



EFFECT OF WATER QUALITY AND DRIP IRRIGATION MANAGEMENT ON PEPPER PRODUCTIVITY

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ABSTRACT

Availability of fresh surface water for irrigation is declining in Egypt, and saline ground-water is increasingly used for irrigation. Therefore, the aim of this study was to investigate the effect of using different water salinity levels on soil salt distribution and sweet pepper at various growth stages, also to evaluate the possibilities of applying the needed Leaching Requirements to decrease the harmful effect of high salinity levels on soil and pepper productivity. A greenhouse experiment was carried out on a sandy soil at Dokki protected cultivation experimental site, Agriculture Research Center (ARC), Ministry of Agriculture and Land Reclamation (latitude 30° 02' 46.1" N, 31° 12' 16.6" E longitudes, and 27m altitude), during the summer and winter seasons of 2017-2018, to evaluate the effect of water quality and drip irrigation management on sweet pepper (*Capsicum annum* L. cv. Top star) plants under surface drip irrigation. The experiment consists of three treatments of EC and three water salinity treatments of leaching requirement. The EC treatments were 0.4 control, 3 and 5 dS/m, leaching requirement was applied after 2 months from transplanting when EC_e become more than EC_{iw} for all treatments, LR treatments was 10% for control S_c , LR 21.4% for $S_{3dS/m}$ and LR 37.5% for $S_{5dS/m}$. Results revealed that irrigation with different salinity levels and Leaching requirement both affected the plant vegetative growth, peppers productivity, yield parameters and irrigation water productivity. As well as, the more salts accumulated in the root zone could lead to higher potential yield losses of sensitive and moderately sensitive crops, such as sweet peppers. It can be concluded that the higher the salinity in the irrigation water the less the height, the single leaf area, the roots fresh weight, the roots height, and the number of fruits per plant. As well as, the higher the salinity in the irrigation water the more concentration of Na, Cl and proline in fruits. Data revealed that higher salinity levels of irrigation water decreased the TSS content of sweet pepper fruit, which expresses sugar concentration in pepper. Increasing salinity affected fruits color. The peppers yield (2.892 Kg/m^2) and Irrigation water Productivity (1.04 Kg/m^3 water) was high in S_c LR. The peppers yield in $S_{3dS/m}$ and $S_{5dS/m}$ treatments were reduce by 46.0% and 78.2%, respectively, comparing with the control treatment.

Keywords: Salt tolerance, *Capsicum annum* L, Leaching requirement, Water Productivity, Fruit Quality.

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