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Evaluation of physical and ground engineering properties of soils in agricultural lands located in stream beds*

Bahadır Atmaca¹, Duygu Boyraz Erdem²

¹ Department of Food Technology, Giresun University,
Şebinkarahisar School of Applied Sciences, 28400, Giresun, Türkiye

² Department of Soil Science and Plant Nutrition,
Tekirdag Namık Kemal University, Faculty of Agriculture,
59000, Tekirdag, Türkiye

Abstract

Global climate change, improper and unintended land use, rapid and unplanned urbanization are very important factors that exert significant pressure on water and soil resources. The aim of this study is to determine and evaluate the physical and ground engineering properties of soils in agricultural lands located in stream beds. The research includes a detailed analysis of the physical and ground engineering properties of the soils in stream valleys in the Şebinkarahisar region, which is under the influence of transitional climate conditions in Türkiye. Soil sampling was carried out in the autumn season. Topsoils and subsoils are mostly in the clay loam, sandy loam and sandy clay loam texture classes. The results of particle density, bulk density and total porosity analyses were found to represent well the samples taken from stream beds. Hydraulic conductivity varies from very slow to fast across all soils. It was determined that the differences in the hydraulic conductivity values of the grounds were due to the sampling from different stream beds and the variation in texture classes. According to the classification based on the values of the plasticity index, the majority of the soils have been found to have high and medium plasticity. The clay activities of the grounds, most of which are classified as having high and medium plasticity, were categorized as non-active and normal. For agricultural activities in the study area, it would be beneficial to map the land characteristics and analyze the waters in the streams. It is thought that analyses of the physical and detailed engineering properties of grounds in stream valleys and determination of different ground types will provide an important contribution to soil-water conservation studies.

Keywords: stream beds, Atterberg limits, hydraulic conductivity

Bahadır Atmaca, Asst. Prof. Dr., Department of Food Technology, Şebinkarahisar School of Applied Sciences, Giresun University, Şebinkarahisar Center, Busait Position, 28400, Şebinkarahisar, Giresun, Türkiye, e-mail: bahadir.atmaca@giresun.edu.tr

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