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 NDSG, 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 NDSG(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 NDSAB, which has been the highest yielding synthetic in previous tests (4,5). NDSB(MS)C8 is more resistant to stalk lodging than NDSG(MS)C8. When averaged over all environments, ear moisture at harvest and stalk lodging percentages were not significantly changed by selection, but NDSB(MS)C8 appeared to be more susceptible to root lodging than the earlier released version. Both synthetics are AES200 maturity.

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 Department, North Dakota State University, Fargo, ND 58105.

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References and Notes
6. Dep. 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. 1715. Registration by the CSSA. Accepted 30 Aug. 1988. *Corresponding author.

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

FOUR F. 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 oxysporum Schlecht. f. sp. pisi (van Hall) Snyd. & Hans.), and genes for resistance to races 1, 2, and/or 5 of F. oxysporum f. sp. pisi (van Hall). 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, Idaho, and Minnesota. On ground severely infested with A. euteiches in Wisconsin, 86-638, 86-2197, 86-2231, and 86-2236 had disease severity indices of 1, 2.3, 2.7, and 0.7, respectively. Using a disease severity scale of 0 to 5, where 0 = healthy and 5 = dead, Dark Skin Perfection consistently had a disease severity index as low as the resistant PI 180693. The resistant control, PI 180693 (1) consistently exhibits a disease severity rating of 0 out of 1. In a disease nursery where Fusarium root rot is prevalent, all four lines have consistently outyielded Dark Skin Perfection by at least 30%.

The parentage of 86-638 is 691008 (a selection from PI 524966) and PI 524965 (3), which is resistant to F. solani f. sp. pisi and Pythium ultimum Trow × PH-91-3. It blooms in the 15th 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' (Pure Line Seed Co.) × 792022 (4). It is semi-leafless (af/af), tolerant to Aphanomyces and Fusarium root rots, is resistant to races 1 and 2 of F. oxysporum f. sp. pisi, blooms in the 16th node, is double podded, and is a wrinkled-seeded canner with green cotyledons.

The parentage of 86-2231 is a selection from B5099, (Aphanomyces tolerant mutant line developed by Dr. Earl Gritton, University of Wisconsin), which was selected at Prosser for tolerance to Fusarium root rot, × 792022. It is also an af/af line with resistance to races 1 and 2 of F. oxysporum f. sp. pisi, blooms in the 14th node, is double podded, and has green cotyledons with wrinkled seed.

The parentage of 86-2236 is a selection from B5762, (mutant line also developed by Dr. Earl Gritton), which was selected at Prosser for tolerance to Fusarium root rot, × 792022. It is highly tolerant to Aphanomyces root rot with a disease severity index as low as the resistant PI 180693. It blooms in the 14th node, is a wrinkled-seeded canner with green cotyledons, double pods, and normal foliage (AF/AF).

The major expected uses of 86-638, 86-2197, 86-2231, and 86-2236 are as parents to develop semi-leafless (af/af) and normal (AF/AF) canny peas with increased resistance to common root rot caused by A. euteiches.