عنوان مقاله:

Effect of irrigation water salinity, manure application and planting method on soil ions variation and ions uptake by saffron (Crocus sativus L.)

محل انتشار:

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خلاصه مقاله:

The objective of the present study is to investigate the effects of irrigation water salinity,cow manure levels and different planting methods on ions variation in soil and their uptake bysaffron. A split-split plot arrangement was conducted in a randomized complete block designwith irrigation water salinity levels (0.45 (fresh water, S1), 1.0 (S2), 2.0 (S3) and 3.0 (S4) dS m-1)as the main plot, cow manure levels (30 (F1) and 60 (F2) Mg ha-1) as the subplot and plantingmethod (basin (P1) and in-furrow (P2)) as the sub-subplot with three replications. Resultsshowed that the concentration of sodium (Na+), calcium (Ca2+), chloride (Cl-), potassium (K+),sulphate (SO42-) ions in soil was increased significantly with increasing water salinity levels.These variations were in accordance with ECe variations that were 2.6 times in S4 comparedwith S1 treatment. However, the soil nitrate (NO3-N) decreased in the highest irrigation salinitylevel by about 30% compared with the lowest salinity level in two growing seasons. Theseelement concentrations were significantly higher in F2 treatment in comparison with F1 due toaddition of these ions by higher application rate of cow manure to soil. There was no significantdifference between element concentrations in soil for two planting methods. Increasing salinityto the highest level significantly increased the saffron leaf concentration of Na+, Ca2+ and Cl- byabout 4.0, 1.4 and 1.5 times, respectively. Increasing salinity resulted in decrease in K+, nitrogen(N) and phosphorus (P) concentration in saffron leaf by about 30, 20 and 39% under the highestwater salinity level, respectively. The in-furrow planting method significantly led to increase inK+, N and P concentration in plant by about 10, 3 and 8% in comparison with the basin planting,respectively. Also, higher manure application rate as 60 Mg ha-1 significantly increased plant Nand P concentration by about 12 and 20% in two growing seasons, respectively.

کلمات کلیدی:

Fertilizer level, Ions concentration, Irrigation water salinity, Planting method, Saffron, soil Salinity

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