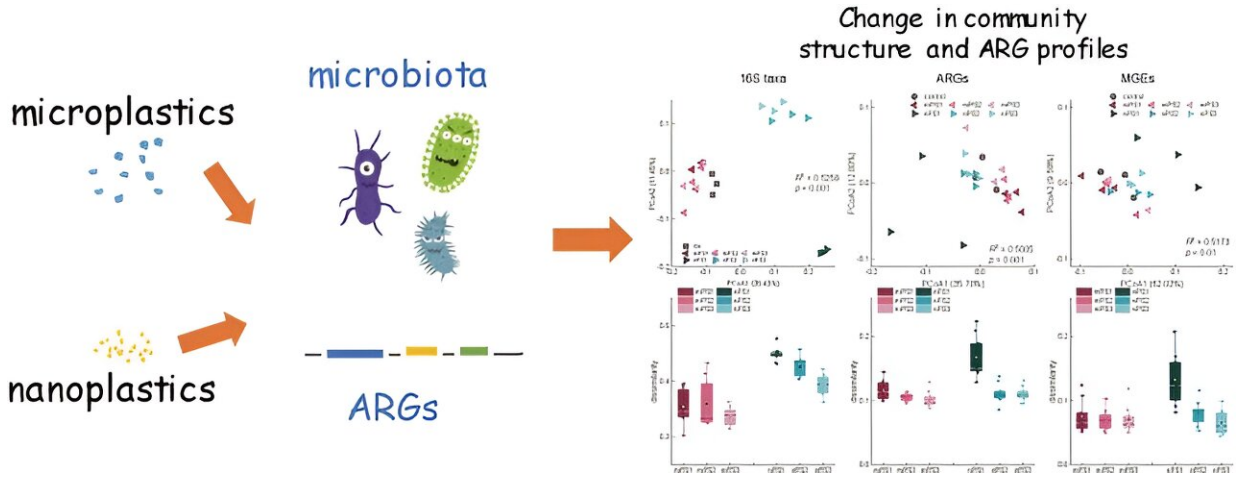
Uncovering how tiny plastics threaten our soil and health

January 2 2024



Credit: *Eco-Environment & Health* (2023). DOI: 10.1016/j.eehl.2023.09.005

In a study published online in *Eco-Environment & Health*, researchers from Zhejiang Shuren University and China Agricultural University have delved into the interaction of tiny plastics and soil, aiming to provide insights into the mechanisms and implications of plastic pollution on soil health and antibiotic resistance.

In this study, scientists investigated the effects of tiny plastic particles, known as nanoplastics and microplastics, on the bacterial community structure and the spread of antibiotic resistance genes (ARGs) in soil. They focused on polystyrene, a common plastic pollutant.

The research revealed that both nanoplastics and microplastics alter soil microbes and increase antibiotic resistance. Notably, nanoplastics, due to their small size, had a more significant impact, even in small quantities. This led to changes in the dominant types of bacteria and enhanced the spread of ARGs, potentially weakening the effectiveness of antibiotics. The findings highlight the growing concern over the presence of tiny plastics in soil and their implications for health and environmental sustainability.

Lead researcher Jie Wang states, "Our findings reveal a startling truth about the hidden dangers of nanoplastics in our environment. They not only disrupt soil microbial communities but also facilitate the spread of antibiotic resistance, posing a silent yet significant threat to ecological and public health."

Overall, the research highlights the complex ways that these tiny plastics are affecting soil and potentially our health. It shows that we need to understand more about these impacts and find ways to reduce plastic pollution to protect our environment and health.

This research underscores the urgent need for comprehensive strategies to manage plastic waste and mitigate its impact on soil ecosystems and public health. By highlighting the role of nanoplastics in amplifying ARG spread and altering microbial communities, the study provides crucial insights for environmental policies and practices aimed at preserving soil health and preventing the escalation of antibiotic resistance.

More information: Lijuan Liu et al, Nanoplastics promote the dissemination of antibiotic resistance genes and diversify their bacterial hosts in soil, *Eco-Environment & Health* (2023). DOI: 10.1016/j.eehl.2023.09.005

Provided by Chinese Academy of Sciences