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EFFECT OF SILICON ON GROWTH AND YIELD OF OREGANO (*ORIGANUM SYRIACUM* L.) PLANTS CULTIVATED UNDER SALT STRESS CONDITIONS.

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ABSTRACT

A field experiment was carried out, during 2013 and 2014 seasons, at the North Sinai Region, El-Maghara Research Station, Desert Research Center, Egypt, to determine the effect of foliage spraying of silicon "Si" (0, 1000 and 2000 ppm) under salt stress conditions on vegetative growth, herb yield, volatile oil production and chemical composition of oregano plant (*Origanum syriacum* L.). Three levels of water salinity were made up (at EC_w 4.11, 6.31 and 9.44 dS/m). The first level of water salinity (4.11 dS/m) was obtained from a natural well and the second and third levels (6.31 and 9.44 dS/m) were made up by adding NaCl to the first level.

The results showed that increasing of water salinity decreased, as expected, the vegetative growth parameters (plant height, number of branches, herb fresh and dry weights and root fresh and dry weight per plant), volatile oil%, volatile oil yield per plant and per feddan, total carbohydrates, Si and K content, while increased Na, Cl and prolien content.

Supplementary Si ameliorated the negative effects of salinity inflicted upon oregano plants. Application of Si increased vegetative growth parameters and increased K, total carbohydrates, Si and K content, while decreased Na, Cl contents in oregano plants. The highest values in vegetative growth parameters were obtained when 2000 ppm Si were applied.

The combined effect between water salinity 4.11 dS/m and Si at 2000 ppm concentration gave the highest values in all the vegetative growth parameters, volatile oil yield per plant and per feddan, total carbohydrates, Si and K contents in both seasons, meanwhile the salinity treatment 9.44 dS/m combined with the untreated Si plants gave the lowest values.

Results here suggest that the negative effects of salinity on the growth and internal chemical constituents of oregano plants may be ameliorated by foliar application of Si treatment.

Key words : Oregano, *Origanum syriacum*, Silicon, Si, Salinity, Salt stress, Vegetative growth, Essential oil.