REGISTRATION OF NDSB(MS)C8 AND NDSG(MS)C8 MAIZE GERMPLASMS

TWO MAIZE (Zea mays L.) (Reg. no. GP-193 and GP-194) breeding populations developed at the Agricultural Experiment Station, North Dakota State University, Fargo, were released in March 1988 for breeding programs for short-growing season areas.

NDSB(MS)C8 (Reg. no. GP-193) (PI 522248) is a yellow endosperm, dent synthetic that was developed by eight cycles of mass selection for yield and standability at high planting densities from NDSB, which was derived from an intercross of six inbreds and an open pollinated variety ‘Zapalote Chico’ (1,2). Seed was bulked from approximately 100 ears (half-sib families) of each cycle to give an improved population. Selection intensity was approximately 1% from among competitive plants grown at approximate planting densities of 185 000 plants ha\(^{-1}\). Selection was based on ear size and resistance to lodging. NDSB(MS)C8 averaged significantly higher (12.1%) grain yield over 12 environments in North Dakota than NDSB(MS)C6, the previously released version of NDSB (2).

NDSG(MS)C8 (Reg. no. GP-194) (PI 522249) is a yellow endosperm, dent synthetic produced by eight cycles of mass selection for yield and standability from NDSG, which was derived from the open pollinated variety ‘Minnesota 13’ (3). Equal numbers of seeds from 30 ears (half-sib families) were composited to give an improved population each cycle. Selection intensity was approximately 1% and was based on dried grain yield per unlodged plant. Grids were employed to reduce environmental effects on selection. When tested in eight environments, NDSG(MS)C8 produced significantly higher yields (17.9%) than NDSG(MS)C5, the previously released version of NDSG.

Both new synthetics have averaged slightly higher yields than NDSB, which has been the highest yielding synthetic in previous tests (4,5). NDSB(MS)C8 is similar in yield and standability to NDSG(MS)C8. When evaluated in 14 environments, ear moisture at harvest and stalk lodging percentages were not significantly changed by selection. NDSB(MS)C8 appeared to be more susceptible to root lodging than the earlier released version. Both synthetics have been tested at the North Dakota State University Experiment Station in November 1987.

Breeder seedstocks are maintained by the North Dakota State University, Fargo, and commercial quantities (200 kernels) from H. Z. Cross, Agricultural Experiment Station and can be obtained in quantities from the Agricultural Experiment Station, North Dakota State University, Fargo.

REGISTRATION OF 86-638, 86-2197, 86-2231, AND 86-2236 PEA GERMPLASMS

FOUR F\(_5\) breeding lines of pea (Pisum sativum L.) (Reg. no. GP-74, GP-75, GP-76, and GP-77) (PI 524962 thru PI 524965) were released by USDA-ARS and the Washington State University Experiment Station in November 1987. These breeding lines are unique in combining genes for resistance to common root rot (caused by Aphanomyces euteiches Drechs.), Fusarium root rot (caused by Fusarium solani (Mart.) Sacc. f. sp. pisi (Jones) Snyd. & Hans.), and genes for resistance to races 1, 2, and/or 5 of F. oxysporum Schlecht. f. sp. pisi (van Hall) Snyd. & Hans. These lines, 86-638, 86-2197, 86-2231, and 86-2236 have consistently outperformed the susceptible ‘Dark Skin Perfection’ when grown in soils moderately infested with A. euteiches in Washington growing season areas.

These breeding lines are unique in combining genes for resistance to common root rot caused by A. euteiches (AF/AF) canopy peas with increased resistance to Fusarium root rot (Fusarium oxysporum f. sp. pisi) bloomed in the 14th node, is double podded, has dimpled seed, and is resistant to races 1 and 5 of F. oxysporum f. sp. pisi and is tolerant to Fusarium root rot.

The parentage of 86-2197 is ‘Tahoe’ (R. Prosser, University of Wisconsin) × 792022 (4). It is semi-leafless (af/af), tolerant to Aphanomyces and Fusarium root rots, is resistant to races 1 and 5 of F. oxysporum f. sp. pisi and is tolerant to Fusarium root rot.

The parentage of 86-2231 is a selection (Aphanomyces tolerant mutant line developed by Dr. Earl Gritton, University of Wisconsin), which was selected at Prosser for tolerance to Fusarium root rot and was also an af/af line with resistance to races 1 and 5 of F. oxysporum f. sp. pisi.

Both new synthetics have averaged significantly higher yields (17.9%) than NDSG(MS)C5, the previously released version of NDSG.

Both new synthetics have averaged slightly higher yields than NDSB, which has been the highest yielding synthetic in previous tests (4,5). NDSB(MS)C8 is similar in yield and standability to NDSG(MS)C8. When evaluated in 14 environments, ear moisture at harvest and stalk lodging percentages were not significantly changed by selection. NDSB(MS)C8 appeared to be more susceptible to root lodging than the earlier released version. Both synthetics have been tested at the North Dakota State University Experiment Station in November 1987.

Breeder seedstocks are maintained by the North Dakota State University, Fargo, and commercial quantities (200 kernels) from H. Z. Cross, Agricultural Experiment Station and can be obtained in quantities from the Agricultural Experiment Station, North Dakota State University, Fargo.