REGISTRATION OF 'GNOME 85' SOYBEAN

'GNOME 85' soybean [Glycine max (L.) Merr.] (Reg. no. CV-281, PI 543857) was jointly developed by the USDA-ARS and the Ohio Agricultural Research and Development Center. It was released in 1985 as a phytophthora rot-resistant backcross version of the determinate cultivar 'Gnome' (4), with specific adaptation to highly productive environments where lodging is frequently a problem with tall indeterminate cultivars.

Gnome 85 was developed using Gnome as the recurrent parent and 'Williams 82' (1) as the source of the Rps* resistance gene. Five backcrosses were made: Gnome × Williams 82. The initial cross was made in 1979. Three backcross cycles were completed each year, one in the field and two in the greenhouse. Hypocotyl inoculation with culture suspension (injected with a hypodermic needle) was used in the greenhouse (5,7). The detached-cotyledon inoculation technique was used on field-grown plants (6). Race 5 Phytophthora megasperma Drechs. f. sp. glycinea T. Kuan & D.C. Erwin was used as the source of inoculum. Resistant plants were used as parents in the next cycle of backcrossing. In 1981, 20 BC, F1 plants were grown in the field and 35 homozygous resistant BC2-derived lines were identified in the 1981–1982 fall and winter greenhouse. These 35 lines were tested for seed yield in Ohio in 1982 and 1983. Twenty-three of these lines were bulked to form breeder seed of Gnome 85 for planting in 1984. Gnome 85 was tested in the Uniform Test II of the Uniform Soybean Tests Northern States in 1984 under the designation Gnome-Rps*.

Gnome 85 is a determinate cultivar of Group II maturity that matures 3 or 4 d later than 'Century' soybean (8). It carries the Rps* gene, which conveys resistance to all currently prevalent races of phytophthora rot. Gnome 85 has purple flowers, tawny pubescence, tan pods at maturity, and shiny yellow seeds with black hila. Plant height averages 60 cm, compared with 90 cm for Century 84, resulting in greater lodging resistance for Gnome 85 than Century 84 (2,3). Gnome 85 is resistant specifically for high-yielding environments (>3300 kg ha−1) and is adapted to 41 to 42° N lat.

Breeder seed of Gnome 85 was distributed to foundation seed organizations in Illinois and Ohio for planting in 1985. Breeder seed of Gnome 85 will be maintained by the Ohio Agricultural Research and Development Center, Wooster, OH 44691. Gnome 85 has been protected under Title V of the Agricultural Research and Development Center. It was released in 1985 as a phytophthora rot-resistant cultivar.


References and Notes
*Corresponding author.

REGISTRATION OF 'NEWTON' SOYBEAN

'NEWTON' soybean [Glycine max (L.) Merr.] (Reg. no. CV-282, PI 543855) was developed cooperatively by the Iowa Agriculture and Home Economics Experiment Station, USDA-ARS, and the Puerto Rico Agricultural Experimental Station. It was released in 1990 because of its resistance to the soybean cyst nematode (SCN) (Heterodera glycines Ichimura, Race 3), moderate resistance to Fe-deficiency chlorosis on calcareous soils, and superiority in seed yield in fields infested with SCN compared with public cultivars of similar maturity that have SCN resistance.

Newton was derived from an F1 plant selection from the single cross of 'BSR 101' × 'CN210' (4,1). The population from which Newton was selected was advanced to the F2 in the Iowa State University–University of Puerto Rico nursery at Isabela, PR, by harvesting in bulk three seeds from each F1 plant. A random sample of the F2 seed was planted at the Agronomy Research Center at Ames, IA, to obtain the next generation. Each F2 plant was thinned individually and evaluated for resistance to Race 3 of the SCN using infested soil in a greenhouse. Newton was among SCN-resistant F2, F3, and F4 lines tested for yield in noninfested conditions in Iowa in 1986 and 1987. Newton, under the designation A87-195032, was tested for yield under SCN-infested and noninfested conditions in Iowa and in the Soybean Cyst Nematode Regional Tests in 1988 and 1989; and for yield in the Uniform Soybean Tests, Northern States, in 1989.

Newton is of Maturity Group II, averaging 2 d later than 'Kenwood' (3). It has purple flowers, gray pubescence, brown pods at maturity, and a shiny yellow seed coat with imperfect black hila. Compared with 'Jack' (2), a cyst nematode-resistant cultivar released in 1989, Newton is 5 d earlier, had 22% higher seed yield in SCN-infested fields, and a 15% lower seed yield in the absence of the SCN. Newton has better seed quality, 16 mg seed−1 heavier seeds, 1.9 percentage units lower seed protein, and 0.5 percentage units higher seed oil than Jack. It is resistant to race 1 of Phytophthora megasperma Drechs. f. sp. glycinea T. Kuan & D.C. Erwin. Unlike Jack, Newton derives its SCN resistance from CN210, which obtained its resistance from 'Peking'. Newton is moderately susceptible to brown stem rot [caused by Phialophora gregata (Allington & D.W. Chamberlain) W. Gams], purple stain [caused by Ceratobasidium kikuchii (T. Matsumoto & Tomoyasu) M.W. Gardner], and pod and stem blight caused [caused by Diaporthe phaseolorum (Cooke & Ellis) Sacc.]. It is susceptible to bacterial tan spot [caused by Curtobacterium flaccumfaciens pv. flaccumfaciens (Hedges) Collins & Jones], and soybean mosaic virus. Breeder seed will be maintained by the Iowa Agriculture and Home Economics Experiment Station, Ames.