Functional Aspects of Soil Biodiversity in Mineral and Organic Fertilized Soils

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Soil biodiversity make essential contribution to soil fertility and health, being considered as an important forces for the achievement of sustainability in agroecosystems (Sandor, 2008). Conventional agricultural practices could negatively affect soil biodiversity by damaging habitats and disrupting their functions. New management strategies have to be adopted in order to conserve and restore soil biological functions (Anderson and Weigel, 2003).

A field experiment was conducted to assess the effects of mineral and organic fertilization on functional diversity of soil organisms. We hypothesize that different fertilizers will conduct to different structure of biotic community which, in turn, will affect some chemical properties of the soil. Mineralization of soil organic matter and the availability of plant nutrients are also related to the structure of soil biodiversity.

During the experiment organic carbon, total nitrogen, nitrate, ammonium, phosphate, potassium and soil acidity were measured monthly in potato fields were 100 kg N was added as mineral and organic fertilizers. The biological parameters used to assess the structure and functions of biotic community were soil enzymatic activity (dehydrogenases, proteases and phosphatases), microbial biomass, soil respiration, physiological metabolic profile, nematode density and functional groups and collembolans density and diversity. The obtained data will be used to create a model of nutrients disposal and availability which will consider both chemical and biological soil properties. The model will allow us to control nutrients mineralization process in order to obtain high yeald with minimum costs.

Preliminary results indicates that different type of fertilizers have influence on enzymatic activities, microbial biomass and soil respiration.

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REFERENCES