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# **The Effect of Afforestations on the Soil Physical and Chemical Properties in Chahnimeh Region, Sistan**

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### Abstract

Afforestations can have major effects on the chemical and physical properties of soil over time. Afforestation in bare lands and its optimal management has a large effect on increasing and decreasing of soil nutrients. Understanding the relationship between vegetation and soil is an important cases to determine suitable locations for the restoration and management of the resources and ecosystems. This research was conducted in order to verify of *Eucalyptus camaldulensis*, *Tamarixa phyla*, *Olea europaea* and *Pinus eldarica* plantations on soil physico - chemical properties in Chahnimeh region, Sistan. Therefore, in each of plantations, soil samples were taken from representative areas (species' understory) and control area in both 0-15 and 15-30 cm according to systematic random method and by using the auger. The samples after transferring to the lab and drying were passed of 2-mm sieve and then were measured them physical and chemical factors, including soil texture, bulk density, pH, electrical conductivity, organic carbon, T.N.V., nitrogen, phosphorus, potassium, sodium, calcium and magnesium. After surveying the data, them analyze was performed using one-way ANOVA and Tukey test. The results indicate that significant differences have been emerged in soil properties under different species. Soil under Eucalyptus species has the highest sodium concentration (321.05 ppm in first depth and 242.65 ppm in second depth), magnesium (1.71 ppm) at the second depth, organic carbon in the second depth (1.72 percent) and lowest pH value in the first depth (7.49) and bulk density in both depth (1.37). Soil of Tamarisk understory has the highest amount of potassium in the second depth (27.74 ppm) and pH (8.28) and the lowest amount of organic carbon (0.42%) in first depth. Soil of Olive understory has the most content of organic carbon (2.26%) and calcium (0.51 ppm) at the first depth and EC (9.52 ds / m) at the second depth. Soil under Pine as a coniferous species has the most amount of phosphorus (.04 ppm), organic carbon (75.1 percent along with Olive species) in the first depth and magnesium (1.71 ppm along with Eucalyptus) in the second depth and also the lowest amount of EC (3.11 ds / m in first and 6.24 ds / m 24/6 at the second depth along with Tamarisk), bulk density (0.99 in both depths), potassium (1.93 ppm) and sodium (2.35 ppm) in the first depth.

**Key Words:** Afforestation, Soil physico chemical, Chahnimeh.