

研究论文

垄畦栽培水稻的植株形态与生理特性研究

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摘要 以杂交稻协优9308和常规粳稻秀水110为材料, 从水稻植株形态和生理特性方面研究了垄畦栽培高产、优质的农学基础。结果表明, (1) 在植株形态上, 与常规栽培相比, 垄畦栽培后株高变矮、茎基部节间的直径和密度增加, 单茎鞘重增加, 植株抗倒性增强; 生长前期叶面积扩展迅速, 生长早期叶片薄, 中、后期叶片厚而挺, 群体光合生态生理较优; 总根量增加, 上层根量所占比重大, 养分吸收能力增强。(2) 在生理特性上, 垄畦栽培水稻灌浆期颖花绿叶量大, 叶绿素含量下降缓慢, 衰老延缓; 在灌浆动态上表现为强势粒灌浆高峰持续时间长, 灌浆前期灌浆速率的变化幅度较小。(3) 在增产效果上, 垄畦栽培对不同类型水稻品种的作用不同, 对相对高秆长叶、存在二次灌浆的籼型杂交稻协优9308效果好于株高相对较矮、抗倒、叶厚而挺的常规粳稻秀水110。

关键词 [水稻](#) [垄畦栽培](#) [形态特征](#) [生理特性](#)

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Morphological and Physiological Characteristics of Raised Bed-cultivated Rice

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Abstract Indica cultivar Xieyou 9308 and japonica cultivar Xiushui 110 were used to study the morphological and physiological characteristics related to high yield and quality under raised bed cultivation. The results were as follows: (1) As compared to conventional cultivated rice, the bottom internode length of ridge cultivated rice was shorter, and the bottom internode diameter, density and sheath weight per stem were higher, so the lodging resistant capacity was better; the leaf grew faster in early growing period and with larger leaf area in tillering stage, which became thick and erect in full heading stage, so the population photosynthetic leaf area was larger; root amount was bigger and concentrated in the upper layer of soil at filling stage, so the capacity of nutrient absorption increased in raised bed-cultivated rice. (2) During grain-filling stage, the leaf to spikelet ratio was larger, chlorophyll content decreased more slowly, and plant senesced slowly in raised bed-cultivated rice than in conventional cultivated rice. In grain filling dynamics, during the first 2 weeks after flowering, the superior grains of raised bed cultivated rice had longer active grain-filling period and smaller grain-filling rate change. (3) In yield improvement effect, there was significant difference between ridge cultivated and conventional cultivated rice for Xieyou 9308 with high stem, long leaf and two-step grain filling character, but no significant difference for Xiushui 110 with relative low stem, higher lodging resistance, and thick and erect leaf.

Key words [Rice](#) [Raised bed-cultivation](#) [Morphological characteristics](#) [Physiological characteristics](#)

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