

The following were collected by John Bamberg, USDA, ARS, Potato Introduction Station, Peninsula Experiment Station, Sturgeon Bay, Wisconsin 54235, United States. Received 09/29/1995.

PI 592397. *Solanum jamesii* Torrey

Wild. BAM 014. Collected 09/24/1995 in New Mexico, United States. Torrance County. Near Albuquerque. Intersection of 55 and 337. Under

junipers in sandy soil. Up to 25 cm. No flowers, fruit or tubers.

- PI 592398. *Solanum jamesii* Torrey
Wild. BAM 015. Collected 09/24/1995 in New Mexico, United States. Torrance County. Near Corona. Where 42 passes through Cibola Nat. Forest. About 1.0 miles NW of Corona at the roadside pulloff on the S side of the road. Sandy moist soil, under junipers. Plants up to 15 cm. No flowers, fruit or tubers. Collected 7 plants. Fairly abundant along 42 to the NW through corner of Cibola National Forest.
- PI 592399. *Solanum jamesii* Torrey
Wild. BAM 016. Collected 09/24/1995 in New Mexico, United States. Lincoln County. Near Corona. About 2 miles NW of 54 on road to Galinas Peak. Under junipers in rich, moist, sandy soil. Abundant. Collected about 13 mature tubers.
- PI 592400. *Solanum fendleri* A. Gray
Wild. BAM 017. Collected 09/25/1995 in New Mexico, United States. Elevation 9640 m. Lincoln County. Near Ruidoso. Montjeau Lookout peak (see SBV 32). In grass and around large rocks near path to the lookout tower. Abundant, but mostly small yellow plants that apparently never flowered. A few flowers. Some with 1-2 small berries. Collected 22 fruit.
- PI 592401. *Solanum fendleri* A. Gray
Wild. BAM 018. Collected 09/25/1995 in New Mexico, United States. Elevation 9960 m. Lincoln County. Near Ruidoso. W from 48 on 532 to Apache Ski Area. Between 9 and 10 mile marker at Windy Point Vista lookout platform. Under cover of low hanging pine branches just below the scenic look platform. In rich black soil under about 3 inches of mulch. Plants small, yellow. Some grazed. Collected one large and 2 small berries.
- PI 592402. *Solanum fendleri* A. Gray
Wild. BAM 019. Collected 09/25/1995 in New Mexico, United States. Otero County. Near Cloudcroft. At 19 mile marker on 244 N of Cloudcroft. W roadside along a large pasture. In moist needle mulch and grass under large Ponderosas. A few small plants with small berries. Collected 12 fruit.
- PI 592403. *Solanum fendleri* A. Gray
Wild. BAM 020. Collected 09/25/1995 in New Mexico, United States. Otero County. Cloudcroft. Just across the road from the school among rocks protected from mowing. Heavy, gravely, dry soil. Old yellowing small plants. Tuber difficult to find. No flowers or fruit.
- PI 592404. *Solanum fendleri* A. Gray
Wild. BAM 021. Collected 09/25/1995 in New Mexico, United States. Otero County. Cloudcroft. Grassy corner lot on S side of main street. In grass in tight gravelly soil. Around old stumps and otherwise protected from mowing. Small plants without flowers. Collected 16 small mature fruit, later found to have seed grubs.
- PI 592405. *Solanum fendleri* A. Gray
Wild. BAM 022. Collected 09/26/1995 in Arizona, United States. Cochise County. Near Chiricahua National Monument at Rustler Park. Mountain slope just W of campground. Very abundant in rich black soil. Larger plants found nestled among rotting fallen logs. Mostly small yellowed plants. Grazed. Flowers and berries rare. Collected 22 small fruit.
- PI 592406. *Solanum fendleri* A. Gray
Wild. BAM 023. Collected 09/26/1995 in Arizona, United States. Cochise County. Near Chiricahua National Monument at Barfoot Park. SE of the camp buildings in a pasture and around the wellhouse. In grass under

Ponderosas. Small yellow plants which never flowered are fairly abundant. No tubers or fruit. Collected 3 small relatively green plants. At home thought one was jam, but later grew to look like a pointed-leafed fendleri.

PI 592407. *Solanum jamesii* Torrey

Wild. BAM 024. Collected 09/26/1995 in Arizona, United States. Cochise County. In Chiricahau National Monument just N of Faraway Ranch parking lot. In floodplain of dry creek. In sandy soil of dry creek wash. Small green plants sparse and mostly no flowers. Collected three small plants.

PI 592408. *Solanum jamesii* Torrey

Wild. BAM 025. Collected 09/26/1995 in New Mexico, United States. Grant County. Near Silver City. On 90 from Lordsburg to Silver City at 17 mile marker. On W side of the road. In sand under and around junipers in very dry habitat. Only one cluster of 20-30 plants up to 20 cm found. Collected 13 small plants and 5 tubers. Plants apparently only reproducing by tubers. Rare.

PI 592409. *Solanum fendleri* A. Gray

Wild. BAM 026. Collected 09/26/1995 in New Mexico, United States. Grant County. Nearly at Sierra County border W of Kingston. On 152 at Iron Creek Campground. Within 75 paces in both directions from the entrance gate along the creek banks. Along Iron Creek banks. Growing in grass and among rocks in shady, moist soil under trees. Plants up to 15 cm with no flowers or fruit. Tubers not yet mature. Collected 7 plants. Exactly same site as BAM 027.

PI 592410. *Solanum jamesii* Torrey

Wild. BAM 027. Collected 09/26/1995 in New Mexico, United States. Grant County near Sierra County border just W of Kinston on 152 at Iron Creek Campground. Same location as BAM 026, within 75 paces both directions from the camp entrance gate along the creek. In moist shady soil among grass and rocks along creek bank. Older yellowing plants up to 20 cm. No flowers or berries. Collected 25 mature tubers. Exactly same site as BAM 026.

PI 592411. *Solanum jamesii* Torrey

Wild. BAM 028. Collected 09/27/1995 in Arizona, United States. Apache County. Near Eagar. About 0.2 miles S of the triangle intersection of 180 and 160 go one mile down the abandoned section of Picnic Creek road. Sandy moist soil under juniper branches on S side of road. Plants up to 35 cm flowering and with immature fruit. Collected 3 small mature fruit and 5 plants with immature fruits. These ripened nicely after being transplanted.

PI 592412. *Solanum fendleri* A. Gray

Wild. BAM 029. Collected 09/27/1995 in Arizona, United States. Apache County. Near Nelson Reservoir. At 2 miles S of reservoir, take 216 E one mile. On S side of road. In dry sandy soil under junipers and pinions. Small plants with no flowers or fruit. Collected six plants and about 15 small mature tubers. Same site as BAM 030.

PI 592413. *Solanum jamesii* Torrey

Wild. BAM 030. Collected 09/27/1995 in Arizona, United States. Apache County. Near Nelson Reservoir. At 2 miles S of Reservoir, take 216 one mile E. Same site as BAM 029. Under branches of pinions and junipers in dry sandy soil. No flowers or fruit. Collected 4 plants. Same site as BAM 029.

PI 592414. *Solanum jamesii* Torrey

Wild. BAM 031. Collected 09/27/1995 in Arizona, United States. Apache County. Near Nelson Reservoir. At 2 miles S of Reservoir, take 216 E for 5 miles to mile marker zero at creek. On N side of road in steep banks

of creek. Dark gray sandy soil. One small plant with one flower, and another plant with one immature fruit. Otherwise fairly abundant small plants and many mature tubers were easily collected.

