

Review Article

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Agronomic Characteristics and Production Application Evaluation of the Early-Maturing and High-Yield Conventional Indica Rice Variety Zhongzu 100

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Abstract Zhongzu 100 is a newly approved conventional early indica rice cultivar jointly developed by Longyou Wuguxiang Seed Industry Co., Ltd. and the China National Rice Research Institute. This study systematically evaluates its breeding background, agronomic characteristics, grain quality traits, stress resistance performance, and production application value based on official variety registration data, regional trial results, production trials, and relevant literature. The results indicate that Zhongzu 100 possesses a moderate growth duration, compact plant architecture, synchronized maturity, favorable population uniformity, and stable yield performance. In Zhejiang provincial regional trials, the variety achieved a yield advantage over the control cultivar and demonstrated strong adaptability to early-rice production systems. Grain quality evaluation showed acceptable milling and edible quality, although further improvement in appearance quality remains desirable. Disease resistance assessment revealed moderate susceptibility to rice blast and relatively weak resistance to bacterial leaf blight, indicating the need for appropriate disease management during cultivation. Case studies further confirmed its suitability for large-scale production, mechanized cultivation, and commercial seed promotion. Overall, Zhongzu 100 represents a practical and productive early-rice cultivar that successfully balances earliness, yield potential, and production stability. The variety has considerable significance for improving early-rice productivity, supporting regional agricultural development, and promoting innovation within the seed industry. Future efforts should focus on enhancing grain quality, strengthening disease resistance, and expanding regional adaptability evaluation.

Keywords Zhongzu 100; Early indica rice; Agronomic characteristics; Production application; Varietal evaluation

1 Introduction

Rice remains one of the clearest links between agronomy and food security. It is still the staple food for more than half of the global population, is cultivated in more than one hundred countries, and depends heavily on Asian production systems. Those broad facts matter for this paper because they explain why variety improvement in rice is rarely just a technical matter of plant type or grain shape. In practice, every new cultivar is judged by whether it can fit real farming schedules, maintain supply, and keep enough market acceptability to be worth planting at scale. For China, where rice remains central to food supply, varietal progress in major production regions has long carried weight far beyond the field itself (Fukagawa and Ziska, 2019).

Within China, early rice plays a special role in the southern and central rice belt where double-cropping systems remain agronomically and economically important. In these systems, the value of an early variety is not defined by yield alone. It must vacate the field on time, leave a workable window for the following crop, and mature uniformly enough to reduce losses and labor friction. That is why early-maturing cultivars are often asked to carry several goals at once: moderate duration, sufficient tillering, decent grain filling, acceptable cooking quality, and enough stability to perform under humid and disease-prone environments. The difficulty of breeding such a combination explains why many useful early-rice cultivars are not “perfect” in every trait, but instead become successful because they solve the practical bottlenecks of a specific production system (Peng et al., 2009; Li et al., 2017).

The continuing demand for improved early-rice cultivars also needs to be understood in the context of modern Chinese breeding. Since the rise of hybrid rice and later the broader super-rice program, the national discussion