Special Issue

The Soil–Water–Microbiome Nexus: Integrating Microbial Functions for Agricultural Sustainability

Message from the Guest Editors

This Special Issue addresses several fundamental research gaps that currently limit the development of microbiome-based solutions for sustainable agroecosystems. First, the mechanisms governing plant–microbe communication, particularly root exudation signals that recruit beneficial microorganisms, remain poorly characterised across diverse crop species and environmental conditions. Second, the performance variability of microbial inoculants under field conditions, where fluctuating soil types, climate stressors, and indigenous microbial communities influence colonisation and persistence, represents a major barrier to consistent agronomic outcomes. Third, the functional roles of rare microbial taxa in multi-nutrient cycling and their responses to alternative water management strategies (such as alternate wetting and drying) require systematic investigation. Fourth, the integration of microbiome indicators into ecological risk assessment frameworks and soil health monitoring protocols remains largely undeveloped. Finally, understanding how climate change-induced stressors interact with soil and water microbiomes to affect ecosystem resilience demands urgent attention.

Guest Editors

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In the context of global changes, the sustainable management of water cycles, going from global and regional water cycles to urban, industrial and agricultural water cycles, plays a very important role on the water resources and on their relationships with food, energy, biodiversity, ecosystem functioning and human health. *Water* invites authors to provide innovative original full articles, critical reviews and timely short communications and to propose special issues devoted to new technological and scientific domains and to interdisciplinary approaches of the water cycles. We ensure a critical review process and a quick turnaround between submission and final decision.

Editor-in-Chief

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