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Effect of Root and Foliar Applications of Silicon on Growth of Strawberry and Mineral Nutrient Uptake under Salinity Stress in Soilless Culture

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This research was conducted to study the effect of root and foliar applications of silicon on growth and yield of strawberry under salt stress conditions in soilless culture. Experiment was conducted based on factorial experiment considering the silicon concentration and its application method as the first factor and salinity as the second one with in completely randomized design in 3 replications. Seedlings of Pajero cultivar of strawberry were prepared at 4-5 leaf stage. After transplanting into 3 L plastic pots containing cocopeat and perlite (1:1 v/v). Salinity levels were; 0 mM (as control) and 40mM. NaCl along with applying salinity treatments, silicon treatments were applied using silicic acid as 1 and 2mM as root application every other day and at 4 and 8mM as foliar spraying once per two weeks. Morphological and vegetative traits consisted of shoot and root dry weight, leaf area, greenness index, specific leaf area, leaf nitrogen content and yield, sodium, potassium, chlorine, silicon and nitrogen concentration in strawberry plant were measured and analyzed. The results showed that NaCl of 40 mM in all levels of silicon concentrations reduced all traits, except the sodium content of shoot and root. At both salinity levels, silicon showed a positive effect on growth parameters of strawberry and reduced adverse effects of salinity. It also seems that root application of silicon has a greater impact on controlling the negative effects of salinity compared to its foliar application method.

Keywords: Strawberry, Silicon, Salinity, Yield, Root application.

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