

1. Record Nr.	UNINA9910637705003321
Titolo	Climate change and microbiome dynamics : carbon cycle feedbacks // editor : Javid Ahmad Parray
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2023] ©2023
ISBN	9783031210792 9783031210785
Descrizione fisica	1 online resource (381 pages)
Collana	Climate change management (Springer (Firm))
Disciplina	551.6
Soggetti	Climatic changes Soil microbiology Soils and climate
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- About This Book -- Contents -- About the Editor -- 1 Diversity and Biogeography of Soil Bacterial Communities -- Introduction -- Definitions -- Diversity -- Biogeography -- Changes in Soil Microbial Biogeography in the World -- Ecological Factor and the Global Distribution of Soil Microbial Communities -- Ecosystem Function and Soil Microbial Biogeography -- Soil Biodiversity Global Atlases and Their Functions in Global -Change Scenarios -- Biogeography of Microbial Communities -- Soil Bacterial Diversity -- Conclusion -- References -- 2 Microbial Consortium: A Boon for a Sustainable Agriculture -- Introduction -- Multifarious PGP Attributes -- Direct Mechanisms -- Indirect Mechanisms -- Microbial Consortium in Agriculture (Bacteria-Bacteria and Bacteria-Fungi Consortium) -- Bacteria-Bacteria Interactions -- Bacteria-Fungal Interactions -- Conclusions and Future Prospects -- References -- 3 Overview of Soil Microbe Dynamics in Different Biosystems -- Introduction -- Soil Microbial Networks -- Bioclimatic Changes and Long-Term Dynamics of Soil Microbial Communities -- Conclusion and Future Perspectives -- References -- 4 Microbial Community Dynamics Due to Land Use Change: Some Circumstances in the Tropical Rain Forest of Indonesia

-- Introduction -- The Dynamic of Soil Microbes Under Forest Harvesting/Tree Cutting -- The Role of Soil Microbes to the Succession of Pioneer in the Secondary Forest, Involved to the Invasive Alien Species Distribution -- Alteration of Soil Microbes Population Due to Land Use Shifting from Natural Forest to Monoculture Plantation -- Role of Soil Microbes on Mining Land and the Limitations to Reclamation Achievement -- Future Strategies -- References -- 5 Climate Change and Microbes: Mechanisms of Action in Terrestrial and Aquatic Biosystems -- Introduction -- Climate Change -- System of Climate. Factors Leading to Climate Change -- Microorganisms and Climate Change -- Role of Aquatic Microbes -- Role of Terrestrial Microbes -- Climate Change: Mechanisms of Action -- Aquatic Microorganisms -- Terrestrial Microbes -- Climate Change Effect on Microorganisms -- Mitigation Strategies -- Conclusion -- References -- 6 Plant Exudates and Microbial Interaction-A Change in Dynamics -- Introduction -- Holobiont -- Extended Phenotype -- Mechanism of Plant Root Exudation -- Root Border Cells Sloughing Off -- Secretion of Mucilage by Roots -- Root Exudation -- Role of Compounds in Host-Microbe and Microbe-Microbe Interaction -- Mycorrhizal Association with Plants -- Phytobiome in Plant Growth and Development -- Conclusion -- References -- 7 Climate Change:- General Overview and Implications on Agriculture and Allied Sectors -- Introduction -- Causes of Climate Change -- Impact of Climate Change on Agriculture -- Climate Change and Its Consequences on Temperate Fruits. -- Potential Consequences of Climate Change on Diseases, Pests and Weeds -- Impact of Climate Change on Fisheries -- Alternative or Cleaner Approaches -- Mitigation and Adaptation Measures -- Potential Research Approaches for Optimizing Yield Increase Under Changing Climatic Scenario -- Role of Microbes in Mitigating Climate Change -- Conclusion -- References -- 8 Soil Microbial Community and Climate Change Drivers -- Introduction -- Effects of the Soil Microbiome on the Characteristics of Emerging Ecosystems -- Influence of the Soil Environment on Microbial Responses to Climate Change -- Effects of Environmental Change -- Raised Carbon Dioxide (CO₂) -- Elevated Temperature -- References -- 9 Impact of Climate Change on Soil Activity (Nitrifying, Denitrifying) and Other Interactions -- Introduction -- Climate Change-A Global Issue -- Impact of Climate Change on Plants. Global Agricultural Ecosystem and Extreme Climate Events -- Plants and Microbe Interaction in Response to Climate Change -- Pathogen-Plant Interaction -- Positive Plant-Microbe Interactions -- Nitrifying and Denitrifying Interactions -- Alteration in Microbial Distribution -- Plant-Microbe Communication -- Climate Change Mitigation and Adaptation Strategies -- Conclusion and Future Perspective -- References -- 10 Soil Microbial Biochemical Activity and Influence of Climate Change -- Introduction -- Challenges -- Dependability Metrics of Soil Microbiome -- Obstruction -- Versatility -- Environmental Change Impacts on the Soil Microbiome -- Soil Warming -- Raised Carbon Dioxide -- Combinatorial and Indirect Effects -- Microbial Biochemical Pathways and Climate Change -- Climate Change Impacts on Soil Carbon -- Conclusions -- References -- 11 Climate Change Drivers and Soil Microbe-Plant Interactions -- Introduction -- Action Mechanisms of Climate Change -- Mechanisms Affecting the Microbes -- Alterations in the Microbial Variety -- Conversions in Physiology -- Action Mechanisms on Plants -- Undulation in Moisture -- Consequences of Climate Change on Microbes -- Rising Temperature -- Altered Precipitation -- Increased CO₂ -- Droughts -- New Developments and Improved Knowledge of Plant-Microbe