- PI 592415. *Solanum fendleri* A. Gray
Wild. BAM 032. Collected 09/27/1995 in Arizona, United States. Apache County. About 1.2 miles N of Greenlee County line on W side of road across from roadside pulloff. In rich humus and needle mulch nestled along rotting Ponderosa logs. Small, yellowing plants, apparently reproducing only by tubers.
- PI 592416. *Solanum jamesii* Torrey
Wild. BAM 033. Collected 09/27/1995 in Arizona, United States. Greenlee County. 666 S of Alpine to 28 then 3.5 miles W. Along the banks of the Black River on W side of roadway. In sticky black soil mixed with gravel or right in pure gravel along running water. Plenty of moisture. Single plants flowering, over 30 cm and very bushy and large leaved. Grazed. In full sun. No fruit. Collected 17 mature tubers.
- PI 592417. *Solanum jamesii* Torrey
Wild. BAM 034. Collected 09/27/1995 in New Mexico, United States. Catron County. Near Reserve. About 4 miles NE on 12 just before 49 on E side of roadway. In sandy moist soil under junipers. Plants small.
- PI 592418. *Solanum jamesii* Torrey
Wild. BAM 035. Collected 09/27/1995 in New Mexico, United States. Catron County. NE of Reserve on 12 to 33 mile marker. On W side of road. Near the fence in sandy soil where utility work had disturbed the soil. Small plants up to 10 cm, dark green and juvenile-looking were abundant. Some flowering and with immature fruit.
- PI 592419. *Solanum jamesii* Torrey
Wild. BAM 036. Collected 09/27/1995 in New Mexico, United States. Catron County. N of town of Apache Creek on 32 at exactly 0.8 miles N of the 6 mile marker. In floodplain of Apache creek on W side of road. Exact site of BAM 037. In rich sandy moist soil in floodplain of running creek. Extremely abundant around large willow bushes. Only a few flowering and only 5 mature and 10 almost mature fruit found.
- PI 592420. *Solanum fendleri* A. Gray
Wild. BAM 037. Collected 09/27/1995 in New Mexico, United States. Catron County. N of town of Apache Creek on 32 at 0.8 miles N of the 6 mile marker. In floodplain of Apache creek on W side of the road. Exactly same site as BAM 036. In rich sandy moist soil in floodplain of Apache creek. Much rarer than *jamesii*, under only a few willow bushes. Very big bushy plants with big leaves, clusters 5-6 big (1.5 cm) fruits.
- PI 592421. *Solanum jamesii* Torrey
Wild. BAM 038. Collected 09/27/1995 in New Mexico, United States. Catron County. Quemado vicinity. On 32 from Apache Creek to Quemado at mile 32 on E side of road at a driveway. Sandy soil under Pinons. No flowers or fruit. Plants small.
- PI 592422. *Solanum jamesii* Torrey
Wild. BAM 039. Collected 09/27/1995 in New Mexico, United States. Cibola County. Near Grants. S of Grants on 117. In El Malpais region at 27.6 mile marker. On E side of road. Sandy soil under junipers. Small green plants up to 6 inches tall. A few flowering. One small mature fruit and 9 plants collected.

The following were collected by John Bamberg, USDA, ARS, Potato Introduction Station, Peninsula Experiment Station, Sturgeon Bay, Wisconsin 54235, United States; David Hammond, North Arizona University, Flagstaff, Arizona, United

States. Received 09/29/1995.

PI 592423. *Solanum jamesii* Torrey

Wild. BAM 040. Collected 10/05/1995 in Arizona, United States. Coconino County. Mormon Lake S of Flagstaff. E side of lake among tumbled rocks on W facing slope. Plants yellowing and apparently only a few flowered and fruited. Four small mature fruit collected by Dr. Hammond of N Arizona University who had observed plants there in 1994.

The following were developed by Bernard P. Goplan, Agriculture Canada, Saskatoon Research Station, 107 Science Crescent, Saskatoon, Saskatchewan S7N 0X2, Canada; J.E.R. Greenshields, Agriculture Canada, Research Branch, Res. Stn., Saskatoon, Saskatchewan S7N 0X2, Canada. Received 1982.

PI 592424. *Lotus corniculatus* L.

Cultivar. "CREE"; Saskatoon Compoiste 58; SL-611. CV-34. Pedigree - Winterhardy introduction (S-3505) from Russia and 11 winterhardy accessions (S-4201 to S-4211) from Macdonald College, Quebec. Not morphologically distinguishable from Empire and Leo, semi-erect type of growth and approx. the same height and date of first bloom. Equal to Leo in winterhardiness, superior to Empire in forage yield and winterhardiness, seed yield and seedling vigor, and superior to Leo in seed yield. Yields 13% more hay than Empire and approx. the same as Leo. Yields 15 and 6% more seed than Empire and Leo, respectively.

The following were developed by R.L. McGraw, Missouri Agr. Exp. Sta., Univ. of Missouri, Dept. of Agronomy, Columbia, Missouri 65211, United States; Paul Beuselinck, USDA, ARS, University of Missouri, Department of Agronomy, Columbia, Missouri 65211, United States. Received 1985.

PI 592425. *Lotus corniculatus* L.

Breeding. MU-81. GP-61. Pedigree - Three cycles of intercrossing plants that trace to 56 foreign introductions and 35 experimental synthetics, or cultivars. Highly heterogenous population developed to provide a diverse genetic source.

The following were developed by D.A. Miller, University of Illinois, Department of Agronomy, Turner Hall 1102 S. Goodwin Ave, Urbana, Illinois 61801, United States; Paul Beuselinck, USDA, ARS, University of Missouri, Department of Agronomy, Columbia, Missouri 65211, United States; L.J. Elling, USDA, ARS, University of Missouri, Dept. of Agronomy, St. Paul, Minnesota 55108, United States; I.T. Carlson, Iowa Agr. Exp. Sta., Iowa State University, Dept. of Agronomy, Ames, Iowa, United States. Donated by University of Minnesota, Department of Agronomy, 1509 Gortner Ave., St. Paul, Minnesota 55108, United States. Received 1983.

PI 592426. *Lotus corniculatus* L.

Breeding. NC-83. GP-6. Pedigree - Developed from 30 selected clones from Illinois (8), Missouri (9), Iowa (6), and Minnesota (7). Yields significantly more forage than the check Leo. Possesses great variability for vigor, erectness of growth habit, plant height, stem length, number of stems/plant, umbels/plant, pods/umbel, seeds/umbel, seed weight, seed yield, maturity, plant width, disease resistance, and persistence. Useful for additional selection because of broad genetic base. Probable area of adaptation northern half of the U.S.

PI 592427. *Lotus corniculatus* L.

Cultivar. "NORCEN"; NC-83 SYNTHETIC. CV-6. Pedigree - Developed from 9 clones selected from 30 superior clones from 4 breeding programs. Broadleaved, intermediate growth habit with diverse genetic background. Resiliency to adapt to different environments within the North Central

region of U.S. Yields about 6.0% more dry matter than the check Leo. In Minnesota, highest in seed yield, but somewhat less winter-hardy than Leo and Carroll. Flowers earlier than Carroll, later than Viking. May be adapted also to the northeastern region of the U.S.

The following were developed by T.H. Taylor, Kentucky Agr. Exp. Sta., University of Kentucky, Lexington, Kentucky 40506, United States; W.C. Templeton, Jr., University of Kentucky, Lexington, Kentucky, United States. Received 1984.

PI 592428. *Lotus corniculatus* L.

Cultivar. "FERGUS"; Kentucky Ecotype. CV-50; PVP 8200143. Pedigree - Empire and imported birdsfoot trefoil seed of French origin. Broadleaved, intermediate growth habit with diverse genetic background. Similar to Carroll in height. Good performance over many environments. Flowers 3 to 5 days earlier and blooms longer than Carroll. High seed producing.

The following were developed by Pioneer Hi-Bred International, Inc., Hutchinson, Kansas, United States. Donated by Rollin G. Sears, Kansas State University, Dept. of Agronomy, Throckmorton Hall, Manhattan, Kansas 66506-5501, United States. Received 08/31/1992.

PI 592429. *Triticum aestivum* L., nom. cons.

Breeding. HBC302E; 92PIN106; NSGC 6035. Pedigree - TX71A889/2172//2157. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel, semidwarf; early flowering; excellent straw.

PI 592430. *Triticum aestivum* L., nom. cons.

Breeding. HBB036J; 92PIN107; NSGC 6036. Pedigree - 2157 PAR/Rocky//2165. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; susceptible to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

PI 592431. *Triticum aestivum* L., nom. cons.

