Registraions of ‘Chukar’ Wheat

Chukar winter club wheat (Triticum aestivum L.) (Reg. no. CV-967, PI 628641) was developed by the USDA-ARS with assistance from the Washington Agricultural Experiment Station and the Oregon Agricultural Experiment Station. Chukar was tested under experimental numbers WA7855 and A9623 and released September 2001 because of its combination of yield potential and disease resistance with the quality characteristics desired for the club wheat market class. Chukar is best suited to the intermediate to high rainfall zones of Washington State and northern Idaho.

The pedigree of Chukar is WA7665/Rulo. The pedigree of WA7665 is ‘Tyee’/‘Capelle Desprez’/‘Tres’. The pedigree of Rulo is Tyee/‘Roazon’/‘Tres’ (Allan et al., 1980, 1986). The final cross was made under the direction of R.E. Allan in 1988. Chukar was developed by the pedigree breeding method. The population was advanced to the F2 generation as 88X1013 when 188 F2,3 heads were selected. A single F2.4 head row was harvested in 1993 after selection for standability, resistance to stripe rust (caused by Puccinia striiformis Westend. f. sp. tritici) and heading date. In 1995 and 1996, the selected line was designated A9623 and grown in the USDA-ARS Advanced Club nursery at Pullman and Walla Walla, WA. In 1997, A9623 was advanced to the USDA-ARS Elite nursery and renamed WA7855.

Chukar was grown in the USDA-ARS Elite nursery over 56 location-years from 1997 to 2000. It was entered into the Western Regional Soft Winter Wheat Nursery from 1998 through 2000. Chukar was evaluated at 18 locations in both 2000 and 2001 in the Washington State University Commercial Winter Wheat Variety Trial (http://variety.wsu.edu/; verified 3 March 2005). In 2001, it was evaluated in the Oregon State Extension Cereal Variety Trial at seven locations and the Northern Idaho Extension Small Grain Performance Trials at four locations. In the USDA-ARS replicated yield trials, the average grain yield of Chukar was 5784 kg ha⁻¹ or 5% greater than ‘Coda’ and ‘Hiller’ (5515 kg ha⁻¹), 9% greater than ‘Eltan’ and ‘Madsen’ (5313 kg ha⁻¹), and 13% better than ‘Stephens’ (5111 kg ha⁻¹). Chukar exhibited this yield advantage in all rainfall zones tested. In the USDA-ARS trials, the grain weight per volume (test weight) of Chukar averaged 773 kg m⁻³, 13 kg higher than that of Hiller, and 13 kg less than that of Coda and Madsen. In the 47 location-years of testing in the Washington, Oregon, and Idaho State Extension Variety trials, average yields of Chukar, Coda, and Madsen were 6869, 6376, and 6438 kg ha⁻¹, respectively. The grain weight per volume of Chukar averaged 760 kg m⁻³, 1.7% heavier than Hiller and 3.3% (26 kg) less than Coda.

Chukar is medium to late maturing with a heading date averaging 155 d from Jan 1 at locations in Washington. This is similar to Eltan, 2 d later than Coda and Hiller and 5 d later than Stephens. It is a semidwarf wheat with an average height of 88 cm, similar to Hiller and 4 cm shorter than Coda and Rely. Lodging of Chukar rated in the absence of straw at 2.5 out of 10, similar to Hiller and 0.5 lower than Coda. The kernel weight of Coda, Eltan, and Madsen.

Chukar is resistant to strawbreaker foot rot (caused by Pch1 gene for resistance, derived from Roazon by the presence of the Ep1-D isozyme marker). Yield loss due to strawbreaker for Chukar has been 20% for the susceptible check cultivars. Chukar is also susceptible to snow mold (caused by Hymenula cerealis Ellis & Everh.) under natural infection at Pullman and Walla Walla in 1998 and 1999 and at Pullman in 2000. In the presence of severe Cephalosporium stripe symptoms on a 1-to-5 scale, a healthy green tissue of normal height and resistance to chlorosis and stunting, was conducted at four locations from 1998–1999 and was 1.8, similar to Madsen and Stephens rated 3.1.

Chukar had less than 5% leaf infection by powdery mildew (caused by Erysiphe graminis DC. f. sp. tritici) at Central Ferry, WA, in 1999 and at Mt. Vernon, WA, in 2000. The susceptible check cultivars had greater than 30% infection. It was evaluated in the Oregon State Chukar had less than 5% leaf infection by powdery mildew in 1998–1999 and was 1.8, similar to Madsen. In those trials, Chukar was evaluated at 18 locations in both years. Grain protein of Chukar was 7.2 g kg⁻¹ or 0.1% less than the susceptible check cultivars. Chukar is resistant to dwarf bunt (caused by Tilletia controversa Kühn) as rated by B. Goates at Logan, UT, to the GP isolate of Hessian Fly [Mayetiola destructor, Fr] and resistant to white rust (caused by Albugo candida var. tritici) at the USDA-ARS Western Wheat Quality Laborator y for standability, resistance and has exhibited high levels of resistance to all races. Chukar is resistant to Cephalosporium stripe (caused by Puccinia recondita Wallwork) and similar to Coda and better than Rely (86%). Flour yield of Chukar is 3, 1.7% heavier than at which 50% of the plants died) of Chukar has averaged 359 kg ha⁻¹.

Grain kernel grading standards for club wheat from test locations in Washington, Oregon, and Idaho were selected from pure seed increase plots at Pullman in 1999-2000. Cold hardiness of Chukar is moderate, averaging 155 d from Jan 1 at locations in Washington. This end use quality of Chukar has been evaluated at the Washington State University Crop Quality Laboratory for 35 location-years spanning the 1997–2000 harvest years. Grain protein of Chukar was 7.2 g kg⁻¹ in 1998–1999 and was 1.8, similar to Madsen. In those trials, Chukar was evaluated at 18 locations in both years. Grain protein of Chukar was 7.2 g kg⁻¹ or 0.1% less than the susceptible check cultivars.