



Evaluation of soil characteristics and properties evolution in different soil uses under semiarid climate, Murcia, SE Spain

J.A. Acosta, A. Faz, S. Martínez-Martínez

Department of Agrarian Science and Technology, Technical University of Cartagena, Cartagena, Spain (ja.acosta @upct.es / Fax: +34968325435 / Phone: +34968327073)

Soil use is one of the major factors affecting changes on soil developing and conservation. Under natural conditions, soil evolution tends to an equilibrium state affected by edaphogenesis processes. Soil under maximum evolution conditions are well covered with vegetation that provides a progressive amount of organic matter and nutrients, contributing therefore to maintain or even improve its structure, as well as obtaining protection against degradative processes. The balance achieved by soils can be disturbed by diverse actions; among those we should highlight the anthropic ones. Agriculture, industries and urbanizations principally can damage deeply soil quality. In Mediterranean soils, under semiarid climate, the negative effect by bad practices may be worsen due to environmental factors, such as lithology and climate.

Evaluation of the soil characteristics and properties evolution under different soil uses will help understand the degradative processes that take place in this Mediterranean environment; and it also provides information about soil quality and sustainability.

The study area is located in the surrounding of Murcia City, SE of Spain, where carbonate rocks and fluvial sediments are dominants and soils are the product of the weathering of these rocks and sediments. The climate of the area is typically Mediterranean with an annual average temperature of 19°C and precipitation of 300 mm. In the last years, Murcia City is expanding including industrial and commercial areas and land degradation in some occasions may be taking place.

In order to complete the objectives of this work, six soil profiles were taken in the surrounding of Murcia City, including urban, industrial, natural, agricultural and aban-

don areas. The soil characteristics estimated were pH, equivalent calcium carbonate, organic carbon, total nitrogen, soluble salts, CEC, exchange bases and particle size.

Results show that some soil characteristics, such as calcium carbonate, pH and particle size, are highly affected by climate and lithology. However, other ones, such as organic carbon and total nitrogen, are principally affected by anthropogenic activities and soil management practices. Therefore, it is important to consider management practices that tend to increase the level of soil organic carbon, and as a consequence reduce degradation processes. Soil in industrial sites, however, has received off site mineral material that has buried the natural soils preventing its evolution.