

UNITED STATES DEPARTMENT OF AGRICULTURE
Agricultural Research Service
Washington, DC

and

NORTH CAROLINA AGRICULTURAL RESEARCH SERVICE
Raleigh, NC

NOTICE OF RELEASE OF SOYBEAN VARIETY N6202

The Agricultural Research Service of the United States Department of Agriculture and the North Carolina Agricultural Research Service announce the release of a new soybean [*Glycine max* (L.) Merr.] germplasm N6202 in August 2009. N6202 is a Maturity Group VI, determinate, conventional germplasm adapted to the southern USA (33 to 37 degrees N latitude) or wherever MG VI varieties are produced. N6202 is a high seed-protein germplasm which also possesses good seed yield. This favorable combination of protein and yield is rare in soybean because of the well known negative genetic relation that occurs between these two traits in most breeding populations. N6202 also has a diverse genetic background (50% exotic pedigree) which may explain, in part, the unusual high protein-good yield phenotype. N6202 is the first improved germplasm descended from Japanese cultivar Fukuyataka to be released in the USA and the second improved germplasm from Japanese cultivar Nakasennari. In addition, N6202 has large seed size. Its unique combination of attributes makes it a potentially desirable breeding stock for both specialty and commodity breeding programs. N6202 was developed by Dr. Thomas E. Carter, Jr., Research Geneticist, USDA-ARS Raleigh, North Carolina.

Pedigree. N6202 is a F4-derived selection from the cross of USDA-ARS cultivar N6201 and USDA-ARS breeding line N95-7390. N6201 is derived from Young x Nakasennari. Breeding line N95-7390 is derived from Young x Fukuyataka. Young is a cultivar developed by USDA-ARS. Fukuyataka is derived from the cross of landraces Oka Daizu and Shiro Daizu 3. Nakasennari is derived from the cross of landrace Houjaku and Nema Shirazu. Nema Shirazu is a selection from landrace Geden Shirazu. Fukuyataka is not known to be related to the genetic base of U.S. soybean. Nakasennari appears in the pedigree of only one U.S. cultivar, N6201.

Line development. The cross between N6201 and N95-7390 was made in the field at the Central Crops Research Station near Clayton, NC in 1997, and the F1 plants were grown at the same location in the following summer. The F2 and F3 generations were advanced using the single seed descent breeding method. The F2 generation (approximately 3000 plants) was advanced at Clayton, NC in 1999. Seed were inspected after harvest for seed appearance, and all seed were discarded except those which had yellow or clear hilum and were also free of bleeding hilum and other seed blemishes. The smallest one-third of the seed were also discarded after passing them through a series of screens with progressively smaller hole diameters. The F3 generation (approximately 800 plants) was grown at the USDA-ARS Tropical Agriculture Research Station (TARS), Isabela, PR, during the following winter. After harvest, seed with bleeding hilum or

other blemishes were discarded. In 2000, approximately 300 individual F4 plants were grown and harvested at the Sandhills Research Station and evaluated for 100-seed weight. The 32 F4 plants with the largest 100-seed weight (all above 20 g) and most desirable seed appearance were grown in progeny rows at Clayton, NC in 2001. One of the progeny rows, N6202, was identified as a promising breeding line and tested subsequently under the experimental designation of N01-10974. Seed composition was not monitored during breeding line development.

Line evaluation. N6202 was evaluated for seed yield and other agronomic traits in the Preliminary and Uniform tests of the USDA Southern States Cooperative Uniform Soybean Yield Trials during 2004 – 2007 in a total of 43 environments. N6202 was also yield tested in nine North Carolina environments by the North Carolina Official State Variety Testing Program (OVT) during 2005 through 2007. In addition, N6202 was tested at 14 locations from 2005 through 2007 as part of the Southern Diversity Yield Trial Project sponsored by a farmer organization, the United Soybean Board.

Agronomic and botanical description. N6202 has purple flowers, gray pubescence, a tan pod wall, and determinate growth habit. The seed has a clear or yellow hilum and yellow seed coat color. N6202 matured five days earlier than the standard control cultivar ‘NC-Roy’ in the Southern regional tests and three days earlier than NC-Roy in USB Southern Diversity Trials. Thus, N6202 is early- to mid- Group VI in maturity. Lodging scores and height of N6202 were similar to those of NC-Roy in all tests. The 100-seed weight of N6202 (21.1 g) was greater than that of the largest-seeded control cultivar Dillon (15.2 g), over 31 environments in USDA regional trials.

Seed protein and oil content. The seed protein concentration of N6202 (457 g kg⁻¹) was higher than that of all three check cultivars, averaged over 22 USDA regional trials: Dillon (421 gkg⁻¹), NC-Roy (424 gkg⁻¹), and Boggs RR (430 gkg⁻¹) (zero moisture basis). In these regional USDA trials, seed oil concentration of N6202 (181 gkg⁻¹) was lower than that of NC-Roy (187 gkg⁻¹), Dillon (198 gkg⁻¹) or Boggs RR (199 gkg⁻¹).

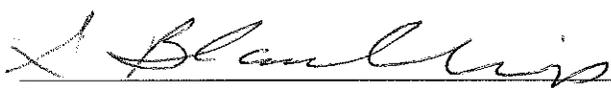
Yield performance. In the USDA Southern States Cooperative Uniform Soybean Yield Trials, N6202 yielded 92% of the highest-yielding control-cultivar NC-Roy (3254 kg ha⁻¹) and 96 and 99% of controls ‘Boggs RR’ and ‘Dillon’, respectively, over 43 environments. N6202 yielded 93% of NC-Roy in the Southern Diversity Yield Trial Project (14 environments) and 90% of NC-Roy in the official North Carolina State Variety trials (9 environments).

Disease resistance. N6202 is resistant to soybean mosaic virus. In two years of the Southern regional tests evaluating susceptibility to stem canker, N6202 was resistant to the fungus. It is susceptible to root knot (*Meloidogyne*) species of nematode as well as races 2, 3, and 14 of soybean cyst (*Heterodera glycines* Ichinohe) nematode. N6202 is prone to moderate levels of bleeding hilum in some environments (especially when planted late), and, thus, is not sufficiently free of breeding hilum for most commercial soyfoods production. N6202 is resistant to shattering even when harvest is delayed extensively in NC.

Availability. Breeder’s seed of N6202 will be maintained by the Soybean and Nitrogen Fixation Unit, USDA-ARS, 3127 Ligon St., Raleigh, NC 27607, 919-513-1480,

Thomas.Carter@ars.usda.gov. Small quantities can be obtained by request from Thomas E. Carter, Jr. Seed of this release will be deposited in the National Plant Germplasm System where it will be available for research purposes, including development and commercialization of new cultivars. It is requested that appropriate recognition be made if this germplasm contributes to the development of a new breeding line or cultivar.

Signatures:



Director
North Carolina Agricultural Research Service

10-20-09

Date



Deputy Administrator, Crop Production and Protection
Agricultural Research Service, U.S. Department of Agriculture

10/22/09

Date