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"Gheorghe Asachi" Technical University of Iasi, Romania

MICROPLASTICS IN AGRICULTURAL SOIL: DETECTION TECHNIQUES, CHALLENGES, LIMITATION, AND FUTURE RESEARCH DIRECTION: A REVIEW

Weiqing Yin[1], Zhao Yao[2], Muhammad Tariq[3], Jiaqi Zhang[4], Qaiser Javed[3], Qingjie Xie[3], Guanlin Li[3,5], Ismail Khan[3], Xin Zhao[6*], Babar Iqbal[3,5*]

[1]Zhenjiang Environmental Monitoring Center of Jiangsu Province, Zhenjiang 212004, People's Republic of China
[2]College of Electronics and Information, Qingdao University, Qingdao 266071, People's Republic of China
[3]School of Environment and Safety Engineering, Jiangsu University, Zhenjiang 212013, People's Republic of China
[4]Ministry of Education Key Laboratory for Ecology of Tropical Islands, Key Laboratory of Tropical Animal and Plant Ecology of Hainan Province, College of Life Sciences, Hainan Normal University, Haikou 571158, China
[5]Jiangsu Collaborative Innovation Center of Technology and Material of Water Treatment, Suzhou University of Science and Technology, Suzhou 215009, People's Republic of China
[6]Department of Civil and Environmental Engineering, College of Engineering, Seoul National University, Seoul 08826, Republic of Korea

Abstract

Microplastic (< 5 mm) contamination in the soil is an increasing environmental issue on the entire planet. It contaminates practically all components of the environment, and accumulating in the soil might harm the soil biota. The identification of these contaminants is unquestionably an important area of research because they have a significant potential to adversely affect the biotic and abiotic components of soil and harm living things. The main goal of this study is to comb through the available methods or technologies to identify and classify microplastics in agricultural soil quickly. Scientists have diligently worked for centuries to solve the riddle of detecting limitations and reducing the likelihood of obtaining erroneous or false-negative outcomes. In this study, we evaluate the effectiveness of all the approaches currently being used to find microplastics in agricultural land. Additionally, it offers explanations for the different detection methods and recommends more effective substitutes. However, the detection methods mainly depend on the type, size, and overall structure of the microplastics. We go over several fundamental detection methods that are primarily employed to find microplastics in agricultural soil, as well as some innovative and multifunctional methodologies that have been proposed to address microplastic detection challenges in agricultural land. To reduce the risk of their widespread exposure to human health, it is imperative to have a thorough understanding of various polymer kinds.

Key words: agricultural land, analytical techniques, emerging contaminants, limitations, soil microplastics

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* Author to whom all correspondence should be addressed: e-mail: babar@ujs.edu.cn, zhaoxin@snu.ac.kr; Phone: +86-511-88790955, +82-2-8808743; Fax: Phone: +86-511-88790955, +82-2-8808743