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STSM title: Influence of cover crops on soil properties in vineyards and olive groves

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Five Keywords: Land management, soil properties, cover crops, vineyards and olive groves.

Topic summary: Agricultural land use is recognized as a trigger for soil and water conservation problems. The main purpose of this STSM was learning about the influence of different land management strategies (tilled soil versus cover crops) on soil properties. The objective is to combat land degradation in the vineyards and olive groves, typical land-uses on these semi-arid regions.

Methods summary: To assess the influence of different land management strategies (tilled soil versus cover crops) on soil properties, it was tested different methods, disk infiltrometers in the field, and methods to determine soil aggregate stability, water holding capacity and permanent wilting point of soil samples in the laboratory. Field trips: El Encín (Spanish National grape collection), El Socorro in Colmenar de Oreja (a field of vineyards), and 'La Chamenea' (the experimental center of olive groves).

Results and implications for restoration: As a result, it was obtained a better knowledge about methodologies to assess soil quality, and in the other hand more information about cover crops and techniques used to protect soil on vineyards and olive groves. After field and laboratory measurements, higher aggregate stability, soil moisture, organic matter and nitrogen content were confirmed for cover crops, such as bitter vetch (*Vicia ervilia*, a grain legume), comparatively to soil with tillage or spontaneous vegetation. These soil properties have potential benefits to reduce soil erosion. Also important to mention the relation between such agronomic practices and the quality of the product (grapes/wine and olive oil) reported by producers and researchers.



Soil erosion experimental plots



Field measurements.



Analysis of samples