Influence of soil management on phosphorus losses in olive orchards at the hillslope scale

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The overall objective of this study was the monitoring and comparison of phosphorus losses in olive orchards with different soil management at the hillslope scale, and the identification of the mechanisms through which phosphorus is lost. Several soil erosion plots were installed in three olive orchards: La Conchuela (plot size: 12 × 24 m), Benacazón (plot size: 8 × 60 m) and Lanjarón (plot size: 8 × 24 m), where the soil was classified as Typic Haploxerert, Petrocalcic Palexeralf and Typic Xerorthent respectively. The average slope of these plots ranges from 11 to 30 %. In all cases the different management systems that were compared are conventional tillage and cover cropping in the inter tree line. At each site, total runoff and sediment losses were measured and sampled. Total phosphorus was determined in the collected sediment and soil samples, while dissolved phosphorus was analyzed in runoff samples. Particle size distribution was determined in the sediment and soil samples using laser-diffraction analysis.

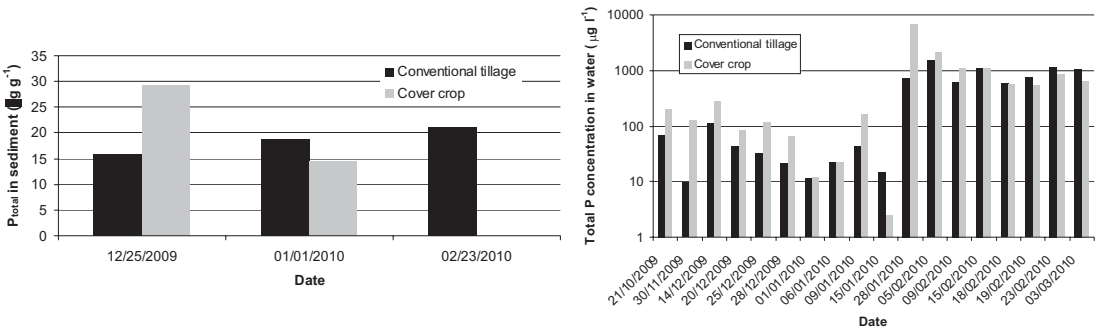

Figure 1: Total P concentration in sediment (left) and runoff water (right) in Lanjaron for different events during fall and winter of the 2009–2010 season.

This communication presents the preliminary results of the first hydrological year of the project (2009–2010), a year of high precipitation. Figure 1 presents some of the results to date for the Lanjarón experimental site.