Description and Quantification of Wet Bulbs in Soils with Contrasting Textures with Different Patterns of Water Application under Drip Irrigation

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Abstract

The objective of this work is to obtain one first approach in the determination of the size of wetted bulbs, and to analyze the effects of different ways of water application on the patterns of the size and shape of the wetted bulb. Irrigation experiment were installed on two soils with a silty clay loam superficial horizon of 0,40 m depth, followed by a clay horizon of low permeability. Measurements were taken to determine the size of the bulb, applying irrigation with dripper of different flow, different distances, with one or two lines and different applied volumes. In addition a field test was carry out using a portable device assessed different flows and irrigation times in a sandy and a clay loam soils. The gravimetric method was used to evaluate the water content of the samples to determine the dimensions of the obtained wetted bulb of in each case. The data were introduced in a computer program (SURFER8), to plot these results and obtain the different wet bulb. The first results show important differences between observed values and the models proposed in the bibliography and there are aspects of the irrigation management, for example irrigation time, that produce deep percolation of the irrigation water.

Keywords: microirrigation, soil wetted volume, stratified soils, trickle