

sity in 1994. After each generation of backcrossing, progeny were screened for RWA resistance in standard greenhouse screening tests (Nkongolo et al., 1989) and resistant plants were used as parents for the next backcross. BC₄F₁ plants were screened for RWA resistance in fall 1998, and resistant plants were increased by self pollination in the greenhouse during winter 1998-1999. Vernalized seedlings of BC₄F_{1,2} lines were grown in a hand-transplanted field nursery in the San Luis Valley, CO, during summer 1999. Eighty-five BC₄F_{1,3} lines, including Ankor (assigned experimental number CO99508), were harvested in early September 1999 and planted in unreplicated trials at three dryland locations in eastern Colorado in late Sept. 1999. Ankor was advanced from preliminary yield trials in 1999 to the dryland Colorado Uniform Variety Performance Trials (Colorado UVPT) in 2001 and 2002. Breeder seed of Ankor originated from a composite of 281 BC₄F_{3,4} headrows selected from headrow purification for RWA resistance and visual uniformity in Yuma, AZ, during 2001.

Ankor is an awned, white-chaffed, medium maturity, semi-dwarf hard red winter wheat. Ankor has very lax, recurved, and tapering heads with white awns. Ankor has white glumes that are medium long and medium wide with oblique shoulders and acuminate beaks. Ankor has kernels that are ovate, red, and hard textured with a short non-collared brush, a rounded cheek, a wide and shallow crease, and a dark brown phenol reaction. Ankor has a semierect juvenile plant growth habit, and flag leaves that are erect and not twisted.

Ankor has medium maturity, 145 d to heading from 1 January, similar to Akron and about 4 d later than 'Prairie Red' (PI 605390). Plant height of Ankor is medium-short (76.5 cm), 4.3 cm taller than Prairie Red and similar to Akron. Coleoptile length of Ankor (76.3 mm, $n = 6$ observations) is slightly less than Prairie Red (86.2 mm) and similar to Akron (79.9 mm). The straw strength of Ankor is good (3.7 score, 1 = erect to 9 = flat, $n = 3$ replications), slightly better than Akron (5.7 score) as determined on the basis of limited evaluation and observation in the 2002 Colorado Irrigated Variety Performance Trial (IVPT). On the basis of field evaluations under natural infection in Colorado and cooperative evaluations through the USDA Regional Testing Program, Ankor is moderately resistant to stem rust (caused by *Puccinia graminis* Pers.:Pers. f. sp. *tritici* Eriks & E. Henn., races RRTS and TPMK), susceptible to leaf rust (caused by *P. triticina* Eriks., field composite of prevalent races), and susceptible to both *Wheat streak mosaic virus* and Barley yellow dwarf virus. Ankor is susceptible to the Great Plains biotype of Hessian fly [*Mayetiola destructor* (Say)] and greenbug [*Schizaphis graminum* (Rondani)]. Resistance to RWA in Ankor is conditioned by the *Dn4* resistance gene. Average resistance scores for Ankor (2.0 score, 1 = very resistant to 5 = very susceptible, $n = 7$ observations) in standard greenhouse seedling screenings tests are lower than the recurrent parent Akron (4.9 score).

Ankor was tested at 17 trial locations of the dryland Colorado UVPT during 2001, 2002, and 2003. Grain yields of Ankor (2943 kg ha⁻¹) were slightly higher than Prairie Red (2886 kg ha⁻¹; $P > 0.05$) and Halt (2874 kg ha⁻¹; $P > 0.05$) and similar to Akron (2936 kg ha⁻¹; $P > 0.05$). Grain volume weight of Ankor (741 g L⁻¹) was similar to Akron (742 g L⁻¹), Prairie Red (740 g L⁻¹), and Halt (739 g L⁻¹). Ankor was tested at three locations of the Colorado IVPT in 2002. In these trials, Ankor (5301 kg ha⁻¹) had higher yield than Akron (4670 kg ha⁻¹; $P > 0.05$), Prairie Red (4918 kg ha⁻¹; $P > 0.05$), and 'Yumar' (PI 605388; 5012 kg ha⁻¹; $P > 0.05$).

