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EFFECT OF MULCH FILMS ON IRRIGATION WATER USE EFFICIENCY OF BELL PEPPER CROP

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Abstract

The use of plastic mulch in agriculture causes serious drawbacks due to huge quantities of waste that lead to a negative environmental impact. The aim of this work was to evaluate the possible water saving through the use of biodegradable mulch films (BMF) in comparison to conventional polyethylene films (PE), establishing a relation between permeability and the films water transfer balance in real field conditions. The field trials were performed for six months (May to October), in 2013. The bell-pepper crop was monitored along the cycle in both PE and BMF mulches through soil probes that measure the water content and soil temperature at 15 cm depth. The water vapor permeability was tested in laboratory following an adaption of the American Society for Testing and Materials (ASTM) E96/E96M-05 method to predict the behavior of the two types of mulches in real conditions. BMF shows a good performance and stretch resistance throughout the crop cycle constituting a viable alternative to conventional films and ensuring normal agronomic performance of plants. In the light of the obtained results, regarding bell-pepper crop, the mulching material lead to a reduction of 12% on water consumption in comparison with the conventional modality (PE). The results obtained on bell-pepper crop where very encouraging once BMF (Agrobiofilm®) consumed less water than PE achieving a reduction around 12%. These results are in accordance with the values obtained at lab-scale for water vapor permeability income (8%) and outcome (15%) corresponding to an increment between PE and BMF.

Key words: Agrobiofilm®, bell-pepper crop, mulching, polyethylene, water use efficiency

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