



## **Influence of sustainable management on aggregate stability and soil organic matter on agricultural soil of southern Spain**

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Intensive agriculture has increased crop yields but also posed severe environmental problems. Unsustainable land management such as excessive tillage can lead to a loss of soil fertility and a drastic reduction in the aggregate stability and soil organic matter content. However sustainable agriculture can keep good crop yields with minimal impact on ecological factors conserving the soil quality and its ecosystem services.

Sustainable agriculture management promotes the maintenance of soil organic matter levels providing plant nutrients through the microbial decomposition of organic materials. Also this management has a positive effect on soil structure with the improvement of stability of aggregates. The resistance of soil aggregates to the slaking and dispersive effects of water (aggregate stability) is important for maintaining the structure in arable soils. Our purpose was to investigate and compare the effects of sustainable agricultural practices versus intensive agriculture on aggregate stability and soil organic matter. Three agricultural areas are being monitored in the southern of Spain, two of them with citrus orchards (AL) and (FE) and one with grapevine(PA). In all of them two agricultural treatments are being developed, organic with no-tillage management(O) and inorganic fertilization with herbicide application and intensive tillage (I). The sustainable agricultural management (manure, no tillage and vegetation cover) contributed to the improve of soil conditions, increasing organic matter and aggregate stability. Meanwhile, herbicide treatment and intensive tillage with inorganic fertilization managements resulted in the decreasing of aggregate stability and low levels of soil organic carbon. Soil organic matter content is generally low in all unsustainable treatments plots and tends to decline in aggregate stability and soil physical condition. In both treatments the crop yield are comparable.