REGISTRATION OF GERMPLASM

Registration of Soybean Germplasm Line D83-3349 Resistant to Sudden Death Syndrome, Soybean Cyst Nematode, and Two Root-Knot Nematodes

The soybean [Glycine max (L.) Merr.] germplasm line D83-3349 (Reg. no. GP-176, PI 590578) was released for research purposes because of its combined resistance to sudden death syndrome [caused by Fusarium solani (Mart.) Sacc.], soybean cyst nematode (Heterodera glycines Ichinohe), and the southern Meloidogyne incognita (Kofoid & White) Chitwood and peanut (M. arenaria (Neal) Chitwood) root-knot nematodes, along with good productivity. It is late Group IV maturity and was developed by the USDA-ARS in cooperation with the Mississippi Agricultural and Forestry Experiment Station, Stoneville, MS.

D83-3349 is an advanced F5 line from the cross ‘Bedford’ × [F3 line ‘Forrest’ × F5 (‘Centennial’ × ‘Peking’)] (2,3,4) made in 1980. Peking carries genes for resistance to soybean cyst nematode (SCN) Race 5 not transferred in the development of cultivars such as Forrest. The cross Centennial × Peking was made in the field at Stoneville, the F1 was grown in the greenhouse during the winter months, and seed for the F2 population was planted in soil infested with SCN Race 5 in the greenhouse at Jackson, TN. Seedlings free of cysts were transplanted to the field at Jackson and grown to maturity. The F3, F4, and F5 generations were grown in the field at Stoneville for agronomic evaluation. Advanced lines were re-evaluated to ensure resistance to SCN Race 5. A single advanced F5 line was used as a male parent in a cross with Forrest. A similar procedure was followed for selecting an advanced F5 line used as a male parent in a cross with Bedford. The F2 seedlings from this cross were screened against SCN Race 14 and seedlings appearing resistant were transplanted to the field. Progeny were screened with SCN Race 5. Agronomic selection and evaluation followed at Stoneville, with rechecking at Jackson for SCN resistance.

D83-3349 was evaluated in the Preliminary IV-S nursery in 1985 and in Uniform Group IV-S in 1986 to 1988. It has a determinate growth type, white flowers, tawny pubescence, and tan pods at maturity. Seeds are yellow with black hila. Seed yield, protein content, and oil content of seed are 2744 kg ha\(^{-1}\), 401 g kg\(^{-1}\), and 159 g kg\(^{-1}\), respectively, compared with 2496 kg ha\(^{-1}\), 413 g kg\(^{-1}\), and 207 g kg\(^{-1}\) for Forrest. D90-7256 has 97.3 g stachyose + raffinose kg\(^{-1}\) protein, in comparison with 88.5 g kg\(^{-1}\) for Forrest.

D90-7256 is an advanced F5 line from the cross Forrest × D76-8070 (1,2) made at Stoneville in 1987. FI population was grown in the greenhouse during the winter of 1987–1988. Selection of 434 plants was grown in the field at Stoneville, the FI was grown in the greenhouse during the winter of 1987–1988. An F2 population of 434 plants was grown in the field at Stoneville, with rechecking at Jackson for SCN resistance.

D83-3349 was rated highly resistant to sudden death syndrome in field plantings in southern Illinois in 1990, 1991, and 1992. It is resistant to SCN Races 3 and 5 and moderately resistant to SCN Race 14. It is resistant to the southern and peanut root-knot nematodes based on greenhouse evaluation at the University of Georgia. It is resistant to bacterial pustule [caused by Xanthomonas campestris pv. glycines (Nakano) Dye]. It is susceptible to stem canker [caused by Diaporthe phaseolorum (Cooke & Ellis) Sacc. f. sp. meridionalis Morgan-Jones].

Small amounts of seed for research purposes may be obtained from the USDA-ARS Soybean Production Research Unit at Stoneville, MS 38776; L.D. Young, USDA-ARS, 605 Airways Blvd., Jackson, TN 38301; P. Gibson, Dep. of Plant and Soil Sci., Southern Illinois Univ., Carbondale, IL 62901-4415. A 50-seed sample may be obtained for 5 yr from the USDA-ARS and the Mississippi Agric. and Forestry Exp. Stn., Stoneville, MS 38776; L.D. Young, USDA-ARS, 605 Airways Blvd., Jackson, TN 38301; P. Gibson, Dep. of Plant and Soil Sci., Southern Illinois Univ., Carbondale, IL 62901-4415. A joint contribution from the USDA-ARS and the Mississippi Agric. and Forestry Exp. Stn. Accepted 31 July 1995. *

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Registration of Soybean Germplasm Line D90-7256 Having High Seed Protein and Low Oligosaccharides

The soybean [Glycine max (L.) Merr.] germplasm line D90-7256 (Reg. no. GP-177, PI 590579) was released to provide a productive, good agronomic type with high seed protein and low oligosaccharides for research purposes. It was developed by the USDA-ARS, Stoneville, MS, in cooperation with the Mississippi Agricultural and Forestry Experiment Station.

D90-7256 is an advanced FS line from the cross Forrest × D76-8070 (1,2) made at Stoneville in 1987. FI population was grown in the greenhouse during the winter of 1987–1988. Selection of 434 plants was grown in the field at Stoneville, the FI was grown in the greenhouse during the winter of 1987–1988. An F2 population of 434 plants was grown in the field at Stoneville, with rechecking at Jackson for SCN resistance.

The 3-yr mean seed yield (18 replications), 2744 kg ha\(^{-1}\), 401 g kg\(^{-1}\), and 159 g kg\(^{-1}\) for Forrest. D90-7256 has 97.3 g stachyose + raffinose kg\(^{-1}\) protein, in comparison with 88.5 g kg\(^{-1}\) for Forrest.

D90-7256 is of Group V maturity, has a determinate growth type, white flowers, tawny pubescence, and tan pods. Seeds are yellow with black hila. Growth characteristics are similar to Forrest. D90-7256 is resistant to the foliar disease bacterial pustule [caused by Xanthomonas campestris pv. glycines (Nakano) Dye]. It is susceptible to stem canker [caused by Diaporthe phaseolorum (Cooke & Ellis) Sacc. f. sp. meridionalis Morgan-Jones].

Small amounts of seed for research purposes may be obtained from the USDA-ARS Soybean Production Research Unit at Stoneville, MS 38776; L.D. Young, USDA-ARS, 605 Airways Blvd., Jackson, TN 38301; P. Gibson, Dep. of Plant and Soil Sci., Southern Illinois Univ., Carbondale, IL 62901-4415. A joint contribution from the USDA-ARS and the Mississippi Agric. and Forestry Exp. Stn. Accepted 31 July 1995. *

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References and Notes