Registration of ‘Commander’ Durum Wheat

‘Commander’ spring durum wheat (Triticum turgidum L. var. durum) (Reg. no. CV 1001, PI 641222) was developed at the Semiarid Prairie Agricultural Research Centre, Agriculture and Agri-Food Canada, Swift Current, SK, and received registration No. 5852 from the Canadian Food Inspection Agency on 13 Aug. 2004. It was released because of its superior quality attributes, particularly gluten strength. Commander was granted Plant Breeder’s Rights on 7 Apr. 2006 by the Canadian Food Inspection Agency, certificate no. 2423.

Commander was selected from the cross W9260-BK03/‘AC Pathfinder’/?/AC Pathfinder made in 1996 and was developed by a modified pedigree breeding method. AC Navigator (Clarke et al., 2001a), AC Pathfinder (Clarke et al., 2001b), and the breeding line W9260-BK03 are from our breeding program. The F2 generation was grown in 1997 as individual plants in a nursery inoculated with leaf (caused by Puccinia graminis Pers. Pers. f. sp. tritici Eriks. & E. Henn.) and stem rust (caused by Puccinia recondita f. sp. tritici Pers. f. sp. tritici Eriks. & E. Henn.). The F2,3 and F2,5 generations were grown as head rows in a winter nursery near Christchurch, New Zealand, to produce seed for yield tests. Unreplicated F2,3 and F2,6 yield trials were grown near Swift Current and Regina, SK, and Lethbridge, AB, in 1998 and 1999 and selected for agronomic performance, disease resistance, and quality (protein, pigment, and gluten strength). An F2,9 line designated 9667B-AA3 was evaluated in preregistration trials in 2000 (six locations) and under the designation DT722 in the Durum Cooperative Test in 2001 to 2003 (10–12 locations per year).

Each year stem and leaf rust were evaluated in inoculated field trials near Winnipeg, MB, using mixtures of prevalent races. The stem rust races used were OFC(C75), QTH (C25), TPM (C53), TMR (C10), TMR (C95), RTH (C57), RRQ (C63), and RKO (C63). The races of leaf rust used were MCDS, MBDS, MBR, MBJ, MGB, TJB, TJBI, TGBJ, and 128–1 (74–2) (Kolmer, 1999, 2001). Races L1, L16, T1, T6, T13, and T19 of common bunt [caused by Tilletia laevis Kuhn in Rabenh., and T. tritici (Bjerk.) G. Wint. in Rabenh.] were used for screening of the Durum Cooperative Test entries in inoculated field trials near Lethbridge, AB. The race designations are those described by Roelfs and Martens (1988) for stem rust, Long and Kolmer (1989) for leaf rust, and Hoffmann and Metzger (1976) for common bunt. Commander is resistant to prevalent leaf rust, stem rust, and common bunt races. It is susceptible to loose smut [caused by Ustilago tritici (Pers.) Rostr.] races T32 and T33, and resistant to race T26, the races prevalent in western Canada.

Grain yield of Commander (1540 kg ha−1) was similar to the check ‘AC Morse’ (1350 kg ha−1), slightly lower than ‘Strongfield’ (1550 kg ha−1), and slightly higher than ‘AC Avonlea’ (Clarke et al., 1999) (1370 kg ha−1) in 34 station-years of data from the main durum production area of western Canada (Clarke et al., 2005). Time to maturity of Commander (99 d) was similar to that of AC Avonlea (99 d) and 1d later than Strongfield and AC Morse (98 d). Commander is a semidwarf with strong straw. Test weight of Commander (78.8 kg hL−1) was similar to AC Avonlea (78.8 kg hL−1) and greater than AC Morse (78.2 kg hL−1). Average grain protein concentration of Commander (166 g kg−1) was similar to that of AC Navigator (164 g kg−1) and AC Morse (166 g kg−1) and less than ‘AC Avonlea’ (178 g kg−1) and Strongfield (182 g kg−1) in 3 yr in the Durum Cooperative Test.

Spikes of Commander are tapering, dense, short, erect, with black awns; glumes are wide, long, glabrous, and white; glume shoulders are rounded to square; glume beak is straight to moderately curved. Kernels are amber in color, midsize, and elliptical; cheeks are rounded, crease is shallow to mid-deep, mid wide; brush is midsize, short; embryo is oval, midsize to large.

Commander is eligible for grades of the Canada Western Amber Duorum wheat class. It has high grain yellow pigment concentration (9.8 mg kg−1), similar to AC Navigator (9.5 mg kg−1) and greater than AC Avonlea (8.3 mg kg−1) and AC Morse (8.0 kg mg−1) (Clarke et al., 2005). Commander has stronger gluten as measured by the gluten index (92%) than the checks such as Strongfield (69%), AC Navigator (69%), and AC Avonlea (29%). Semolina yield of Commander (67.4%) was lower than AC Navigator (68.0%) and higher than AC Avonlea (66.6%) and AC Morse (66.3%).

Breeder Seed, originating from 140 F4a Breeder Lines, will be maintained by the Seed Increase Unit of Agriculture and Agri-Food Canada, Indian Head, SK, S0G 2K0. Distribution and multiplication of Select, Foundation, Registered and Certified seed stocks will be handled by Saskatchewan Wheat Pool, 2625 Victoria Ave., Regina, SK. S4T 7T9. Small quantities of seed for research purposes are available from the corresponding author.


References


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