Breeding. HBC208O; 92PIN108; NSGC 6037. Pedigree - 2163 PAR/PL145//2163 SIS. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Soft kernel; semidwarf; early flowering; excellent straw.

PI 592432. *Triticum aestivum* L., nom. cons.

Breeding. HBE0780A; 92PIN109; NSGC 6038. Pedigree - 2163/W9523A. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Soft kernel; semidwarf; early flowering; excellent straw.

PI 592433. *Triticum aestivum* L., nom. cons.

Breeding. HBE0780B; 92PIN110; NSGC 6039. Pedigree - 2163/W9523A. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Soft kernel; semidwarf; early flowering; excellent straw.

PI 592434. *Triticum aestivum* L., nom. cons.

Breeding. HBC059E; 92PIN111; NSGC 6040. Pedigree - WX11088/2165//W8447. Hard red winter wheat. Moderately resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

PI 592435. *Triticum aestivum* L., nom. cons.

Breeding. HBE0272A; 92PIN112; NSGC 6041. Pedigree - W8476B/Vona//W2420. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian

fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN.
Hard kernel; semidwarf; early flowering; excellent straw.

PI 592436. *Triticum aestivum* L., nom. cons.

Breeding. HCC0076A; 92PIN114; NSGC 6042. Pedigree - W1404/TX79A2729.
Hard red winter wheat. Moderately susceptible to leaf rust; susceptible
to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust
race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

PI 592437. *Triticum aestivum* L., nom. cons.

Breeding. HBC696-108; 92PIN115; NSGC 6043. Pedigree - OK754615/Kavkaz
107//TX71A889/2157. Hard red winter wheat. Resistant to leaf rust;
susceptible to Hessian fly Biotype GP; resistant to SBMV; resistant to
stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent
straw.

The following were developed by Pioneer Hi-Bred International, Inc., Vernon,
Texas 76384, United States. Donated by Rollin G. Sears, Kansas State
University, Dept. of Agronomy, Throckmorton Hall, Manhattan, Kansas
66506-5501, United States. Received 08/31/1992.

PI 592438. *Triticum aestivum* L., nom. cons.

Breeding. VBG0048-158; 92PIN117; NSGC 6044. Pedigree - W0405D/2*Arkan.
Hard red winter wheat. Susceptible to leaf rust; heterozygous for
reaction to Hessian fly Biotype GP; resistant to SBMV; resistant to stem
rust race TMN. Hard kernel; semidwarf; early flowering; excellent
straw.

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Hutchinson, Kansas, United States. Donated by Rollin G. Sears, Kansas State
University, Dept. of Agronomy, Throckmorton Hall, Manhattan, Kansas
66506-5501, United States. Received 08/31/1992.

PI 592439. *Triticum aestivum* L., nom. cons.

Breeding. HBE0363-134; 92PIN118; NSGC 6045. Pedigree - WX12907/TAM
108//W2440. Hard red winter wheat. Resistant to leaf rust; resistant to
Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race
TMN. Hard kernel; semidwarf; early flowering; excellent straw.

PI 592440. *Triticum aestivum* L., nom. cons.

Breeding. HBE0779-152; 92PIN119; NSGC 6046. Pedigree - W9476C/2163. Hard
red winter wheat. Resistant to leaf rust; resistant to Hessian fly
Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard
kernel; semidwarf; early flowering; excellent straw.

PI 592441. *Triticum aestivum* L., nom. cons.

Breeding. HBF0290-146; 92PIN121; NSGC 6047. Pedigree -
W9471A/W9523A//W3415. Hard red winter wheat. Resistant to leaf rust;
resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to
stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent
straw.

PI 592442. *Triticum aestivum* L., nom. cons.

Breeding. HBF0290-144; 92PIN122; NSGC 6048. Pedigree -
W9471A/W9523A//W3415. Hard red winter wheat. Resistant to leaf rust;
resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to
stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent
straw.

PI 592443. *Triticum aestivum* L., nom. cons.

Breeding. HBF0290-145; 92PIN123; NSGC 6049. Pedigree -
W9471A/W9523A//W3415. Hard red winter wheat. Resistant to leaf rust;

resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

PI 592444. *Triticum aestivum* L., nom. cons.

Breeding. HBF0263-137; 92PIN124; NSGC 6050; "2137". Pedigree - W2440/W9488A//2163.

PI 592445. *Triticum aestivum* L., nom. cons.

Breeding. HBF0302-148; 92PIN125; NSGC 6051. Pedigree - W9476C/2163//W9523A. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

PI 592446. *Triticum aestivum* L., nom. cons.

Breeding. HBF0140-119; 92PIN126; NSGC 6052. Pedigree - W2415/W2439//2180. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

PI 592447. *Triticum aestivum* L., nom. cons.

Breeding. HBF0303-156; 92PIN127; NSGC 6053. Pedigree - W9476C/2163//W0541A. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

PI 592448. *Triticum aestivum* L., nom. cons.

Breeding. HBF0337-112; 92PIN128; NSGC 6054. Pedigree - W9488A/2163//2180. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

PI 592449. *Triticum aestivum* L., nom. cons.

Breeding. HBF0435-130; 92PIN129; NSGC 6055. Pedigree - WX11731/2163//W9523A. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

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PI 592450. *Triticum aestivum* L., nom. cons.

Breeding. VBE0186-148; 92PIN130; NSGC 6056. Pedigree - Siouxland/W2421//Pony. Hard red winter wheat. Susceptible to leaf rust; heterozygous for reaction to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

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PI 592451. *Triticum aestivum* L., nom. cons.

Breeding. HBF0576-140; 92PIN131; NSGC 6057. Pedigree - FL 302/Siouxland//W3415. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to

stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

PI 592452. *Triticum aestivum* L., nom. cons.
Breeding. HBF0337-113; 92PIN132; NSGC 6058. Pedigree - W9488A/2163//2180
. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN.
Hard kernel; semidwarf; early flowering; excellent straw.

PI 592453. *Triticum aestivum* L., nom. cons.
Breeding. HBF0361-124; 92PIN133; NSGC 6059. Pedigree - 2154/Hawk//W0423A
. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN.
Hard kernel; semidwarf; early flowering; excellent straw.

PI 592454. *Triticum aestivum* L., nom. cons.
Breeding. HBF0276-147; 92PIN134; NSGC 6060. Pedigree - 2172/2163//W9419B
. Hard red winter wheat. Susceptible to leaf rust; heterozygous for reaction to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

PI 592455. *Triticum aestivum* L., nom. cons.
Breeding. HBE0780-132; 92PIN135; NSGC 6061. Pedigree - 2163/W9523A. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Soft kernel; semidwarf; early flowering; excellent straw.

PI 592456. *Triticum aestivum* L., nom. cons.
Breeding. HBF0425-155; 92PIN137; NSGC 6062. Pedigree - W8447D/W2436//W3420. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

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PI 592457. *Triticum aestivum* L., nom. cons.
Breeding. VBF0223-108; 92PIN138; NSGC 6063. Pedigree - W2440/W2410//2165
. Hard red winter wheat. Susceptible to leaf rust; susceptible to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

PI 592458. *Triticum aestivum* L., nom. cons.
Breeding. VBF0223-107; 92PIN139; NSGC 6064. Pedigree - W2440/W2410//2165
. Hard red winter wheat. Resistant to leaf rust; susceptible to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN.
Hard kernel; semidwarf; early flowering; excellent straw.

The following were developed by Pioneer Hi-Bred International, Inc., Hutchinson, Kansas, United States. Donated by Rollin G. Sears, Kansas State University, Dept. of Agronomy, Throckmorton Hall, Manhattan, Kansas 66506-5501, United States. Received 08/31/1992.

PI 592459. *Triticum aestivum* L., nom. cons.
Breeding. HBF0248-146; 92PIN140; NSGC 6065. Pedigree - W2439/2172//W0402A. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent

straw.

