1. Record Nr. UNINA9910997095603321

Titolo	Microorganisms Resilience to Climate Change / / edited by Piyush Pandey, Shrivardhan Dheeman, Dinesh K. Maheshwari
Pubbl/distr/stampa	Singapore : , : Springer Nature Singapore : , : Imprint : Springer, , 2025
ISBN	981-9637-48-1
Edizione	[1st ed. 2025.]
Descrizione fisica	1 online resource (XVII, 384 p. 36 illus., 35 illus. in color.)
Collana	Microorganisms for Sustainability, , 2512-1898 ; ; 56
Disciplina	579
Soggetti	Microbiology Microbial genetics Cytology Microbial ecology Microbial Genetics Cellular Microbiology Environmental Microbiology
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Section-I. Fundamentals of Climate Change and Microbial Community Dynamics -- Chapter 1. Microbial Symbiosis in Diverse and Changing Climatic Conditions -- Chapter 2. Exploring the Potential of Natural and Synthetic Microbial Carbon Dioxide Fixation Pathways for Catalyzing Climate Action -- Chapter 3. Climate-Driven Shift in Plant-Microbe Dynamics: A Comprehensive Review -- Chapter 4. Microbial Communities in Changing Climate: Challenges and Opportunities -- Section-II. Climate Resilience in Agroecosystem -- Chapter 5. Significance of plant growth-promoting rhizobacteria in alleviating drought stress in crop plants under changing climate for sustainable agriculture production -- Chapter 6. Disentangling the Contribution of Plant Genetics in Rhizomicrobiome Recruitment for Climate Resilient Agroecosystems -- Chapter 7. Plant Growth-Promoting Bacteria-Mediated Climatic Stress Tolerance in Plants -- Chapter 8. Climate Change and Soil Ecosystems: Impacts on Microbial Communities, Pathogen Dynamics, and Agricultural Sustainability -- Section-III. Microbial Solutions for Climate Resilience: Plant Interactions,

Biofortification, and Extremophiles -- Chapter 9. Role of Soil Microbial Communities in Nutrient Homeostasis and Climate Resilience -- Chapter 10. Pseudomonas fluorescens: An influencer for food crop biofortification by siderophore-mediated iron acquisition -- Chapter 11. Extremophiles in Climate Change Mitigation: Harnessing Resilient Microbes for a Sustainable Future -- Section IV. Microbial Responses to Climate Change: Carbon Sequestration, Cryosphere Ecology, and Antimicrobial Resistance -- Chapter 12. Carbon Sequestration and Rhizoremediation: Strategies for Managing Xenobiotic Compounds and Restoring Ecological Balance -- Chapter 13. Glacial cryosphere, its microbial ecology and the impact of climate change -- Chapter 14. Climate change and antimicrobial resistance -- Section V. Conclusion -- Chapter 15. Resilience of Microorganisms in the Face of Climate Change: Key Conclusions.

Sommario/riassunto

This book covers a wide range of topics such as role of microorganisms in the global carbon cycle, the impact of climate change on microbial communities, and the feedback mechanism between them. Microorganisms produce and consume greenhouse gases to transform essential elements, such as carbon and nitrogen, to form their cellular components. Microorganisms are also involved in nitrogen and phosphorus cycling, which are essential for plant growth and productivity. Thus, the role of microbial communities in agroecosystems with biogeochemical cycles is imperative for addressing the current global warming situation. Microorganisms are highly sensitive to changes in environmental conditions such as temperature, moisture, and nutrient availability. As the climate continues to change, shifts in microbial community structure and function may have significant consequences for ecosystem services such as nutrient cycling, water purification, and carbon sequestration. In this book experts from a range of fields, such as microbiology, ecology, biogeochemistry, and climate science come together to provide a holistic perspective on the role of microorganisms in climate change. This book is of reference to policymakers, educators, researchers and students working in the field of microbiology and climate sciences.