

A New Extra-strong Hard Red Winter Wheat Variety : 'Yumechikara'

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Summary

'Yumechikara', an extra-strong hard red winter wheat variety developed by NARO Hokkaido Agricultural Research Center, was released in January 2009. 'Yumechikara' was released because of its resistance to *Wheat Yellow Mosaic Virus (WYMV)* and its good bread-making quality. 'Yumechikara' was registered as 'Wheat Norin No.172' by the Ministry of Agriculture, Forestry and Fisheries in 2010. The pedigree of 'Yumechikara' is 'Satsukei 159' / 'KS 831957 (F₁)' and 'Tsukikei 9509 (Kitanokaori)'. 'Satsukei 159' was a donor of winter hardiness and early maturity traits. 'KS 831957' was introduced from Kansas State University, USA and was a donor of *WYMV* resistance, high protein content and extra-strong dough quality traits. 'Tsukikei 9509 (Kitanokaori)' was a donor of short culm, lodging tolerance, powdery mildew and leaf rust resistance. The cross was made in 1995.

'Yumechikara' has fairly good resistance to *WYMV*, Fusarium head blight and leaf rust, good bread-making quality, and high lodging resistance compared to 'Hokushin'. In the test field of NARO Hokkaido Agricultural Research Center (Memuro), the average yield of 'Yumechikara' (8.34t/ha) from 2006 to 2008 (harvest year) was 8% higher than that of 'Hokushin' (7.72t/ha). On average, 'Yumechikara' matured 2 days later

(July 30) than 'Hokushin' and had a 7 cm shorter culm length (85 cm), 11 g higher test weight (838g/L) and 3.8 g higher 1000-grain weight (41.8g) than those of 'Hokushin'. The spike is awned, brown chaff, oblong and dense. The kernel is ovate and mid-long and is brown with a hard, glassy texture.

'Yumechikara' has good milling quality with milling score and flour yield similar to those of 'Hokushin'. The flour color of 'Yumechikara' is similar to that of 'Hokushin' in L* (brightness), a* (redness) and in b* (yellowness). The average MV (maximum viscosity measured by an amylograph) of 'Yumechikara' (800B.u.) was higher than that of 'Hokushin' (643B.u.), and the average Ab (water absorption measured by a farinograph) of 'Yumechikara' (68.4%) was higher than that of 'Hokushin' (53.3%). The average flour protein content of 'Yumechikara' (11.7%) was higher than that of 'Hokushin' (9.9%). The bread-making quality score of 'Yumechikara' flour by blending with soft flour (Hokushin) resulted in superior loaf volume by Japan Institute of Baking's tests. 'Yumechikara' will be useful for *WYMV*-infested areas and for increasing self-sufficiency in food of Japan by enlarging the domestic wheat market for bread.

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