

Responses of Photosynthetic Functions to Low Temperature in Flag Leaves of Rice Genotypes at the Milky Stage [PDF]

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摘要: To examine the chilling resistance of a newly developed super hybrid rice (*Oryza sativa*) Liangyou 122 at the different temperatures, an experiment was conducted to investigate the photosynthetic pigments contents, changes in fatty acids content of thylakoid membrane and the activities of several anti-oxidative enzymes at milky stage with traditional hybrid rice Shanyou 63 as control, by growing rice under the 25/15°C and 25/20°C day/night temperature. The results showed that the malondialdehyde(MDA) content and superoxide anion(O<sub>2</sub><sup>-</sup>) were increased remarkably, while the activities of superoxide dismutase(SOD) and catalase(CAT) were obviously decreased with the duration of low temperature treatment. Moreover, the change enhanced with the increased difference between day and night temperatures. Meanwhile, the index of unsaturated fatty acid (IUFA) of both varieties also increased. As a result, the photosynthetic rate and the chlorophyll content were decreased considerably, while at beginning the carotenoids content increased and then decreased. Of all the parameters investigated, the variation range in Liangyou 122 was less than that in Shanyou 63, but the values of the former were more than the latter, which means that Liangyou 122 may be more resistant to chilling temperature at the milky stage.

关键词: anti-oxidation system; fatty acid; low temperature; photosynthetic pigments; super hybrid rice  
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