IRRIGATION MANAGEMENT WITH REMOTE SENSING TECHNIQUES

Crop Water Requirements and Biophysical Indicators

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In irrigated agriculture, increasing water management efficiency is the way to save water and to render irrigation a sustainable activity. In the present work procedures with remote sensing are used to determine the contents of available water in the soil at each moment and therefore the opportunity for the application of the water volume strictly necessary to optimize crop growth (irrigation opportunity and irrigation amount). The analysis applied to the Irrigation District of Divor, Évora, having used 7 experiment plots cultivated to corn, that are irrigated with center-pivot systems.

Data were determined from multispectral and infrared images of the cultivated surface obtained by satellite and by flying unmanned platform, integrated with parameters of the atmosphere and of the crops, as to calculate biophysical indicators and indices of water stress in the vegetation: NDVI, Kc, Kcb, CWSI. Therefore, crop evapotranspiration (ETc) was estimated and crop water requirement calculated, as well as the opportunity and the amount of irrigation water to allocate.

As this information is geo-referenced, maps can be prepared with GIS technology, describing water situation and the opportunity for watering crops. If the remote images are available with enough high spatial and temporal resolution, the frequent availability of maps can serve as a basis for a farmers irrigation advice system and for the regional irrigation authority to make decisions on the irrigation management at the regional scale. This can be a significant contribute to an efficient water management technology, for a sustainable irrigated agriculture.

***Key-Words:*** *Remote Sensing, Vegetation Indexes, Crop Coefficients, Water Balance*