Registration of 'AC Barrie' wheat

'AC Barrie' hard red spring wheat (Triticum aestivum L.) (Reg. no. CV-830, PI 593658) was developed at the Semiarid Prairie Agricultural Research Centre, Agriculture and Agri-Food Canada, Swift Current, SK. Because of its high grain yield, high protein concentration, and favorable production traits, it was released in 1994. Its name was chosen to honor Barrie Campbell, the wheat breeder (retired) with Agriculture and Agri-Food Canada who developed the parents of AC Barrie.

AC Barrie was selected from the cross ‘Neepawa’/‘Columbus’/BW90 (1,2,3) made in 1984, using a modified pedigree breeding procedure. The F2 seed was inoculated with common bunt (caused by Puccinia recondita Roberge ex Desmaz.) and stem rust (caused by P. graminis Pers.-Pers.) epiphytotic nursery. The F3, F4, and F5 generations were grown as headrows in a winter nursery near Brawley, CA, to multiply seed for early-generation yield tests. Agronomic performance of experimental lines was measured in the F4, F5, and F6 generations in replicated trials at two locations. A seed sample from the yield trials was used to assess grain quality and kernel characteristics. An F6F7 line, designated as 8405-F4, F5, and F6 generations in replicated trials at two locations. A seed sample from the yield trials was used to assess grain quality and kernel characteristics. An F6F7 line, designated as 8405-BK3C, was evaluated in preliminary registration trials in 1989 and 1990; and, designated as BW661, in the Western Bread Wheat Cooperative tests from 1991 to 1993. It received Registration no. 3980 from the Food Production and Inspection Branch, Agriculture and Agri-Food Canada, on 16 Aug. 1994.

In 3 yr of testing in the Western Bread Wheat Cooperative Test, the average yield of AC Barrie (3960 kg ha⁻¹) was 6% more than Neepawa and ‘AC Eatonia’, 4% more than ‘Kapetwa’, and 1% less than ‘Laurea’. The yield advantage of AC Barrie was greater at locations in the Dark Brown soil zone than locations in the Brown soil zone. In the 1993 Central Bread Wheat Cooperative Test, the yield of AC Barrie (3550 kg ha⁻¹) exceeded Neepawa by 16%, Kapetwa by 10%, and Columbus by 6% and was similar to that of ‘Roblin’.

When averaged over the 3 yr in the Western Bread Wheat Cooperative Test, the protein concentration of AC Barrie (162 g kg⁻¹ dry matter basis) was as follows: 5.8 g kg⁻¹ greater than Laura, 4.6 g kg⁻¹ greater than Neepawa and Kapetwa, and 3.3 g kg⁻¹ greater than AC Eatonia. In the 1993 Central Bread Wheat Cooperative Test, the protein concentration of AC Barrie (164 g kg⁻¹) was 12.7 g kg⁻¹ greater than Kapetwa, 10.4 g kg⁻¹ greater than Neepawa, 3.5 g kg⁻¹ greater than Columbus, and similar to that of ‘Roblin’.

The average time-to-maturity of AC Barrie (108 d) is 1 to 3 d longer than Neepawa and Kapetwa, 2 d earlier than Columbus, and slightly earlier than Laura. AC Barrie has shorter and stronger straw (93 cm) than all check cultivars in the Western and Central Bread Wheat Cooperative Tests except Roblin. It has a larger kernel (36 mg kernel⁻¹) and higher grain volume weight (799 kg m⁻³) than other cultivars.

