

Evaluation of Aqua Crop Model in Simulating Barley Biomass Production under Deficit Irrigation

H. Karimi-Avargani, A. Rahimikhoob¹ * and M. H. Nazarifar

Former MSc. student, Department of Irrigation and Drainage Engineering, Aburaihan College, University of Tehran, Iran.

habibkarimi@ut.ac.ir

Professor, Department of Irrigation and Drainage Engineering, Aburaihan College, University of Tehran, Iran

akhob@ut.ac.ir

Research expert of Department of Irrigation and Drainage Engineering, Aburaihan College, University of Tehran, Iran.

nazarifar@ut.ac.ir

Abstract

Crop Simulation models are used for water management in farms and are widely used for optimization of water use efficiency. AquaCrop model, developed by FAO, is based on yield response to water. Compared to other similar models, AquaCrop requires fewer input parameters. The objective of this study was evaluation of this model for barley under deficit irrigation in Pakdasht region. The experiment was done in 2014-15 growing season and included three irrigation treatments and three sowing dates. The irrigation treatments included full irrigation and two treatments of 80% and 60 percent of full irrigation. Sowing dates included early, normal, and late planting. Comparing the estimated values of AquaCrop model and measured values showed that the model is well capable of simulating the barley biomass production. Average R^2 , RMSE and MBE for the comparison between measured and estimated values were calculated to be 0.96, 8.4 %, and 2.6 %, respectively.

Keywords: Crop water consumption, Evapotranspiration, Normalized water productivity, Planting date, Water stress.

1- Corresponding author: Department of Irrigation and Drainage Engineering, Aburaihan College, University of Tehran, Iran.

* - Received: December 2016, and Accepted: February 2017