

عنوان مقاله:

Effects of salinity and irrigation water management on soil and tomato in drip irrigation

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خلاصه مقاله:

In this research, the effects of irrigation with saline and fresh water through drip irrigation method and using two irrigation management strategies: M1, M2 (M1 is irrigation with fresh water in alternative with saline water, M2 is saline water in first half time of each irrigation event and fresh water in the second half), on the yield, water productivity (WP), soil salinity, plant height and diameter, fruit water content, fruit density, L, a and b colorimetric factors, textures, strength, sodium, calcium and nitrogen concentrations were investigated. The experiments were conducted in a randomized completely block design as split plot with three replications in which management strategies were the main plots and subplots were different levels of salinity, 0.68, 2, 4, 6 and 8 dS/m (S0, S1, S2, S3, S4, respectively). Highest and lowest yields were in M1S1 (59.12 t/ha) and M2S4 (18.81 t/ha) treatments, respectively. The yield difference between M1 and M2 management strategies were significant at 5% level of probability and the average yield of M2 was 24.20% less than the M1 treatment. Applied irrigation water was decreased with increasing salinity levels because leaf area and leaf transpiration was reduced. Therefore, water productivity was increased, so that the highest water productivity was in the M1S4 treatment. To evaluate the use of saline water on soil, ECe was measured in each plot at four layers in soil. Highest ECe was in the S4 salinity level in both management strategies. Based on soil salinity and crop yield, M1 and M2 management strategies were suitable at lower levels of salinities (0.68 and 2 dS/m) and salinities over 4 dS/m, respectively. Furthermore, M1 management strategy, due to more efficient leaching in the surface layers of soil, was more appropriate than M2 management strategy.

کلمات کلیدی:

Salinity, Irrigation management, Tomato, Water productivity

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