

China's new oilseed rape variety delivers record yield in high-altitude trial

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“Zhongyouqing No. 1” records 4,719.75 kg/ha under mechanical harvesting in Qinghai, highlighting the potential of biotechnology-led ecological breeding



A new spring oilseed rape variety developed by the Oil Crops Research Institute of the Chinese Academy of Agricultural Sciences has delivered a record yield in a high-altitude demonstration plot in China, pointing to new possibilities for expanding oilseed production in regions where harsh growing conditions have traditionally constrained yields.

“Zhongyouqing No. 1”, developed by a team led by Academician Wang Hanzhong, recorded a mechanically harvested yield of 4,719.75 kg/ha in a 6.67 ha demonstration plot in Huangzhong District, Xining, Qinghai. Experts assessed the crop on site, with the measured yield exceeding the local average by more than 66.3 per cent.

The result sets a new benchmark for mechanically harvested spring oilseed rape in a 6.67 ha demonstration plot in China's high-altitude regions. More importantly, it demonstrates the potential of combining advanced breeding technologies with location-specific breeding to improve the productivity of spring oilseed rape in challenging production environments.

The variety was developed through a breeding framework that combines biotechnology with ecological breeding. The approach integrates molecular marker-assisted selection, gene editing and microspore culture to accelerate the identification and development of promising breeding lines.

According to the research team, the technology has reduced the scale of line screening from hundreds of millions of candidates to tens of thousands while cutting the breeding cycle from about eight to 10 years to roughly five years.

The second component of the approach is ecological breeding, based on the principle of developing varieties in the environments where they will ultimately be grown. The team has established breeding outposts across major oilseed production ecologies, allowing varieties to be selected under the specific climatic, soil and production conditions of each region.

That strategy has produced a portfolio of varieties targeted at markedly different growing environments across China.

For the Yangtze River Basin, the team developed “Zhongyouza No. 501”. In 2025, the variety produced 5,665.2 kg/ha under mechanical harvesting in a 6.67 ha demonstration plot in Dongtai, Jiangsu, setting a new record for mechanically harvested winter oilseed rape yield in a 6.67 ha demonstration plot in China.

In northern China, “Guoyanyou No. 1” was developed for strongly winter-hardy saline-alkali land. In 2026, it recorded a mechanically harvested yield of 4,251.75 kg/ha in Dongying, Shandong, setting a new yield record for oilseed rape grown on moderately saline-alkali land in the Bohai Rim.

The team has also developed “Zhongyouzao No. 5” for fallow winter fields in southern China. The variety recorded a mechanically harvested yield of 3,029.4 kg/ha in a 6.67 ha demonstration plot in Xinfeng, Jiangxi, in 2026.

With a growth period of just 166 days, the variety set a new record for high-yield oilseed rape within China's three-crop rice-rice-oil production system, where the available window for the oilseed crop is particularly constrained.

The results across Qinghai, Jiangsu, Shandong and Jiangxi underline the broader objective of the breeding programme: rather than pursuing a single high-yield variety for diverse environments, the team is developing varieties tailored to specific production ecologies.