Registration of M87-1569 Soybean Germplasm Resistant to Soybean Cyst Nematode

The soybean (Glycine max (L.) Merr.) germplasm line M87-1569 (Reg. no. GP-175, PI 584527) was developed by the Minnesota Agricultural Experiment Station. M87-1569 was released because of its early maturity (Maturity Group 0) and resistance to Races 1 and 3 of soybean cyst nematode (SCN) (Heterodera glycines Ichnohe).

M87-1569 originated as an F4 plant selection from the cross M70-187 x L77-808 (4). M70-187 was an SCN resistant germplasm line released by the Minnesota Agric. Exp. Sta. L77-808 has the pedigree 'Williams' x PI 87631-1 (1). PI 87631 is reported to have partial resistance to SCN Race 3 (R.L. Bernard, personal communication). The population was advanced by the single-pod bulk method to the F4 generation in Chile and Minnesota. The F4 plants were screened in the field against Race 3 of SCN. F4 Plants were screened in the greenhouse against Races 1 and 3 of SCN. M87-1569 was yield tested in Minnesota under both SCN infested and noninfested conditions from 1989 through 1993. It was evaluated in the Northern Regional Soybean Cyst Nematode Test, Group I, from 1990 through 1992 (2) and in the Uniform Soybean Tests, Northern States, Uniform Test 0, from 1991 through 1993 (7).

M87-1569, classified as Group 0 maturity (relative maturity 0.9), is about 2 d later than 'Lambert', about 5 d earlier than 'Bell' (3,5,6). M87-1569 has indeterminate growth habit, purple flowers, tawny pubescence and tan pods at maturity. Seeds are yellow with black hila and dull seed coat luster. In comparison with Lambert, M87-1569 is taller, has similar lodging, seed quality, and iron chlorosis scores, has smaller seed size, and is lower in oil and protein content. Under moderate to heavy SCN infestations, M87-1569 will yield more than Lambert.

In addition to being resistant to Races 1 and 3 of soybean cyst nematode M87-1569 carries the Rps1 gene for resistance to phytophthora root rot (caused by Phytophthora sojae sojae M.J. Kaufmann & J.W. Gerdemann).

Seed of M87-1569 was distributed to soybean breeders and other interested individuals in 1994. Breeder seed will be maintained by the Minnesota Agric. Exp. Sta. Small samples of M87-1569 for research purposes can be obtained for at least five years by writing to the corresponding author.

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Registration of Five Self-Fertile, Partially Nondormant Cuphea Germplasm Lines: VL-90 to VL-95

Five self-fertile, partially nondormant BC2S2 lines, VL-90 (Reg. no. GP-5, PI 574491), VL-91 (Reg. no. GP-6, PI 574492), VL-92 (Reg. no. GP-7, PI 574493), VL-93 (Reg. no. GP-8, PI 574494), and VL-95 (Reg. no. GP-9, PI 574495), of cuphea (Cuphea viscosissima Jacq. x C. lanceolata Ait.f. forma silenoides (Nees) Regel) were developed at Oregon State University and officially released by the Oregon Agricultural Experiment Station in October of 1993. These lines were developed by introgressing genes for nondormancy from C. lanceolata to C. viscosissima. Seed of C. viscosissima can be dormant for two or more years and seldom germinates with less than one year of storage (1).

VL-90, VL-91, VL-92, VL-94, and VL-95 originated from a hybrid between the dormant C. viscosissima line PI 534911 and the partially nondormant open-pollinated C. lanceolata population LN-43 (2). LN-43 and PI 534911 were hybridized in an isolated field nursery at Corvallis in 1987. Progeny from open-pollinated rows of PI 534911 were used to generate a partially nondormant line (PI 534911/PI 534911) or cross-pollinated (PI 534911/LN-43). One thousand seed were screened for germination 1, 2, and 3 mo after harvest. Seed began germinating 3 mo after harvest. One hundred percent of the progeny from seedlings germinated at 3 mo were interspecific (PI 534911/LN-43); interspecific progeny can be distinguished from intraspecific progeny by flower and gross morphology (5). The first 20 progeny to germinate at 3 mo were selected and backcrossed to PI 534911. One thousand BC1 seeds were screened for germination 3 mo after harvest. The first 20 progeny to germinate were selected and backcrossed to PI 534911. This was repeated through BC2.

The donor species (C. lanceolata) lacks fertility and is predominantly cross-pollinated, whereas the recipient species (C. viscosissima) is self-fertile and predominantly self-pollinated (6).

Self-fertile progeny were selected among nondormant BC2 and BC3 progeny using screened insect-proof greenhouses. The characteristics of self-fertile progeny are complete seed set and no fruit abortion in the absence of insect pollinators. Self-fertility was observed among BC2 and BC3 progeny, but not among F1 or BC2 progeny. Five self-fertile nondormant BC3 progeny were selected and inbred for two generations to develop BC2S2 lines (VL-90, VL-91, VL-92, VL-94, and VL-95). Seed within BC2S2 and BC3S2 lines was bulked and screened for germination 3 mo after harvest. All the selected BC2S2 and BC3S2 progeny produced seed without insect pollination.

Seed of PI 534911 and each BC2S2 line (VL-90, VL-91, VL-92, VL-94, and VL-95) was increased under separate insect-proof cages at Corvallis in 1992. Germination percentages of VL-90, VL-91, VL-92, VL-94, and VL-95 ranged from 44 to 74%; germination percentage of the recurrent parent (PI 534911) was 0% 210 d after harvest.

The fatty acid and oil percentages of VL-90, VL-91, VL-92, VL-94, and VL-95 were similar to those of PI 534911 (7,8). These lines are morphologically close to the wild species. Seed of VL-90, VL-91, VL-92, VL-94, and VL-95 can be requested by writing to the corresponding author. Please acknowledge the use of this germplasm when developing additional germplasm or cultivars.

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References and Notes


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