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Nota di contenuto	Chapter 1. Microbial interactions and plant growth -- Chapter 2. Dynamics of rhizosphere microbial communities of cover crops dried with glyphosate -- Chapter 3. Soil-plant-microbe interactions: Use of nitrogen-fixing bacteria for plant growth and development in sugarcane -- Chapter 4. Microbial interactions and plant health -- Chapter 5. “I’ve got the magic in me”: The microbiome of conventional vs organic production systems -- Chapter 6. Plant-microbe interactions: Current perspectives of mechanisms behind symbiotic and pathogenic associations -- Chapter 7. Nucleic acid extraction for studying plant-microbe interactions in rhizosphere -- Chapter 8. Plant-fungi association: Role of fungal endophytes in improving plant tolerance to drought stress -- Chapter 9. Root associated bacteria-Rhizoplane and endosphere -- Chapter 10. Microbial functions in the rhizosphere -- Chapter 11. Rhizosphere signaling cascades:

fundamentals and determinants -- Chapter 12. Endophytic and epiphytic modes of microbial interactions and benefits -- Chapter 13. Fascinating fungal endophytes role and possible beneficial applications: An overview -- Chapter 14. Potential of fungal endophytes in plant growth and disease management -- Chapter 15. Endophytes: Role and functions in crop health -- Chapter 16. Quorum sensing in plant growth promoting rhizobacteria and its impact on plant microbe interaction -- Chapter 17. Microorganism role for crop production and its interface with soil agro-ecosystem -- Chapter 18. Microbes: Bioresource in agriculture and environmental sustainability -- Chapter 19. Arbuscular mycorrhizal symbiosis: A promising approach for imparting abiotic stress tolerance in crop plants -- Chapter 20. An insight into genetically modified crop-mycorrhizal symbiosis -- Chapter 21. An expedition to the mechanism of plant microbe interaction by utilization of different molecular biology tools -- Chapter 22. Disease induced resistance and plant immunization using microbes -- Chapter 23. Exploring the role of plant-microbe interactions in improving soil structure and function through root exudation: A key to sustainable agriculture -- Chapter 24. Understanding functional genomics of PTGS silencing mechanisms for Tobacco Streak Virus and other Ilarviruses mediated by RNAi and VIGS -- Chapter 25. Rhizocompetence of applied bioinoculants -- Chapter 26. Beneficial bacteria for disease suppression and plant growth promotion -- Chapter 27. Bacterial strains with nutrient mobilization ability from Ciuc Mountains (Transylvania region, Romania) -- Chapter 28. Ameliorating salt stress in crops through plant growth promoting bacteria -- Chapter 29. Improvement of soil-borne pests control with agronomical practices exploiting the interaction of entomophagous fungi -- Chapter 30. Influence of climate change, rhizosphere Soil and cultivation on soil fertility determinants -- Chapter 31. Bacterial endophytes: potential candidate for plant growth promotion -- Chapter 32. Microbial community composition and functions through metagenomics.

Sommario/riassunto

This books presents an updated compilation on fundamental interaction mechanisms of microbial communities with the plant roots and rhizosphere (belowground) and leaves and aerial parts (aboveground). Plant rhizopshere recruits its own microbial composition that survive there and help plants grow and develop better under biotic and abiotic conditions. Similar is the case with the beneficial microorganisms which are applied as inoculants with characteristic functions. The mechanism of plant-microbe interactions is interesting phenomenon in biological perspectives with numerous implications in the fields. The First volume focuses on the basic and fundamental mechanisms that have been worked out by the scientific communities taking into account different plant-microbe systems. This includes methods that decipher mechanisms at cellular, physiological, biochemical and molecular levels and the functions that are the final outcome of any beneficial or non-beneficial interactions in crop plants and microbes. Recent advances in this research area is covered in different book chapters that reflect the impact of microbial interactions on soil and plant health, dynamics of rhizosphere microbial communities, interaction mechanisms of microbes with multiple functional attributes, microbiome of contrasting crop production systems (organic vs conventional), mechanisms behind symbiotic and pathogenic interactions, endophytic (bacterial and fungal) interaction and benefits, rhizoplane and endosphere associations, signalling cascades and determinants in rhizosphere, quorum sensing in bacteria and impact on interaction, mycorrhizal interaction mechanisms,

induced disease resistance and plant immunization, interaction mechanisms that suppress disease and belowground microbial crosstalk with plant rhizosphere. Methods based on multiphasic and multi-omics approaches were discussed in detail by the authors. Content-wise, the book offers an advanced account on various aspects of plant-microbe interactions and valuable implications in agro-ecological perspectives.