



Microorganisms

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Special Issue Reprint

Special Abilities of Microbes and Their Application in Agro-Biology

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Amid the growing challenges posed by climate change, securing global food security has never been more critical. This imperative is at the heart of the United Nations' "Zero Hunger" SDG. This reprint unveils the innovational role of microbial-based biofertilizers in creating sustainable agricultural solutions. Microbes, resilient and adaptable, thrive in the most extreme environments on Earth—from the icy polar regions and searing hot springs to polluted and arid lands. Their extraordinary adaptability, driven by unique biochemical and physiological mechanisms, equips them with the ability to produce essential enzymes and metabolites. These capabilities are harnessed to support sustainable agriculture, particularly in enhancing soil fertility and crop production under diverse environmental stressors. It meticulously documents case studies demonstrating the efficacy of such microbes as biofertilizers, bio-stimulants, and biopesticides, which perfectly align with sustainable agriculture and circular economy principles. This is a vital resource for students, researchers, scholars, and policymakers. It provides insights into how microbial solutions can be strategically implemented to promote sustainable agricultural practices that work in harmony with nature. As we navigate the complexities of climate change, this volume serves as a beacon of hope, illustrating how leveraging the special abilities of microbes can lead to a resilient and sustainable agricultural future.

