

عنوان مقاله:

Evaluating AquaCrop Model for Predicting Soybean Yield and Water Productivity under Different Irrigation Regimes

محل انتشار:

هشتمین کنفرانس بین المللی کشاورزی پایدار در محیط زیست، غذا، انرژی و صنعت (سال: 1396)

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خلاصه مقاله:

Lack of water is a major restriction for the agricultural sector in arid and semi-arid regions. In such areas, an exact estimation of water productivity (WP) is an important task for planning. Among several simulation models, AquaCrop can be used to evaluate alternative water management practices in order to improve WP. The objective of this study was to evaluate the performance of the model AquaCrop (v4.0) for the simulation of soybean yield and WP under semi-arid conditions. A two-consecutive year field experiment with soybean was conducted in 2008 and 2009 in Karaj, Iran. This experiment consisted of four furrow irrigation treatments including full irrigation (FI), conventional deficit irrigation (75 and 50 percent of the soil moisture deficit compensation) (DI75% and DI50%), and partial root drying at 50 percent of the soil moisture deficit compensation (PRD50%). The results indicated that AquaCrop could simulate crop evapotranspiration (ET_c), WP and grain yield for soybean reasonably well for the FI treatment and the mild water stress treatment (DI75%). The performed sensitivity analysis indicated that mean deviation percentage of simulated grain yield, biological yield, WP and ET_c for the partial root drying treatment in comparison with the FI treatment was more than about 94%, 92%, 91% and 87% respectively, indicating that AquaCrop cannot simulate these components at partial root drying treatment efficiently like other treatments at all. For better verification of the results, the use of a larger number of PRD treatments at different irrigation levels is suggested.

کلمات کلیدی:

Crop evapotranspiration; Irrigation scheduling; Modeling; Water productivity

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