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

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Five Keywords: cover crops, vineyards, olive groves, soil stability, water holding capacity, water infiltration.

Topic summary: Cover crops could be key contributors in enhancing resistance to increasingly severe drought conditions combined with periodic intense precipitation events in agricultural lands. Traditional soil management in vineyards and olive orchards includes intensive tillage that has resulted in loss of soil organic matter and soil structural stability. Cover crops can improve soil structural stability resulting in reduced erosion and increased water retention and infiltration, although competition for water is an issue that must be overcome.

Methods summary: Influence of soil management including cover crops (Yeros, barley, and Brachypodium) were compared to tillage + spontaneous vegetation using a single ring infiltrometer, a mini-disk infiltrometer (0 and 4 cm pressure heads), bulk density, and soil porosity.

Results and implications for restoration: The COST Short Term Scientific Mission (STSM) to Universidad Autónoma de Madrid consisted of visits to several field research stations to demonstrate the influence that cover crops can have in these systems, and it also gave us the opportunity to sample soil physical properties in various was that allow for a broad characterisation of soil structural functioning. The cover crop Brachypodium distachyon was comparable with tillage in its ability to influence both water infiltration and soil aggregate stability (i.e., resistance to erosion) and may therefore be a viable alternative to tillage in vineyards and olive groves in Madrid.