Milling and bread baking characteristics of Ankor were determined from composite samples of grain from multiple

locations in 2000 and 2001 and four single-location evaluations from the 2001 growing season. Relative to its recurrent parent Akron, Ankor had higher grain volume weight (727 vs. 721 g L⁻¹), kernel weight (24.8 vs. 23.6 mg kernel⁻¹), and percent large kernels (36.3 vs. 27.5% kernels that do not pass a Tyler #7 sieve, 2.92 mm openings), lower mixograph mixing tolerance score (2.3 vs. 3.5; 0 = unacceptable to 6 = excellent scale), and shorter mixograph mixing time (2.9 min vs. 3.6 min). Ankor and Akron were similar for flour protein concentration (Ankor 117 g kg⁻¹ vs. Akron 121 g kg⁻¹), mixograph water absorption (Ankor 609 g kg⁻¹ vs. Akron 614 g kg⁻¹), flour ash (Ankor and Akron both 4.3 g kg⁻¹), Quadromat Senior flour extraction (Ankor 661 g kg⁻¹ vs. Akron 658 g kg⁻¹), and pup loaf volume (Ankor 0.88 L vs. Akron 0.92 L) and crumb grain score (Ankor 3.9 score vs. Akron 4.0; 0 = unacceptable to 6 = excellent scale).

The Colorado Agricultural Experiment Station will maintain Breeder seed of Ankor. Multiplication and distribution rights of other classes of pedigreed seed have been transferred from the Colorado Agric. Exp. Stn. to the Colorado Wheat Research Foundation, 7100 S. Clinton St., Suite 120, Centennial, CO 80112. Ankor has been approved for U.S. Plant Variety Protection under P.L. 91-577 with the certification option. Small quantities of seed for research purposes may be obtained from the corresponding author for at least 5 years from the date of this publication.

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Registration of 'Jerry' Wheat

'Jerry' hard red winter wheat (*Triticum aestivum* L.) (Reg. no. CV-940, PI 632433) was developed by the North Dakota Agricultural Experiment Station in cooperation with the USDA-ARS and released in July 2001. Jerry was named after Gerald (Jerry) Johnson who was the research technician on the winter wheat breeding program at North Dakota State

University from 1969 to 1995. Jerry was released on the basis of its superior grain yield potential, lodging resistance, winter hardiness, and acceptable end-use quality. The target production area for Jerry is North Dakota, northern South Dakota, and eastern Minnesota.

Jerry was tested under the experimental designation ND9257 and is an F₃-derived line from the cross 'Roughrider'/ND7571/'Arapahoe' made in 1987 by D.J. Cox. Roughrider was released in 1975 and has a high level of winter hardiness and excellent grain quality (Erickson et al., 1977). Arapahoe was released by the Nebraska Agriculture Experiment Station in cooperation with the USDA-ARS in 1988 (Baenziger et al., 1989). ND7571 is a North Dakota experimental with the pedigree 'Winoka' (Citr14000)/NB66425. NB66425 is an experimental line from the Nebraska Agriculture Experiment Station developed in the 1960s. The F₂ and F₃ were advanced by the bulk breeding method. Jerry was visually selected as an F_{3,4} head row for agronomic merit including winter hardiness, maturity, and general resistance to disease in the field. From the F₅ to release, the line was advanced with annual rouging to remove off-types. Jerry was tested in 38 trials in North Dakota from 1995 through 2000, and in 55 trials in the Northern Regional Performance Nursery in 1996, 1997, 1999, and 2000 at locations in Iowa, Minnesota, Nebraska, Montana, North Dakota, South Dakota, and Wyoming.

Juvenile plant growth of Jerry is erect, plant color at boot is dark green. Jerry has a midlong, midwide spike with long awns. The spike is tapering in shape, middense and inclined at maturity. Both the awns and glumes are white at maturity. Glumes are mid-long, mid-wide with a narrow elevated shoulder. The kernel is midlong with an ovate shape. It has a narrow middeep crease with rounded cheeks and a small germ. The brush is midsize and medium in length.

