

# MICROPLASTICS IN AGRICULTURAL SOILS: SOURCES AND MICROBIAL REMEDIATION APPROACHES

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**Purpose.** The purpose of this study was theoretical analysis of the sources of microplastics in agricultural soils, its impact on agroecosystems and microbial remediation approaches to remove microplastics from the soil. **Design / Method / Approach.** Given the complex and multifaceted nature of the research topic, a complex of general scientific methods was used to achieve the research goal: analytical, synthetic, hermeneutic, pragmatic, generalization. **Findings.** The sources of microplastics in agricultural soils are plastics used to cover fertilizers, pesticides and seeds, film for mulching, use of wastewater for irrigation, sludge from wastewater treatment as fertilizers that can lead to the occurrence of environmental risks for the functioning of agroecosystems and human health. Microbial remediation is a promising direction for the removal of microplastics from agricultural soils. **Theoretical Implications.** Generalized information on the sources of microplastics in agricultural soils, the consequences for agroecosystems of this type of pollution, as well as microbial remediation approaches for the removal of microplastics are presented, which expands the understanding of microplastics as a pollutant of agroecosystems. **Practical Implications.** The given information will contribute to the growth of research into the level of contamination of agricultural soils with microplastics, in particular, in Ukraine, and the formation of biofilms of soil microorganisms-biodegraders on the surface of microplastics (with attention to sulfate-reducing bacteria), including influence of various toxicants on these processes. **Originality / Value.** The theoretical and practical issues of contamination of agricultural soils with

microplastics are summarized with emphasis on biofilm formation as an important stage of microbial remediation. **Research Limitations / Future Research.** In Ukraine, the level of contamination of agricultural soils with microplastics, the impact of toxicants on the biofilm formation by soil microorganisms-biodegraders on the surface of microplastics (with attention to sulfate-reducing bacteria) have not been determined and further research on this issue is needed.