Performance Evaluation of AquaCrop Model for Irrigated Field Maize in South-eastern Albania

M. Bitri (Cinaj)[*], S. Grazhdani

Department of Physics and Applied Sciences, Faculty of Forestry Sciences, Agricultural University of Tirana, Tirana, ALBANIA

Abstract: Simulation models that quantify the effects of water on yield at the farm level are valuable tools in water and irrigation management. To address this need, FAO has developed a yield-response to water model, named AquaCrop model, which simulates attainable yields of the major field and vegetable crops cultivated worldwide. Although the model is simple, it gives particular attention to the fundamental processes involved in crop productivity and in the responses to water, from a physiological and agronomic background perspective. The ease of use of the model, the low requirement of input parameters, and its sufficient degree of simulation accuracy make it a valuable tool for estimating crop productivity under rain fed conditions, supplementary and deficit irrigation, and on-farm water management strategies for improving the efficiency of water use in agriculture. A set of conservative parameters calibrated and validated for maize in a prior study and considered applicable to a wide range of conditions and not specific to a given maize cultivar, are used to further evaluate the performance of AquaCrop model for maize using data from environmental conditions of Korça zone. In this study, AquaCrop model is parameterized and tested for corn under full (100%) and deficit (50, and 33% of full) irrigation regimes. The model is able to simulate the crop water use under very high *ET* and wind conditions. Furthermore, the model performed satisfactorily for the growth of aboveground biomass, grain yield, and canopy cover in the non-water-stress treatments and mild stress conditions, but it is less satisfactory in simulating severe water-stress treatments, especially when stress occurred during senescence.

Keywords: *Aqua Crop model, canopy cover, biomass accumulation, grain yield, efficiency of water use.*

[*]*Corresponding: E-Mail: marselabitri@yahoo.it; Tel: 00355682087691*