

## **A study on actual evapotranspiration estimation based on the Todorovic method**

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**Abstract** A method to simulate surface resistance proposed by Todorovic was investigated for a winter wheat surface by comparing actual evapotranspiration (ET) estimates from the Penman-Monteith model, where surface resistance was derived on the basis of the Todorovic method with ET measurement from a weighing lysimeter located at the Daxing experimental station of the China Institute of Water Resources and Hydropower Research (IWHR). The field work was conducted from March to June 2007. The study proves that, on a daily basis, estimated daily ET showed strong agreement with measured daily ET. The average daily value of measured ET and estimated ET was 3.73 mm/d and 3.96 mm/d, respectively, and the MAE and RMSE for estimated ET was 0.663 mm/d and 0.793 mm/d, respectively. On an hourly basis, the model could only perform well when the field was fully covered. The combination of the Todorovic method and the Penman-Monteith model could be used to estimate daily winter wheat ET when the field was fully covered.

**Key words** evapotranspiration; lysimeter; surface resistance; Penman-Monteith model; Todorovic method