

Studies on the Use Efficiency of Meteorological Resources for Rice. II. Water Use Efficiency.¹

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Abstract

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There are several definition for water use efficiency (WUE). The aim of this study is to evaluate the water use efficiency of 27 rice cultivars with different scale and measurement. The results showed the CO₂ flux measured by Bowen ratio / energy system in field were consistent with the change of leaf area index. It could be used to decide the water use efficiency in non-stress rice field. The experiment in pot indicated the different water requirement among rice cultivars were related to the ratio of photosynthesis rate to transpiration rate of leaves. By the comparison with the leaves of 27 rice cultivars, it showed the water use efficiency in indica and upland rice are higher than japonica rice under drought treatment. It indicated the current japonica cultivars ought to improve the drought tolerance by means of breeding. In addition, the PSII electron transfer chain (ETR) of the fluorescence parameter of drought leaves could be used to quickly select the rice with high water use efficiency.

Key words: Rice (*Oryza sativa* L.), Evapotranspiration, Flux, Water use efficiency.



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