

## ANALYSIS OF THE EFFECTS OF CERTAIN EXOTIC ORNAMENTAL PLANTS ON SOIL PROPERTIES: THE KARADENIZ TECHNICAL UNIVERSITY CAMPUS CASE

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### ABSTRACT

The use of increasingly diverse exotic ornamental plants in urban open green spaces has led to more heterogeneous urban landscapes. The studies on ecological effects of these plants on the existing soil properties and on long-term impact on urban ecosystems are insufficient. Thus, the present study aimed to investigate the impact of certain exotic plants on the properties of the soil properties where they were planted in a case of a public area. In the study, Karadeniz Technical University campus (Trabzon, Turkey), where exotic ornamental plants were used extensively, was selected as the sample. Three-replicate soil samples were obtained from the areas where 20 exotic woody plant species which were planted in the sample area more than 20 years ago and were the most prevalent species in the area and unplanted control areas. Certain physical and chemical properties of the soil samples such as texture (sand, clay, dust), soil reaction (pH), organic matter, total nitrogen, salinity, total lime content and potassium intake were analyzed in the laboratory. The study findings demonstrated that there were significant differences between the properties of the soil where exotic plant species were planted and the soil properties in unplanted control areas ( $p < 0.05$  and  $p > 0.01$ ). In particular, it was observed that exotic plants induced a significant increase in total nitrogen, potassium intake and organic matter content. Therefore, consideration of the effects of exotic species on certain physical and chemical soil properties in landscape planting may be beneficial for more successful plant selection and sustainable designs. The present study findings are expected to contribute to expanding the present knowledge on the interactions between exotic species and soil properties planted in urban areas.

**Keywords:** Exotic plants, plant-soil interaction, landscape planting, Trabzon.