

## Research Insight

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# Application Performance and Promotion Value of Qianjiang 661 in Rice-Rapeseed Rotation Systems

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**Abstract** Rice-rapeseed rotation is one of the most important double-cropping arrangements in the middle and lower reaches of the Yangtze River. It links summer grain production with winter oilseed supply, raises land-use intensity, reduces seasonal fallow, and supports the broader goal of improving domestic edible-oil security. Against the backdrop of labor shortages, tighter sowing windows after late rice harvest, and the continuing push toward mechanized cultivation, the performance of a rapeseed cultivar in this system can no longer be judged by yield alone. Growth duration, stand establishment under paddy-field conditions, maturity uniformity, lodging behavior, and compatibility with mechanized sowing and harvesting have become equally important. This review examines the application value of Qianjiang 661 as a practical rapeseed cultivar for rice-rapeseed rotation systems. Because publicly indexed, variety-specific peer-reviewed data are still limited, the paper integrates three levels of evidence: general research on rice-rapeseed rotation and sustainable crop diversification, publicly accessible reports on rapeseed production and agricultural sustainability, and the case materials specified for this review, including enterprise demonstration information from Longyou Wuguxiang Seed Industry Co., Ltd. and Zhejiang extension-oriented demonstration descriptions. On this basis, the paper evaluates the agronomic fit of Qianjiang 661, its likely contribution to yield formation and system efficiency, and its economic, ecological, and regional strategic significance. The review concludes that the chief value of Qianjiang 661 lies in system fit rather than a single extreme trait. Its promotion value appears strongest in humid eastern rice regions where moderate earliness, stable field performance, and mechanization compatibility matter as much as peak yield. At the same time, broader independent validation, clearer variety-specific cultivation packages, and more transparent multi-location evidence remain necessary before making stronger claims about its regional generalization.

**Keywords** Qianjiang 661; Rice-rapeseed rotation; Rapeseed production; Agricultural sustainability; Promotion value

## 1 Introduction

Rice-rapeseed rotation has long occupied a strategic place in Chinese agriculture because it ties together staple grain production, winter land use, domestic vegetable-oil supply, and the ecological management of farmland in the Yangtze River Basin. In practical terms, the system matters because it enables one field to support both a summer rice crop and a winter oilseed crop within the same annual cycle. In policy terms, it matters because rapeseed remains one of China's major domestically produced oilseed crops, while edible-oil demand continues to place pressure on national supply chains. More broadly, rotation-based intensification is now discussed not simply as a way to produce more per hectare, but as a way to improve the ecological and economic performance of farmland without relying only on expansion or higher external inputs (Godfray et al., 2010; Tilman et al., 2011; Pretty, 2018). Yet the rice-rapeseed rotation system is not automatically efficient. It is constrained by short turnaround time after rice harvest, wet and compacted paddy soils, increasingly scarce labor, and a growing reliance on mechanized sowing and harvesting. These constraints change what breeders and extension workers look for in a rapeseed cultivar. Moderate earliness, strong establishment after rice, reasonably compact and harvestable plant architecture, and synchronized maturity can be just as decisive as theoretical yield potential. The modern discussion therefore moves beyond “high yield” as a single criterion and asks whether a cultivar fits the whole annual production schedule (Lin, 2011; Bommarco et al., 2013; Gurr et al., 2016).