Irrigation Scheduling Based on Pan Evaporation Values for Cucumber (*cucumis sativus* l.) Grown Under Field Conditions

Ahmet Ertek Suat Şensoy İbrahim Gedik Cenk Küçükyumuk

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Abstract

This study was conducted to determine the most suitable irrigation frequency and quantity in cucumber grown under field conditions. The amount of water used was based on pan evaporation from a screened Class-A pan. Irrigation treatments consisted of two irrigation intervals ($I1$: 4 and $I2$: 8 day), and three plant-pan coefficients ($K_{cp}1$: 0.50; $K_{cp}2$: 0.75 and $K_{cp}3$: 1.00). Plants were first watered at the transplanting date and scheduled irrigations were initiated after 4- and 8-day intervals.

Irrigation quantities applied to the treatments varied from 320 to 509 mm; seasonal plant water comsumption or evapotranspiration of irrigation treatments varied from 391 to 597 mm; and the cuccumber yield varied from 17.99 to 45.20 ton ha^{-1}. The highest total yield was obtained from $I2K_{cp}3$ treatment. Moreover, $K_{cp}3$ treatments had the highest early yield. E_t/E_{pan} ratio according to treatments ranged from 0.29 to 1.25. Irrigation treatments had significant effects ($P < 0.01$) on yield and there were significant positive linear relations ($P < 0.01$) between the fruit number and irrigation water and between the plant water compsumption and the yield.

In conclusion, $K_{cp}3$ treatment with 8-day-irrigation interval is recommended for cucumber grown under field conditions in order to get higher cucumber yield and to save time and labor. Furthermore, the E_t/E_{pan} equation of the best irrigation treatment ($I2K_{cp}3$) of this study ($E_t = 1.05E_{pan} + 96.72$) should, therefore, be used in the scheduling irrigation programs in similar conditions.

Keywords: Irrigation; Cucumber; Pan evaporation; Irrigation scheduling