



The effects of ants on soil properties in chemically- and organically-managed orchards.

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Ants are environmental engineers that contribute to soil turnover and improve water infiltration, organic matter concentration, and soil porosity. How important ants are on these soil properties depends on the type of soil, ant activity, and the number and species of ants. However, soil management of agriculture land (organic and chemical farming) also results in soil properties changes that can be relevant for the soil processes and productivity. Since little is known on the impact of ants on soil development on both of these agricultural management systems, a study was conducted on two orchards (chemical- and organic-treated) in eastern Spain. Forty samples (0-2 cm depth) were collected from the chemically-managed orchard, and forty samples taken from the organically-managed orchard. Half of the samples at each orchard (20) were taken from ant-affected soil and 20 were taken from areas with no ant activity (control). Organic matter, soil bulk density, grain size, calcium carbonate content, and aggregate stability (Drop test, CND and TDI) were measured on each sample. Fresh soil deposited on the soil surface during nest construction by ants was not collected. Our results show that ants did not affect any soil property on the organic orchard, but ant activity increased soil organic matter content and aggregate stability and decreased bulk density. Ants can act as soil engineers on chemical orchards, but they are not an im-

portant factor in organic orchards, where biological activity, organic matter content, and understory vegetation is high. However, on chemically managed farms the soil turnover and organic matter redistribution is determined by ants as no others agents (vegetation, worms, etc) are active.