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REGISTRATION OF 'HYAK' WHEAT

'HYAK' (Reg. no. 749, PI 511674) is a club type soft-white winter (SWW) wheat (*Triticum aestivum* L.) cultivar developed by USDA-ARS Wheat Genetics, Quality, Physiology, and Disease Research Unit at Pullman, WA. It was jointly released by USDA-ARS and the Agricultural Experiment Stations of Washington, Idaho, and Oregon in January 1988.

Hyak was selected in 1980 from an F_2-derived F_3 line from the cross VPM1/'Moisson' 421//2*'Tyee'. Hyak is an early maturing one-gene semidwarf (Rht_2). Spikes of Hyak are elliptical, very dense, and erect with awnlets that range from 2 to 20 mm at the spike apex. Glumes are glabrous, white, midlong, midwide; shoulders oblique to rounded; and beaks midwide, acute, 0.5 to 1.5 mm in length. Kernels of Hyak are white, soft, short, ovate to oval; germ small; crease midwide, middeep; cheeks rounded; and brush midsized, short to midlong.

Hyak expresses moderately high resistance to strawbreaker foot rot [caused by *Pseudocercosporella herpotrichoides* (Fron) Deighton]. Its resistance is presumably inherited from VPM1 and derived from *T. ventricosum*. A gene for strawbreaker resistance was shown to be closely associated with the EP-V1 endopeptidase gene on the long arm of 7D (1). Hyak is homogeneous for the EP-V1 allele.

In eight replicated trials of diseased (inoculated with *P. herpotrichoides*) vs. control plots (sprayed with benomyl fungicide) conducted during 1981 to 1988, Hyak, Tyee, 'Stephens', 'Daws', and 'Nugaines' had mean strawbreaker induced losses of 4, 26, 24, 31, and 43%, respectively. Significant ($P < 0.05$) yield reductions occurred in 2 of the 8 trials for Hyak, while Tyee, Stephens, Daws, and Nugaines had significant losses in 7, 7, 7, and 8 trials, respectively. The overall mean yields of Hyak, Tyee, Stephens, Daws, and Nugaines in strawbreaker inoculated trials were 6680, 5280, 5280, 5190, and 4100 kg ha^{-1}, respectively.

In Washington State trials where strawbreaker was not a factor, Hyak (WA7166) has usually yielded within ± 1% of semidwarf club SWW cultivars and ± 6% of common SWW cultivars. In 118 Washington trials during 1983 to 1988, the mean yields of Hyak, 'Crew', and 'Tres' (club SWW) averaged 4800, 4770, and 4820 kg ha^{-1}, respectively. Nugaines, Stephens, Daws, and 'Lewjain' (common SWW) had means of 4570, 4620, 4840, and 5070 kg ha^{-1}, respectively. In 32 regional trials Hyak, Tres, Nugaines, Stephens, and 'Dusty' have averaged 5250, 5250, 5110, 5920, and 5990 kg ha^{-1}, respectively.

The grain volume weight of Hyak (781 kg m^{-3}) has been similar to Crew (777 kg m^{-3}), greater than Tyee (765 kg m^{-3}) but less than Tres (797 kg m^{-3}) when averaged across 16 test-yr. Hyak is similar in plant height to Tres. Like other semidwarf clubs, Hyak may lodge under conditions conducive to lodging, such as irrigation. The vulnerability of Hyak to lodging is comparable to Tyee but less than Tres. Hyak heads about 4 d earlier than Tres or similar to Stephens. It is comparable to Tres for emergence properties but inferior to Stephens. Hyak is moderately coldhardy and resists shattering.

During 1980 to 1987, Hyak has expressed field resistance to the prevalent northwestern USA biotypes of stripe rust (caused by *Puccinia striiformis* West.); leaf rust (caused by *P. recondita* Rob. ex *tritici*); and stem rust (caused by *P. graminis* Pers. f. sp. *tritici* Eriks. & Henn.). It is susceptible to powdery mildew (caused by *Erysiphe graminis* DC. f. sp. *tritici* E. Marchal); flag smut (caused by *Urocystis agropyri* [Preuss] Schroet.); cephalosporium stripe (caused by *Cephalosporium gramineum* Nir. & Ika.); and most races of *Tilletia tritici* (Bjerk.) Wint., *T. laevis* Kuhn,. and *T. controversa* Kuhn.

The USDA-ARS Western Wheat Quality Laboratory has rated Hyak as satisfactory to very satisfactory for overall club SWW quality traits during 1984 to 1986 evaluations. Hyak is similar to Tres for cookie diameter, sponge cake score, and flour yield. It is like Moro for cake volume and noodle score.

Breeder and foundation seed of Hyak is maintained by Washington Crop Improvement Association under the auspice of the Agronomy and Soils Department, Washington Agricultural Research Center, Washington State University, Pullman, WA 99164.

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References and Notes

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2. Allan, R.E.,* G.L. Rubenthaler, R.F. Line, and D.E. Roberts. USDA-ARS, Wheat Genetics, Quality, Physiology, and Disease Unit, 209 Johnson Hall, Washington State Univ., Pullman, WA 99164-6420; and C.J. Peterson, Jr., Agronomy and Soils Dep., Washington State University, Pullman, WA 99164-6420. Registration by CSSA. Accepted 31 May 1989. *Corresponding author.

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