Effect of High Temperature on Sucrose Content and Sucrose Cleaving Enzyme Activity in Rice Grain During the Filling Stage [PDF]

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摘 要：Dynamic changes of sucrose, fructose, glucose contents and differences in activities of sucrose synthase, vacuolar invertase, and cell wall bound invertase in rice grain after flowering stage were studied under natural and high temperatures by using two japonica rice varieties Koshihikari and Sasanishiki. In rice grains, the sucrose synthase activity was higher than that of invertase, which was significantly correlated with starch accumulation rate, indicating that the sucrose synthase played an important role in sucrose degradation and starch synthesis. Under high temperature, the significant increase in grain sucrose content without any increase in fructose and glucose contents, suggested that the high temperature treatment enhanced sucrose accumulation, while diminished sucrose degradation in rice grains. Compared with the control plants, the decrease in activities of sucrose synthase, vacuolar invertase, and cell wall bound invertase with high temperature treated plants indicated that the deceleration of sucrose-degradation was related to the decrease in activities of sucrose synthase and invertase.

关键词：high temperature; sucrose content; sucrose synthase; vacuolar invertase; cell wall bound invertase;
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