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Taxonomic and genetic diversity of microorganisms (Task 1.1)

Arbuscular mycorrhizal fungi (AMF) have a crucial role in plant nutrition and health. Generally, disturbance and intensive agriculture tend to reduce species-level diversity of AMF. However, it can be hypothesized that a larger pool of genetic diversity provides a reservoir of symbiotic functions that may become important as environmental conditions change. Consequently, the diversity of these fungi represents a plausible indicator for soil ecosystem functioning, but its value has not been adequately validated across different types of habitats.

The aim of the post-doc project is to study soil biodiversity of AMF in European soils in order to provide indicators of soil quality. For this purpose, in close collaboration with the group in Torino (Italy), AMF communities will be characterized in the long-term observatories (LTO's), using highthroughput sequencing (454 sequencing) based on the ITS2 region. Moreover, root samples from the Lusignan LTO were taken to allow a comparison between root and soil communities in this site. Within the context of other soil organisms studied, the influence of geographic distance, different land use, land management and soil properties on AMF communities will be analyzed to address the potential correlation of AMF diversity and soil quality. All sequence analyses will be done using the pipeline common to all organisms, and a specific pipeline for AMF will be developed.