

## The Effects of Sewage Sludge Usage and Manure on Some Heavy Metals Uptake in Savory (*Satureja Hortensis L.*)

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**Abstract :** In recent decades with the development of technology and lack of food sources, sewage sludge in production of human foods is inevitable. Various sources of municipal and industrial sewage sludge that is produced can provide the requirement of plant nutrients. Soils in arid, semi-arid climate of central Iran that most affected by water drainage, iron and zinc deficiencies, using of sewage sludge is helpful. Therefore, the aim of this study is investigation of sewage sludge and manure application on Ni and Zn uptake by Savory. An experiment in a randomized complete block design with three replications was performed. Sewage sludge treatments consisted of four levels, control, 15, 30, 80 tons per hectares, the manure was used in four levels of control, 20, 40 and 80 tons per hectare. Results showed that the wet and dry weights was not affected by sewage sludge using, while, manure has significant effect on them. The effect of sewage sludge on the cadmium and lead concentrations were significant. Interactions of sewage sludge and manure on dry weight values were not significant. Compare mean analysis showed that increasing the amount of sewage sludge had no significant effect on cadmium concentration and it reduced when sewage sludge usage increased. This is probably due to increased plant growth and reduced concentrations of these elements in the plant.

**Keywords :** savory, lead, cadmium, sewage sludge, manure

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