Registration of 'Pierce' Durum Wheat

'Pierce' (Reg. no. CV-937, PI 632366, 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 1 June 2001. Pierce was named after a large durum-producing county in North Dakota. Pierce was released because of its high yield and test weight, and good quality.

Pierce was tested as D941038 and was selected from the cross D86117/D88289 made in 1991. The parent D86117 was derived from the cross ‘Monroe’/D87209. The pedigree of D87209 is D74111/’Cando’. D88289 was derived from the cross D8189/D81141. D8189 was derived from the cross D68111/’Rugby’/’Ward’/3/’Vic’. D81141 was derived from th cross D72114/’Edmore’/D781. Pierce was developed using the pedigree method and was bulked in the F5 generation as an F4-derived line in 1994. Pierce was tested for agronomic and quality traits at 32 location-years from 1998 to 2000.

Pierce is a daylength-sensitive durum wheat that is similar in heading date to ‘Maier’ (3) (62 d) and 1 d later than ‘Munich’ (6). Pierce's plant height averages 92 cm and is 3 cm and 14 cm taller than Maier and the semidwarf cultivar ‘Plaza’ (2), respectively. The culms are white and the peduncle is slightly recurved. Pierce’s spikes are midlong, awned, oblong, laxative, and inclined. The awns are white and 12 to 13 cm in length. The glumes are glabrous, white, long, and wide. The kernels are amber, hard, mid-long, and elliptical; the germ is large; the crease is mid-wide and shallow; and the brush is short.

Mean grain yield of Pierce (3696 kg ha⁻¹) was 4.6 and 2.4% higher than ‘Ben’ (5) and Maier, respectively, based on 32 location-years of testing in the Uniform Regional Durum Nursery from 1998 to 2000. Pierce (3790 kg ha⁻¹) had a 4.3 and 4.1% higher mean yield than both Ben and Maier, respectively based on 17 location-years in the North Dakota Research Extension Centers’ varietal trials from 1998 to 2000. Pierce had 766.4 kg m⁻³ grain volume weight and 30.6 mg kernel weight when tested at 32 location-years in the Uniform Regional Durum Nursery. Pierce has 14.2 kg m⁻³ higher grain volume weight than Maier and 5.4 mg lower kernel weight than Ben.

Based on 18 location-years in North Dakota field plots (1998 to 2000), the semolina extraction rate of Pierce (61.1%) on the Buhler-Miag laboratory mill at the Department of Cereal Science, North Dakota State University, is lower than Ben (62.7%). Other milling characteristics and spaghetti color were favorable. Pierce has very strong gluten mixing characteristics (classification: 7.0) as estimated by mixograph, similar to Maier and stronger than Ben (classification: 7.0 and 6.0, respectively). Semolina protein of Pierce was 131 g kg⁻¹, which is similar to ‘Lebsock’ (1) and ‘Mountrail’ (4) but lower than Maier (138 g kg⁻¹).

Pierce was evaluated at the USDA-ARS, Northern Crop Science Laboratory, Fargo, ND for wheat stem rust (caused by Puccinia graminis Pers.:Pers. f. sp. tritici Eriks. & E. Henn) and was found to be highly resistant to pathotypes Pgt-QCCJ, -QTHJ, -RTQQ, -TMLK, -TPMK, and -HPHJ. Pierce’s adult plant resistance in the field to leaf rust (caused by P. triticina Eriks.) is high (5R) and is similar to Munich and Plaza. Pierce has a moderate level of resistance to tan spot [caused by Pyrenophora tritici-repentis (Died.) Drechs]. Pierce is moderately susceptible to Fusarium head blight [caused by Fusarium graminearum Schwabe; teleomorph Gibberella zeae (Schweinitz) Petch].
Breeder seed will be maintained by the Seedstocks Project, Agricultural Experiment Station, North Dakota State Univ., Fargo, ND 58105-5051. Protection for Pierce 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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