

Estimation of Evapotranspiration and Crop Coefficient of Eggplant with Lysimeter in Al-Hasa Region

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Abstract : A field experiment was conducted for two seasons of 2011 and 2012 in The Agricultural Experiment Research Station in King Faisal University at Al-Hasa region, Saudi Arabia to estimate evapotranspiration (ETC) of Eggplant crop using Drainage Lysimeter with surface area of 2 x 2 m and depth of 1.5 m. The irrigation was applied daily. The amount of drainage was measured before each irrigation event. The results showed that there was almost no difference in the seasonal evapotranspiration of eggplant crop in the two seasons. The average evapotranspiration values for eggplant crop for the summer and winter seasons were 823.4 mm and 479.7 mm respectively. The highest and the lowest weekly measured values of (ETC) of eggplant crop during the two summer seasons were 8.6 mm/day and 3.9 mm/day respectively, while the highest and lowest weekly measured values of (ETC) of eggplant crop during the two winter seasons were 3.9 mm/day and 2.0 mm/day respectively. The measured values of ETC, in conjunction with the results of Penmen-Monteith equation for reference Evapotranspiration (ETR), were used to determine the crop coefficient (KC ini, KC mid and KC end) for eggplant crop. The average values were 0.50, 84 and 0.60 for KC ini, KC mid and KC end in Al-Hasa region, respectively. These estimated values for KC were used to approximate (ETC) for eggplant crop. High positive correlation coefficient (0.959) was detected between the approximated and measured values of eggplant crop evapotranspiration.

Keywords : evapotranspiration, eggplant, ETC, Al-Hasa

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