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 207 g kg⁻¹, respectively, compared with 2822 kg ha⁻¹, 413 g kg⁻¹, and 215 g kg⁻¹ for 'Stafford' (1). D83-3349 is 3 d earlier in maturity than Stafford.

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.

References and Notes

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