- PI 592460. *Triticum aestivum* L., nom. cons.
Breeding. HBE0321-131; 92PAN1-120; NSGC 6066. Pedigree - W2407/W2434//W2439. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592461. *Triticum aestivum* L., nom. cons.
Breeding. HBE0363-135; 92PAN1-121; NSGC 6067. Pedigree - WX12907/TAM 108//W2440. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592462. *Triticum aestivum* L., nom. cons.
Breeding. HBE0771-148; 92PAN1-122; NSGC 6068. Pedigree - W2439/2163. Hard red winter wheat. Moderately susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592463. *Triticum aestivum* L., nom. cons.
Breeding. HBC059E-117; 92PAN1-123; NSGC 6069. Pedigree - WX11088/2165//W8447. Hard red winter wheat. Moderately resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592464. *Triticum aestivum* L., nom. cons.
Breeding. HBE0780-155; 92PAN1-124; NSGC 6070. Pedigree - 2163/W9523A. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Soft kernel; semidwarf; early flowering; excellent straw.
- PI 592465. *Triticum aestivum* L., nom. cons.
Breeding. HBE0321-132; 92PAN1-125; NSGC 6071. Pedigree - W2407/W2434//W2439. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592466. *Triticum aestivum* L., nom. cons.
Breeding. HBE0771-150; 92PAN1-126; NSGC 6072. Pedigree - W2439/2163. Hard red winter wheat. Moderately susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592467. *Triticum aestivum* L., nom. cons.
Breeding. HBE0771-145; 92PAN1-127; NSGC 6073. Pedigree - W2439/2163. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592468. *Triticum aestivum* L., nom. cons.
Breeding. HBE0780-154; 92PAN1-128; NSGC 6074. Pedigree - 2163/W9523A. Hard red winter wheat. Susceptible to leaf rust; heterozygous for reaction to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Soft kernel; semidwarf; early flowering; excellent straw.
- PI 592469. *Triticum aestivum* L., nom. cons.
Breeding. HBC0208-120; 92PAN1-129; NSGC 6075. Pedigree - 2163 PAR/PL145//W9503. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to

- stem rust race TMN. Soft kernel; semidwarf; early flowering; excellent straw.
- PI 592470. *Triticum aestivum* L., nom. cons.
Breeding. HBF0303-158; 92PAN1-131; NSGC 6076. Pedigree - W9476C/2163//W0541A. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592471. *Triticum aestivum* L., nom. cons.
Breeding. HBF0114-114; 92PAN1-132; NSGC 6077. Pedigree - W2414/W8447D//W3417. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592472. *Triticum aestivum* L., nom. cons.
Breeding. HBF0174-122; 92PAN1-133; NSGC 6078. Pedigree - W2424/Siouxland//2163. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592473. *Triticum aestivum* L., nom. cons.
Breeding. HBF0276-141; 92PAN1-135; NSGC 6079. Pedigree - 2172/2163//W9419B. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; susceptible to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592474. *Triticum aestivum* L., nom. cons.
Breeding. HBF0303-159; 92PAN1-136; NSGC 6080. Pedigree - W9476C/2163//W0541A. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592475. *Triticum aestivum* L., nom. cons.
Breeding. HBE1066-105; 92PAN1-137; NSGC 6081. Pedigree - W2414/2163. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592476. *Triticum aestivum* L., nom. cons.
Breeding. HBF0276-139; 92PAN1-138; NSGC 6082. Pedigree - 2172/2163//W9419B. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592477. *Triticum aestivum* L., nom. cons.
Breeding. HBF0276-140; 92PAN1-140; NSGC 6083. Pedigree - 2172/2163//W9419B. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592478. *Triticum aestivum* L., nom. cons.
Breeding. HBF0146-120; 92PAN2-101; NSGC 6084. Pedigree - W2420/W2425//2157. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

- PI 592479. *Triticum aestivum* L., nom. cons.
Breeding. HBF0303-157; 92PAN2-102; NSGC 6085. Pedigree - W9476C/2163//W0541A. Hard red winter wheat. Moderately resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592480. *Triticum aestivum* L., nom. cons.
Breeding. HBF0204-123; 92PAN2-103; NSGC 6086. Pedigree - W2430/2163//W2435. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592481. *Triticum aestivum* L., nom. cons.
Breeding. HBF0214-126; 92PAN2-104; NSGC 6087. Pedigree - W2435/W2439//W0541A. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592482. *Triticum aestivum* L., nom. cons.
Breeding. HBF0303-155; 92PAN2-105; NSGC 6088. Pedigree - W9476C/2163//W0541A. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592483. *Triticum aestivum* L., nom. cons.
Breeding. HBF0303-160; 92PAN2-107; NSGC 6089. Pedigree - W9476C/2163//W0541A. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592484. *Triticum aestivum* L., nom. cons.
Breeding. HBF0302-154; 92PAN2-108; NSGC 6090. Pedigree - W9476C/2163//W9523A. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

The following were developed by Pioneer Hi-Bred International, Inc., Vernon, Texas 76384, United States. Donated by Rollin G. Sears, Kansas State University, Dept. of Agronomy, Throckmorton Hall, Manhattan, Kansas 66506-5501, United States. Received 08/31/1992.

- PI 592485. *Triticum aestivum* L., nom. cons.
Breeding. VBF0015-152; 92PAN2-109; NSGC 6091. Pedigree - HBY411A/W3459//W0487D. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.

The following were developed by Pioneer Hi-Bred International, Inc., Hutchinson, Kansas, United States. Donated by Rollin G. Sears, Kansas State University, Dept. of Agronomy, Throckmorton Hall, Manhattan, Kansas 66506-5501, United States. Received 08/31/1992.

- PI 592486. *Triticum aestivum* L., nom. cons.
Breeding. HBF0337-113; 92PAN2-110; NSGC 6092. Pedigree -

- W9488A/2163//2180. Hard red winter wheat. Resistant to leaf rust; heterozygous for reaction to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592487. *Triticum aestivum* L., nom. cons.
Breeding. HBF0361-124; 92PAN2-111; NSGC 6093. Pedigree - 2154/Hawk/W0423A. Hard red winter wheat. Moderately susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592488. *Triticum aestivum* L., nom. cons.
Breeding. HBF0611-145; 92PAN2-112; NSGC 6094. Pedigree - 16thIBWSN#21/W2413//W3415. Hard red winter wheat. Resistant to leaf rust; susceptible to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592489. *Triticum aestivum* L., nom. cons.
Breeding. HBF0551-137; 92PAN2-113; NSGC 6095. Pedigree - W0010E/16thIBWSN#21//2172/Siouxland. Hard red winter wheat. Resistant to leaf rust; susceptible to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592490. *Triticum aestivum* L., nom. cons.
Breeding. HBF0350-120; 92PAN2-114; NSGC 6096. Pedigree - W9523A/W2413//2180. Hard red winter wheat. Susceptible to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592491. *Triticum aestivum* L., nom. cons.
Breeding. HBF0471-133; 92PAN2-118; NSGC 6097. Pedigree - PI 447045/NE78659//W3441. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592492. *Triticum aestivum* L., nom. cons.
Breeding. HBF0337-115; 92PAN2-120; NSGC 6098. Pedigree - W9488A/2163//2180. Hard red winter wheat. Resistant to leaf rust; resistant to Hessian fly Biotype GP; resistant to SBMV; resistant to stem rust race TMN. Hard kernel; semidwarf; early flowering; excellent straw.
- PI 592493. *Triticum aestivum* L., nom. cons.
Breeding. HBF0408-126; 92PAN2-121; NSGC 6099. Pedigree - WX12846/TX71A889//W0402A.
- PI 592494. *Triticum aestivum* L., nom. cons.
Breeding. HBF0303-152; 92PAN2-123; NSGC 6100. Pedigree - W9476C/2163//W0541A.
- PI 592495. *Triticum aestivum* L., nom. cons.
Breeding. HBF0441-163; 92PAN2-125; NSGC 6101. Pedigree - 2163/W9523A//W3445.
- PI 592496. *Triticum aestivum* L., nom. cons.
Breeding. HBF0425-156; 92PAN2-126; NSGC 6102. Pedigree - W8447D/W2436//W3420.
- PI 592497. *Triticum aestivum* L., nom. cons.

