



## **Net irrigation requirements for maize (*Zea mays* L.) in Bocono-Masparro interfluvium area.**

Asdrubal Jesus Farias Ramirez and Maria Alejandra Moreno Pizani

Central University of Venezuela (UCV), Institute of Agriculture Engineering, Department of Agriculture Engineering, Maracay, Bolivarian Republic of Venezuela

Irrigated agriculture is one of the largest consumers of fresh water. In situations where water resources are limited, the irrigation for crops has led to water use conflicts because of human, hydroelectric and industrial demands. Thus, achieving precise information about water availability and water needs of crops becomes safety factors to guarantee sustainable development of irrigated crops in the future. In Bocono-Masparro interfluvium area located within Barinas and Portuguesa states in Venezuela, there has been a significant increase in intensive farming with maize (*Zea mays* L.) which made essential to determine the availability of irrigation water to meet the crop requirement and improve the management based on planning designs. Due to the lack of irrigation requirements data for the study area, a methodology was developed to estimate the net irrigation requirements (NIR). Therefore, the available information of this region related to climate, soil and irrigation was used to estimate NIR for maize through CROPWAT 8.0 model. There were established different crop-climate-soil combinations that allowed estimating NIR. It was found that NIR did not exceed the value of 125 mm/month in all of the combinations. Based on these results, a NIR spatial distribution map was obtained through the use of ArcView 3.2<sup>®</sup>. The results showed that the highest NIR were located in the northeast sector of the study area which was associated to the influence of the Weather Station named San Hipolito. Additionally, the estimated availability of groundwater was found to be higher than the surface water, and both combined exceeded the demands of the study area. The model CROPWAT 8.0 provided necessary information for irrigation planning in large scale. A NIR map developed through the proposed methodology represents a useful tool to integrate water balance factors.