1. Record Nr. UNINA9910890180803321

Titolo	Soil Bacteria : Biofertilization and Soil Health / / edited by Shrivardhan Dheeman, M. Tofazzal Islam, Dilfuza Egamberdieva, Md. Nurealam Siddiqui
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2024
ISBN	981-9734-73-8
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (600 pages)
Disciplina	579.1757
Soggetti	Botany Microbial populations Physiology Plant Science Microbial Communities
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Section-I: Soil Health and fertility Chapter 1: 1. Biofertilizers: Catalysts for Enhancing Soil and Plant Health in Pursuit of Sustainable Agriculture -- Chapter 2: Biorecovery of Soil Health -- Chapter 3: 3. Nitrogen-fixing Bradyrhizobium spp. as Plant Growth-Promoting Bacteria to Improve Soil Quality and Plant Tolerance to Biotic and Abiotic Stresses -- Chapter 4: Potential of Plant Growth Promoting Rhizobacteria for Ensuring Soil Fertility and Plant Health -- Chapter 5: Soil and Crop Health Promotion: Zinc and Lead Management by Biofertilization -- Section-II: Nutrient Management and Plant Health Chapter 6: Phosphate Solubilizing Bacteria: A Role Towards Sustainability in the Agricultural Systems -- Chapter 7: Solubilization of Soil Insoluble Phosphate by Bacteria: Molecular Mechanism and Phosphorus Use Efficiency in Crop Plant -- Chapter 8: Nanobiofertilizers: The Futuristic Tools for Nutrient Management in Plants -- Chapter 9: Plant Growth Promoting Rhizobacteria and Sustainable Agriculture -- Chapter 10: Bioprospecting Endophytes for Plant Growth Promotion -- Chapter 11: Microbial Phytohormone Production as Signal for Plant Growth Promotion -- Chapter 12: Potentials of Plant Probiotic Bacteria for

Improving Growth and Health of Crop Plants -- Section-III: Applications of Multifaceted Soil Bacteria Chapter 13: Actinobacteria: Potential Natural Synthesizers of Bioactive Compounds having Multidimensional Activities -- Chapter 14: Soil Bacterial Consortia in Rhizobium-Legume Interactions -- Chapter 15: Harnessing Plant Growth-Promoting Rhizobacteria: A Dual Approach as Biofertilizers and Biopesticides for Field and Vegetable Crop Production -- Chapter 16: Selection and Application of Soil Bacterial Elite Strains as Biofertilizers for the Reclamation of Deteriorated Soil Health -- Chapter 17: Rhizospheric Soil Bacteria as Biostimulants for Phytostabilization and Reclamation of Mine Tailings -- Chapter 18: Colonization of the Rhizosphere by Bacillus Species: Triggering Resistance Induction in Plants -- Chapter 19: Root Colonization and Molecular Mechanism of Plant Growth Promotion by the Plant-Associated Bacteria -- Chapter 20: Unlocking the interaction and mechanistic insights of plant probiotic bacteria for sustainable mitigation of soil salinity stress -- Chapter 21: Improving Plant Tolerance to Biotic and Abiotic Stresses through Bacterial Volatile Compounds.

Sommario/riassunto

This comprehensive exploration delves into the pivotal role of bacteria in soil health, elucidating their mechanisms in organic matter decomposition, metal facilitation, bioremediation of stubborn materials, and nutrient cycling essential for soil fertilization, plant health and conditioning. In an agricultural ecosystem, soil nutrients are the backbone, sourced either externally through fertilizers or internally by the action of soil bacteria. Understanding the intricate concert of soil bacteria within the ecological framework offers three significant advantages: revitalizing soil health and quality (soil reclamation), enhancing soil nutrient availability (biofertilization), and amplifying crop yields in an environmentally sustainable manner (sustainable agriculture). This book caters to a diverse audience including educators, researchers, technocrats, policymakers, agricultural foundations, non-governmental organizations, and particularly research students. It also serves as supplementary material for undergraduate and graduate students across various disciplines such as agriculture, microbiology, biotechnology, forestry, ecology, soil science, and environmental sciences. Additionally, it provides invaluable insights for both national and international agricultural scientists and soil ecologists, enriching their understanding of soil ecosystems and agricultural sustainability.