REGISTRATION OF SIX SORGHUM GERMPLASM RANDOM-MATING POPULATIONS

The USDA-ARS, and the Agricultural Research Division, Institute of Agriculture and Natural Resources, University of Nebraska, released six sorghum [Sorghum bicolor (L.) Moench] random-mating populations in May 1985. The populations were improved for one or more traits through one or more cycles of recurrent selection and generally have good agronomic traits, including combine-height stature. All B and R designations in the pedigrees refer to reaction with A1 cytoplasm. The diversity of these populations provides useful germplasm to public and private sorghum breeding programs for either inbred line development or continued recurrent selection.

NP3R(S1)C4 (Reg. no. GP-202) was selected from NP3R, released in 1972 (1), after four cycles of S1 family testing for increased grain yield. Comparison of the base cycle and the C3 indicated a yield advantage of 28% for the latter. The C4 should equal or exceed the C3. Standability has been materially improved in advanced cycles. The population segregates for ms3.

NP5R(S1)C4 (Reg. no. GP-203) is a broad-based population formed by crossing 8 experiment station R lines, 42 partially converted R lines from Texas A&M University, and 59 segregates from R-line crosses made in Africa to ms3 segregates in an earlier cycle of NP3R. Random mating and four cycles of S1 family testing for yield improvement followed. Yield evaluation of S1 families from the C3 revealed a 16% increase over the base. NP5R has high genetic diversity and considerable agronomic variability.

NP12B(S1)C2 (Reg. no. GP-204) was formed by crossing 39 yellow endosperm B-lines from Texas A&M University to ms3 segregates in NP2B, also released in 1972 (1). After random mating, fertile plants were screened for absence of testa, recombinant, and followed with two cycles of S1 family testing for increased protein yield (protein percentage × kg/ha grain yield). NP12B is a source of new B lines, particularly those with yellow endosperm.

NP18B(S1)C2 (Reg. no. GP-205) is a reselection of a composite of PP2B and BR4B, unreleased populations from Purdue University that were developed by crossing sorghum conversions and introductions having good grain quality, particularly high grain protein, to ms3 segregates in NP2B. After recombination and mass selection in Nebraska for shorter plant height and earlier maturity, two cycles of S1 family testing were practiced for increased protein yield. NP18B has grain quality attributes that make it a source of useful B lines.

NP20BR(M)C2 (Reg. no. GP-206) is a broad-based population with several grain quality attributes. The population segregates in NP2B, also released in 1972 (1). After random mating, selfed and blended, NP20BR will provide a higher frequency of R lines than B lines.

NP18B(S1)C2 (Reg. no. GP-205) is a reselection of a composite of PP2B and BR4B, unreleased populations from Purdue University that were developed by crossing sorghum conversions and introductions having good grain quality, particularly high grain protein, to ms3 segregates in NP2B. After recombination and mass selection in Nebraska for shorter plant height and earlier maturity, two cycles of S1 family testing were practiced for increased protein yield. NP18B has grain quality attributes that make it a source of useful B lines.

NP21R(M)C4 (Reg. no. GP-207) was obtained from the USDA-ARS Sorghum and Wheat Research Station; the Agricultural Research Division, Institute of Agriculture and Natural Resources, University of Nebraska, Lincoln, NE 68583.


References and Notes


Published in Crop Sci. 27:614 (1987).