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A new method for indirectly estimating infiltration of paddy fields in situ

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Choosing a paddy field located in Taihu basin plain as the experimental field, the deep water irrigation mode is adopted. Infiltration is a significant component of hydrological cycle and water balance research. The methods for measuring infiltration of paddy fields in situ are usually difficult and change the original agricultural water management conditions generally. So in this paper, we implemented a new method for indirectly estimating infiltration of paddy fields in situ. When there is no rainfall, irrigation and artificial drainage, the water depth variation process of paddy fields is only influenced by evapotranspiration and infiltration (E+F). We can choose the steady decline processes of water depth to estimate (E+F) by deciding the steady decreasing rate of water depth based on synchronous observation of precipitation and water depth. Evapotranspiration of paddy fields can be calculated by using the crop coefficient method with synchronous meteorological data. We can get evapotranspiration (ET) of paddy fields by multiplying reference crop evapotranspiration (ET0), calculated by the recommended FAO-56 Penman-Monteith equation, with crop coefficients. So the infiltration of paddy fields in situ can be obtained by deducting evapotranspiration from (E+F). Applying the new method, we obtained infiltration of the experimental field during rice jointing-booting period. The mean infiltration is 7.4 mm/d.