

Annual Congress on

SOIL SCIENCES

December 04-05, 2017 | Madrid, Spain

Soil biodiversity: A pivotal element that sustains soil functions

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During the last century, soils have been over-exploited by industrial and agriculture developments in many parts of the world. Soils play a key role in the maintenance of ecosystem services and their preservation, in relation to human impacts and long-term processes induced by climate change, has become a priority topic. Besides the obvious implications for agro-sylvo-pastoral production, soils take part in the provision of other services such as carbon sequestration, nutrient cycling, protection of plants from pests, genetic resources, and other functions. A wide range of ecosystem services depends on soils and the functions performed by soil biota can have an impact at the global scale, with the consequences for global climate. The complex processes carried out by soil organisms have significant effects on ecosystem operation, soil quality, and yields and crops. The still in part unknown relationships between soil living community and ecosystem functions are extremely intricate and the study of these relationships is essential for understanding soil ecological functions and their ability to provide services. The need to adopt soil biodiversity monitoring programs is induced by both the increasing pressures on soil biodiversity and the limited knowledge obtained up to now. It is widely reported that the planet is currently losing biodiversity and it can be assumed that this process is occurring to the variety of organisms living in the soil. Finally, the increasing recognition of problems derived from soil degradation has contributed to identifying soil biota research as a priority in soil quality assessments.

Recent Publications

1. Pinto S, Gatti F, Garcia-Montero L G and Menta C (2017) Does soil fauna like truffles just as humans do? One-year study of biodiversity in natural brûles of *Tuber aestivum* Vittad. *Science of Total Environment* 584–585:1175–1184.
2. Gardi C, Visioli G, Conti F D, Scotti M, Menta C and Bodini A (2016) High nature value farmland: assessment of soil organic carbon in Europe. *Frontiers in the Environmental Science* 4(47):1-10.
3. Menta C, Garcia-Montero L G, Pinto S, Conti F D, Baroni G and Maresi M (2014) Does the natural microcosm created by *Tuber aestivum* affect soil microarthropods? A new hypothesis based on Collembola in truffle culture. *Applied Soil Ecology* 84:31-37.
4. Gardi C, Montanarella L, Arrouays D, Bispo A, Lemanceau P, Jolivet C, Mulder C, Ranjard L, Römbke J, Rutgers M and Menta C (2009) Soil biodiversity monitoring in Europe: ongoing activities and challenges. *European Journal of Soil Science* 60:807-819.
5. Tabaglio V, Gavazzi C and Menta C (2009) Physico-chemical indicators and microarthropod communities as influenced by no-till, conventional tillage and nitrogen fertilisation after four years of continuous maize. *Soil & Tillage Research* 105:135-142.



Fig. 1. Schematic representation of the relationships between soil functions and soil biota.

Biography

Cristina Menta is a Researcher in Soil Biology at Parma University, Italy. She obtained her PhD in Animal Biology, she is titular Professor of Zoology course at Parma University, and Scientific Director of the Natural History Museum of Parma University. She is coordinating as soil fauna expert and several research projects related to the characterization of soil fauna in natural and degraded areas. With her team, she has participated to the development of a new biological soil quality index (QBS-ar), based on soil micro-arthropod community, applied at international scale. She has published more than 50 papers in national and international scientific journal, chapters of book, and she has taken part in national and international congresses.

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