



Turkish Journal of Agriculture and Forestry

Turkish Journal

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The Influence of Clay Content, Organic Carbon and Land Use Types on Soil Aggregate Stability and Tensile Strength

Yasemin KAVDIR*, Hasan ÖZCAN, Hüseyin EKİNCİ, Yusuf YİĞİNE
Çanakkale Onsekiz Mart University, Terzioğlu Campus, Agricultural Faculty, Soil
Science Department, 17020 Çanakkale - TURKEY
Orhan YÜKSEL
Çanakkale Onsekiz Mart University, Bayramiç Vocational School, Bayramiç-
Çanakkale - TURKEY

Abstract: Soil tensile strength (TS) and aggregate stability (AS) values can be used as indicators of soil structural quality. The objective of this study was to determine the influences of land use types, soil carbon and clay contents on soil structure. Soil samples were collected from 51 different locations from the Kumkale Basin in Çanakkale in April and July 2003. A global positioning system (GPS) was used to determine the coordinates of sampling points. TS, AS, soil organic carbon (SOC), and clay contents were determined. Results of soil analysis and coordinates of sampling points were transferred to the Arc View geographical information systems (GIS) program. Multiple regression analysis showed that TS was positively related ($r^2 = 0.89$ and 0.92 in April and July, respectively) to clay content when SOC was high. The water stable aggregates in pasture soils were approximately 10 times more water stable than those in other agricultural soils in the region. In general, wet AS was more sensitive to cropping and management systems than TS. Soil AS rose with increasing soil SOC content while TS of soil aggregates was mostly influenced by clay content. However, the effect of clay content on aggregate TS rose with increasing SOC content.

Key Words: Tensile strength, GIS, soil aggregate stability, organic carbon, clay content

Turk. J. Agric. For., **28**, (2004), 155-162.

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