



Citrus plantation and soil erosion by surface and subsurface flow.

The Montesa soil erosion research station.

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Eastern Spain is the world's greatest exporter of oranges. Citrus plantations were established two centuries ago on alluvial plains and alluvial terraces where flood irrigation was developed by means of river discharge management. During the last 20 years, drip irrigation from groundwater has allowed farmers to establish citrus orchards on sloping ground. Despite changes to the slope of the fields, farm management has utilised the same strategies as the non-slope orchards and those strategies resulting in greater soil losses. An investigation has been developed since 2005 on the effect of land management on soil erosion and water resources. At the experimental station of Montesa 6 plots of 300 m² were constructed with a three-depth collector that gathers groundwater at 2 depths, and surface runoff. The collector was built with concrete and gravel in order to collect subsurface soil flow at 10-30 and 50-70 cm depths respectively, and surface runoff. The flows are collected in 1m³ tanks. During 2005-2007 organic farming management was maintained. Manure was applied at 50 Mg ha⁻¹ year⁻¹ and a catch crop of oats (2005) was sown in October and cut and shredded in June. No tillage was applied. During the 3 years of measurements, no flows were collected, other than one event during summer 2005 on the lowest collector of groundwater flow, which was due to a discharge from the irrigation system due

to a broken pipe. Neither surface nor subsurface flow has been collected. The future plan for the experimental station is to change from organic farming to chemical farming with herbicides and ploughing managements in order to check if this does or does not influence the erosional processes.