Registration of ‘N7002’ Soybean


‘N7002’ soybean [Glycine max (L.) Merr.] (Reg. No. CV-492, PI 647085) was cooperatively developed and released by the USDA-ARS and the North Carolina Agricultural Research Service. It is a determinate group VII maturity soybean cultivar that has excellent yield potential. Twenty-five percent of its parentage is exotic germplasm. Few soybean cultivars produced in the USA have this level of genetic diversity, and thus, its release broadens the genetic base of soybean cultivars. N7002 is adapted to the southern USA (30° to 37° N latitude) or wherever cultivars of group VII maturity are produced.

N7002 is an F_4-derived selection from the cross of ‘N7001’ and ‘Cook’ (Carter et al., 2003; Boerma et al., 1992). N7001 was the first public cultivar released in the USA with Plant Introduction (PI 416937 in its pedigree (USDA-ARS National Genetic Resources Program, 2005). The PI 416937, a landrace from Japan, appears distinctly different from the previous ancestors of North American soybean, with much larger leaves and a more prolific rooting system (Pantalone et al., 1996 a,b). Cook was derived from the cross of ‘Braxton’ and ‘Young’ (Bernard et al., 1988; Burton et al., 1987). The F_1 hybrid seed from the cross were produced in 1994 at Clayton, NC, and F_1 plants were grown during the following winter at the USDA-ARS Tropical Agriculture Research Station (TARS), Isabela, PR. The F_2 and F_3 generations were advanced using the single seed descent breeding method (Brim, 1966). The F_2 generation was advanced at Clayton, NC, in 1995 followed by the F_3 generation at TARS during the winter. In 1996 individual F_4 plants were grown and harvested at Jackson Springs, NC. Approximately 173 F_4 plants were grown in progeny rows at Clayton in 1997. Approximately 100 of these progeny rows were entered into replicated yield trials in North Carolina during 1998. The bulked harvest of progeny row N97-9658 was designated N7002. N7002 is a full sib of USDA maturity group VIII cultivar N8001 (Carter et al., 2007).

Between 2002 and 2005, N7002 was evaluated in the regional trials of the North Carolina State University Official Variety Trials (Bowman, 2005). N7002 matured 1 d earlier than USDA cultivar NC-Raleigh (Burton et al., 2006). N7002 plant height of N7002 was 8 cm taller than N7001 and 3 cm taller than NC-Raleigh (93 cm). Plant lodging was rated using a scale of 1 to 5, where 1 = no lodging and 5 = completely lodged at maturity. The plant lodging of N7002 (1.9) was less than that of N7001 (1.8) and less than that of NC-Raleigh (2.3). N7002 had less seed oil content than that of N7001 (1.8) and less than that of NC-Raleigh (2.3). N7002 (2907 kg ha^−1) was similar to that of N7001 (2477 kg ha^−1) and 17% greater than that of NC-Raleigh (2491 kg ha^−1).

N7002 was evaluated in 56 environments in the USDA-ARS Southern Region Uniform Group VII Tests of 2002 (Paris and Shelton, 2005). The group VII cultivars ‘Benning’ and ‘Haskell’ have been the standards for this test since 1996 and 1993, respectively (1994, 1997). In 2004 Haskell was replaced with a control cultivar in the USDA-ARS Southern Group VII Test. HaskellRR is a backcross-derived cultivar that has the patented Roundup Ready trait and is resistant to Haskell for yield and all other agronomic traits of Roundup herbicide (Monsanto, Marysville, OH). To describe the agronomic performance of N7002 in comparison to control cultivars in 2005, the performances of Haskell and HaskellRR and designated ‘Haskell/HaskellRR’. Maturity group VII of N7002 was similar to that of Haskell/HaskellRR and 3 d later than Benning (199 g kg^−1). The plant height of N7002 (84 cm) was shorter than that of Benning (93 cm) and Haskell/HaskellRR (89 cm). N7002 had 100-seed weight (13.1 g) and protein content of N7002 averaged 402 g kg^−1 but was similar to Benning (1.9) and Haskell/HaskellRR (2.1). The seed yield of N7002 (3223 kg ha^−1) was greater than that of Benning (2977 kg ha^−1) and Haskell/HaskellRR (2999 kg ha^−1). The 100-seed weight of N7002 (13.1 g) was similar to that of Benning (402 g kg^−1) and Haskell/HaskellRR (398 g kg^−1). N7002 had less seed oil content than that of Benning (402 g kg^−1) and Haskell/HaskellRR (398 g kg^−1).