RHA 408 and RHA 409 are homozygous for resistance to Race 2 downy mildew [caused by Plasmopara halstedii (Farl.) Berl. & De Toni in Sacc.], have genes for fertility restoration of the PET1 cytoplasmic male sterility, and have upper stem branching. HA 410 is an S$_e$-derived S$_a$ maintainer line selected from the USDA B-line SCL Recurrent Selection Population, Cycle 1. This population was a composite of maintainer lines screened on a sclerotinia-infested field in 1987 near Moorhead with tolerant lines intermated to form the population. HA 411 is an S$_e$-derived S$_a$ maintainer line selected from the population USDA B-SCL B-3, Cycle 1. The USDA B-SCL B-3 Population was created by crossing HA 821 with selections from Armavirskij 50, HA 338, S.A. PTC Composite, and HA 892/H. pacuflorius Nutt. (syn. H. rigidus Desf.). HA 821 was released by USDA and the North Dakota Agricultural Experiment Station in 1986 (1). Armarvirsik 50 was obtained from the North Central Plant Introduction Station, Ames IA, as Ames 5886. HA 338 is a maintainer line released by the USDA and the North Dakota Agricultural Experiment Station in 1988 (2). S.A. PTC Composite was obtained from a germplasm exchange with the Grain Crops Research Institute, Potchefstroom, South Africa, in 1986. The HA 892/H. pacuflorius line was derived from a cross made by USDA in 1982 in Fargo, ND. All four of these lines were screened in 1986 and 1987 for sclerotinia tolerance on an infested field near Moorhead. The F$_1$ hybrids of the four crosses were intermated to form the USDA B-SCL B-3 Population. The pedigree breeding method was utilized to develop RHA 408, RHA 409, HA 410, HA 411, and HA 412.

Hybrids with the two restorer lines, RHA 408 and RHA 409, were produced by crossing with CMS HA 390 and CMS HA 124. Hybrids with the three maintainer lines, HA 410, HA 411, and HA 412, were produced by crossing with NMS RHA 801 (3). These hybrids were compared with two checks, Hybrid 894 and NK 285, in sclerotinia-infested fields near Glyndon, MN, in 1993 and 1994; Woodland, CA, in 1993; Carrington, ND, in 1993; and near Camet, Argentina, during the 1993–1994 growing season. The test in California was in cooperation with Pioneer Hi-Bred International and the test in Argentina was in cooperation with DeKalb Argentina S.A. The North Dakota experiment was conducted in cooperation with the Carrington Research and Extension Center (N. Dak. Agric. Exp. Stn.). Averaged over all locations and years, the percentage of sclerotinia-infected plants of hybrids with RHA 408, RHA 409, HA 410, HA 411, and HA 412 was 12.5, 8.8, 11.8, 5.9, and 9.1%, respectively, compared with 39.2 and 46.1% for the check hybrids.

In the regional test, LG90-2550 yielded 2% less than 'Corsica', the highest yielding MG II cultivar in the test, and 16% more than Lawrence, the adapted parent. LG90-2550 was 2 d earlier and 15 cm shorter than Edison and 6 d earlier and 31 cm shorter than Lawrence. LG90-2550 was also tested in the Preliminary Test III A of the Uniform Soybean Tests Northern Region in 1996 (4). In the regional test, LG90-2550 yielded 11% less than Macon and was 3 d earlier and 13 cm shorter. In the Illinois tests, LG91-7350 yielded 2% less than 'Corsica', the highest yielding MG IV cultivar. LG91-7350 matured on the same day as Corsica and was 5 cm taller. LG90-2550 was also tested in the Preliminary Test IV A of the Uniform Soybean Tests Northern Region in 1996 (4). In the regional test, LG91-7350 yielded 2% less than Macon and 14% less than 'Stressland'. It was 2 d later and 5 cm taller than Macon and 4 d earlier and 7 cm shorter than Stressland.

Research employing RAPD markers and cluster analysis to evaluate genetic diversity has shown that the introductions used in these crosses are genetically distinct from the current U.S. soybean germplasm. The soybean [Glycine max (L.) Merr.] germplasm lines LG90-2550 (Reg. no. GP-186, PI 602995) and LG91-7350R (Reg. no. GP-187, PI 602996) were cooperatively developed and released in 1997 by the USDA-ARS and the Illinois Agricultural Experiment Station for use as parental lines in yield improvement programs. These lines combine high yield with unique genetic diversity not currently present in the commercially used gene pool in North America. LG90-2550 and LG91-7350R were developed through an early-generation testing procedure. The progenitor populations were yield-tested as F$_2$ families in the F$_1$ and F$_2$ generations. Lines were derived from single-plant selections made in the F$_2$ generation and bulk harvested in the F$_3$.

**Registration of LG90-2550 and LG91-7350R Soybean Germplasm**

The soybean [Glycine max (L.) Merr.] germplasm lines LG90-2550 (Reg. no. GP-186, PI 602995) and LG91-7350R (Reg. no. GP-187, PI 602996) were cooperatively developed and released in 1997 by the USDA-ARS and the Illinois Agricultural Experiment Station for use as parental lines in yield improvement programs. These lines combine high yield with unique genetic diversity not currently present in the commercially used gene pool in North America.

**References and Notes**


