

EFFECTS OF SILICON APPLICATION AND MYCORRHIZAL INOCULATION ON GROWTH AND YIELD OF TOMATO PLANTS (*LYCOPERSICON ESCULENTUM* MILL.) IN REDUCED IRRIGATION CONDITION

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Introduction:

Drought stress is one of the most important environmental stresses that affect plant growth and yield. In fact, drought stress is caused by the decrease in soil water potential that result in reduction of leaf relative water content and yield (1). Iran is located in the dry belt of the world and considered as a dried zone. The average rainfall in Iran is about 250 mm of rainfall in the third world. The results of researches showed that inoculation with mycorrhizal fungi (2) and silicon nutrition (3) increased the plant resistance to drought stress. The aim of the present study was comparing the effect of silicon and mycorrhizal fungi on growth of tomato plants under reduced irrigation condition.

Materials and Methods:

In this study, an experiment was designed with three factors of drought stress, silicon treatments (0 and 0.2 mM) and inoculated with mycorrhizal fungi in a factorial design in a randomized complete block with four replications. Plants cultured in pots containing perlite under greenhouse conditions. Mycorrhizal treatments performed by adding 50 g clay containing mycorrhizal spores on the surface of perlite. Sodium Silicate (Na_2SiO_3 -Sigma) was used for the silicon treatment.

Results and Discussion:

The results of data analysis and variance showed that vegetative characteristics such as leaf numbers and fruits weight significantly reduced in the stressed plants, two months after drought treatment. On the contrary, silicon treatment and inoculation with mycorrhizal fungi considerably increased plants growth in drought condition. In conclusion, the results of examined factors in this study showed that, drought-resistance of tomato in the mycorrhizal inoculation was more evident than silicon treatment.

Key words: Drought, Mycorrhizal fungi, Silicon, Tomato

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