Breeding. HBF0303-149; 92PAN2-127; NSGC 6103. Pedigree - W9476C/2163//W0541A.

PI 592498. *Triticum aestivum* L., nom. cons.
Breeding. HBF0303-150; 92PAN2-129; NSGC 6104. Pedigree - W9476C/2163//W0541A.

PI 592499. *Triticum aestivum* L., nom. cons.
Breeding. HBE0773-128; 92PAN2-130; NSGC 6105. Pedigree - 2172/2163.

PI 592500. *Triticum aestivum* L., nom. cons.
Breeding. HBF0247-143; 92PAN2-131; NSGC 6106. Pedigree - W2439/2172//W3417.

PI 592501. *Triticum aestivum* L., nom. cons.
Breeding. HBE0773-126; 92PAN2-134; NSGC 6107. Pedigree - 2172/2163.

PI 592502. *Triticum aestivum* L., nom. cons.
Breeding. HBF0363-125; 92PAN2-135; NSGC 6108. Pedigree - McNair 1003/16thIBWSN#21//Colt.

The following were developed by Paul Beuselinck, USDA, ARS, University of Missouri, Department of Agronomy, Columbia, Missouri 65211, United States. Received 12/05/1995.

PI 592503. *Lotus corniculatus* L.
Cultivar. Population. "ARS-2620". Pedigree - Accessions G31272, G31273, G31276, G31298, and G31317 were used as pollen donors in crosses with Norcen, AU Dewey, and MU-81. Forty-seven F1's were open pollinated to produce Syn 1 (Breeder) seed and a field increase of Syn 1 produced Syn 2 (Foundation class) seed. First birdsfoot trefoil cultivar that exhibits rhizomes. Similar to Noreen and AU Dewey, but more variable in morphology like MU-81. Semierect with small to medium sized leaves and fine to medium sized stems. Contains a larger number of early-flowering plants than Noreen or AU Dewey. Produces rhizomes and is easily distinguished from other cultivars. Expression of rhizomes may not be found in every plant as rhizome production will be influenced by genetic segregation for the trait, management practices, and edaphic conditions.

The following were developed by Int. Center for Agricultural Research in the Dry Areas, P.O. Box 5466, Aleppo, Syria. Received 12/05/1995.

PI 592504. *Cicer reticulatum* Ladiz.
Breeding. ILWC 292.

The following were developed by H.C. Sharma, Int. Crops Res. Inst. for the Semi-Arid Tropics, Patancheru, Andhra Pradesh 502 324, India; B. V. S. Reddy, Int. Crops Res. Inst. for the Semi-Arid Tropics, Sorghum Project, Patancheru, India; B.L. Agrawal, Regional Research Station, Sorghum Millet Improvement Project, Misamfu, Kasama, Zambia; C.V. Abraham, Int. Crops Res. Inst. for the Semi-Arid Tropics, Cereals Program, Patancheru, Andhra Pradesh 502 324, India; K.F. Nwanze, Int. Crops Res. Inst. for the Semi-Arid Tropics, Cereals Program, Patancheru, Andhra Pradesh 502 324, India; J.W. Stenhouse, Int. Crops Res. Inst. for the Semi-Arid Tropics, Cereals Program, Patancheru, Andhra Pradesh 502 324, India. Received 12/08/1995.

PI 592505. *Sorghum bicolor* (L.) Moench
Breeding. Inbred. ICSB 88019; PM 7061B. PL-254. Pedigree - IS 152 / D76514-8-1-1-1, . Midge-resistant seed parents based on A1 cytoplasmic-genetic male-sterility system. Flower 59-60 days. Good potential for producing midge-resistant hybrids in combination with

midge-resistant restorers. Less susceptible to rust, leaf blight, zonate leaf spot, anthracnose and moderately susceptible to grain molds.

PI 592506. *Sorghum bicolor* (L.) Moench

Breeding. Inbred. ICSB 88020; PM 7068B. PL-255. Pedigree - FLRI 01 / DS76514-13-1-1-7-1. Midge-resistant seed parents based on A1 cytoplasmic-genetic male-sterility system. Flower 59-60 days. Good potential for producing midge-resistant hybrids in combination with midge-resistant restorers. Less susceptible to rust, leaf blight, zonate leaf spot, anthracnose, and moderately susceptible to grain molds.

The following were developed by Charles N. Bollich, USDA-ARS, Rice Research, RT. 7, Box 999, Beaumont, Texas 77706, United States; Anna McClung, USDA, ARS, Rice Research Station, Route 7, Box 999, Beaumont, Texas 77713, United States; M.A. Marchetti, Texas A&M Experiment Station, Rice Research Station, Beaumont, Texas, United States; B.D. Webb, USDA, ARS, Rt. 7, Box 999, Beaumont, Texas 7713-8530, United States. Received 12/11/1995.

PI 592507. *Oryza sativa* L.

Breeding. Population. B82-761. GP-79. Pedigree - Vista / Lebonnet. Long grain with excellent resistance to *Pyricularia grisea* and *Rhizoctonia solani* which cause rice blast and sheath blight, respectively. Blast resistance due to the unique combination of three major genes, pi-d, Pi-z, and Pi-kh. Sheath blight resistance superior to any other conventional U.S. long grain cultivar. Early maturing (119 days) and conventional height (132 cm), yield inferior to commercial cultivars but milling quality comparable. Apparent amylose 20.4% and intermediate gelatinization temperature.

The following were developed by J.C. McCarty, USDA, ARS, Crop Science Research Laboratory, P.O. Box 5367, Mississippi State, Mississippi 39762, United States; Johnnie Jenkins, USDA, ARS, Crop Sci. Res. Lab., P.O. Box 5367, Mississippi State, Mississippi 39760, United States; R.L. Shephard, USDA, ARS, Crop Sci. Res. Lab., P.O. Box 5367, Mississippi State, Mississippi 39762, United States; W.L. Parrott, USDA, ARS, Crop Sci. Res. Lab., P.O. Box 5367, Mississippi State, Mississippi 39762, United States. Received 12/11/1995.

PI 592508. *Gossypium hirsutum* L.

Breeding. M-92RNR. GP-619. Pedigree - Auburn 634 / Stoneville 213. Root-knot nematode eggs/plant averaged 1200 compared to 81,000 on check Stoneville 825. Boll size equal to the check. Lint percent significantly lower than the check. Fiber strength not significantly different from Stoneville 825. Seed cotton yield numerically lower but not significant from Stoneville 825.

PI 592509. *Gossypium hirsutum* L.

Breeding. M-120RNR. GP-620. Pedigree - Auburn 634 / Coker 201. Root-knot nematode eggs/plant averaged 400 compared to 81,000 on check Stoneville 825. Boll size greater than the check. Lint percent significantly lower than the check. Fiber strength 21% greater than Stoneville 825. Seed cotton yield numerically lower but not significant from Stoneville 825.

PI 592510. *Gossypium hirsutum* L.

Breeding. M-155RNR. GP-621. Pedigree - Auburn 634 / Coker 310. Root-knot nematode eggs/plant averaged 600 compared to 81,000 on check Stoneville 825. Boll size equal to the check. Lint percent significantly lower than the check. Fiber properties not significantly different from Stoneville 825. Seed cotton yield numerically lower but not significant from Stoneville 825.

PI 592511. *Gossypium hirsutum* L.

Breeding. M-240RNR. GP-622. Pedigree - Auburn 634 / Deltapine 61. Root-knot nematode eggs/plant averaged 500 compared to 122,000 on check Deltapine 41. Boll size equal to the check. Lint percent significantly lower than the check. Fiber properties not different from Deltapine 41 except 2.5% span length which was significantly lower. Seed cotton yield significantly higher than Deltapine 41.

PI 592512. *Gossypium hirsutum* L.

Breeding. M-249RNR. GP-623. Pedigree - Auburn 634 / Stoneville 213. Root-knot nematode eggs/plant averaged 600 compared to 81,000 on check Stoneville 825. Boll size and lint percent significantly lower than the check. Fiber properties not significantly different from Stoneville 825. Seed cotton yield numerically lower but not significant from Stoneville 825.

PI 592513. *Gossypium hirsutum* L.

