



Effect of addition of organic materials and irrigation conditions on soil quality in olive groves in the region of Messinia, Greece.

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Intensive cultivation practices are associated to soil degradation mainly due to low soil organic matter content. The application of organic materials to land is a common practice in sustainable agriculture in the last years. However, its implementation in olive groves under different irrigation regimes has not been systematically tested under the prevailing Mediterranean conditions. The aim of this work was to study the effect of alternative carbon input techniques (i.e. wood shredded, pruning residues, returning of olive mill wastes the field with compost) and irrigation conditions (irrigated and rainfed olive orchards) on spatial distribution of soil chemical (pH, EC, total organic carbon, total nitrogen, inorganic nitrogen, humic and fulvic acids, available P, and exchangeable K) and microbial properties (soil basal microbial respiration and microbial biomass carbon) in two soil depths (0-10 cm and 10-40 cm). The study took place in the region of Messinia, South western Peloponnese, Greece during three year soil campaigns. Forty soil plots of olive groves were selected (20 rainfed and 20 irrigated) and carbon input practices were applied on the half of the irrigated and rainfed soil parcels (10 rainfed and 10 irrigated), while the remaining ones were used as controls. The results showed significant changes of chemical and biological properties of soil in olive orchards due to carbon treatments. However, these changes were depended on irrigation conditions. Microbial parameters appeared to be reliable indicators of changes in soil management. Proper management of alternative soil carbon inputs in olive orchards can positively affect soil fertility.