Response to Climate Change -- Climate Change Effects on Plant-Microbe Interactions -- Alleviation Schemes -- Light Soil Sealing/Mulching -- Utilization of Organic Waste (Compost, Manure, and Sludge) -- Fertilizers -- Crop Administration/Selection of Species of Crop -- Landscape Administration/Hedgerows and Grassy Field Margins -- Microbial Communities and Mitigation Strategies -- Managing Microbial Communities and Reducing CO₂ Release -- Using Microbial Community Management to Lower Methane Emissions -- Conclusion -- Future Perspectives -- References.

12 Climate Changing Impact on Microbes and Their Interactions with Plants: An Overview -- Introduction -- Impact of Global Warming and Drought -- Climate Variation Impact on Plant Microbiomes Assemblage -- Climate Changing Impact on Plant-Microbe Interactions -- Plant-Microbiome Communication -- Beneficial Plant-Microbe Interactions -- Pathogen-Plant Interactions -- Hormonal Crosstalk with Plant-Microbe Interactions Under Changing Climatic Conditions -- Conclusion and Future Prospects -- References -- 13 Soil Salinity and Climate Change: Microbiome-Based Strategies for Mitigation of Salt Stress to Sustainable Agriculture -- Introduction -- Climate Change and Soil Salinization -- Global Distribution of Saline Soils -- Salinity Stress and Impact on Plants and Microbes -- Effect of Salinity Stress on Plants -- Effects of Salinity on Soil Microorganisms -- Mechanisms of Salinity Stress Tolerance in Microbes and Plants -- Production and Accumulation of Osmoprotectants -- Antioxidant Enzyme Activity -- Reduced Uptake of Salt Ions by Microbes and Plants -- ACC Deaminase Activity and Lowering of Ethylene Formation -- Exopolysaccharide Production and Biofilm Formation -- Siderophore Production -- Phosphate Solubilization -- Production of Phytohormones -- Organic Acids Role in Amelioration of Salt Stress -- Nitric Oxide Production and Mitigation of Salt Stress -- Inoculation Effects of Salt-Tolerant Bacteria in Improving Plant Growth of Different Crops -- Genetic Engineering of Plants and Microbes for Efficient Alleviation of Salinity Stress -- Conclusions and Future Perspectives -- References -- 14 Over View of Symbiosis Mechanisms and Soil Quality Management Practices to Combat Environmental Changes -- Introduction -- Biomass Structure and Sources -- Biochar and Other Additives -- Important Criteria of Quality Soil -- Soil Physical Quality Criteria.

Soil Chemical Quality Criteria -- Biological Quality Criteria of Soil -- Increasing the Organic Matter Content in Quality Soil -- Critical Symbiosis Mechanisms in Soil -- Conclusions and Future Perspectives -- References -- 15 Symbiosis Mechanisms and Usage of Other Additives Like Biochar in Soil Quality Management -- Introduction -- What is Symbiosis? -- Background and Biochar Definition -- Biochar Impacts on Soil Attribute -- Biochar Impacts on Plant Development and Yield Fertility -- Biochar Relationship of Microorganisms in Fertility -- Effect of Biochar on Microorganisms' Community -- Effect of Biochar on Microbial Plenty -- Effect of Biochar on Microbial Composition and Structure -- Effect of Biochar on Microbial Activity -- Effect of Biochar on Functional Ecology of Microorganisms -- The Impact of Biochar on Beneficial Soil Organisms -- Biochar Impact on Rhizosphere Microorganisms -- Biochar-Microorganism Interaction -- The Microorganism Pattern in Soil Health Progress -- Microorganism Bioengineering for Soil Health Improvement Through Remediation -- Interactions of Biochar and Microorganisms in Soil -- Biochar Attribute as a Possible Effective Microbial Transport -- Microorganisms as Biofertilizers -- Biochar Amendment with Microorganism -- Biochar Quality Variations as a Soil Modification -- Plant Development and Soil

Microflora Stimulation -- Biochar-Microbe Interaction Mechanisms in Soil -- Biochar Provides a Haven for Microorganisms -- Biochar Provides Nutrients for Soil Microorganisms -- Studies Have Noted the Positive Effect of Biochar -- Biochar Modifies Microbial Habitats -- Biochar Changes Soil Enzyme Activity -- Biochar Reduces the Toxicity of Pollutants for Soil Microorganisms -- Biochar for Sustainable Soil Management -- Response of Microbial Populations to Soils Amended with Biochar -- Future Research Directions -- Conclusions.
References.
