

PROJECT TITLE

“ET- Copais: A novel low-cost and accurate system, for Grass Reference Evapotranspiration measurements”

CLIENT

Potential investors and stakeholders that operate within the context of: Large and small crop farms - Agro meteorological Services for Agricultural Production - Agricultural Cooperatives - Centers for Rural Development and institutes - Land Reclamation Services - Sport fields sectors - Urban Landscape – Green roofs

OBJECTIVES & BENEFITS

The ET-Copais station uses an empirical method (validated at the CIMIS network) to calculate reference evapotranspiration, combined with an ET-controller. It can save irrigation water by up to 40%, by making real-time hourly time step ETo estimates based on measurements of climatic parameters. The primary advantages of ET-COPAIS system are low cost of purchase, the non-existent cost for installation, and limited maintenance and calibration, factors that result from the simplicity of the system. Its practical operation is simpler and more efficient than any similar system.

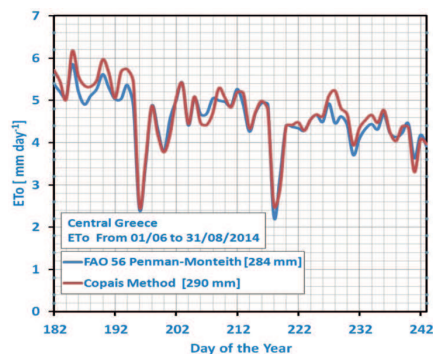
SOLUTION

Evapotranspiration is the fundamental factor that defines production efficiency under the water availability. Consequently, precise irrigation scheduling through flexible and cost-effective systems for the determination of crop water requirements in a short time of calculation at the field level could give a competitive advantage for the business and improve the agricultural incomes. ET- Copais system is a low cost micro-station designed for irrigation scheduling and agricultural systems. The station calculates Grass Reference Evapotranspiration (ETo), using an empirical ETo method in hourly and daily time step of calculation

(Alexandris & Kerkides, 2003; Alexandris et al, 2006). It also calculates ETo using a new method (Chatzithomas and Alexandris, 2015) that utilizes two variables (Rs, RH). The method requires data for three pertinent meteorological attributes, solar radiation Rs, air temperature T, and relative humidity RH. Thus, ET-Copais system consists of the three respective meteorological sensors. The system is powered by a rechargeable battery which is supported by an integrated small solar panel.

RESULTS

The chart presents three months (June, July and August, 2014) variation of the daily reference evapotranspiration estimates by the two methods (Standardized method FAO56 Penman - Monteith, and Copais method) at the experimental field of Agricultural University. The chart indicates that the simpler empirical equation Copais compares reasonably well with the FAO-56 PM method during the warm months in central Greece. The total ETo for the summer period is 290mm for Copais and 284 mm for FAO56-PM, respectively.



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