in a nursery inoculated with leaf rust [caused by Puccinia recondita Roberge ex Desmaz.] and stem rust [caused by P. graminis Pers.:Pers.] The F₁, F₂, and F₃ generations were grown as head rows in a winter nursery near Brawley, CA, to produce seed for yield tests. Two replicate F₂, F₃, and F₄ yield trials were grown near Swift Current and Regina in 1989 through 1991 and selected for agronomic performance, disease resistance, and quality (protein, pigment, gluten strength). An F₃₈ line designated 8774-CR3A was evaluated in preliminary registration trials in 1992 and 1993, and under the designation DT661 in the Durum Cooperative Test in 1994 to 1996.

AC Avonlea yielded an average of 3% more than 'Kyle', 1% more than 'Plenty', and 2% more than 'AC Morse' at 10 to 12 locations in 3 yr of testing in the Durum Cooperative Test (1). Time to maturity of AC Avonlea was similar to that of the checks. AC Avonlea is 12 cm shorter and has stronger straw than Kyle and Plenty. Test weight of AC Avonlea (79.6 kg ha⁻¹) was similar to Kyle and Plenty, and greater than AC Morse (78.5 kg ha⁻¹). Average grain protein concentration of AC Avonlea (164 g kg⁻¹ dry matter basis) was higher than Kyle (156 g kg⁻¹), Plenty (153 g kg⁻¹), and AC Morse (160 g kg⁻¹) in 3 yr in the Durum Cooperative Test. AC Avonlea is resistant to leaf and stem rust and to common bunt [caused by Tilletia laevis Kühn in Rabenh. and by T. tritici (Berk.) G. Wint. in Rabenh.; syn. T. caries (DC.) Tul. & C. Tul.] races L1, L16, T1, T6, T13, and T19, and is susceptible to loose smut [caused by Ustilago tritici (DC.) Tul. & T. caries (Bjerk.) G. Wint. in Rabenh.; syn. U. graminis Pers.:Pers. f. sp. tritici Eriks. & E. Henn.] and loose smut [caused by U. graminise Pers.:Pers. f. sp. tritici Eriks. & E. Henn.] races T32, and T33 prevalent in western Canada. AC Avonlea is photo-period sensitive.

Spikes of AC Avonlea are clavate to fusiform, mid dense, mid-long, erect, and awned. Glumes are white, midwold, midlong, and glabrous; glume shoulders are oblique to square, some slightly elevated; glume beaks are medium length and acuminate. Kernels are medium amber in color, midlong to short, midwold, and elliptical to ovate; cheeks are slightly angular to slightly rounded; brush is midsize to small, short to very short; embryo is midsize to small, and ovate.

AC Avonlea is eligible for grades of the Canada Western Amber Durum wheat class. It has higher grain yellow pigment concentration than the predominant Canadian cultivar Kyle, and is similar to Kyle in other end-use characteristics.

Breeder seed, originating from 131 F₃₈; breeder lines, will be maintained by the Seed Increase Unit of the Indian Head Research Farm, Indian Head, SK SOG 2K0. Canadian plant breeders’ rights have been requested. Distribution and multiplication of pedigreed seed stocks will be handled by Value Added Seeds, Ltd., Box 2000, Lumsden, SK SOG 3C0. Small quantities of seed for research purposes are available from the corresponding author.


References and Notes


Registration of ‘Belzer’ Durum Wheat

‘Belzer’ (Reg. no. CV-868, PI 603286), spring durum wheat (Triticum turigium L. var. durum Desf.) was developed by the North Dakota Agricultural Experiment Station in cooperation with USDA-ARS and officially released on 14 July 1997. Belzer was tested as D87240 and was selected from the cross D7798×DT367 made in 1983 by R.G. Cantrell. The parent D7798 was derived from the cross DT7110×Edmore (5). The pedigree of D77110 is D6580×Ward (7). D6580 was derived from the cross ‘Lakota’/DwF4-Ldn/Leeds (3). DT367(4) was developed at the Agricultural Canada Research Station at Swift Current, SK, and was released as a high-yielding durum wheat germplasm in 1991. Belzer was developed using the pedigree method and was bulked in the F₄ generation as an F₅-derived line in 187. Belzer was named in honor of the late Terry Belzer, durum wheat producer of Cando, ND, in recognition of his efforts to secure funds for research on fusarium head blight (caused by Fusarium graminearum Schwabe; teleomorph Gibberella zeae (Schwein.) Petch). Belzer was tested for agronomic and quality traits at 68 location-years from 1991 to 1996. Belzer was released because of its high yield, large kernels, very strong gluten, and moderate level of resistance to fusarium head blight relative to ‘Renville’ (1).

Belzer is a daylength-sensitive durum wheat that is similar in heading date to ‘Lloyd’ (2) (63.7 d) and 1 d later than Renville. Belzer’s plant height averages 94.3 cm, which is 1.7 cm shorter than ‘Vic’ (6) and Renville and 22.2 cm taller than the semidwarf Lloyd. The culms are white and the peduncle is slightly recurved. Belzer’s spikes are midlong, awned, oblong, middense, and erect. The awns are white and 12 to 14 cm in length. The glumes are glabrous, white, long, and medium wide. The kernels are amber, hard, long, and elliptical; the germ is middized; the crease is midwide and shallow, and the brush is absent.

Grain yield of Belzer (3520.8 kg ha⁻¹) was 10.9 and 1.2% greater than that of Vic and Renville, respectively, based on 68 location-years of testing in the Uniform Regional Durum Nursery from 1991 to 1996. Belzer had a 5.7% yield advantage over Vic and similar yield to Renville (3339.9 kg ha⁻¹) based on 32 location-years in the North Dakota Research Extension Centers’ varietal trials from 1991 to 1996. Belzer had 740.6 kg m⁻³ grain volume weight and 39.9 mg kernel weight when tested at 68 location-years in the Uniform Regional Durum Nursery. Relative to Renville, Belzer’s grain volume weight is 21.9 kg m⁻³ lower, and kernel weight is 2.5 mg greater.

Based on 36 location-years in North Dakota field plots (1991-1996), the semolina extraction rate of Belzer on the Buhler-Mag Laboratory mill at the Department of Cereal Sciences, North Dakota State University, is 2.3 and 0.8% less than Renville and Vic, respectively. Other milling characteristics and spaghetti color were favorable. Belzer has very strong gluten mixing characteristics (classification: 6.9) as estimated by mixograph, stronger than Vic and Renville (classification: 5.8). Semolina protein of Belzer was 138 g kg⁻¹, which is similar to Vic and Renville.

Belzer 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-QCC, -QTH, -RTQ, -RCR, -TML, -TPM, and -HPI. Belzer’s adult plant resistance in the field to leaf rust (caused by P. recondita Roberge ex Desmaz.) is high (10R) and is similar to Vic and Renville. Belzer has a moderate level of resistance to tan spot [caused by Pyrenophora tritic-repents (Died.) Drechs.].