

ability. It grows rapidly at about 6 mo of age and produces uniform, average sized purple colored stalks.

H78-4153 is resistant to common rust [caused by *Puccinia melanocephala* Syd. & P. Syd.], leaf scald [caused by *Xanthomonas albilineans* (Ashby) Dowson], yellow leaf syndrome [caused by *Sugarcane yellow leaf virus*], and moderately resistant to smut [caused by *Ustilago scitaminea* Syd. & P. Syd.] and eye spot [caused by *Bipolaris sacchari* (E.J. Butler) Shoemaker]. It has a soft rind and a few growth cracks making it susceptible to rats and beetle borers [*Rhabdoscelus obscurus* (Boisduval)] during the second year of growth as the cane lodges. H78-4153 must not be over dried in the ripening process.

Vegetative cuttings will be maintained by the Experiment Station, Hawaii Agriculture Research Center, Aiea, HI 96701.

K.K. Wu\*

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Genetics and Pathology Dep., Hawaii Agricultural Research Center, Aiea, HI 96701. Published with the approval of the director as Paper no. in the Journal Series of the HARC. Registration by CSSA. Accepted 30 June 2002. \*Corresponding author (kkwu@harc-hspa.com).

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### Registration of 'Avalanche' Wheat

'Avalanche' (Reg. no. CV-921, PI 620766) hard white winter wheat (*Triticum aestivum* L.) was developed by the Colorado Agricultural Experiment Station and released to seed producers in September 2001. Avalanche was released because of its hard white grain color and excellent adaptation for dryland production in eastern Colorado and the west-central Great Plains. Avalanche was selected from the cross KS87H325/'Rio Blanco' (PI 531244) made in 1988 at Hays, KS. KS87H325, an unreleased experimental line from the Kansas State University-Hays wheat breeding program, has the pedigree RL6005/RL6008/'Larned'/3/'Cheney'/Larned/4/'Bennett' sib/5/'TAM 107'. RL6005 and RL6008 are Canadian lines (Cereal Research Lab, Winnipeg) where *Lr16* and *Lr17*, respectively, were backcrossed into a 'Thatcher' background.

Avalanche was selected in 1993 at Hays, KS, as an F<sub>4.5</sub> line following bulk population advance in the F<sub>2</sub> and F<sub>3</sub> generations. Following preliminary yield testing in Kansas in 1994, Avalanche was given the experimental designation CO940611 by Colorado State University. Hand sorting of F<sub>4.9</sub> bulk seed samples for white kernel color was done in 1997. Breeder seed of Avalanche originated from a composite of 262 F<sub>11:12</sub> headrows selected in 2000 on the basis of visual uniformity and white kernel color purity.

Avalanche is an awned, white-glumed, medium maturity, semidwarf hard white winter wheat. Avalanche is medium maturing (142 d to heading from 1 January), 4 d later than TAM 107, similar to 'Akron', and 4 d earlier than 'Prowers 99'. Plant height of Avalanche is medium-short (76 cm), 3 cm taller than TAM 107, and 8 cm shorter than Prowers 99. The straw strength of Avalanche is similar to TAM 107 and Akron, but superior to Prowers 99. On the basis of field evaluations under natural infection in Colorado and cooperative evaluations through the USDA Regional Testing Program, Avalanche is resistant to stem rust (caused by *Puccinia graminis*

Pers.:Pers. f. sp. *tritici* Eriks & E. Henn.), moderately susceptible to leaf rust (caused by *Puccinia triticina* Eriks.), and moderately susceptible to both *Wheat streak mosaic virus* (WSMV) and Barley yellow dwarf virus. Avalanche is susceptible to the Great Plains biotype of Hessian fly [*Mayetiola destructor* (Say)], greenbug [*Schizaphis graminum* (Rondani)], and Russian wheat aphid [*Diuraphis noxia* (Mordvilko)].

Avalanche was tested in 35 trial locations of the Colorado Dryland Variety Performance Trials from 1998 to 2001. In these trials, Avalanche (3413 kg ha<sup>-1</sup>) yielded less than Alliance (3507 kg ha<sup>-1</sup>; *P* > 0.05), similar to Akron (3426 kg ha<sup>-1</sup>; *P* > 0.05), and significantly greater than TAM 107 (3272 kg ha<sup>-1</sup>; *P* < 0.05). In comparison with other hard white winter wheat cultivars available in Colorado, Avalanche has yielded less than 'Trego' (3467 versus 3326 kg ha<sup>-1</sup>; 25 locations, 1999-2001; *P* > 0.05) but greater than both 'Lakin' (2762 versus 2614 kg ha<sup>-1</sup>; 15 locations, 2000-2001; *P* > 0.05) and 'Nuplains' (2762 versus 2526 kg ha<sup>-1</sup>; 15 locations, 2000-2001; *P* > 0.05).

Milling and bread baking characteristics of Avalanche were determined from composite grain samples from eight subregional production zones (Peterson, 1992) from the 1999 and 2000 USDA Southern Regional Performance Nurseries and from the 1999 and 2000 Colorado Dryland Variety Performance Trials. Relative to the broadly adapted check cultivar TAM 107, Avalanche had higher grain volume weight (782.5 versus 755.5 kg m<sup>-3</sup>), kernel weight (30.1 versus 29.6 mg kernel<sup>-1</sup>), and flour yield (679 versus 664 g kg<sup>-1</sup>) with similar flour protein (117 versus 119 g kg<sup>-1</sup>) and ash contents (4.4 versus 4.2 g kg<sup>-1</sup>). In bread baking tests, Avalanche had better crumb grain and texture scores (3.7 versus 3.1 score; 0, unacceptable to 6, excellent scale) and slightly lower bake water absorption (622 versus 630 g kg<sup>-1</sup>) than TAM 107. Mixograph mixing time, mixograph tolerance score, and loaf volume were similar for Avalanche and TAM 107. Visual ratings of 0- to 24-h alkaline noodle color change have been similar to Trego.

Breeder seed of Avalanche will be maintained by the Colorado Agricultural Experiment Station. Avalanche has been submitted 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 yr from the date of this publication.

S.D. HALEY,\* J.S. QUICK, T.J. MARTIN, J.J. JOHNSON,  
 F.B. PEAIRS, J.A. STROMBERGER, S.R. CLAYSHULTE,  
 B.L. CLIFFORD, AND J.B. RUDOLPH

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S.D. Haley, J.S. Quick, J.A. Stromberger, S.R. Clayshulte, B.L. Clifford, and J.J. Johnson, Soil and Crop Sciences Dep., Colorado State Univ., Fort Collins, CO 80523; T.J. Martin, Kansas State Univ. Agric. Res. Center-Hays, Hays, KS 67601; F.B. Peairs and J.B. Rudolph, Bioagricultural Sciences and Pest Management Dep., Colorado State Univ., Fort Collins, CO 80523. Registration by CSSA. Accepted 13 June 2002. \*Corresponding author (scott.haley@colostate.edu).

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