

Relationship Between Variation in Activities of Key Enzymes Related to Starch Synthesis During Grain Filling Period and Quality of Eating and Cooking in Rice [PDF]

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摘要: Four japonica rice varieties with significant differences in quality of eating and cooking were used in the experiment. The varieties showed differences in amylose and amylopectin contents at different grain filling stages, which were attributed to the accumulative speed of starch at different grain filling stages. During grain filling period, the varieties had no difference in the time when the activities of ADPgucose pyrophosphorylase (AGPP) and soluble starch synthesis (SSS) reached a maximum, but had difference in the time when the activity of starch branching enzyme (SBE) reached a maximum, in which the inferior quality varieties were earlier than the high quality ones, and high quality varieties still kept high enzyme activities at the late stage of grain filling. The correlation and relative degree between AGPP, SSS, SBE and amylose content, amylopectin content, taste meter value, and RVA properties varied with the different stages of grain filling. The correlation between SSS activity and taste meter value was not significant during the whole period of grain filling, but the activities of AGPP and SBE had significant or highly significant correlation with taste meter value. It was helpful for improving quality of eating and cooking of japonica rice to use the materials with low enzyme activity at the early stage of grain filling or high enzyme activity at the late stage as parents.

关键词: japonica rice; grain filling; starch synthesis enzymes; cooking quality; eating quality

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