

Contents

List of Contributors *vii*

Preface *xi*

- 1 A Review of Endophytic Microbiota of Medicinal Plants and Their Antimicrobial Properties 1**
Robeena Sarah, Nida Idrees, and Baby Tabassum
- 2 Plant Microbiome: A Key to Managing Plant Diseases 10**
Dipal B. Minipara, Khushboo Pachhigar, and Himanshu R. Barot
- 3 Impact of Microbiomes to Counter Abiotic Stresses in Medicinal Plants- A Review 30**
Abeer Hashem, Khaloud Mohammed Alarjani, Khalid F. Almutariri, Javid A. Parray, Sushil K. Sharma, Ashwani Kumar, Turki M. Dawoud, Khalid S. Almaary, Nosheen Shameem, and Elsayed Fathi Abd-Allah
- 4 Uses of Compost in Agriculture and Bioremediation – A Review 51**
Aparna Gunjal
- 5 Metagenomics and Microbiome Engineering: Identification of Core Microbiome and Improvement of Rhizosphere 58**
Bahman Fazeli-Nasab, Nafiseh Mahdinezhad, and Javid A. Parray
- 6 Core Microbiome: Plant Growth and Development 101**
Thirunarayanan P, Uday Kumar Thera, Tulasi Korra, and Manoj Kumar V
- 7 Microbiome Engineering and Biotechnology: The Real Finenesses of a Robust Rhizosphere 118**
Barkha Sharma, Shalini Tiwari, and Kailash Chand Kumawat
- 8 Role of Rhizospheric Microbiome in Enhancing Plant Attributes and Soil Health for Sustainable Agriculture 139**
Sandeep Sharma and Kailash Chand Kumawat

- 9 **Toxic Effects of Some Herbicides on the Fatty Acid Profile of Wheat Varieties: A Phytomicrobiome Study** 163
Fadime Karabulut and Songul Çanakçı-Gulengul
- 10 **Microbial Prospects in Sediment Denitrification of Eutrophic Wetland Ecosystems** 183
Rupak Kumar Sarma and Kamal Choudhury
- 11 **Role of Plant Microbiome in Carbon Sequestration for Sustainable Agriculture** 190
Ranjith Sellappan, Aswini Krishnan, and Kalaiselvi Thangavel
- 12 **Functions and Emerging Trends of the Microbial Community in Heavy Metals Bioremediation: A Review** 206
Nida Idrees, Robeena Sarah, and Baby Tabassum
- 13 **Microbiomics and Sustainable Agriculture: New Frontiers** 212
Shabeer Ahmad Dar, Mohammad Yaseen Mir, Azra N. Kamili, Irshad Ahmad Nawchoo, and Shabir Ahmad Bhat
- 14 **Role of Nanotechnology in Soil Microbiome and Agricultural Development** 230
Bisma Farooq, Shahnaz Anjum, Madiha Farooq, Gulzar Ahmed Rather, Asma Nazir, Bijaya Kumar Nayak, and Anima Nanda
- 15 **Microbial Biofilms: Optimal Genetic Material Exchange in a Microbiome Environment** 249
Niraj Singh and Pranjal Pratim Das
- 16 **Rhizosphere Improvement: Role of Biotechnology and Microbioengineering** 268
Afrozah Hassan and Irshad Ahmad Nawchoo
- 17 **Exploring Biological Agents and Core Microbiomes as a Tool for Reclamation of Abandoned Mines** 288
Seema B. Sharma and Rupak Dey
- 18 **Mycorrhizal Strategy for the Management of Hazardous Chromium Contaminants** 298
Abeer Hashem, Newsheen Shameem, Javid A. Parray, and Elsayed Fathi Abd-Allah
- Index** 315