Conservation strategies on olive orchards in eastern Spain.

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Herbicides (83%) and tillage (14 %) are the most widespread soil management methods in the Sierra de Enguera olive orchards in eastern Spain, and result in high erosion rates due to the water and tillage erosion. Over the last 5 years an experimental station has been developed at El Teularet – Sierra de Enguera, Valencia Province, in order to determine the effect of land management on soil erosion. Soil management of the plots are as follows: contact herbicides, residual herbicide, systemic herbicide, traditional tillage, tillage with catch crops, catch crop with no-tillage, control plot, legumes with no tillage, chipped branches mulch, straw much, geotextile, scrubland and 30-years abandoned orchard. Each plot has 5 subplots of 1 x 1, 1 x 2, 1 x 4, 2 x 16 and 3 x 16 m. The runoff and sediments are collected by Gerlach collectors and storage for every rainfall event in tanks of 100 to 1000 litres. The systems are monitored every two weeks or/and after any rainfall event. The results from 2004 and 2005 measurements show a negligible runoff and sediment contribution except on the herbicide sites were soil erosion reached average values from 1.8 to 4.17 Mg ha^{-1} year^{-1}. The ploughed soils contribute little sediments and runoff although tillage erosion was found. Any conservation strategy (weeds, catch crops, straw and chipped branches mulch, geotextile or scrub) result in the reduction of the soil loss. However, high erosion rates were found when massive herbicide application takes place.