

USDA SOYBEAN GERMPLASM COLLECTION REPORT -- 2000

February 2001

In 2000, we distributed 24,407 seed lots from the USDA Soybean Germplasm Collection in response to 343 requests from 196 individuals. There were 291 domestic requests (85% of the total) with a total of 18,035 seed packets representing 11,043 accessions sent to 154 researchers from 36 states and Puerto Rico. Domestically, public scientists made 206 requests and scientists with commercial companies made 74 requests. There were 6,372 seed packets of 5,175 accessions in 52 orders sent to 42 scientists in 22 countries. We also sent seeds of 494 accessions to the National Seed Storage Laboratory for backup.

We planted 2,372 four-row plots of *G. max* for seed replacement in the Collection. These plots were planted at three locations: 1,954 at Urbana, 282 at Stoneville, and 131 in Costa Rica in December 1999. This was the first time that we have grown plots in Costa Rica. The quality and quantity of seed from the Costa Rica plots was good, so this location will continue to be used for growing late maturity group accessions. In the summer of 2000 we grew over 1,300 pure line rows in Costa Rica. These were the new accessions recently collected in Vietnam plus the latest maturity accessions obtained from China in the most recent germplasm exchange. We added approximately 517 new pure line accessions, primarily from China and Vietnam to the Collection.

We received 19 new accessions from China, five from North Korea, two from Costa Rica, and three from Poland. We also received seeds of 30 domestic cultivars, two germplasm releases, and one private variety.

The first year of the general field evaluation of 850 maturity group V accessions from PI 416.758 to PI 597.389 was planted at Stoneville. The second year of 1,061 accessions in maturity group V with introductions up to PI 408.345 and the first year of the remaining 478 accessions in maturity groups V to VIII will be planted at Stoneville in 2001. The first year of the remaining 1423 maturity group 000 to IV accessions will be planted at Urbana in 2001.

Reaction to Frogeye Leafspot, caused by *Cercospora sojina* (C-32 isolate) for 1,688 accessions screened by D. Weaver and W. Yang, and Phytophthora Rot (*Phytophthora sojae*), races 7, 17, 25, 30, 30T, 31, 33, and 38 for 1015 accessions screened by A. Dorrance and A. Schmitthenner were added to GRIN.

The Technical Bulletin "Evaluation of the USDA Soybean Germplasm Collection: Maturity Groups VI – VIII (FC 03.659—PI 567.235B)" containing agronomic and descriptive data for 1625 accessions has been submitted for publication, and the data uploaded into GRIN. Agronomic and descriptive evaluation data for 1353 accessions in Maturity Groups 000 - IV (PI 507.670 - PI 574.486) and 479 accessions in Maturity Groups IX - X (PI 163.308 - PI 567.238) are in the final editing stage before publication.

The current perennial glycine inventory is 918 accessions in 13 species, plus one unclassified species. We presently have no accessions for *G. albicans*, *G. hirticaulis*, and *G. lactovirens*. For most accessions we have only ten seeds. In 1999, we began to increase the perennial collection starting with the Australian core collection established by Tony Brown. These are being grown in pots in the greenhouse during the winter and moved outside during the summer months. Most plants produced seed within a year, but a few still have not flowered. 78% of the core collection and 26% of all perennial glycine accessions now have sufficient seed to distribute. Digital images of leaves, pods and seeds, and flowers are being taken as the perennials are grown. These images are on GRIN. Seven seed requests were made

for 193 seed packets of 147 accessions in 2000 and 138 of those accessions had sufficient seed to distribute. Dr. Tony Brown of CSIRO in Australia generously agreed to fill requests for the perennial *Glycine* that we did not have.

In cooperation with Dr. Tara VanToai, USDA-ARS at Ohio State University, we obtained funds from the USDA-Foreign Agricultural Service to support Ngon Troung from Can Tho University to visit the U.S. for 9 months. Mr. Troung is a soybean breeder and germplasm curator at Can Tho University. He brought with him approximately 80 accessions from Vietnam and has been characterizing those accessions with DNA markers. He will also combine his data with data we have on the recently collected accessions from far northern Vietnam and accessions from southwestern China. His work will help characterize the distribution of diversity in Vietnam and the relatedness of Vietnamese soybeans to those of southern China. We anticipate additional cooperative germplasm activities with Vietnam in the future.

In FY01, the soybean germplasm collection obtained a budget increase of over \$160,000 a year in recurring funds. We had had no changes in our funding since the retirement of former curator Dick Bernard and the elimination of one research position in the unit. Since that time, the number of accessions in our Collection for which we are responsible has increased by nearly 120%, the average number of samples distributed per year has increased over 350%, and the number of field plots grown annually has nearly tripled. In the past few years our USDA funding has only covered the cost of salaries of permanent USDA employees, building utilities, and basic costs associated with germplasm seed increases and distribution. We currently have a major backlog in processing seeds into the Collection. This has not affected the availability of seeds but has impacted our efficiency. Our current plans are to hire another full time research technician whose primary responsibilities will be to assist in the germplasm operations. We also solicit the advice of the committee as to high priority projects that could be undertaken in the next few years.

As of February 15, 2001, the Collection contained the following entries:

Annual subcollection	Entries	Available
Introduced <i>G. max</i>	16382	16287
<i>G. soja</i>	1114	1113
Germplasm releases	156	156
Modern cultivars	459	457
Old cultivars	209	208
Private cultivars	31	30
All isolines	594	592
<u>Genetic types</u>	<u>177</u>	<u>171</u>
Annual sub-total	19122	19014

Perennial species	Entries	Available	Core	Core Available
<i>G. arenaria</i>	3	0	3	0
<i>G. argyrea</i>	12	2	3	2
<i>G. canescens</i>	119	29	18	17
<i>G. clandestina</i>	116	31	18	14
<i>G. curvata</i>	6	2	4	2
<i>G. cyrtoloba</i>	44	6	5	4
<i>G. falcata</i>	26	5	5	3
<i>G. latifolia</i>	43	15	8	8
<i>G. latrobeana</i>	6	2	6	2
<i>G. microphylla</i>	33	15	9	9
<i>G. pindanica</i>	1	0	0	0
<i>G. tabacina</i>	229	78	15	14
<i>G. tomentella</i>	279	55	21	15
<u>G. sp.</u>	<u>1</u>	<u>0</u>	<u>0</u>	<u>0</u>
Perennial subtotal	918	240	115	90
Collection total	20040	19254		

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