



## **Water, manure and agriculture management as key factors for organic matter decomposition in citrus orchards in Eastern Spain.**

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Citrus orchard soils in eastern Spain usually have low organic matter contents (<1%) after millennia of ploughing and decades of herbicide applications. Since manure is normally not used in chemically-treated orchards, an increase in soil organic matter is important for achieving a sustainable system. Very little is known on how orchard management affects abiotic soil conditions (e.g temperature, moisture, pH) that are the drivers of organic matter decomposition. Four study sites near Valencia were selected for study, which have various combinations of different orchard management regimes: organic with and without manure, chemical applications, and irrigation (drip, flood, none). We used wood stakes (*Pinus taeda*, *Populus tremuloides*, *Pinus halepensis* and *Populus alba*) as a standard index to measure the impact of these orchard management treatments on organic matter decomposition. Each treatment plot had 100 stakes installed from 0 to 20 cm depth (25mm x 25 mm x 200 mm), and 100 stakes laying on the soil surface (25mm x 25 mm x 150). Stakes will be removed every 12 months over

a five year period. Preliminary results has shown the importance of organic matter additions and the type of irrigation system on wood stake decomposition. Termites were very active in irrigated soils.