



Effect of tree biodiversity on earthworm community following tree planting

Context

Biodiversity of tree plantations improves the quality of soil organic matter (SOM) by its humification and its organic-mineral complexes stabilization. Earthworms play a fundamental role in soil mixing and favour aggregation of soil mineral particles that in turn leads to improved soil structure. Consequences on soil C storage and plant productivity have often been shown to increase with the increase of biodiversity, but the reasons for this and effects on biodiversity of soil dwelling animal are not clear, especially in reforested systems and tree plantations. Should we expect some effects of plant species richness on earthworm populations? We hypothesize that differences observed in the humification degree and degree of formation of organo-mineral complexes may be linked to effects of tree species richness on pedofauna and specifically on earthworm abundance in soil.

Main aims

The main objective of the work will be to investigate the effect of tree biodiversity on the composition of pedofauna in soils of 20 years old tree plantations in relation to potential soil C sequestration. The study will focus on earthworms and on the relationships between ecological categories, biomass and abundance. Results will complete previous studies on the characterization of SOM in these soils in order to highlight a potential contribution of earthworms to humification and incorporation of organic matter into organo-mineral complexes.

Skills: Field practice, soil sampling, earthworm extraction, lab practice.

Keywords: soil organic matter, earthworm communities, tree planting, species richness, biodiversity.

Fieldwork: The students are encouraged to request fundings for travel and accommodation. Sampling and field activities will take place in the north-east of Italy while laboratory work will take place at Udine University and at the University of Neuchâtel.

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