

Response to High Temperature in Flag Leaves of Super High-Yielding Rice Pei' ai 64S/E32 and Liangyoupei jiu [PDF]

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摘 要: Two newly bred hybrid rice combinations, super high-yielding Liangyoupei jiu (Pei' ai 64S×9311) and Pei' ai 64S/E32 (Pei' ai 64S×E32) were used to investigate the photosynthetic characteristics under high temperature in comparison with hybrid rice Shangyou 63. High temperature caused a decreased photosynthetic efficiency and aggravated photoinhibition. The optimum temperature for photosynthetic electron transportation and photosynthetic CO<sub>2</sub> fixation were about 28°C and 35–40°C respectively. Linear electron transportation is more sensitive to high temperature than the photochemical process. The mechanism of high temperature adaptation was possibly as follows: super high-yielding rice has quickly increasing carotenoid, which acted as a more favorable antioxidant system to reduce the active oxygen production and avoid damage to the photosynthesis system; super high-yielding rice has a higher efficiency of xanthophylls cycle to dissipate excess heat energy; super high-yielding rice has a more stable photosynthetic function, higher photosynthetic efficiency and more heat stable protein content.

关键词: hybrid rice; high temperature; stress; photosynthesis

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