Breeding. M-272RNR. GP-624. Pedigree - Auburn 634 / Stoneville 213. Root-knot nematode eggs/plant averaged 1600 compared to 81,000 on check Stoneville 825. Boll size and lint percent significantly lower than the check. Fiber properties not significantly different from Stoneville 825. Seed cotton yield numerically lower but not significant from Stoneville 825.

PI 592514. *Gossypium hirsutum* L.

Breeding. M-315RNR. GP-625. Pedigree - Auburn 634 / Deltapine 61. Root-knot nematode eggs/plant averaged 500 compared to 122,000 on check Deltapine 41. Boll size greater than the check. Lint percent significantly lower than check. Fiber properties not different from Deltapine 41 except 2.5% span length which was significantly lower. Seed cotton yield numerically higher but not significant from Deltapine 41.

PI 592515. *Gossypium hirsutum* L.

Breeding. M-331RNR. GP-626. Pedigree - Auburn 634 / Auburn 56. Root-knot nematode eggs/plant averaged 600 compared to 81,000 on the check Stoneville 825. Boll size equal to the check. Lint percent significantly lower than the check. Fiber properties not significantly different from Stoneville 825. Seed cotton yield significantly lower than Stoneville 825.

PI 592516. *Gossypium hirsutum* L.

Breeding. M-725RNR. GP-627. Pedigree - Auburn 634 / Coker 310. Root-knot nematode eggs/plant averaged 600 compared to 81,000 on check Stoneville 825. Boll size greater than the check. Lint percent significantly lower than the check. Fiber properties not different from Stoneville 825. Seed cotton yield numerically higher but not significant from Stoneville 825.

The following were developed by J.H. Lambright, United States. Received 12/12/1995.

PI 592517. *Gossypium hirsutum* L.

Cultivar. "LAMBRIGHT 2020A". PVP 9500274.

The following were developed by LESCO, Inc., United States. Received 12/12/1995.

PI 592518. *Poa pratensis* L.

Cultivar. "WILD WOOD". PVP 9600008.

The following were developed by S & W Seed Company, United States. Received 12/12/1995.

PI 592519. *Medicago sativa* L.
Cultivar. "SW 8210". PVP 9600023.

The following were developed by Rogers Seed Company, United States. Received 12/12/1995.

PI 592520. *Phaseolus vulgaris* L.
Cultivar. "PANTHER". PVP 9600024.

The following were developed by LESCO, Inc., United States. Received 12/12/1995.

PI 592521. *Poa trivialis* L.
Cultivar. "ProAm". PVP 9600025.

The following were developed by Zajac Performance Seeds. Received 12/12/1995.

PI 592522. *Festuca rubra* var. *commutata* Gaudin
Cultivar. "TREAZURE". PVP 9600026.

The following were developed by Minnesota Agr. Exp. Sta., University of Minnesota, St. Paul, Minnesota 55108, United States. Received 12/12/1995.

PI 592523. *Glycine max* (L.) Merr.
Cultivar. "Glacier". PVP 9600038.

PI 592524. *Glycine max* (L.) Merr.
Cultivar. "Granite". PVP 9600039.

The following were developed by W. Brotherton Seed Company, Inc., United States. Received 12/12/1995.

PI 592525. *Pisum sativum* L.
Cultivar. "CASELODE". PVP 9600040.

The following were developed by Ed J. Lyng Company, Division of Trinidad Benham Corp., United States. Received 12/12/1995.

PI 592526. *Helianthus annuus* L.
Cultivar. "LYNGS PREMIER CALIFORNIA GREYSTRIPE". PVP 9600041.

The following were developed by Wisconsin Agr. Exp. Sta., University of Wisconsin, Madison, Wisconsin 53706, United States. Received 12/12/1995.

PI 592527. *Avena sativa* L.
Cultivar. "BELLE". PVP 9600042.

The following were developed by Frank Garcia, Jr., United States. Received 12/12/1995.

PI 592528. *Capsicum chinense* Jacq.
Cultivar. "FRANCISCA". PVP 9600043.

The following were developed by Farmers Marketing Corporation, United States. Received 12/12/1995.

PI 592529. *Triticum durum* Desf.
Cultivar. "EDDIE". PVP 9600044.

The following were developed by The Scotts Company, United States. Received 12/12/1995.

PI 592530. *Lolium perenne* L.
Cultivar. "CALYPSO II". PVP 9600045.

The following were developed by Turf Merchants, Inc., United States. Received 12/12/1995.

PI 592531. *Agrostis stolonifera* L.
Cultivar. "TRUELINE". PVP 9600046.

The following were developed by Wisconsin Crop Improvement Association, Wisconsin, United States. Received 12/12/1995.

PI 592532. *Medicago sativa* L.
Cultivar. "COLUMBIA 2000". PVP 9600047.

The following were developed by Jacob Hartz Seed Company, Inc., United States. Received 12/12/1995.

PI 592533. *Glycine max* (L.) Merr.
Cultivar. "H4152". PVP 9600048.

The following were developed by Pioneer Hi-Bred International, Inc., United States. Received 12/12/1995.

PI 592534. *Glycine max* (L.) Merr.
Cultivar. 9004. PVP 9600050.

PI 592535. *Glycine max* (L.) Merr.
Cultivar. 9132. PVP 9600051.

PI 592536. *Glycine max* (L.) Merr.
Cultivar. 9151. PVP 9600052.

PI 592537. *Glycine max* (L.) Merr.
Cultivar. 9163. PVP 9600053.

PI 592538. *Glycine max* (L.) Merr.
Cultivar. 9172. PVP 9600054.

PI 592539. *Glycine max* (L.) Merr.
Cultivar. 9253. PVP 9600055.

PI 592540. *Glycine max* (L.) Merr.
Cultivar. 9254. PVP 9600056.

PI 592541. *Glycine max* (L.) Merr.
Cultivar. 9255. PVP 9600057.

PI 592542. *Glycine max* (L.) Merr.
Cultivar. 9244. PVP 9600058.

PI 592543. *Glycine max* (L.) Merr.

- Cultivar. 9305. PVP 9600059.
- PI 592544. *Glycine max* (L.) Merr.
Cultivar. 9313. PVP 9600060.
- PI 592545. *Glycine max* (L.) Merr.
Cultivar. 9323. PVP 9600061.
- PI 592546. *Glycine max* (L.) Merr.
Cultivar. 9343. PVP 9600062.
- PI 592547. *Glycine max* (L.) Merr.
Cultivar. 9352. PVP 9600063.
- PI 592548. *Glycine max* (L.) Merr.
Cultivar. 9481. PVP 9600064.
- PI 592549. *Glycine max* (L.) Merr.
Cultivar. 9611. PVP 9600065.

The following were developed by Harris Moran Seed Company, United States.
Received 12/12/1995.

- PI 592550. *Allium cepa* L.
Cultivar. HMX 7083. PVP 9600066.

The following were developed by Smith Seed Services, United States. Received
12/12/1995.

- PI 592551. *Lolium perenne* L.
Cultivar. "STATESMAN II". PVP 9600067.

The following were developed by Willamette Valley Plant Breeders, Inc.,
United States. Received 12/12/1995.

- PI 592552. *Lolium perenne* L.
Cultivar. "WVPB-PR-89-666". PVP 9600068.

The following were developed by Asgrow Seed Company, United States. Received
12/12/1995.

- PI 592553. *Glycine max* (L.) Merr.
Cultivar. "A2704". PVP 9600069.
- PI 592554. *Glycine max* (L.) Merr.
Cultivar. "A3134". PVP 9600070.
- PI 592555. *Glycine max* (L.) Merr.
Cultivar. "A3732". PVP 9600071.
- PI 592556. *Glycine max* (L.) Merr.
Cultivar. "A3834". PVP 9600072.
- PI 592557. *Glycine max* (L.) Merr.
Cultivar. "A4922". PVP 9600073.
- PI 592558. *Glycine max* (L.) Merr.
Cultivar. "A5547". PVP 9600074.

The following were developed by Tan-Ag, Inc., United States. Received 12/12/1995.

