

2001 Soybean Crop Germplasm Committee Meeting

Minutes submitted by Emerson R. Shipe

The Soybean Germplasm Committee held its annual meeting February 19, 2001 in conjunction with the Soybean Breeder's Workshop at St. Louis, MO. In attendance were committee members Elroy Cober, Ronald Hammond, Howard Gabe, Tom Kilen, Dan Phillips, Esther Peregrine, Brad Hedges, Randall Nelson, Terry Niblack, George Graef, Steve Muench, Perry Cregan, Richard Wilson, Allan Stoner, Emerson Shipe, and guests Tommy Carter, Istvan Rajcan, Carol Becton, Jennifer Yezak Molen, Andrea Cardinal, Jim Orf, Terry Coffelt, Glen Bowers, and Tom Isleib. Chair, Emerson Shipe, called the meeting to order at 8:00 a.m. and distributed copies of a document which describes the function, duties, and responsibilities of crop germplasm committees. He gave a brief report on information shared at the Crop Germplasm Committee Chairs' Workshop held July 19-20, 2000 in Beltsville, MD. Randy Nelson and Tommy Carter made a presentation at the Workshop entitled "Utilization of Germplasm in a Soybean Breeding Program".

An agenda was sent to the committee members prior to the meeting naming members to the four subcommittees and listing topics for discussion. The committee broke into subcommittees until 9:30 a.m.

Acquisition (Graef, Chair; Cober, Nelson, Gabe, Bowers)

Germplasm exchange with China is continuing under the existing memorandum of agreement. Future exchanges with Vietnam are being explored. There was discussion on the need for further characterization of accessions in maturity groups IX and X with specific emphasis given to identifying accessions resistant to soybean mosaic virus.

Randy Nelson distributed a draft of a Soybean Core Collection containing 967 accessions. It was assimilated based on geographic diversity and represents about 7% of the total collection for which the country of origin is known. He emphasized that it is an initial draft and he solicits input from breeders and geneticists as to what they would like to see in a core collection and how they would utilize such a collection.

Evaluation (Phillips, Chair; Niblack, Hammond, Durham)

Dan Phillips reported that the Soybean Pathogen Germplasm Conservation Subcommittee had submitted a proposal to the IFAFS program but it was not funded. The Committee strongly endorsed the efforts of this subcommittee to seek additional funding to support work of the currently funded labs/distribution centers for soybean cyst nematode and *Phytophthora*. There was general consensus from Committee members that continued efforts should be pursued to extend funding for the soybean pathogen collection and distribution labs.

There was discussion on the need to develop a uniform standard rating system of reporting results of disease and insect screening tests for entry in the GRIN system. Dan Phillips will discuss this with John Rupe, the incoming pathology committee member.

Ron Hammond briefly presented information on the emerging soybean aphid problem prevalent in the upper Midwest in 2000. It is a vector for soybean mosaic virus. He stressed the importance of identifying additional sources of resistance to SMV by screening recently acquired accessions in the collection.

Enhancement (Wilson, Chair; Shipe, Muench, Cregan)

The USDA Germplasm/Cultivar Release Notice Policy is undergoing an ARS review, headed by Roger Lawson with a report is expected by 1 April 2001. Tommy Carter, Jr. was recommended as a liaison between SCAC and Lawson to ensure that soybean release concerns are included and to help review proposed policy changes.

Research priorities for germplasm enhancement were listed as follows:

- a. Current efforts between American Oil Chemist's Society, Archer Daniels Midland Co., and Monsanto are underway to coordinate and harmonize methods for analysis of protein, oil, fatty acid and other seed constituents. The focus is on developing a uniform set of standards, protocol and laboratory certification. A workshop and symposium is planned for the AOCS annual meeting in Minneapolis, May 2001, which will address this subject.
- b. Gene markers: Detection of alleles with specific mutations that govern seed composition traits will require more advanced gene marker technology. This approach requires knowledge of the gene, gene product and gene sequence that is associated with a given recessive allele. Such markers should have universal application in breeding programs for disease and quality traits
- c. The Committee voted to support the current efforts of The Sunflower Producers Association to increase congressional funding for *Sclerotinia* research since it is also an economically important pathogen on soybean.
- d. SAVE/SAGE: Significant progress has been made in evaluation of Asian soybean germplasm/varieties. The Committee recommended a continued and expanded effort to introgress the best material into U.S. breeding programs. The Committee also voted to formally commend private seed companies for their significant contributions of time, material and resources in these evaluation efforts. Tommy Carter indicated that a publication describing results of the most recent evaluations will be available soon.
- e. Expanded research efforts are needed to achieve United Soybean Board Better Bean Initiative goals. New traits include reduced phytic acid and indigestible carbohydrates plus increased isoflavone content (protein), and increased tocopherol and sterol content (oil). Incorporation of these traits into adapted germplasm requires improved methods for chemical analysis, and specific gene markers for these traits. The USDA analytical lab should play an important role in providing these services.

Operations (Kilen, Chair; Peregrine, Hedges, Stoner)

The Committee voted to discontinue maintenance of 18 germplasm releases which have not been requested in the past 10 years. The germplasm will continue to be available from the long-term storage facility at Fort Collins, CO.

Esther Peregrine reported that new data for *Phytophthora* and frogeye leaf spot has been added to GRIN. The *Phytophthora* data was supplied by Ann Dorrance, Ohio State University and David Weaver, Auburn University, provided the frogeye data.

Collection of agronomic and descriptive data for 1625 accessions from MG VI to MG VIII has been completed. A technical bulletin containing the data has been sent to the

publisher. By the end of 2002, all of the current soybean PI collection will be fully characterized for the basic descriptors.

The descriptors for the perennial *Glycine* species are not well-defined. Esther Peregrine has added pictures of the perennials to GRIN. In the future, it would be beneficial to add pictures to complement the text that explains soybean trait scores. Esther Peregrine would welcome suggestions on what images should be added to GRIN. Any pictures or digital images would be appreciated.

There is more data that should be added to GRIN. An inventory of data that has been collected but not entered into the database should be made.

New funding will facilitate the addition of new staff. Currently, the rate-limiting step is the harvesting and processing of seed. Additional personnel will eliminate this backlog and will ensure that seed samples are sent to Fort Collins for long-term storage in a timely manner.

The new winter nursery location in Costa Rica is working well. The quality and quantity of seed produced is very good.

Other Business

Esther Peregrine distributed the 2000 Soybean Germplasm Collection Report. In 2000, 24,407 seed lots in response to 343 requests from 196 individuals were distributed. Requests came from 154 researchers in 36 states and Puerto Rico and from 42 researchers in 22 foreign countries. There are now 19,122 accessions in the combined G. max and G. soja collection and 918 accessions of 13 species and one unclassified species in the perennial collection.

Allan Stoner reported that the entire USDA germplasm system received a \$3 million increase in funding for FY 2001 and efforts, led by the American Seed Trade Association, continue to obtain additional funding for FY 2002.

New members joining the committee are Glenn Bowers-private breeder south, Brad Hedges-private breeder north, and John Rupe-pathology. Richard Wilson will serve a second 3-year term in the physiologist position.

Appreciation was expressed to retiring members Dan Phillips and Howard Gabe for their service over the past 6 years. George Graef was elected Chair for 2002. Brad Hedges was elected Vice-chair.

Meeting adjourned at 11:55 a.m.

E. R. Shipe, Chair

T. Niblack, Vice-chair