



The El Teularet – Sierra de Enguera experimental site. Land management effects on organic matter decomposition in Spanish rainfed orchards.

Artemi **Cerdà**(1) Debbie Page-Dumroese(2) Martin F. Jurgensen(3) and Merche B. Bodí(1,4)

(1) Departament de Geografia. Universitat de València. Blasco Ibáñez, 28, 46010- València. artemio.cerda@uv.es

(2) US Forest Service, Rocky Mountain Research Station, Moscow, ID 83843, USA.

(3) School of Forest Resources and Environmental Science, Michigan Technological University, Houghton, MI 49931. USA.

(4) GEA (Grupo de Edafología Ambiental). Departamento de Agroquímica y Medio Ambiente, Universidad Miguel Hernández, Avenida de la Universidad s/n, 03202-Elche, Alicante.

Organic matter decomposition is a key soil process, which affects soil nutrient and water availability, gas exchanges (O_2 and CO_2), and other soil physical properties, such as bulk density. Eastern Spain has a Mediterranean climate (500 mm y^{-1}) where rainfed agriculture using tillage and/or herbicide management systems have resulted in degraded soils with less than 1 % organic matter content. However, conservation and organic farming practices are being initiated, but account for < 5 % of the Spanish rainfed agricultural land. Relatively little information is available on the impact of these management systems have on organic matter decomposition. Therefore, we have established a study at the El Teularet – Sierra de Enguera Experimental Station to determine the effect of different soil management practices on soil properties, and if these changes affect decomposition rates. The practices studied are: 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 mulch, geotextil, and an abandoned orchard (control). Wood stakes (*Pinus taeda*, *Populus tremuloides*, *Pinus halepensis* and *Populus alba*) were used as a standard substrate to measure the impact of soil and residue treatments on organic matter decomposition. The basic experimental design had 100 stakes installed from 0 to 20 cm depth (25mm x 25 mm x 200 mm), and 100 stakes laying on the soil surface (25mm x 25 mm x 150) on each treatment plot. Additional stakes were installed in the geotextil and tillage treatments. Stakes will be removed every 12 months over a five year period.