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Topic: 03. Land Degradation
S03.02-SOIL EROSION AND DEGRADATION ON AGRICULTURE

Title **EVALUATION OF SOIL PHYSICAL QUALITY UNDER DIFFERENT SOIL LAND USES IN A SMALL SICILIAN WATERSHED**

Text: Sustainability of extensive rain fed agriculture needs assessment of land use effects on soil physical and hydraulic properties. Several soil physical quality indices were determined for four adjacent areas in a small Sicilian watershed, that were characterized by a different land use, namely cropland (C), olive grove (O), grassland (G) and eucalyptus plantation (E). Soil texture was similar for the considered areas, even if the no-tilled soils (G and E) showed a higher clay content in the top layer (0-20 cm) than in the lower layer (20-40 cm). The bulk density of the top layer ranged between 1.20-1.43 g cm-3 (C < G < O < E), with significant differences between C and E. In the lower layer, it ranged between 1.16-1.43 g cm-3 (C < O < E < G), with bulk density of C that was significantly smaller than that of the other land uses. The organic matter content was generally low and comparable for the different areas (in average 1.6%). The near-saturated soil hydraulic conductivity values were significantly higher for no-tilled (G, E) than tilled soils (C, O), whereas the opposite result was found for smaller degrees of saturation. The Dexter's soil quality index assumed similar values in both the top (0.024-0.047) and the lower layer (0.024-0.040), with the higher values associated to tilled soils. According to existing guidelines, the soil physical quality of the selected areas was generally poor independently of the land use. However, the cropland showed a better quality than the other land uses.

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