Stalks of AC Barrie are fusiform to oblong, middense, midlong, erect, and apically awnless. Glumes are midwide, midlong, glabrous, and white; glume shoulders are square to elevated, some glume beaks are short and acute. Kernels are red, midsize, midlong, and oval to ovate; cheeks are angular; the brush is midsize with midshort hairs; embryos are midsize and oval. AC Barrie has resistance to prevalent races of common bunt, leaf rust and stem rust, and moderate resistance to loose smut (caused by Ustilago tritici) and common bunt and grown as individual plants in a growth room from which resistant plants were selected. The F2, F4, and F6 generations were grown as headrows in a winter nursery near Brawley, CA, to multiply seed for early-generation yield tests. In 1987, F3 headrows were established in a leaf rust (caused by Puccinia recondita Roberge ex Desmaz.) and stem rust (caused by P. graminis Pers.-Pers.) epiphytotic nursery near Swift Current. AC Barrie has preharvest sprouting resistance similar to AC Eatonia and intermediate to Columbus and Neepawa.

The Subcommission on Grain Quality of the Canadian Prairie Registration Committee for Grain rated AC Barrie eligible for grades of the Canada Western Red Spring wheat class. AC Barrie exhibited superior overall quality with better ratings for protein, flour yield, and loaf volume than the checks. A more detailed description of this cultivar has been published (4).

Breeder seed, originating from a bulk of 126 breeder lines, will be produced and maintained by the Seed Increase Unit of the Research Farm at Indian Head, SK S0G 2K0. Canadian plant breeders’ rights have been requested. Distribution and multiplication of select, foundation, registered, and certified seed will be handled by SeCan Association, 200-57 Auriga Dr., Nepean, ON K2E 8B2.

J. G. MCLEOD, M. R. FERNANDEZ, AND R. E. KNOX (5)

References and Notes
5. Semiarid Prairie Agric. Res. Ctr., Agric. and Agri-Food Canada, P.O. Box 1030, Swift Current, SK S9H 3X2, Canada. Registration by CSSA. Accepted 30 June 1996. *Corresponding author (depaauw@em.agr.ca).

Registration of ‘AC Karma’ Wheat

‘AC Karma’ hard white spring wheat (Triticum aestivum L.) (Reg. no. CV-831, PI 593659) was developed at the Semiarid Prairie Agricultural Research Centre, Agriculture and Agri-Food Canada, Swift Current, SK. It was released in 1994 to provide a cultivar that combines high grain yield with resistance to common bunt (caused by Tilletia laevis Kühn in Rabenh. and T. caries (DC.) Tul. & C. Tul.), and grown as individual plants in a leaf rust (caused by Puccinia recondita Roberge ex Desmaz.) and stem rust (caused by P. graminis Pers.-Pers.) epiphytotic nursery. The F3, F4, and F5 generations were grown as headrows in a winter nursery near Brawley, CA, to multiply seed for early-generation yield tests. A more detailed description of this cultivar has been published (4).

AC Karma was selected from the descendents of a cross ‘HY320’/5/BW553/’HY358 (1,4) by HY358/7915-QX76B2. Both the F1 and F2 of HY320/5/BW553/’HY358 were screened for reaction to common bunt. Five resistant F2 plants from each of nine F1-derived families were crossed to the F1 of HY358/7915-QX76B2. The F1 seed of the final cross was inoculated with common bunt and grown as individual plants in a growth room from which resistant plants were selected. The F2, F3, and F5 generations were grown as headrows in a winter nursery near Brawley, CA, to multiply seed for early-generation yield tests. In 1987, F3 headrows were established in a leaf rust (caused by Puccinia recondita Roberge ex Desmaz.) and stem rust (caused by P. graminis Pers.-Pers.) epiphytotic nursery near Swift Current. Grain yield potential and other agronomic traits were assessed in the FS and F2 by growing replicated trials at two locations. Also, selected F2 lines were screened for reaction to both common bunt and loose smut. An experimental line, designated as 8628-VC2E, was evaluated in preregistration trials in 1990; and, designated as HY395, in the High Yield Wheat Cooperative test from 1991 to 1993. On 11 Oct. 1994, the Food Production and Inspection Branch of Agriculture and Agri-Food Canada issued Registration no. 3991 for AC Karma.

Based on 3 yr in the High Yield Wheat Cooperative test, the average yield of AC Karma (4780 kg ha⁻¹) was 3% more than ‘Genesis’ (2), the only other registered Canada Prairie Spring-