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 the southwestern corn rust which is caused by Puccinia polysora Underw.

All three lines were developed by selfing selections from MpSWCB-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.

endosperm maize synthetic developed from cycles of mass selection for yield and stand, an unreleased experimental synthetic, was an open-pollinated variety 'Minnesota 13' by the selection for larger kernel size and superior agronomic appearance. In each cycle of mass selection of NDSG, equal numbers of 30 ears (half-sib families) were composited to improved population each cycle. Selection for approximately 1%. NDSG(MS)C plants are taller slightly below midplant. This synthetic is a replacement and is slightly earlier than NDSC(C) and improved over NDSG for yield and stalk lodging. Maturity is AES200-300.

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

NDSC(FS)C, plants are taller than NDSC(C) and ear height, test weight, and lodging resistance. However, this synthetic has improved shelling and tends to have higher yields and lower moisture than NDSD. NDSD(FS)C, is AES200-300 maturity.

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

References and Notes

1. Cross, H.Z. 1982. Registration of maize germplasm lines and four germplasm sources of endosperm synthetic developed from cycles of mass selection for yield and stand, an unreleased experimental synthetic, was an open-pollinated variety 'Minnesota 13' by the selection for larger kernel size and superior agronomic appearance. In each cycle of mass selection of NDSG, equal numbers of 30 ears (half-sib families) were composited to improved population each cycle. Selection for approximately 1%. NDSG(MS)C plants are taller slightly below midplant. This synthetic is a replacement and is slightly earlier than NDSC(C) and improved over NDSG for yield and stalk lodging. Maturity is AES200-300.

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