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Growth and Nutrient Elements Accumulation in Leaf of *Pinus eldarica* Medw. Trees Irrigated with Municipal Effluents

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Abstract

Increasing industrialisation and urbanisation has not only deprived production of crops through land degradation but also remained mute witness to the continuous loss of our precious water resources. Attempts have been made to reverse the process of this degradation with afforestation with fast growing tree species and disposal of wastewater safely and economically to tree plantations. In this study, the effects of irrigation with municipal effluent on growth and nutrient elements accumulation in leaf of *Pinus eldarica* Medw. trees were investigated in two areas irrigated by municipal effluent and good water in an urban green space of south Tehran of Iran. For this purpose, four sample plots (30 m×30 m) were systematic-randomly chosen in either of both areas. Measurements in chosen sample plots indicated that diameter at breast height (d.b.h.), total height, crown length, average crown diameter, basal area and volume of *Pinus eldarica* Medw. trees were significantly ($p < 0.01$) greater in area irrigated with municipal effluent than with good water. In each plot, four samples of leaf and soil were taken to determinate the concentrations of N, P, K, Mg, Ca, Na, Fe, Mn, Cu and Zn in laboratory. The results revealed that concentrations of N, P, K, Mg, Ca, Na, Fe, Mn, Cu and Zn in leaf of *Pinus eldarica* Medw. trees and soil were significantly greater in area irrigated with municipal effluent than with good water. The results of this study suggest that municipal effluent can be utilised, as an important source providing required water for afforestation.

Keywords: Afforestation, growth, irrigation, nutrient elements, *Pinus eldarica*, wastewater

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