



Soil degradation effect on biological activity in Mediterranean calcareous soils

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Soil degradation processes include erosion, organic matter decline, compaction, salinization, landslides, contamination, sealing and biodiversity decline. In the Mediterranean region the climatological and lithological conditions, together with relief on the landscape and anthropological activity are responsible for increasing desertification process. It is therefore considered to be extreme importance to be able to measure soil degradation quantitatively. We studied soil characteristics, microbiological and biochemical parameters in different calcareous soil sequences from Valencia Community (Easter Spain), in an attempt to assess the suitability of the parameters measured to reflect the state of soil degradation and the possibility of using the parameters to assess microbiological decline and soil quality. For this purpose, forest, scrubland and agricultural soil in three soil sequences were sampled in different areas. Several sensors of the soil biochemistry and microbiology related with total organic carbon, microbial biomass carbon, soil respiration, microorganism number and enzyme activities were determined. The results show that, except microorganism number, these parameters are good indicators of a soil biological activity and soil quality. The best enzymatic activities to use like indicators were phosphatases, esterases, amino-peptidases. Thus, the enzymes test can be used as indicators of soil degradation when this degradation is related with organic matter losses. There was a statistically significant difference in cumulative O₂ uptake and extracellular enzymes among the soils with different degree of degradation. We would like to thank Spanish government-MICINN for funding and support (MICINN, project CGL2006-09776).