Registration of 'Maier' Durum Wheat

'Maier' (Reg. no. CV-885, PI 607531), spring durum wheat (Triticum turgidum L. var. durum Desf.) was developed by the North Dakota Agricultural Experiment Station in cooperation with USDA-ARS and officially released on 5 Nov 1998. Maier was tested as D89135 and was selected from the cross D8193/D8335 made in 1985 by R.G. Cantrell. The parent D8193 was derived from the cross D68111/'Rugby'/Crosby'/Vic'. D68111 was derived from the cross D65150/'Leeds'. D65150 was derived from the cross Pi//'Tomclair'/'Tehuacan'/3/'Zenati Bouteille'/Wells'. The pedigree of D8335 is 'Wascana'/Rolette'/Vic. Maier was developed using the pedigree method and was bulked in the F5 generation as an F4-derived line in 1989. Maier was named in honor of the late Mel Maier, North Dakota State Wheat Commission Administrator. Maier was tested for agronomic and quality traits at 52 location-years from 1993 to 1997. Maier was released because of its high protein concentration, large kernels, very strong gluten, and maintaining high level of grain yield as 'Ben' (4) and 'Renville' (1).

Maier is a daylength-sensitive durum wheat that is similar in heading date to Ben (60.4 d) and 3 d later than ‘Monroe’ (2). Maier's plant height averages 85.5 cm, which is 4.1 cm shorter than Ben and 17.7 cm taller than the semidwarf cultivar Lloyd (3). The culms are white and the peduncle is slightly recurved. Maier’s spikes are midlong, awned, oblong, laxative, and erect. The awns are white and 14 to 16 cm in length. The glumes are glabrous, white, long, and wide. The kernels are amber, hard, long, and elliptical; the germ is midsized; the crease is midwide and shallow, and the brush is absent.

Grain yield of Maier (3467.0 kg ha⁻¹) was similar to Ben and Renville, based on 52 location-years of testing in the Uniform Regional Durum Nursery from 1993 to 1997. Maier had a 3.5% lower yield than Ben (3090.7 kg ha⁻¹) and similar yield to Renville (2983.2 kg ha⁻¹) based on 26 location-years in the North Dakota Research Extension Centers’ varietal trials from 1993 to 1997. Maier had 753.5 kg m⁻³ grain volume weight and 38.2 mg kernel weight when tested at 52 location-years in the Uniform Regional Durum Nursery. Maier has 12.9 kg m⁻³ grain volume weight and 2.5 mg kernel weight lower than Ben.

Based on 23 location-years in North Dakota field plots (1993 to 1996), the semolina extraction rate of Maier (60.4%) on the Buhler-Miag laboratory mill at the Department of Cereal Sciences, North Dakota State University, is similar to Ben and Renville. Other milling characteristics and spaghetti color were favorable. Maier has very strong gluten mixing characteristics (classification: 6.6) as estimated by mixograph, stronger than Ben and Renville (classification: 6.2 and 5.7, respectively). Semolina protein of Maier was 141 g kg⁻¹, which is higher than Ben (136 g kg⁻¹) and Renville (135 g kg⁻¹).

Maier was evaluated at the USDA-ARS, Northern Crop Science Laboratory, Fargo, ND for wheat stem rust (caused by Puccinia graminis Per.:Pers. f. sp. tritici Eriks. & E. Henn) and was found to be highly resistant to pathotypes Pgt-QCC, -QTH, -RTQ, -RCR, -TML, -TPM, and -HPH. Maier’s adult plant resistance in the field to leaf rust (caused by P. triticina Eriks.) is high (10R) and is similar to Vic and Renville. Maier has a moderate level of resistance to tan spot [caused by Pyrenophora tritici-repentis (Died.) Drechs]. Maier is moderately susceptible to Fusarium head blight [caused by Fusarium graminearum Schwabe; teleomorph Gibberella zeae (Schwein.) Petch].
Breeder seed will be maintained by the Seedstocks Project, Agricultural Experiment Station, North Dakota State Univ., Fargo, ND 58105-5051. Protection for Maier will be applied for under the U.S. Plant Variety Protection Act for foundation, registered, and certified seed.

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References and Notes

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