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Nota di contenuto	1.Microbial diversity in agricultural soils: implications for soil functionality and productivity -- 2.Microbial Interactions in Soil Ecosystems: Facilitating Plant Growth, Nutrient Cycling, and Environmental Dynamics -- 3.Exploring plant-microbe interactions in extreme environments: lessons from arid and desert ecosystems -- 4. Enhancing Bioremediation Efficiency in Agricultural Soil through Microbial Consortia Optimization -- 5.Synergistic Plant-Microbe Interactions in Biomining and Bioleaching: Implications for Sustainable Resource Recovery -- 6.Enhancing Sustainable Farming with Beneficial Microbes: Soil Health, Crop Growth, and Environmental Safety -- 7. Plant growth promoting rhizobacteria: an integration of the

mechanisms behind their agricultural application -- 8.Microbial Biostimulants: Boosting Plant Performance and Stress Tolerance Error! Bookmark not defined -- 9.Plant growth promotion induced by phosphate solubilizing endophytes from the tropics -- 10.Biocontrol Strategies: Microbial Defenders against Plant Pathogens -- 11. Battlefronts in agriculture: understanding plant-pathogen interactions -- 12.Exploring Microbial Consortia for Enhanced Crop Protection and Plant Growth Promotion in Agriculture -- 13.Scaling Up Microbial Solutions: Challenges and Triumphs in Agriculture -- 14.Food Safety in a Changing World: Challenges and Innovations -- 15.Exploring metabolomics for unraveling microbial contributions to enhancing plant health -- 16.Each to their own: x-omics understanding of genotype specificity to develop smart bioinoculant formulations.

Sommario/riassunto

The world struggles with the dual problem of feeding a growing global population and ensuring environmental protection. Yet, current agricultural techniques cannot guarantee food security and environmental safety. Hence, there is a need to explore the transformational potential of sustainable agriculture as a preferred alternative. This book analyses the roles of beneficial microbes, which are often considered the unsung heroes of agriculture, in revolutionizing food production and reducing the adverse impact of agriculture on the environment. Readers are guided through the complex web of interactions between plants and microbes while also being introduced to a wide range of microorganisms essential to these interactions. Furthermore, the book unravels the intricate methods by which these microbial allies promote nutrient absorption, strengthen plant defenses against pathogens, prevent nutrient runoff and improve stress tolerance while lowering the dependency on synthetic chemical use. It also makes a compelling case for continued research and innovation in this field as we strive to harness the full potential of microbial allies to shape the future of agriculture. .