

The use of straw in vineyards and orchards to reduce soil and water losses in Eastern Spain.

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Straw has been demonstrated to be a very efficient mulch to reduce soil losses. This has been found by different authors and in different regions such as the Mediterranean Region, where there is a need to reduce the non-sustainable soil and water losses caused by the compaction of soil, lack of vegetation and intense thunderstorms. The Soil Erosion and Degradation Research Team from the University of Valencia with the collaboration of other research areas is developing a holistic research program to understand how straw mulch can be introduced and applied with success in traditional rainfed and modern irrigated orchards and vineyards.

The research is based on three approaches: i) the perception of the farmers; ii) the economic cost; iii) and the biophysical impact of the straw mulch on soils, runoff generation and soil erosion. Farmer perception has been researched by means of interviews and the results shows that farmers prefer a tidy and clean soil (if possible ploughed in the vineyards) rather than vegetation or straw cover. There is a need to inform the farmers about how important it is to protect the soil and to find the right covers. It is also important to find adequate subsidies to encourage this management. Without financial support most farmers will be not convinced to use catch-crops, mulches or chipped branches. The cost of the straw is about 0.05 € Kg⁻¹, the transport is 0.02 € Kg⁻¹ and the application 0.04 € Kg⁻¹. The cost is affordable for farms that have high incomes and mechanization. The results of rainfall simulation experiments and measurements under plot conditions demonstrate a reduction of one order of magnitude in soil erosion rates and 30 % in runoff discharge when straw mulch is used. The straw reduces soil erodibility due to the protective cover, which reduces raindrop impact energy on the soil surface and slows runoff, encouraging infiltration.

Acknowledgements

This research was funded by the European Union Seventh Framework Programme (FP7/2007-2013) under grant no. 603498 (RECARÉ Project). J. Rodrigo-Comino, was awarded with a scholar grant (FPU) by Ministerio de Educación, Cultura y Deporte de España (Spanish Ministry of Education, Culture and Sport, Spain).

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