

عنوان مقاله:

Evaluation of some Estimation methods of Evapotranspiration to determination of yield for Maize and Wheat using AquaCrop

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خلاصه مقاله:

AquaCrop model was developed to simulate crop response to water consumption and irrigation management. The model is easy to use, works with limited input, and has acceptable accuracy. On the other hand, there are different methods for estimating evapotranspiration, whose performance is different in various climatic conditions. The purpose of this research is to investigate the effect of different methods to estimate evapotranspiration of the reference plant in various climates of Iran on estimating the yield of maize and wheat using AquaCrop. To fulfil the experiment, ۴۰-year meteorological data (۱۹۸۰-۲۰۲۰) of five cities of the country (Urmia, Mashhad, Rasht, Qazvin, and Yazd) were used. First, evapotranspiration was estimated using the FAO-۵۶ and five temperature and radiation methods daily. Then, the yield value of these two plants was simulated by AquaCrop and compared with the FAO-۵۶ by error statistical criteria determination coefficient (R^2), normal root means square error (NRMSE) and Nash-Sutcliffe index (NS). According to the results, among the two temperature methods Blaney-Criddle method with the NRMSE is in the range of ۰-۲۰%, R^2 and Nash-Sutcliffe are, close to the optimal value of one for maize and wheat in parameter simulation are acceptable. About radiation methods, the Priestley-Taylor and the Turc methods in simulation of maize yield. Also about radiation methods for wheat, the Turc and the Makkink method for simulation of yield are desirable.

کلمات کلیدی:

Model, ET, FAO-۵۶, Iran, Simulation

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