
Estimating crop coefficients of raspberry based on digital images processing, lysimetry and agroclimatic information network

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Abstract

Berries sector has increased the value of exports from 2014 to 2018 in more than 50% in Spain. This economic success has been possible thanks to the diversification of crops. The strawberry monoculture has evolved into a mix of strawberry, raspberry, blueberries and blackberries crops. Raspberry has increased exponentially in recent years. To assess its sustainability, it is necessary to resolve uncertainties about their crops water needs. In this context, the use of digital photography enables raspberry grow monitoring, which allows to estimate crop water requirements from variables that are directly related to evapotranspiration. One of these variables is the percentage of crop cover. This paper presents a new methodology for estimating lysimeter crop coefficients of raspberry from the percentage of ground cover (PGC) and the percentage of lateral crop cover (PLC) extracted from digital photographs. The relationship between both types of coverages is one of the innovative results of this work. The method was successfully applied to and validated using a commercial crop of raspberry (*Rubus idaeus* cv. ‘San Rafael’) located in Huelva (Southern Spain).

Keywords: Water productivity, application efficiency, raspberry, crop coefficient, image processing, lysimeter

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