

Effects of microplastics on soil abiotic and biotic properties

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Recently, microplastics (MPs), characterized by a diameter ranging between 0.1 μm and 5 mm, has received increasing attention because of their wide distribution in the environment. They are widely studied in marine environment but few studies have been performed in the terrestrial one. The present research aimed to fill this gap, evaluating the effects of MPs on the soil abiotic and biotic properties. To achieve the goal, a mesocosm trial was performed. In more details, 14 pots (1m of diameter) were filled with soil and left outdoor. A sheet of PE (60 x 60 cm) was placed on soil surface of 5 pots, a sheet of MaterBi of the same size was placed on soil surface of other 5 pots, and no sheets were placed in 4 pots, considered as control. Surface soil (0 - 10 cm) samples were collected before plastic sheet addition, and after three and six months since sheet addition. Soil samples were analyzed for abiotic (pH, water content, water holding capacity, concentrations of total and organic carbon, and total nitrogen, C/N ratio) and biotic (hydrolasic, dehydrogenasic, β-glucosidasic and ureasic activities, and respiration) properties and phytotoxicity (germination index of *Lepidium sativum* L. and *Sorghum saccharatum* L). The results showed an meaningful separation of the investigated soil properties with respect to the exposure time rather than treatments. The main drivers of the found separation were pH, water holding capacity, total carbon concentration, dehydrogenasic activity and respiration.

Biography

Dott. Giorgia Santini has completed her Master degree at the age of 23 years and started the PhD course in Biology (section Ecology) at the age of 24 at the University of Naples Federico II. Her research interests include the effects of microplastics on soil abiotic and biotic properties. She collaborates with the University of Florence (Italy) and University of Vigo (Spain). Since 2019, she is co-author of 5 papers published of scientific journals with IF. Finally, she has attended several meetings and congresses.

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