



## **Simulation of filter strips influence on runoff and soil and nutrient losses under different rainfall patterns in a small vineyard catchment**

Maria C. Ramos and Carolina Benito

University of Lleida, Environment and Soil Science, Lleida, Spain (cramos@macs.udl.es)

This work presents the analysis of the influence of filter strips on soil and water losses in a small catchment, whose main land use is grape vines. The watershed was located in the municipality of Piera (Barcelona, Spain). Other crops like olive trees, winter barley and alfalfa were also found, as well as some residential areas. Soil and water losses were simulated using the Soil and Water Assessment Tool (SWAT). The model was calibrated and validated using soil water and runoff data collected in the field during the period May 2010- May 2012. Then, the model was run for the period 2000-2011, which included years with different rainfall amounts and characteristics. Soil losses with and without that soil conservation measure was compared. The annual rainfall recorded during the analysed years ranged from 329.8 to 785 mm with different rainfall distributions within the year. Runoff rates ranged from 17 to 141 mm, which represented respectively 4.7 and 21% of total precipitation. Both extreme situations were recorded in the driest years of the series, with precipitation below the average. Soil losses ranged between 0.31 Mg/ha in the driest year and 13.9 Mg/ha, in the wettest. The simulation of soil losses with the introduction of filter strips 3m width in the vineyards resulted in a reduction of soil losses up to 68% in relation to the situation without that soil conservation measure. This soil loss decrease represented an additional nutrient loss reduction (up to 66% for N<sub>organic</sub>, up to 64% of P<sub>organic</sub> and between 6.5 and 40% of N<sub>nitrate</sub>, depending on rainfall characteristics).