



## **Biological and biochemical soil indicators: monitoring tools of different agricultural managements**

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The intensive agricultural managements, increased in the last twenty years, have resulted in a decrease in fertility of soils, representing a serious threat to agricultural productivity due to both the increase in production cost, mainly for intensive use of mineral fertilizers, and the loss of the quality of crops themselves. Organic matter content is closely related to the soil fertility and its progressive reduction in cultivated soils, without a satisfactory recovery, could make agriculture untenable, resulting in a high detrimental effect on environment. But an appropriate soil management practices can improve soil quality by utilizing organic amendments as alternative to mineral fertilizers to increase soil quality and plant growth. In this context, demand of suitable indicators, whose are able to assess the impact of different agricultural managements on soil quality, has increased. It has shown that soil biological and biochemical properties are able to respond to small changes in soil conditions, thus providing information on subtle alterations in soil quality.

Aim of this study was to evaluate the use of soil biological and biochemical properties as fertility indicators in agricultural soils under different agricultural managements, sited in Campania Region (Southern Italy). After a preliminary monitoring phase of soil fertility on different farms sited in five agricultural areas of Campania Region, we have selected two farms in two different study areas to assess the effect on soil quality of different organic amendments. In particular, a compost from municipal solid waste and wood from scraps of poplars pruning were supplied in different doses and ratios. Soil samplings after one month from the amendment addition and then every 4 months until a year were carried out. All collected soil samples were characterized by main physical, chemical, biochemical and biological properties.

In general, the use of different organic amendments showed a positive effect on fertility of both soils under intensive farming. In general, all enzymatic activities and organic carbon content increased after 1 month, and they were still higher after 4 months from amendment application. Microbial biomass and soil potential activity (respiration) showed significantly higher values in soils added with organic amendments, for both farms and samplings, with more marked effects on respiration in the first sampling.

In conclusion results showed, in general, a quick response as indicators of the assayed biological and biochemical soil properties and a good recovery in fertility of the studied agricultural soils.

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