



Soil Protection measures based on the analysis of sediment sources in a commercial farm at the Guadalquivir Valley (Spain)

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High soil losses are associated with agricultural areas dedicated to traditional crops in Spain (olive, grapevine, almond and sunflower, among others) and they caused by interacting drivers such as frequent intense events, steep/hilly slopes and unsuitable managements (De Santisteban et al., 2006). These crops are essential for the Spanish economy but at the same time, they constitute important areas of soil degradation. This work has been promoted by a farm owner interested in improving the sustainability of his farm as well as solving traffic problems derived from a gully.

An analysis based on a modeling approach and field measurements was carried out in order to diagnose the main sediment sources of a farm with traditional Mediterranean crops (sunflower and olives) and to propose actions for optimizing soil conservation efforts. Firstly, an environmental study to characterize meteorological and topographical features, soil properties and managements was performed. The farm was divided in different areas belonging to the same hydrological catchment, land-use and management. Secondly, splash and inter-rill erosion were evaluated in each spatial unit through the RUSLE model. Rills and gullies in the catchment were also measured by using orthophotographies and a tape in the field to calculate their corresponding sediment volume. Finally, a plan of soil protection measures was designed and presented to the owner who will apply the proposed actions, mainly cover crop seeding and construction of check dams.

REFERENCES:

De Santisteban, L. M., J. Casali, and J. J. López. 2006. Assessing soil erosion rates in cultivated areas of Navarre (Spain). *Earth Surf. Process. Landforms* 31: 487-506.