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Nota di contenuto	Plant-Bacteria Interactions; Contents; List of Contributors; 1 Ecology, Genetic Diversity and Screening Strategies of Plant Growth Promoting Rhizobacteria (PGPR); 1.1 Introduction; 1.1.1 Rhizosphere Microbial Ecology; 1.1.2 Plant Growth Promoting Rhizobacteria (PGPR); 1.2 Rhizosphere Microbial Structure; 1.2.1 Methods to Study the Microbial Structure in the Rhizosphere; 1.2.2 Ecology and Biodiversity of PGPR Living in the Rhizosphere; 1.2.2.1 Diazotrophic PGPR; 1.2.2.2 Bacillus; 1.2.2.3 Pseudomonas; 1.2.2.4 Rhizobia; 1.3 Microbial Activity and Functional Diversity in the Rhizosphere 1.3.1 Methods to Study Activity and Functional Diversity in the Rhizosphere1.3.2 Activity and Effect of PGPR in the Rhizosphere; 1.4 Screening Strategies of PGPR; 1.5 Conclusions; 1.6 Prospects; References; 2 Physicochemical Approaches to Studying Plant Growth Promoting Rhizobacteria; 2.1 Introduction; 2.2 Application of Vibrational Spectroscopy to Studying Whole Bacterial Cells; 2.2.1

Methodological Background; 2.2.2 Vibrational Spectroscopic Studies of A. brasilense Cells; 2.2.2.1 Effects of Heavy Metal Stress on A. brasilense Metabolism
2.2.2.2 Differences in Heavy Metal Induced Metabolic Responses in Epiphytic and Endophytic A. brasilense Strains2.3 Application of Nuclear -Resonance Spectroscopy to Studying Whole Bacterial Cells; 2.3.1 Methodological Background; 2.3.2 Emission Mossbauer Spectroscopic Studies of Cobalt(II) Binding and Transformations in A. brasilense Cells; 2.4 Structural Studies of Glutamine Synthetase (GS) from A. brasilense; 2.4.1 General Characterization of the Enzyme; 2.4.2 Circular Dichroism Spectroscopic Studies of the Enzyme Secondary Structure
2.4.2.1 Methodology of Circular Dichroism (CD) Spectroscopic Analysis of Protein Secondary Structure2.4.2.2 The Effect of Divalent Cations on the Secondary Structure of GS from A. brasilense; 2.4.3 Emission Mossbauer Spectroscopic Analysis of the Structural Organization of the Cation-Binding Sites in the Enzyme Active Centers; 2.4.3.1 Methodological Outlines and Prerequisites; 2.4.3.2 Experimental Studies of A. brasilense GS; 2.4.3.3 Conclusions and Outlook; 2.5 General Conclusions and Future Directions of Research; References
3 Physiological and Molecular Mechanisms of Plant Growth Promoting Rhizobacteria (PGPR)3.1 Introduction; 3.2 PGPR Grouped According to Action Mechanisms; 3.2.1 PGPR Using Indirect Mechanisms; 3.2.1.1 Free Nitrogen-Fixing PGPR; 3.2.1.2 Siderophore-Producing PGPR; 3.2.1.3 Phosphate-Solubilizing PGPR; 3.2.2 PGPR Using Direct Mechanisms; 3.2.2.1 PGPR that Modify Plant Growth Regulator Levels; 3.2.2.2 PGPR that Induce Systemic Resistance; 3.3 Conclusions; 3.4 Future Prospects; References; 4 A Review on the Taxonomy and Possible Screening Traits of Plant Growth Promoting Rhizobacteria
4.1 Introduction

Sommario/riassunto

Here, an extremely experienced team of authors from five different continents provides a timely review of progress in the use and exploitation of soil bacteria to improve crop and plant growth. They present novel ideas on how to grow better, more successful crops, in an environmentally sound way, making this invaluable reading for those working in the pharmaceutical, biotechnological and agricultural industries.