WETTING PATTERN OF POINT EMITTER AS AFFECTED BY IRRIGATION AMOUNT AND DURATION

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ABSTRACT

The purpose of this research was to study the wetting pattern, created within a soil profile from a point source for fixed volumes of water applied in different durations. Experiments were conducted for 4, 8, 12, 16, 20 and 24 litres of water applied in 4, 8 and 12 hours in sandy loam soil. Each experiment was replicated 3 times. The wetting front was detected by analysing the moisture contents of soil before and after irrigation. Soil samples were taken at 5 cm vertical intervals and moisture contents were determined gravimetrically.

The relationship of horizontal spread and depth of wetting front was found exponential. An exponential model was developed for each combination of water volume and time of application. Coefficients were determined in order to develop a generalized equation to predict the wetting front depth with respect to horizontal location for application time ranging from 4 to 12 hours.

The model results were compared with the observed field data. The comparison was found statistically valid at 5 and 10 percent significance levels.