



Growth, chemical constituents and mineral content of Cypress (*Cupressus Sempervirens, L*) seedling grown on sandy soil as influenced by Nickel and Cobalt in irrigation water

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Abstract: A pot experiment was conducted in two seasons (2013 and 2014) to evaluate the sensitivity of Cypress seedling grown on sandy soil conditions to various concentrations of both nickel (Ni) and Cobalt (Co) *i.e.* 0, 10, 20, 40 and 80ppm in irrigation water. Results showed that all tested treatments of both heavy metal (Ni or Co) caused significant increases in stem length and stem diameter of Cypress seedling as compared with control treatment with the exception of 80 ppm Ni or Co treatment for stem length and 10, 80 ppm Ni for stem diameter. The fresh and dry weight of root, stem and leaves were significantly increased by 10 and 20 ppm Ni or Co, while raising concentration of both heavy metals to 40 and 80 ppm led to significant decreases in fresh and dry weight of seeding organs in most cases. The obtained results revealed that chlorophyll (a, b), carotenoids and sugars increased with Ni or Co at 10, 20 and 40 ppm concentration as compared with control treatment. However the high rate of both Ni or Co (80 ppm) reduced carotenoids, soluble, non- soluble and total sugars content less than control. Total indoles and shoot crude fiber content of Cypress seedling were increased with all Ni or Co treatments. Ni and Co treatments led to increases in leaf N, P, K, Ni and Co content of cypress seedling plant as compared with control treatment. Moreover, leaf N, P and K content were showed progress increasing with increasing level of both Ni and Co from 10 to 40 ppm.

Key words: cypress, heavy metals, Ni, Co, macro elements, indoles, crude fiber, phenol.

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