

USDA SOYBEAN GERMPLASM COLLECTION REPORT -- 2006

February 2007

In 2006, we distributed 19,737 seed lots from 8,731 accessions from the USDA Soybean Germplasm Collection in response to 611 requests from 288 individuals. There were 537 domestic requests (88% of the total) with a total of 17,742 seed packets representing 8,261 accessions sent to 229 researchers from 36 states. Domestically, public scientists made 408 requests and scientists with commercial companies made 129 requests. There were 1,635 seed packets of 1,541 accessions in 74 orders sent to 59 scientists in 15 countries. The entire *Glycine max* collection has been requested by EMBRAPA, Brazil, and a private Brazilian plant breeding company. Approximately 12,000 seed lots have already been packeted and are awaiting shipment. Thirteen seed requests were made for 332 seed packets of 216 perennial *Glycine* accessions. We also sent seeds of 423 accessions to the National Center for Genetic Resources Preservation for backup.

We planted 1,883 plots of *G. max* for seed replacement in the Collection. These plots were planted at three locations: 1,385 plots at Urbana, 638 plots at Stoneville, and 316 plots in Costa Rica. Plots for pure lining new accessions were planted in Urbana, Stoneville, and Costa Rica. 17 new pure line accessions from Brazil, China, Japan, North Korea, and Vietnam were added to the Collection.

We received seeds of 1 domestic cultivar, 20 germplasm releases, and 1 genetic type.

With the exception of accessions in maturity groups IX and X, all accessions added to the Collection prior to 2000 have been grown in our general evaluation trials. Some accessions were re-planted in Stoneville and Urbana in 2006 to resolve problems in the classification of some qualitative traits. With the data from 2006, all remaining evaluations should be ready for publication within the next year. A total of 15,981 accessions out of the total 17,509 plant introductions, and public cultivars in the collection have been summarized to date and the data added to the National Plant Germplasm GRIN database.

There are approximated 1,600 accessions not yet tested for resistance to any race of soybean cyst nematode (SCN), and many accessions have only tested for one or two races. Dr. Prakash R. Arelli has agreed to screen the Collection beginning with the accessions not yet tested for any SCN race. Seed from the first batch of 400 accessions was sent to him in December, 2006 with plans to send another 400 accessions every six months.

We are still working on language that is acceptable to both sides for material transfer agreements with AVRDC in Taiwan and with the Chinese Ministry of Agriculture.

Douglas Trimble was hired as a new full time germplasm technician to replace Gerald Sprau, who retired.

Progress is being made on finalizing a core collection for *Glycine max* using a combination of descriptive, quantitative and origin data.

As of December 31, 2006, the Collection contained the following entries:

USDA Soybean Germplasm Collection Inventory

Annual subcollection	Entries	Perennial species	Entries	Core
Introduced <i>G. max</i>	16791	<i>G. arenaria</i>	3	3
<i>G. soja</i>	1116	<i>G. argyrea</i>	12	3
Germplasm releases	201	<i>G. canescens</i>	119	20
Modern cultivars	510	<i>G. clandestina</i>	83	16
Old cultivars	208	<i>G. curvata</i>	6	4
Private cultivars	60	<i>G. cyrtoloba</i>	44	5
All isolines	640	<i>G. falcata</i>	25	5
<u>Genetic types</u>	<u>196</u>	<i>G. latifolia</i>	43	8
Annual sub-total	19722	<i>G. latrobeana</i>	7	6
		<i>G. microphylla</i>	32	9
		<i>G. pescadrensis</i>	71	2
		<i>G. pindanica</i>	1	0
		<i>G. rubiginosa</i>	33	2
		<i>G. stenophita</i>	25	0
		<i>G. tabacina</i>	137	13
		<i>G. tomentella</i>	277	21
		<i>G. sp.</i>	1	0
		Perennial subtotal	919	117

Collection total 20641

Number of accessions screened for pests and diseases for which data is entered in GRIN:

<i>Glycine soja</i>			
Type	Descriptor	Qualifier	Accessions screened
Disease	Soybean mosaic virus		182
Insect	Beet armyworm		425
Insect	Soybean Looper		379
Insect	Velvetbean caterpillar		408
Nematode	Cyst nematode	Race 1	1078
Nematode	Cyst nematode	Race 3	545
Nematode	Cyst nematode	Race 4	1
Nematode	Cyst nematode	Race 5	547

<i>Glycine max</i>			
Type	Descriptor	Qualifier	Accessions screened
Disease	Asian soybean rust	Mixed isolates	3620
Disease	Bacterial pustule		3391
Disease	Bean Pod Mottle Virus		344
Disease	Brown stem rot		4024
Disease	Frogeye C-32 Isolate		1677
Disease	Frogeye race 2		2651
Disease	Frogeye, unspecified race		115
Disease	Peanut Mottle Virus		2150
Disease	Phytophthora Rot	Race 1	9942
Disease	Phytophthora Rot	Race 2	430
Disease	Phytophthora Rot	Race 3	2813
Disease	Phytophthora Rot	Race 4	1468
Disease	Phytophthora Rot	Race 5	790
Disease	Phytophthora Rot	Race 6	138
Disease	Phytophthora Rot	Race 7	2970
Disease	Phytophthora Rot	Race 8	148
Disease	Phytophthora Rot	Race 9	95
Disease	Phytophthora Rot	Race 10	623
Disease	Phytophthora Rot	Race 12	640
Disease	Phytophthora Rot	Race 17	2228
Disease	Phytophthora Rot	Race 20	652
Disease	Phytophthora Rot	Race 25	2836
Disease	Phytophthora Rot	Race 30	115
Disease	Phytophthora Rot	Race 30T	263
Disease	Phytophthora Rot	Race 31	145
Disease	Phytophthora Rot	Race 33	113
Disease	Phytophthora Rot	Race 38	65
Disease	Pythium ultimum		1288
Disease	Soybean mosaic virus	G1	52
Disease	Soybean mosaic virus	G5	49
Disease	Stem canker		1466
Disease	Sudden Death Syndrome		6854
Insect	Aphid		1942
Insect	Beet armyworm		5
Insect	Corn Ear Worm		26
Insect	Leaf hopper injury		784
Insect	Mexican Bean Beetle damage		5037
Insect	Soybean Looper		2364
Insect	Velvetbean caterpillar		126
Nematode	Cyst nematode	Race 1	117
Nematode	Cyst nematode	Race 2	114
Nematode	Cyst nematode	Race 3	11888
Nematode	Cyst nematode	Race 4	7376
Nematode	Cyst nematode	Race 5	11054
Nematode	Cyst nematode	Race 14	2477
Other	Chlorosis score		1594
Other	Salt reaction		564

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