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Interactions of grass spontaneous cover in olive orchards with site conditions and management: a study case using biodiversity indices

Carmen Arroyo (1), Encarnación Taguas (1), Ángel Lora (1), Gema Guzmán (1), Karl Vanderlinden (2), and Jose A Gómez (3)

(1) University of Córdoba, Agronomist and Forest Engineering School, Cordoba, Spain (o72arbac@uco.es,evtaguas@uco.es, cr1logoa@uco.es, g92gudim@uco.es), (2) IFAPA, Centro Las Torres-Tomejil - Seville, Spain (karl.vanderlinden@juntadeandalucia.es), (3) Sustainable Agriculture Institute (CSIC) - Córdoba, Spain (joseagomez@ias.csic.es)

Spontaneous herbaceous plants are an inexpensive control measure of soil erosion in olive orchards. Grass covers on steep areas are a requirement for compliance by farmers with basic standards concerning the environment, derived from Common Agricultural Policy (cross-compliances). In addition to ground cover, other aspects such as biodiversity and OC storage capacity of these systems are often not considered, despite the fact that the occupation of many ecological niches by different species might provide substantial environmental and landscape benefits.

In this study, we evaluated different biodiversity indices on grass cover in two olive orchard catchments with different managements (conventional tillage and non-tillage with natural herbaceous plants) during 3 years (2011-2013). Seasonal samples of vegetal material and pictures in a permanent grid (4 samples/ha) were taken to characterize the temporal variations of the indicators: number of species, frequency, diversity and transformed Shanon′s and Pielou′s indices.

The specific objectives of this work were: i) to describe and to compare the biodiversity indices in two contrasting olive orchard catchments of 6 and 9 ha with different soil types, precipitation, topography and management; ii) to explore possible relationships of these indexes with soil organic carbon content and soil loss.

The results will allow improving our knowledge of environmental functions of this type of ground cover as well as factors determining its development. These features can be particularly interesting to enhance the environmental values of marginal olive orchards in steep locations.

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