



## **Land uses and water repellency on calcareous soil in Eastern Spain. A WDPT and rainfall simulation research.**

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Assesments of water repellency under field conditions give information about the capacity of soils to rain infiltration, and their susceptibility to surface runoff production and material release. The top soil surface (0-2 cm) characteristics mainly determine the soil hydrological and erosional response to wetting. Land use modifies the soil surface, and consequently the hydrological and erosional response. The aim of this study is to identify the land uses prone to induce surface water repellent layers, and to determine the relations between land use, hydrophobicity and soil and water losses under Mediterranean climatic conditions.

Rainfall simulation experiments (0.25 m<sup>2</sup>, 55 mm during one hour) were carried out in summer 2002 under extremely dry conditions and Spring 2003 under wet conditions. 10 experiments (5 in summer and 5 in spring) were carried out at each of the selected land uses: *Pinus halepensis* woodland, *Quercus coccifera* shrubland, Orange grove, Olive grove, Cereal field and recently Burnt scrubland located in the Cànnyoles river valley in Valencia Province, Eastern Spain. WDPT (Water Drop Penetration Time) measurements were carried out at the same location of the rainfall simulation experiments. The results shows that the hydrophobic response is almost negligible on the studied calcareous soils, except underneath the *Pinus halepensis* woodland. The

soil erosion and runoff rates were very low under the vegetated soil, but much higher on the ploughed land. Soil water repellency is not a key factor on soil hydrology on calcareous soils.