



Evaluation of soil organic carbon changes in forest soils from Mediterranean natural areas

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This study evaluated soil organic carbon (SOC), nitrogen (N), and the stratification ratio (SR) of SOC in regosols of a toposequence (Summit, backslope and toeslope) in natural forest areas located in a typical Mediterranean area of South Spain. Recent research has demonstrated the importance of the relationship of soil properties with the different topographical positions, as this can be of relevance for an efficient and effective management of natural areas.

Total SOC was low in all the studied soils. Values were 69 g kg^{-1} (Summit), 65.1 g kg^{-1} (Backslope) and 49.2 g kg^{-1} (Toeslope). Consequently, these results show a pattern of decrease from the highest (Summit) to the lowest topographical position (Toeslope). Also, SOC decreased with depth in all topographical positions. The total SOC stock remained evenly distributed in the three topographical positions.

N had a pattern of decrease with depth in all topographical positions. However, total N was higher in the backslope than in the other two topographical positions. Nitrogen stock followed the same pattern, with a higher value in the backslope than in the summit or in the toeslope.

SR of SOC increased when deeper sections were taken into account at the backslope and toeslope. However, the SR of SOC did not change significantly with depth in the summit. An increase of this measure with depth has been associated with a higher SOC sequestration and higher carbon stability by several authors.

Therefore, the results showed that soil quality was higher in lower topographical positions.