



Metamorphic and Volcanic Soil Properties in Selected Natural Areas from Murcia Province, SE Spain

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

Technical University of Cartagena, Cartagena, Spain (silvia.martinez@upct.es / Fax: +34968325435 / Phone: +34968327073)

Forest soils are the primary sources of all essential nutrients for vegetation, including exchangeable bases and micronutrients. The growth conditions and distribution of vegetation types in different slope positions are controlled, among others, by the bioavailability of soil nutrients, water and aeration in the root zone. The recycling processes in these forest ecosystems determine the spatial variation of soil nutrients in the forest land. So, soils play a major role in the biogeochemistry of forest ecosystems.

The Mediterranean mountains, in particular those located in SE Spain, have unique environments, complex topography, and climate and are highly vulnerable to human actions. Precisely, the climate in southeast Spain is semiarid Mediterranean, characterised by low rainfall and high evapotranspiration, where the nature of the parent material has a strong influence on soil development and evolution.

The aim of this study was to compare the physical and physico-chemical properties of soils developed on metamorphic and volcanic parent materials and, to study differences among these natural areas. Five metamorphic soils evolved on argillites, slates, schists, cuarcites and phillites, and five areas developed on lamproites, riocacites, basalts, ophites and andesites were selected in Murcia Province. In each area, 11-13 surface soil samples were taken following a sampling grid.

The analyses used for the determination of the soil properties were pH, electrical conductivity, organic matter, total nitrogen, equivalent calcium carbonate, cation exchange capacity, and clay, silt and sand contents.

The results of this study have shown that do not exist important differences between the metamorphic and volcanic soil properties. Some differences are only observed in

areas where exist an increase of the plant cover, especially pine trees. pH mean values are slightly higher in metamorphic soils, around 8.0. None of the soils is saline ($EC < 2 \text{ dS/m}$); the amount of soluble salts are similar for both soil types, and only for the soils developed on schists this mean value was higher ($942.6 \mu\text{S/cm}$). Soil samples from metamorphic areas exhibited CEC of less than 13 cmol kg^{-1} , while for the other soils it ranged from 11.6 to $26.4 \text{ cmol kg}^{-1}$. Mean percentages of O.C., total nitrogen and CaCO_3 in the metamorphic and volcanic soils are, in general, similar. Regarding to the texture class, metamorphic areas were sandy loam and volcanic soils were mainly sandy loam and clay loam.