PI 592559. *Festuca arundinacea* Schreber
Cultivar. "GENERIC". PVP 9600075.

The following were developed by Minnesota Agr. Exp. Sta., University of Minnesota, St. Paul, Minnesota 55108, United States. Received 12/12/1995.

PI 592560. *Glycine max* (L.) Merr.
Cultivar. "Toyopro". PVP 9600076.

The following were developed by Robert Busch, USDA, ARS, University of Minnesota, Department of Agronomy &, St. Paul, Minnesota 55108, United States . Received 12/18/1995.

PI 592561. *Triticum aestivum* L., nom. cons.
Cultivar. Pureline. "VERDE"; SBE0437. PVP 96001115. Pedigree - MN7663 / SBY 354A. Height semidwarf. Glumes long, wide, white with elevated shoulder and acuminate beak. Spike awned, mid-dense, tapering. Kernel red in color, elliptical to ovate, mid-size, with rounded cheeks and narrow mid-deep crease. Brush has no collar and medium in length. Twisted flag leaf prior to heading. Yield average high. Volume weight intermediate. Heading medium to late. Resistant to lodging. Resistant to prevalent races of stem rust (*Puccinia graminis*) and leaf rust (*Puccinia reconditia*). Moderately susceptible to loose smut (*Ustilago tritici*). Limited spread in spike when inoculated with *Fusarium* head blight (*Fusarium graminearum*). Bread-making properties acceptable. Grain protein intermediate to low. Flour yield high and intermediate in water absorption. Strong mixing characteristics with acceptable internal and external loaf characteristics.

Species Index

Abelmoschus crinitus (592390)
Agrostis gigantea (590428)
Agrostis stolonifera (592531)
Allium cepa (590939, 591559, 592550)
Amaranthus sp. (590990-590992)
Arachis dardani (591358, 591364-591365)
Arachis decora (591342)
Arachis hypogaea (590279-590396, 590456-590487)
Arachis hypogaea ssp. hypogaea (590879, 591815)
Arachis hypogaea var. fastigiata (590489, 590516)
Arachis hypogaea var. peruviana (590455, 590488)
Arachis pintoii (590429)
Arachis pusilla (591349)
Arachis sp. (591345, 591347-591348, 591362-591363)
Arachis stenosperma (591350-591352, 591359)
Arachis sylvestris (591343-591344, 591346, 591353-591357, 591360-591361)
Astragalus cicer (591558)
Avena nuda (591809, 592087-592088)
Avena sativa (590937, 591611, 591808, 591810, 591930-591931, 591948-591950,
592007-592013, 592074-592086, 592089-592102, 592527)
Beta vulgaris (590580-590612, 590617-590623, 590626-590627, 590630-590632,
590635-590640, 590700, 590734-590742, 590744-590746, 590748-590749,
590757-590762, 590767-590796, 590807-590812, 590859-590861,
590863-590878, 591334-591336)
Beta vulgaris ssp. vulgaris (590613-590616, 590641-590699, 590701-590733,
590743, 590747, 590750-590756, 590763-590766, 590797-590806,
590813-590858, 590862)
Beta vulgaris var. flavescens (590624-590625, 590628-590629, 590633-590634)
Bouteloua gracilis (591814)
Brachiaria dictyoneura (590435)
Brassica oleracea (591568-591572)
Brassica rapa ssp. pekinensis (590995)
Buchloe dactyloides (590427)
Calamovilfa longifolia (592392)
Capsicum annuum (591805)
Capsicum baccatum (590505-590506)
Capsicum cardenasii (590507)
Capsicum chinense (592528)
Capsicum pubescens (590503-590504)
Carthamus tinctorius (592391)
Catharanthus roseus (591563)
Cicer arietinum (592394-592396)
Cicer reticulatum (592504)
Citrullus lanatus (590935)
Coix lacryma-jobi (590993-590994)
Cynodon dactylon (590569-590571, 591024)
Eleusine coracana (590961-590971)
Eragrostis curvula (591632-591633)
Fagopyrum esculentum (590988-590989)
Festuca arundinacea (591046, 591478, 592559)
Festuca longifolia (591473)
Festuca rubra (591636)
Festuca rubra ssp. rubra (591471)
Festuca rubra var. commutata (591472, 591631, 591638, 592522)
Glycine canescens (591573-591575)
Glycine clandestina (591576-591596)
Glycine latifolia (591597)
Glycine max (590232-590239, 590248, 590256-590257, 590517-590523,
590532-590536, 590578-590579, 590931-590932, 591050-591051,
591429-591435, 591481, 591484-591548, 591561-591562, 591565-591567,

591630, 591825, 592389, 592393, 592523-592524, 592533-592549,
 592553-592558, 592560)
Glycine tabacina (591598-591602)
Glycine tomentella (591603-591610)
Gossypium hirsutum (590222-590223, 590240-590242, 590249, 590568, 590933,
 591047, 591055, 591417-591426, 591564, 592295-592302, 592508-592517)
Helianthus annuus (592304-592327, 592526)
Helianthus maximilianii (592328-592339)
Helianthus nuttallii (592340-592341, 592349)
Helianthus nuttallii ssp. *rydbergii* (592342-592348, 592350)
Helianthus pauciflorus (592351-592353)
Helianthus petiolaris ssp. *petiolaris* (592354-592359)
Hibiscus acetosella (591552)
Hibiscus mechowii (591550)
Hibiscus sabdariffa (591549, 591551)
Hordeum jubatum (591821-591822)
Hordeum vulgare (591480)
Hordeum vulgare ssp. *vulgare* (591612-591613, 591617, 591701, 591793, 591823,
 591832, 591866, 591872-591882, 591926-591929, 591951-591956, 591958,
 592158-592288, 592303, 592378)
Lactuca sativa (590255, 590524-590526, 590573-590575, 590936, 590940, 590996,
 591044, 591048, 591052-591053, 591848-591849)
Lathyrus odoratus (592388)
Lolium perenne (590243, 591634-591635, 591641, 591806, 591833-591834, 592530,
 592551-592552)
Lotus corniculatus (592424-592428, 592503)
Lotus corniculatus var. *japonicus* (591056)
Malus angustifolia (589727, 589761-589767, 589769-589773, 590175)
Malus asiatica (589869-589878)
Malus baccata (589281, 589353, 589371, 589374-589376, 589378, 589477, 589738,
 589831, 589833, 589838-589839, 590170)
Malus brevipes (589170)
Malus coronaria (589162, 589227, 589332, 589344, 589423, 589425, 589728,
 589739-589740, 589768, 589976-589997, 590000, 590014, 590018-590021)
Malus domestica (589131-589160, 589163, 589165, 589167-589169, 589171-589180,
 589182-589183, 589185-589197, 589199-589219, 589221, 589223-589224,
 589226, 589229, 589231-589233, 589235-589240, 589242-589243, 589245,
 589248-589251, 589254-589257, 589263-589265, 589291-589312,
 589314-589316, 589318, 589321-589330, 589335-589337, 589340-589343,
 589345-589352, 589354-589355, 589357-589358, 589360-589363, 589365,
 589367, 589428-589448, 589451-589453, 589456-589458, 589461-589464,
 589466, 589468-589476, 589478-589483, 589485-589496, 589498,
 589501-589505, 589507, 589509, 589511-589513, 589515-589521,
 589523-589598, 589600-589602, 589612, 589632-589640, 589645-589726,
 589774-589815, 589817-589819, 589821-589826, 589828-589830,
 589835-589837, 589841-589842, 589844-589856, 589863, 589883-589907,
 589909-589911, 589913-589929, 589931, 589943-589954, 589956-589971,
 590022-590027, 590069-590087, 590118-590169, 590171-590174,
 590176-590189, 590219-590220)
Malus doumeri (589882)
Malus florentina (589317, 589385, 589402)
Malus floribunda (589181, 589741-589743, 589827, 590033-590035, 590089)
Malus fusca (589220, 589228, 589266, 589275, 589283, 589319, 589933-589942,
 589975, 590036-590039)
Malus halliana (589246, 589262, 589277, 589744, 589757, 589972, 590028-590032
 , 590054-590056, 590058-590059, 590090-590092)
Malus honanensis (589879-589881)
Malus hupehensis (589334, 589522, 589751, 589756, 589760, 590040-590042,
 590052-590053, 590057)
Malus hybrid (589230, 589234, 589244, 589247, 589252, 589267-589274,
 589279-589280, 589282, 589284-589285, 589288-589290, 589338-589339,
 589359, 589364, 589366, 589381, 589388, 589398, 589450, 589454-589455,
 589459-589460, 589465, 589467, 589484, 589497, 589499-589500, 589506,
 589508, 589510, 589514, 589603-589611, 589613-589631, 589641-589644,

