Registration of ‘Jinmai 61’ Wheat

‘Jinmai 61’ is a hard white winter wheat (*Triticum aestivum* L.) (Reg. no. CV-973, PI 634021) developed by the Wheat Breeding Innovation Group (WBIG) in the Cotton Research Institute of Shanxi Agri. Sci. Academy, China. ‘Jinmai 61’ was officially named and registered in 1999 by the Testing and Appraising Committee of Crop Cultivars of Shanxi Province (TACCCSP). ‘Jinmai 61’ was released because of its superior yielding ability combined with higher 1000-kernel weight (TKW), earlier maturity and combined powdery mildew (caused by *Erysiphe graminis* DC. f. sp. *tritici* Marchal) and yellow rust (caused by *Puccinia striiformis* Westend. f. sp. *tritici*) resistance. ‘Jinmai 61’ is registered to the Shanxi Province, *mai* means wheat in Chinese, and 61 is the serial number of wheat cultivars registered and released by the TACCCSP.

‘Jinmai 61’ was derived as an F5 plant family from the cross ‘Yumai 13’/‘Lumai 14’ made in 1990. (The cross number is 90151.) Both parents had good agronomic and yielding characteristics and were widely planted in the HHWGR in 1980s. ‘Zheng891’ was developed by professor Lin Zuoji’s group and was registered as Yunmai 13 in Henan province (*Yr* resistant but *Pm* susceptible). Zheng891 was derived from the cross ‘Bainong3217’/‘9612–2’. Bainong3217 was a selection from the cross ‘Funo’/‘Neixiang5’/‘Xianrong39’/‘Xinong64(4)43’/‘Yanda24’. Yanda24 was a selection from the cross ‘Zhengzhou6’/‘Fengchan3’. 9612–2 was a selection with unknown pedigree. ‘Yan1604’ was developed and registered as ‘Lumai 14’ in Shanxi province (*Pm* resistant but *Yr* susceptible). Yan1604 was derived from the cross ‘C149’/‘530F4’. In 1991, about 8000 F2 seeds were bulked harvested from 29 F1 plants. In 1992, about 800 plants were selected from about 6000 F2 plants for the combination of resistance to yellow rust and powdery mildew, and for maturity, height, and vigor. After the grain evaluation, 131 out of the 800 selected plants whose TKW ≥ 50 g were planted as the key plots. ‘Jinmai 61’ was derived from one of these F2–derived F3 plant families, after subsequent selection for yield and TKW, a combination of yellow rust and powdery mildew resistance, cold resistance, sprouting resistance, and chlorophyll content (Pan et al., 2000).

‘Jinmai 61’ was originally evaluated in a preliminary yield nursery at three Shanxi locations in 1995 under the selection serial number 90151–30–12–4S20. ‘Jinmai 61’ was officially tested as ‘YunFengZao21’ in the Southern Shanxi Performance Test Nursery on limited-irrigation lands. In 1997, ‘Jinmai 61’ yielded 6494 kg ha⁻¹ averaged over 11 locations, 13.2% higher than ‘Jinmai 31’ (5735 kg ha⁻¹). In 1998, ‘Jinmai 61’ yielded 5279 kg ha⁻¹ averaged over 11 locations, 8.5% higher than ‘Jinmai 31’ (4863 kg ha⁻¹). Over all 22 location–years, ‘Jinmai 61’ yielded 5886 kg ha⁻¹, 11.13% higher than ‘Jinmai 31’. In the official Demonstration Trials in 1998 in both Linfen and Yuncheng, ‘Jinmai 61’ yielded 5.3% higher than ‘Jinmai 31’ when averaged over 8 locations.

‘Jinmai 61’ has pale coleoptiles with about 50% coleoptile tillers. The kernel is vitreous and elongated with much higher height–width ratio than ‘Jinmai 31’. The crease is shallow to middeep. The brush is short to medium long. In 2000 through 2004, the mean TKW for ‘Jinmai 61’ was 48 g compared with 76 g for ‘Xiaoyan 503’. SDSPAGE results showed that ‘Jinmai 61’ showed equal steam bread-making quality to ‘Jinmai 31’ and ‘Yumai 13’, but better than ‘Lumai 14’ based on the visual score.

‘Jinmai 61’ showed better resistance to yellow rust and powdery mildew than ‘Yumai 13’, ‘Lumai 14’, and ‘Jinmai 31’ for all the 30 location–years in the fields based on the observation in 1997 through 1999. The natural race composition is unknown. The genetic resistance to Powdery mildew races, the mean TKW for ‘Jinmai 61’ was 48 g compared with 39, 780, 765, and 785 g L⁻¹ for ‘Yumai 13’, ‘Lumai 14’, and ‘Jinmai 31’.

The mean grain protein content was 140 g kg⁻¹ for ‘Jinmai 61’, 132, 128, and 140 g kg⁻¹ for ‘Yumai 13’, ‘Lumai 14’, and ‘Jinmai 31’, respectively. The bread-making score for ‘Jinmai 61’ was 66.5 compared with 78.5 for ‘Xiaoyan 503’. SDSPAGE results showed that ‘Jinmai 61’ showed equal steam bread-making quality to ‘Jinmai 31’, but better than ‘Lumai 14’ based on the visual score.

‘Jinmai 61’ showed better resistance to yellow rust and powdery mildew than ‘Yumai 13’, ‘Lumai 14’, and ‘Jinmai 31’ for all the 30 location–years in the fields based on the observation in 1997 through 1999. The natural race composition is unknown. The genetic resistance to Powdery mildew races, the mean TKW for ‘Jinmai 61’ was 48 g compared with 39, 780, 765, and 785 g L⁻¹ for ‘Yumai 13’, ‘Lumai 14’, and ‘Jinmai 31’.

Breeder seed was developed by selection among 180 plant lines derived from 12 F2 populations (from a cross family 90151–30–12–4S20–Yunfengzao21, bulked populations) for uniformity and higher TKW. Forty-eight selected F9 plant lines were bulked to form Breeder seed for ‘Jinmai 61’. Small quantities of Breeder seed are available by request from the corresponding author. ‘Jinmai 61’ has been the Shanxi Provincial check cultivar since 1999.

**References**

