AGROSYM

# BOOK OF ABSTRACTS

*XV International Scientific Agriculture Symposium*

*"Agrosym 2024"*

*Jahorina, October 10-13, 2024*

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# MICROPLASTIC POLLUTION EFFECTS ON SOIL PROPERTIES IN FOREST ECOSYSTEMS (SERBIA)

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## Abstract

Microplastic (MP) pollution is recognized as one of the biggest environmental problems due to multiple direct and indirect impacts on the environment. Existing research works indicate that the presence of MP in soil affects organic matter cycle, energy flow of terrestrial ecosystems, global production of $CO_2$, climate, plant communities, crop production and biodiversity. There are only few studies dealing with the impact of MP on forest soil ecosystems. Research aimed to access the impact of MP on soil main chemical, physical and biological properties by comparing polluted and non-polluted forest sites in the three largest alluvial plains in Serbia is currently being carried out within the project "Evaluation of the Microplastic in the Soils of Serbia". Statistically significantly higher values of electrical conductivity, pH and particles > 0.02 mm have been measured in samples from polluted localities; while C, N and CEC have been measured significantly higher in samples from unpolluted sites. Prolonged microbial respiration (three months) has been measured and obtained data have been used as input for potentially mineralizable carbon and mineralization rate estimations, which are statistically significantly higher at all polluted sites. These results support the viewpoints that can be found in the literature, that the presence of MP in the soil affect organic carbon cycle and $CO_2$ emissions. Differences in estimates indicate that microbial communities may be using MP particles as an additional food source. In order to establish the level of the impact of MP on soil properties and microbial activity in the longer term, the study is ongoing.

**Keywords:** *microplastic, pollution, forest soil, soil respiration, soil carbon.*

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