589729-589737, 589820, 589862, 589908, 589912, 590111, 590190-590218)
Malus ioensis (589241, 589258, 589320, 589406, 589414, 589419, 589426, 589745
 , 589843, 589998-589999, 590001-590013, 590015-590017, 590093)
Malus kansuensis (589401, 589973)
Malus kirghisorum (589373, 589380, 590043, 590094)
Malus micromalus (589753-589754, 589955)
Malus orientalis (590044)
Malus orthocarpa (589392)
Malus prattii (590045-590047, 590095)
Malus prunifolia (589164, 589184, 589331, 589333, 589370, 589389, 589816,
 589832, 589859, 589930, 589932)
Malus pumila (589166, 589225, 589287, 589857, 590096-590098)
Malus sargentii (589368, 589372, 589394, 589400, 589405, 589412, 589416,
 590048-590050)
Malus sieboldii (589161, 589261, 589747-589749, 590051, 590099-590103)
Malus sikkimensis (589377, 589390, 589599, 589750, 589834, 590104-590108)
Malus sp. (589276, 589386, 589396, 589407-589409, 589411, 589413, 589417,
 589420-589421, 589858, 589860-589861, 590109-590110)
Malus spectabilis (589379, 589404)
Malus sylvestris (589382, 590061)
Malus toringoides (589393, 589403, 590062)
Malus transitoria (589384, 589422)
Malus trilobata (589397)
Malus tschonoskii (589313, 589395, 589752)
Malus x *arnoldiana* (589222)
Malus x *atrosanguinea* (589253, 590221)
Malus x *dawsoniana* (589260)
Malus x *hartwigii* (589864-589868)
Malus x *moerlandsii* (589449)
Malus x *platycarpa* (589198, 589356, 589415, 589427, 589746)
Malus x *robusta* (589278, 589286, 589383, 589424, 590068)
Malus x *scheideckeri* (589418)
Malus x *soulardii* (589391, 589410)
Malus x *sublobata* (589755, 590060)
Malus x *zumi* (589259, 589840)
Malus yunnanensis (589369, 589387, 589399, 589758-589759, 589974,
 590063-590067, 590088, 590112-590117)
Medicago sativa (590227, 591443, 592519, 592532)
Medicago sativa ssp. *sativa* (590999, 591436-591442, 591444-591470)
Oryza barthii (590399-590400)
Oryza glaberrima (590401-590403)
Oryza latifolia (590397-590398)
Oryza minuta (590412, 590981-590983)
Oryza rufipogon (590413, 590417-590426, 590984-590987)
Oryza sativa (590225-590226, 590254, 590404-590411, 590977-590980, 592507)
Oryza sp. (590414-590416)
Panicum virgatum (591824)
Pennisetum glaucum (590972-590976, 591068, 591337, 591427)
Phaseolus vulgaris (590224, 590531, 590540, 590572, 591054, 591836,
 591842-591847, 592520)
Phleum pratense (591640)
Pisum sativum (590527-590530, 590567, 591835, 592525)
Poa pratensis (591049, 591477, 591637, 591639, 591803, 592518)
Poa trivialis (590934, 591474, 592521)
Prunus pumila var. *depressa* (591700)
Saccharum hybrid (590278)
Salix exigua (591338-591341)
Schizachyrium scoparium (591813)
Secale cereale ssp. *cereale* (590948, 591057, 591945, 592289)
Secale strictum ssp. *anatolicum* (592290, 592293)
Secale strictum ssp. *kuprijanovii* (592291-592292)
Secale sylvestre (592294)
Solanum acaule (590889, 590895-590896, 590898, 590902, 590906-590907, 590911)
Solanum albicans (590888, 590891-590893, 590897)

Solanum bukasovii (590890)
Solanum bulbocastanum (590930)
Solanum coelestipetalum (590903-590905, 590913)
Solanum colombianum (590899-590901, 590908-590910, 590923, 590925)
Solanum commersonii (590880-590887, 590914-590921)
Solanum fendleri (592400-592406, 592409, 592412, 592415, 592420)
Solanum jamesii (592397-592399, 592407-592408, 592410-592411, 592413-592414, 592416-592419, 592421-592423)
Solanum orophilum (590894)
Solanum paucissectum (590922)
Solanum polytrichon (590929)
Solanum sp. (590912, 590924)
Solanum tuberosum (590927-590928)
Solanum tuquerrense (590926)
Sorghastrum nutans (591811-591812)
Sorghum bicolor (590490-590496, 591002-591009, 591025-591043, 591366-591416, 592505-592506)
Sorghum hybrid (590436-590443, 590446, 590448-590452)
Sorghum sp. (590444-590445, 590447, 590453-590454)
Trifolium affine (591642)
Trifolium alexandrinum (590944)
Trifolium angustifolium (591643-591644)
Trifolium arvense (591645-591646)
Trifolium aureum (591647-591650)
Trifolium bocconeii var. *tenuifolium* (591651)
Trifolium campestre (591652)
Trifolium diffusum (591653-591656)
Trifolium dubium (591657)
Trifolium glomeratum (591658-591659)
Trifolium grandiflorum (591660-591661)
Trifolium haussknechtii (591662)
Trifolium hirtum (591663-591665)
Trifolium incarnatum var. *molineri* (591666-591667)
Trifolium lappaceum (591668)
Trifolium leucanthum (591669-591670)
Trifolium ligusticum (591671)
Trifolium nigrescens (591672-591673)
Trifolium patens (591674-591676)
Trifolium pauciflorum (591677)
Trifolium phleoides (591678-591679)
Trifolium pilulare (591680)
Trifolium purpureum (591681-591682)
Trifolium scabrum (591683-591684)
Trifolium setiferum (591685-591686)
Trifolium spadiceum (591687-591692)
Trifolium squamosum (591693)
Trifolium squarrosum (591694)
Trifolium striatum (591695-591696)
Trifolium strictum (591697-591698)
Trifolium vesiculosum (591699)
Tripsacum dactyloides (591482-591483)
Triticum aestivum (590258-590277, 590576-590577, 590941-590943, 590949-590960, 591000-591001, 591045, 591428, 591475, 591479, 591553-591557, 591560, 591622-591629, 591702, 591762-591792, 591794-591802, 591807, 591816-591820, 591826-591830, 591850-591862, 591867, 591869-591870, 591883-591889, 591905-591911, 591913, 591916-591925, 591932-591944, 591957, 591962-591966, 591970-592006, 592020-592073, 592103-592157, 592429-592502, 592561)
Triticum dicoccon (591868)
Triticum durum (591058-591067, 591069-591333, 591761, 591831, 591914, 591959-591961, 592014-592019, 592529)
Triticum monococcum (591871)
Triticum spelta (591890-591904)
Triticum turgidum (591967-591969)

Ulmus americana (590997-590998)
Urochloa brizantha (590431, 590434)
Urochloa decumbens (590430)
Urochloa humidicola (590432)
Urochloa ruziziensis (590433)
Verbena x hybrida (590938)
Vigna radiata (592360-592362)
Vigna unguiculata (591476, 592363-592377)
X Triticosecale sp. (590945-590947, 591804, 591837, 591863-591865, 591912,
591915, 591946-591947)
Zea mays ssp. mays (590228-590231, 590244-590247, 590250-590253,
590497-590502, 590508-590515, 590537-590539, 590541-590566,
591010-591023, 591614-591616, 591618-591621, 591703-591760,
591838-591841, 592379-592387)