Registration of ‘NC-Raleigh’ Soybean


NC-Raleigh is an F₅-derived selection from the cross of USDA breeding line N85–492 and USDA germplasm release N88–480, made in 1991 in North Carolina (Burton and Wilson, 1994). N85–492 was derived from the cross of N77–179 × ‘Johnston’ and is the maternal parent of the soybean cultivar Kuell (Burton et al., 1987; Weaver et al., 2000). N77–179 was selected from the cross of N70–1549 × N72–3213 and is a parent of soybean cultivars Clifford and Holladay (Burton et al., 1997, 1996).

The paternal parent of NC-Raleigh was N88–480, an F₃-derived breeding line selected from the fourth cycle of a recurrent selection population improvement program for higher seed oil concentration. The parents of the original population were ‘Arksoy’, ‘Ogden’, ‘Lee’, ‘Roanoke’, D60–8107, ‘Jackson’, and N69–2774 (USDA-ARS National Genetic Resources Program, 2005; Weiss, 1953a, 1953b; Johnson, 1958). D60–8017 was derived from the cross of D51–4877 × D55–4168. D51–4877 was derived from Roanoke × N45–745. N69–2774 is the original maintainer source for the male-sterile gene msI of unknown pedigree (Brim and Young, 1971).

During the winter of 1991–1992, F₁ plants were grown at the USDA-ARS Tropical Agriculture Research Station (TARS), Isabela, PR. The F₂, F₃, and F₄ generations were advanced by the single seed descent breeding method (Brim, 1966) at Clayton, NC, in 1992, at TARS in the winter of 1992–1993, and at Clayton in 1993, respectively. In 1994, individual F₃ plant rows were grown and harvested at Clayton, NC. In 1995, F₅₆ plant rows were grown, harvested, and selected for yield and other agronomic traits. Plant row N95–614 was later named NC-Raleigh.

During 1999–2001, NC-Raleigh was evaluated in eight environments of the North Carolina State University Official Variety Trials (Bowman, 2001). NC-Raleigh matured the same day as Pioneer variety ‘97B61’. NC-Raleigh yielded 336 kg ha⁻¹ greater than 97B61 (3001 kg ha⁻¹). Plant height of NC-Raleigh was 2 cm shorter than 97B61 (99 cm) across four environments.


The seed protein concentration for NC-Raleigh (401 g kg⁻¹) or Haskell (521 g kg⁻¹) was lower than that of Benning (422 g kg⁻¹). The oil concentration for NC-Raleigh (221 g kg⁻¹) was greater than that of Benning (201 g kg⁻¹) or Haskell (198 g kg⁻¹).

NC-Raleigh has white flowers, tawny pubescence, various hila color (brown and black), and tan pods. USDA regional tests, NC-Raleigh was rated resistant to soybean mosaic virus and stem canker. It was resistant to soybean cyst (Heterodera glycines Ichinohe), Meloidogyne incognita (Kofoid & White) Chitwood] nematodes. In USDA regional tests, NC-Raleigh was rated resistant to powdery mildew (caused by Microsphaera pisi Hara & Peck).

Seed is available from North Carolina Producers, Inc. (8220 Riley Hill Rd., Zebulon, NC 27597, USA 919–269–5592). Small seed quantities of NC-Raleigh will be available for research purposes from the author. It is requested that appropriate recognition be made if this germplasm contributes to the development of germplasm line or cultivar. Seed will also be deposited in the National Center for Genetic Resources Preservation and Plant Germplasm System.

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References


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