

# SOIL ORGANIC MATTER EFFECTS ON RUNOFF AND EROSION IN DRYLAND VINEYARDS OF NE SPAIN

**Ildefonso Pla Sentís**

Departament de Medi Ambient i Ciències del Sòl, Universitat de Lleida  
Av. Alcalde Rovira Roure 177, E-25198 Lleida, Spain : [ipla@macs.udl.es](mailto:ipla@macs.udl.es)

---

Soil organic matter is often considered the soil component with higher influence on other soil physical, chemical and biological properties. Various factors control the content and forms of soil organic matter, including crops and management systems. Agricultural practices in dryland vineyard lands, with hilly topography, in NE Spain, have undergone profound changes during the last 20-30 years, with a general intensification of production, and complete mechanization of all operations. Land leveling and tillage, and continuous mechanical cultivation have affected negatively the soil organic matter and the physical properties of the surface soil, increasing water runoff losses and soil erosion.

In order to improve this situation there is an increased addition of organic amendments, mainly compost of farm manure. This paper presents results obtained in a more general field study of the water balance and soil moisture regime with different agricultural management systems of dryland vineyards, in a silt loam soil derived of calcareous lutites, under the semiarid Mediterranean climate of NE Spain. There are analyzed the influences of different contents of soil organic matter (SOM) in the surface soil (0-20 cm), in areas with the traditional soil management practices (0.84 % SOM) compared with the new mechanized systems, without (0.18 % SOM) and with (1.16 % SOM) the addition of compost (120 metric tons/hectare) during the last four years.

The results show that SOM content is low under the different conditions, but the apparent effects on the soil moisture regime and on the grape production, specially in dry years, are very significant. The higher levels of SOM (1.16 %) in the soil after two additions of 60 metric tons/hectare in four years, does not result in marked decreases in runoff and erosion, and in grape yields.

It is concluded that in these soils not only the SOM content is important in the improvement of the soil physical properties, and that a great part of the added organic materials is lost by erosion and decomposition before it associates to the mineral soil colloids. Therefore, C sequestration associated to the application of large amount of organic residues to the soil, is not very effective under the present land management system in dryland vineyards of NE Spain.

**Key-words:** NE Spain, Vineyards, Soil organic matter, Erosion, Runoff, Compost of farm manure

**RESEAU  
EROSION**



**Référence bibliographique Bulletin du RESEAU EROSION**

**Pour citer cet article / How to cite this article**

Pla Sentis, I. - Soil organic matter effects on runoff and erosion in dry land vineyards of ne Spain, pp. 477-477, Bulletin du RESEAU EROSION n° 23, 2004.

Contact Bulletin du RESEAU EROSION : [beep@ird.fr](mailto:beep@ird.fr)