



The effects of different soil cover management practices on plant biodiversity and soil properties in Mediterranean ancient olive orchards

Suzana Madzaric, Adel Aly, Gaetano Ladisa, and Generosa Calabrese
Mediterranean agronomic institute of Bari, Italy (smpursus@yahoo.com)

Abstract

The effects of different soil cover management practices on plant biodiversity and soil properties in Mediterranean ancient olive orchards

Madzaric S., Aly A., Ladisa G. and Calabrese G.

The loss of natural plant cover due to the inappropriate soil cover management is often a decisive factor for soil degradation in Mediterranean area. This accompanied with typical climate, characterized by cool, wet winters and hot and dry summers leads to soil erosion and loss of productivity. Due to simplification of agricultural practice and to the attempt to decrease cost of production, keeping soil bare is a widespread agricultural practice in Mediterranean ancient olive orchards (AOOs). The consequences of this are degradation of soil quality and reduction of plant biodiversity. In last year's some alternative practices are proposed in order to protect soil and biodiversity. One of these practices is the "grassing" i.e. covering the soil by selected autochthonous plant species. Objectives of our study are: (1) to evaluate impact of different soil cover management practices on soil properties and plant biodiversity in AOOs and (2) to define a minimum indicators' set (Minimum Data Set - MDS) to evaluate the effectiveness of different agricultural practices in environmental performance of AOOs. A comparison was carried on considering two management systems (conventional vs. organic) and three agricultural practices: conventional with bare soil (CON), organic with soil covered by selected autochthonous species (MIX) and organic left to the native vegetation (NAT). In general a clear positive influence of organic management system was recognized. Some soil quality indicators (physical, chemical and biological) showed responsiveness in describing the effects of management system and agricultural practices on soil properties. The both approaches with vegetation cover on the soil surface (either sowing of mixture or soil left to the natural plant cover) performed better than conventional one with repeated tillage and bare soil during the whole year. This is peculiarly visible in the case of soil erosion that presents an enormous problem in Mediterranean region. No clear differences resulted between the two organic practices for soil management (natural cover and grassing).

Key words: organic agriculture, ecological indicators, agricultural practices, soil quality, olive groves