Registration of S01-9269 Soybean Germplasm Line Resistant to Soybean Cyst Nematode with Seed Oil Low in Saturates

Soybean \([Glycine\ max\ (L.)\ Merr.]\) germplasm line S01-9269 (Reg. no GP-309, PI 636694) was developed and released in May 2004 by the Missouri Agricultural Experiment Station and ARS-USDA. It has value as a parent in soybean improvement programs because of its broad resistance to soybean cyst nematode (SCN), \(Heterodera\\ glycines\) Ichinohe, populations and seed oil that averages half the saturated fatty acids (saturates- % palmitate + % stearate) as conventional soybeans which average about 14 to 15% saturates (Wilson 2004).

S01-9269, maturity group V (RM 5.5) is an \(F_4\) selection composited in the \(F_3\) generation from S94-1867 \(\times\) a low palmitic acid \(F_2\) selection from \([S93-1475\ \times\ \text{('Holladay' } \times\ CX1538-70-5)]\) (Burton et al., 1996). S94-1867 is a SCN resistant line from Pioneer ‘P9592’ \(\times\) S91-1693. P9592 is derived from Pioneer ‘P9561’ \(\times\) (Asgrow ‘A5618’ \(\times\) P9561). P9561 is from ‘Forrest’ (Hartwig and Epps, 1973) \(\times\) ‘Mack’ (Caviness et al., 1972). A5618 is from ‘Williams’ (Bernard and Lindahl, 1972) \(\times\) ‘York’ (Smith, 1968). S91-1693 is from ‘Hartwig’ (Anand, 1992) \(\times\) ‘Coker 485’. Coker 485 is from ‘Centennial’ (Hartwig and Epps, 1977) \(\times\) [(‘Hampton 266’ \(\times\) ‘Bragg’) \(\times\) ‘Hutton’] (Hinson and Hartwig, 1964; Hinson, 1973). Hampton 266 is a selection from ‘Coker Hampton’ (Webb and Hicks, 1965). S93-1475 is an SCN resistant selection from S85-1706 \(\times\) Hartwig. S85-1706 is from ‘Bedford’ (Hartwig and Epps, 1978) \(\times\) ‘Essex’ (Smith and Camper, 1973). CX1538-70-5 is a low saturate selection from the cross of two low palmitate lines N79-2077-12 (Burton et al., 1994) \(\times\) C1726 (Wilcox and Cavins, 1990).

The low saturate trait was recovered in S01-9269 from the three crossing cycles by advancing the \(F_2\) to the \(F_3\) generation from the first cross Holladay \(\times\) CX1538-70-5 in the winter nursery. The following spring, about one third of the seed was cut and removed from each of 200 \(F_2\) seeds for a fatty acid profile analysis. The corresponding partial seeds with the embryo intact containing 7% or less saturates were planted and used in making the second cross, \([S93-1475\ \times\ \text{('Holladay' } \times\ CX1538-70-5)]\), during the summer. Again, the \(F_1\) was advanced to the \(F_2\). In the winter nursery and low saturate \(F_2\) seed were recovered as above and used to make the third and final cross, S94-1867 \(\times\) [(‘S93-1475 \(\times\) (Holladay \(\times\) CX1538-70-5)]\), the next summer. The \(F_1\) was advanced to the \(F_2\) and low saturate \(F_2\) seed were recovered as above, then planted and harvested. Seed from 12 low saturate \(F_2\) plants were planted as \(F_3\) rows in the winter nursery. Five \(F_3\) plants from each row were selected, and a five seed sample from each plant was analyzed in bulk for fatty acid profile. Those plants with seed low in saturates were planted in \(F_4\) rows during the summer of 2000, and four single plants were selected from each row. A five seed sample from each single plant was analyzed in bulk for fatty acid profile, and all plants low in saturates were placed in \(F_4\) rows in 2001. Raw S01-9269 which averaged 6.7% saturates-

REFERENCES


Graef, G.L. 2003. Regional Quality Traits Test Report 2003 Group 1673. Published online June 24, 2005