

Water Use Efficiency, Fruit Yield and Quality of Squash *Cucurbita pepo* L. with Different Irrigation Quantities and Humic Acid Fertilization in a Semi-arid Agricultural Area

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**Abstract**

The objective of the study was to estimate the crop water requirement, water use efficiency and fertilizers productivity (agronomic efficiency) of squash under irrigation treatments and humic fertilizers. The study was carried out in the field of Agricultural Collage- University of Baghdad/ Al - Jadriya during spring season 2016. Factorial experimental was used Randomized Complete Block Design including twelve treatments in three replicates. The first factor was irrigation including three treatments irrigation was imposed at 35, 50 and 70% depletion of available water, whereas the second one was organic fertilizers (humic acid) with four levels 0, 10, 20 and 30 kg ha<sup>-1</sup>. The water content of depletion water for 0-0.2m layer was calculated from planting till shoot growth and increasing of irrigation water depth to include 0-0.3m during flowering and yield formation stages. Actual evapotranspiration was estimate using water balance equation, reference evapotranspiration from modified Penman Montieth equation.

ET<sub>a</sub> values recorder 440, 395 and 335 mm at 35, 50 and 70% depletion of available water, respectively, while the ET<sub>o</sub> recorder 457 mm. Application of humic acid lead to increase water use efficiency field and crop, and fertilizer productivity for all irrigation treatments and reached 6.50, 5.84 kg m<sup>-3</sup> and 359.6, respectively under irrigation at 35% depletion available water and 30 kg ha<sup>-1</sup> humic acid. The results showed that suffered squash to water stress lead to reduced water use efficiency, fertilizer productivity and fruit yield. The results also showed that a quality characteristic of squash was improved in response to humic acid application.

**Key words:** irrigation, humic fertilizers, consumptive use, Squash, fertilizer productivity