In 42 North Dakota and Regional trials (1996–2000), Jerry headed (12 June) on the same day as Roughrider. In 13 North Dakota trials (1995–2000), Jerry headed (11 June) 2 d before 'Seward' (Cox et al., 1988), and 1 d after 'Ransom' (Anderson et al., 2001). In 13 North Dakota trials (1995–2000) where lodging occurred, lodging of Jerry was 18% compared with 39, 41, and 35% for Roughrider, Seward, and Ransom, respectively. In 19 North Dakota trials (1995–2000), plant height of Jerry averaged 94 cm compared to Roughrider, Seward, and Ransom with plant heights of 99, 104, and 89 cm, respectively. The height of individual heads in single plants of Jerry can vary by as much as 10 cm, particularly when seeded lightly. Tall off-types occur in Jerry at a frequency less than 1%. Except for height, these are indistinguishable in head morphology and color during growth and at maturity from the predominate plant type. In 2001–2002, 200 F_{8,9} head rows of Jerry were grown for repurification. Tall off-type rows were rogued, the remainder were harvested in bulk and used as the new source for Breeder Seed.

In 38 North Dakota trials conducted from 1995 through 2000, grain yield of Jerry averaged 4,205 kg ha⁻¹, which was 2% higher than Ransom (4123 kg ha⁻¹), 7% higher than 'Elkhorn' (3816 kg ha⁻¹) (Anderson et al., 1998), 5% higher than Seward (4007 kg ha⁻¹), and 14% higher than Roughrider (3,617 kg ha⁻¹). In the 4 yr Jerry was tested in the Northern Regional Performance Nursery, it had an average yield of 3949 kg ha⁻¹ which was 16% higher than Roughrider (3299 kg ha⁻¹). In 11 North Dakota trials (1995–2000) where winter kill was observed, Jerry exhibited 88% survival compared with Roughrider at 89% and Ransom at 83%.

Jerry has shown resistance to stem rust (caused by *Puccinia*

graminis Pers.:Pers. f. sp. *tritici* Eriks & E. Henn; most likely possessing *Sr6* and *Sr16*; USDA Cereal Disease Laboratory) and moderate resistance to leaf rust (caused by *Puccinia triticina* Eriks.; most likely possessing *Lr10* and *Lr16*; USDA Cereal Disease Laboratory) in the seedling stage (data obtained from the Uniform Winter Wheat Northern Regional Performance Nursery, 1997, 1999, 2000). Field grown adult plants of Jerry in North Dakota have shown resistance to natural infection by stem rust and to leaf rust pathogens. Resistance to natural stem rust infection was similar to that observed for Seward and Roughrider. However, the hypersensitive response-based resistance to leaf rust observed on the flag leaf of Jerry was a marked improvement to the susceptible reactions observed on flag leaves of Seward and Roughrider.

The grain quality of Jerry was tested by the Department of Cereal and Food Science at North Dakota State University in 1997, 1998, and 1999. Grain volume weight of Jerry averaged 77.4 kg hL⁻¹, which was lower than Roughrider (78.0 kg hL⁻¹) and similar to Seward (77.2 kg hL⁻¹). Grain and flour protein of Jerry (134 and 127 g kg⁻¹, respectively) was slightly lower than Roughrider (139 and 132 g kg⁻¹), but higher than Seward (124 and 116 g kg⁻¹). Flour extraction on the Buhler Laboratory mill for Jerry (694 g kg⁻¹) was slightly less than Roughrider (697 g kg⁻¹) but higher than Seward (687 g kg⁻¹). The flour ash content (4.4 g kg⁻¹) was similar to Seward (4.5 g kg⁻¹) and lower than Roughrider (4.9 g kg⁻¹). Farinograph water absorption for Jerry (595 g kg⁻¹) was less than Roughrider (606 g kg⁻¹) and slightly higher than Seward (592 g kg⁻¹). On the basis of the Farinograph, Jerry produces somewhat stronger mixing dough than Roughrider. Loaf volume of Jerry (942 cm³) was lower than Roughrider (1006 cm³).

Breeder Seed of Jerry will be maintained by the Seedstocks Project, Agriculture Experiment Station, North Dakota State Univ., Fargo, ND 58105-5051. Small samples of seed for research purposes maybe obtained from the Seedstocks Project for at least 5 yr. Protection for Jerry under the U.S. Plant Variety Protection Act will not be made.

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