Registration of Germplasms

REGISTRATION OF Mp705, Mp706, AND Mp707 GERMPLASM LINES OF MAIZE

Maize (Zea mays L.) germplasm lines, Mp705 (Reg. no. GP-130), Mp706 (Reg. no. GP-131), and Mp707 (Reg. no. GP-132), were developed by USDA-ARS in cooperation with the Mississippi Agricultural and Forestry Experiment Station. These lines were released as sources of resistance to leaf feeding by the southwestern corn borer, Diatraea grandiosella (Dyar), and the fall armyworm, Spodoptera frugiperda (J.E. Smith). They also have an intermediate level of resistance to southern corn rust which is caused by Puccinia polysora Underw.

All three lines were developed by selfing selections from MSWCB-4(1) for eight generations while evaluating for resistance to leaf feeding by the southwestern corn borer and the fall armyworm. Plants were infested at the whorl stage of growth with first instar larvae; damage was visually rated on a scale of 0 (no damage) to 9 (extensive damage) 14 days later. When evaluated for resistance to leaf feeding by the southwestern corn borer in 1982 and 1983, mean ratings of Mp705, Mp706, Mp707, Mp496 (resistant check), and Ab24E (susceptible check) were 5.6, 5.5, 5.1, 6.7, and 8.1, respectively. When evaluated for resistance to fall armyworm in 1983, these lines rated 5.5, 3.9, 4.7, 6.8, and 8.1, respectively.

Mp705, Mp706, and Mp707 have yellow kernels and white cobs and are short to medium in height. The maturity classification of Mp705 and Mp706 is AES1100, and that of Mp707 is AES1200. All three lines are good pollen and seed producers. Limited data indicate fair combining ability for yield.

Breeder seed is maintained and distributed in small quantities by the Agron. Dep., Mississippi State Univ., P.O. Box 5248, Mississippi State, MS 39762.

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References and Notes

2. Research geneticist and research entomologist, USDA-ARS, respectively. Crop Science Research Laboratory, Mississippi State, MS 39762. Contribution of the Crop Science Res. Lab., USDA-ARS in cooperation with the Mississippi Agric. and Forestry Exp. Stn., Mississippi State, MS. Published as Paper no. 5755 of the Mississippi Agric. and Forestry Exp. Stn. Registration by the Crop Sci. Soc. of Am. Accepted 25 June 1984.

REGISTRATION OF NDSG(MS)C3, NDSF(FS)C1, AND NDSD(FS)C1 MAIZE GERMPLASM

Three maize (Zea mays L.) (Reg. no. GP133, GP134, and GP135) breeding populations developed at the Agricultural Experiment Station, North Dakota State University, were released in 1984 for breeding programs for short-growing-season areas. Breeder seedstocks are maintained by the North Dakota Agricultural Experiment Station and can be obtained in germplasm quantities (200 kernels) from H.Z. Cross, Agronomy Dep., North Dakota State Univ., Fargo, ND 58105.

NDSG(MS)C3 (Reg. no. GP133) is a yellow-dent-endosperm maize synthetic developed from NDSG by five cycles of mass selection for yield and standability. NDSG, an unreleased experimental synthetic, was derived from the open-pollinated variety "Minnesota 13" by two cycles of mass selection for larger kernel size and several cycles for improved agronomic appearance. In each of the five cycles of mass selection of NDSG, equal numbers of seeds from 30 ears (half-sib families) were composited to give an improved population each cycle. Selection intensity was approximately 1%. NDSG(MS)C3 plants are tall with ears borne slightly below midplant. This synthetic has higher ear placement and is slightly earlier than NDSG, which has been described previously (2). NDSG(MS)C3 has lower test weight and more root lodging than NDSG, but it is much improved over NDSG for yield and stalk lodging resistance. Maturity is AES200-300.

NDSF(FS)C1 (Reg. no. GP134) and NDSD(FS)C1 (Reg. no. GP135) are yellow-dent-endosperm maize synthetics developed by one cycle of reciprocal full-sib selection among full-sib families between NDSG and NDSD, synthetics released in 1982 (1). Among 400 sets of attempted crosses, 33 successful full-sib families with corresponding selfed ears were obtained. These were tested at three locations, and 15 superior families were identified based on a rank-summation index which weighted 40% for yield and 20% each for ear moisture at harvest, stalk lodging resistance, and root lodging resistance. Remnant seed of selfed ears from plants that produced the superior full-sib families were sown and the resulting plants were intercrossed within both NDSG and NDSD by making full-sib matings and compositing seed within each to produce the improved synthetics, NDSF(FS)C1 and NDSD(FS)C1.

NDSF(FS)C1 plants are taller than NDSG plants but appear unchanged relative to maturity, shelling percentage, test weight, and lodging resistance. However, grain yield has been improved by 26% over NDSG. This synthetic is AES200-300 maturity.

NDSD(FS)C1 plants are similar to NDSG plants in plant and ear height, test weight, and lodging resistance. However, this synthetic has improved shelling percentage and tends to have higher yields and lower moisture at harvest than NDSG. NDSD(FS)C1 is AES200-300 maturity.

H. Z. Cross (3)

References and Notes

3. Professor of agronomy, North Dakota State Univ., Fargo, ND 58105. Published with the approval of the director of the North Dakota Agric. Exp. Stn. as Journal Article no. 1525. Registration by the Crop Sci. Soc. of Am. Accepted 25 June 1984.

REGISTRATION OF FOUR STEM RUST AND CROWN RUST RESISTANT OAT GERMPLASM LINES

Four germplasm lines of oats (Avena sativa L.) (Reg. no. GP26 to GP29) were released in 1983 by USDA-ARS and the Minnesota Agricultural Experiment Station. The lines