

PB-18

A Wheat Variety, “Hwanggeumal” with Good Bread Quality, Red Grain, Partial Waxy, Tolerance to PHS

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[Abstract]

A new winter wheat (*Triticum aestivum* L.) cultivar “Hwanggeumal” was developed by the NICS (National Institute of Crop Science), RDA (Rural Development Administration) in 2019. It was derived from a cross of the “Jokyoung/Kauz/Rayon” and “Jopoom” in 2008. It had advanced generation through bulk and pedigree method for seven years and designated line name “Jeonju398” after AYT (Advance Yield Trial) test for two years. And “Hwanggeumal” was designated variety name after RYT (Regional Yield Trial) test in eight locations around Korea for two years from 2018 to 2019. Its heading date was April 19 and maturity date was May 31, which were similar to Jokyoung. “Hwanggeumal” had shorter plant height (75 cm) and spike length (7.1 cm), spikes per m² (699) and lower 1,000 grain weight (44.2 g) than “Jokyoung” (78 cm, 8.2 cm, 776, 46.6 g, respectively). “Hwanggeumal” showed weak to winter hardiness and susceptible to powdery mildew but tolerance to PHS (Pre-harvest sprouting). The average grain yield in the AYT was 6.2 ton/ha, which were 10% more than “Jokyoung”. And in the RYT was 5.1 ton/ha in upland and 4.4 ton/ha in paddy field, which were lower than “Jokyoung”, respectively. “Hwanggeumal”’s flour yield (71.4%) and flour lightness (91.82) showed similar to “Jokyoung” and higher protein content (14.0%) and gluten content (10.3%) and SDS-sedimentation volume (60.3ml). These results showed that the “Hwanggeumal” dough strength of flour is strong than “Jokyoung”. “Hwanggeumal”’s HMW-GS (High molecular weight gluten subunits) composition are *Glu-D1* (5+10), Granule-bound starch synthase (GBSS) composition are *Wx-A1* (a), *Wx-B1* (b), *Wx-D1* (a) and composition of Puroindolines are *Pina-D1*(a), *Pinb-D1*(b).

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