REGISTRATION OF CULTIVARS

Registration of ‘Fowler’ Soybean

‘Fowler’ soybean [Glycine max (L.) Merr.] (Reg. no. CV-421, PI 613195) was developed by the USDA-ARS, in cooperation with the University of Tennessee Agricultural Experiment Station and the North Carolina Agricultural Research Service. It was released in 1999 to provide a cultivar of Group V maturity with high yield potential and resistance to soybean cyst nematode (SCN) (Heterodera glycines Ichinohe). Races 2, 3, 5, and 14 (6). Fowler is best adapted to production areas between 34° and 37° N lat.

Fowler is an F1 bulk of a single-plant selection made in the F2 from the cross ‘Hartweg’ × ‘Holladay’ (1, 2). The F2 plants of the cross were challenged with a mixture of SCN Races 2, 3, 5, and 14 in the greenhouse during the spring of 1992. Resistant plants were transplanted to the field for seed production. The transplants were progeny tested in each succeeding generation for resistance to the four SCN races in separate tests. A single plant was chosen from a progeny row in each of the F3, F4, and F5 generations, and the remainder of the row was bulked for yield evaluation during the next year. One hundred and twenty F5 plants were selected from the border rows of yield plots, tested for resistance to each of the four SCN races, and grown in progeny rows in the field for selection for uniformity of flower, pubescence, pod wall color, plant growth, and maturity. Selected rows were bulked in the F5 generation.

Fowler matures ≈1 d later than ‘Hutcheson’ (3). It has determinate plant type, white flower, tawny pubescence, and tan pod wall. Seeds are shiny yellow with black hila. Fowler has been confirmed to be resistant to SCN Races 2, 3, 5, and 14 by greenhouse tests. It may have resistance to other SCN races because the resistant parent, Hartweg, is resistant to most races of the nematode. Fowler is susceptible to stem canker [caused by Diaporthe phaseolorum (Cook & Ellis) Sacc. var. meridionalis F.A. Fernandez] and root-knot nematodes [Meloïdogyne arenaria (Neal) Chitwood and M. incognita (Kofoid & White) Chitwood]. Fowler, tested as J94-7, averaged two bushels per acre less than Hutcheson in the Tennessee variety trials in 1997 (4), one bushel per acre less in 1998 (5), and two bushels per acre less than Hutcheson in the Uniform Soybean Tests Southern Sates Maturity Group V tests in 1997 and 1998 (7, 8). In four fields infested with either SCN Race 2 or 5, Fowler averaged four bushels per acre more than Hutcheson and had only 17% of the nematodes occurring in Hutcheson plots at harvest. Fowler averaged 8 to 16 bushels per acre more than Hartweg in 1994 to 1995 and in 1997 in tests in western Tennessee.

Breeder seed will be maintained by USDA-ARS, Crop Genetics and Production Research Unit, P.O. Box 345, Stoneville, MS 38776-0345. One hundred seed of Fowler can be obtained for research purposes from the corresponding author for at least five years. U.S. plant variety protection for Fowler will not be applied for.

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References and Notes

6. Riggs, R.D., and D.P. Schmitt. 1988. Complete characterization of (1) the race scheme for Heterodera glycines Ichinohe and (2) the modified shuttle breeding program. The F1 of Maravilla-TCL-3 was developed by the International Maize and Wheat Improvement Center (CIMMYT), Mexico D.F., Mexico, and released in Mexico by the University of Mexico State, Universidad Autónoma del Estado de México, UAEM, in 1999 (Reg. no. 1229-TCL-010-300799/C).

Registration of ‘Maravilla-TCL99’ Triticale

‘Maravilla-TCL99’ spring triticale (X triticoasele Wittmack L.) (Reg. no. CV-21, PI 613160) was developed by the International Maize and Wheat Improvement Center (CIMMYT), Mexico D.F., Mexico, and released in Mexico by the University of Mexico State, Universidad Autónoma del Estado de México, UAEM, in 1999 (Reg. no. 1229-TCL-010-300799/C).

Maravilla-TCL99 is a widely adapted and high yielding complete hexaploid triticale cultivar. It was developed using a modified pedigree selection method known as the shuttle breeding method established by N.E. Borlaug in the mid-1940s (1) and adopted by the CIMMYT wheat and triticale breeding program (3). Shuttling germplasm between Obregon (40 m alt and 27.5° N lat) and Toluca (2640 m alt and 18° N lat) enables CIMMYT breeders to select cultivars adapted to a wide range of abiotic and biotic stresses with no photoperiod sensitivity. Maravilla-TCL99 was selected from the progeny of the cross ‘DAGRO’/‘IBEX’/‘CIVET#2’ (SW787.246-1B-3Y-2B-4RES-0B-1Y-0PAP-3Y-0B-0UAEM). The F1 of Maravilla-TCL99 was evaluated in Toluca, Mexico State and the F2, F3, F4, and F5 generations were grown at Obregon, Sonora. The F2, F3, F4, and F5 were evaluated at El Batan. The F3 and F4 generations of Maravilla-TCL99 were grown at Papalotla and the University UAEM campus, respectively. Two hundred individual plants were selected from the F3 in Obregon and planted as head rows in Papalotla. The agronomically desirable and homogenous F1-derived head rows were bulked and evaluated in yield trials in Obregon. Seed purification was continued in the F3 and subsequent generations by planting 200 head rows in each generation, discarding the off-types and bulking the similar rows.

In Obregon, an arid region, Maravilla-TCL99 was selected under three types of mega-environments (ME) with ME1 as a high input environment with full irrigation, ME4 an arid environment with one irrigation before planting only, and ME5 a heat stress environment during grain filling. Early generation selection in Obregon was based primarily on agro-nomic type and resistance to leaf rust (caused by Puccinia recondita Rob. ex Desm. f. sp. tritici) and stem rust (caused by Puccinia graminis Pers. f. sp. tritici Eriks. & Hann). Grain yield and test weight were additional selection criteria in the advanced generations. At El Batan, Papalotla (ME4), and Toluca, a high rainfall area (ME2), selection traits in early generations were resistance to yellow rust (caused by Puccinia