



The impact of agriculture management on soil quality in citrus orchards in Eastern Spain

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Currently, the agricultural management of citrus orchard in the Valencia region in E Spain, is changing from traditionally irrigated and managed orchards to drip irrigated organic managed orchards. It is not known what is the effect of such changes on soil quality and hope to shed some light with this study on this transition. It is known that the drip-irrigated orchards built in sloping terrain increase soil erosion (Cerdà et al., 2009; Li et al., 2014) and that agricultural management such as catch crops and mulches reduce sediment yield and surface runoff (Xu et al., 2012;), as in other orchards around the world (Wang et al., 2010; Wanshnong et al., 2013; Li et al., 2014; Hazarika et al., 2014):

We hypothesize that these changes have an important impact on the soil chemical and physical properties. Therefor we studied the soil quality of 12 citrus orchards, which had different land and irrigation management techniques. We compared organic (OR) and conventional (CO) land management with either drip irrigation (DRP) or flood irrigation (FLD). Soil samples at two depths, 0-1 cm and 5-10 cm, were taken for studying soil quality parameters under the different treatments. These parameters included soil chemical parameters, bulk density, texture, soil surface shear strength and soil aggregation. Half of the studied orchards were organically managed and the other 6 were conventionally managed, and for each of these 6 study sites three fields were flood irrigated plots (FLD) and the other three drip irrigated systems (DRP) In total 108 soil samples were taken as well additional irrigation water samples.

We will present the results of this study with regard to the impact of the studied irrigation systems and land management systems with regard to soil quality. This knowledge might help in improving citrus orchard management with respect to maintaining or improving soil quality to ensure sustainable agricultural practices.

References

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