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Microplastics in Terrestrial Ecosystem

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Message from the Guest Editor

Microplastics are plastic particles with a diameter of less than 5 mm. Recent studies about the effects of microplastic pollution are mainly from the aquatic environment. However, this contaminant is a potentially larger issue in terrestrial ecosystems, with 4- to 23-times the amount of microplastics released into the land than the ocean. In fact, almost 75%–90% of aquatic microplastics come from terrestrial land through surface runoff. Accumulating microplastics in terrestrial ecosystems have caused some soil problems, with microplastics reaching up to 7% of soil weight in some highly contaminated areas. Microplastics can significantly alter soil bulk density, porosity, saturated hydraulic conductivity, field capacity, and soil water repellency, thus, affecting plants. Exposure of plants to microplastics leads to delayed germination of seeds, reduction in root and shoot biomass, and inhibition of leaf size, chlorophyll content, and photosynthetic efficiency. In addition, sub-micrometer- and micrometer-sized plastic particles can be absorbed by plants and transported from roots to shoots, posing a potential threat to human health.

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