Registration of ‘Pearl’ Soybean

‘Pearl’ soybean [Glycine max (L.) Merr.] (Reg. no. CV-339, PI 583367) was developed by the USDA-ARS, in cooperation with the North Carolina Agricultural Research Service. It was released in 1994 as a special-purpose cultivar for the production of the Japanese fermented product natto.

Pearl is the bulked increase of an $F_4$ plant from the cross G80-1515 x ‘Vance’. The parents of G80-1515 were ‘Pickett 71’ (3) and ‘Bedford’ (2). The parents of Vance were ‘Essex’ (4) and an unknown wild (Glycine soja Sieb. & Zucc.) or semiwild soybean (G. Buss, 1994, personal communication). G80-1515 and Vance were mated in 1987 at Clayton, NC, and the $F_1$ was grown at the USDA-ARS Tropical Agriculture Research Station (TARS), Isabela, PR, the following winter. The $F_2$ plants were bulk harvested at Clayton, NC, in 1988 and seed passing through a screen with 0.48-cm round holes were saved. The $F_3$ plants were grown and bulk harvested at the TARS the following winter. Seed passing through a screen with 0.48-cm round holes were saved and planted at Clayton in 1989. Single $F_4$ plants were harvested and assayed for 100-seed weight and seed quality. Progeny of selected $F_4$ plants were grown at the TARS, the following winter and subsequently yield-tested in 1990 at Plymouth, NC. Prior to release, Pearl was designated as NTCPR90-172 and yield-tested in nine North Carolina environments from 1990 to 1992.

Pearl matures 3 d later than ‘Young’ (1) and is adapted to similar latitudes (approximately 31 to 37° N). Averaged over 2 yr, it produces 5% lower yield than Young in wide row spacings (75–100 cm) when grown under full-season conditions. In four North Carolina environments, the 100-seed weight of Pearl averaged 8.4 g, smaller than that of Young (16.7 g) or Vance (9.1 g). The average seed protein and oil concentrations on a dry-weight basis for Pearl are 417 and 186 g kg$^{-1}$ seed, respectively, compared with 432 and 187 g kg$^{-1}$ seed for Young. In these same environments, Pearl was lodging resistant, with an average lodging score of 2.0 [where 1 indicates no lodging], vs. 3.0 for Young. In other trials, Pearl averaged 15 cm shorter than Young. Pearl has yellow seed with shiny luster and buff hilla, white flowers, gray pubescence, determinate growth habit, and narrow leaves. Pearl is resistant to the southern root knot nematode [Meloidogyne incognita (Kofoid & White) Chitwood] and moderately resistant to both the peanut root knot [M. arenaria (Neal) Chitwood] and Javanese root knot [M. javanica (Treub) Chitwood] nematodes.

In 1992, breeder seed were provided to the North Carolina Foundation Seed Producers for increase. Foundation seed were distributed to other states by request and according to seed supply in 1994. The North Carolina Agricultural Research Service will be responsible for maintaining breeder seed. A U.S. Plant Variety Protection Certificate has been applied for. Small samples of Pearl can be obtained from the corresponding author for at least five years.

IN. Probst was released in 1994 because of its excellent yield potential and its resistance to multiple races of Phytophthora rot. The name Probst was selected to honor Dr. Albert H. Probst, USDA-ARS research agronomist, who had a distinguished career as a soybean breeder at Purdue University from 1970. This cultivar is adapted to production from Indiana to the USA, where Maturity Group III varieties have been grown.

Probst is an $F_4$-derived line from the cross ‘Spencer’ x ‘Resnik’ (1,3). The $F_2$ through $F_4$ generations were advanced through selfed descent and $F_5$ progenies were grown in 2-m rows at the University Agronomy Research Center, West Lafayette, IN. The progeny row CX1164-77 was selected and replicated performance tests in Indiana in 1989 and 1990.

Probst was evaluated under the designation Preliminary Test IIIB in 1991 and Uniform Test III in the Uniform Soybean Tests Northern Region (2). Averaged over 2 yr mean data for Probst were 3578 kg ha$^{-1}$ seed yield, 25 September maturity date, 84 cm mature plant height, 413 g kg$^{-1}$ protein and 203 g kg$^{-1}$ oil concentration in the seed. These data were compared with Resnik, which averaged 3403 kg ha$^{-1}$ seed yield, 20 September maturity date, 15.0 g 100-seed weight, 416 g kg$^{-1}$ protein and 206 g kg$^{-1}$ oil concentration in the seed.

Probst is an indeterminate Group III cultivar with purple flowers, tawny pubescence, and, when mature, tan pods containing yellow seeds with intermediate luster (between black hilla, and low peroxidase seedcoat activity. The Rps1-k allele that confers resistance to Races 1 through 15, 17, 18, 21 through 24, and 26 of Phytophthora sojae. Additional information on characteristics and performance of Probst and released cultivars are reported in The Uniform Soybean Tests Northern Region 1993 (2).

Foundation seed of Probst was produced and distributed to the following states Illinois, Indiana, Iowa, Kansas, Missouri, Nebraska, and Ohio and will be distributed to qualified certifiers for production of registered seed in 1995. Applications have been made for U.S. Plant Variety Protection of Probst. Sample of seed of Probst for research purposes may be obtained from the corresponding author for at least five years.

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References and Notes