

Contents

List of Contributors	page vii
Preface	xi
Part I Introduction	
1 Endophytes for a Growing World	3
TREVOR R. HODKINSON AND BRIAN R. MURPHY	
Part II Role of Endophytes in Growth and Biotic and Abiotic Stress Resistance	
2 Searching for Novel Fungal Biological Control Agents for Plant Disease Control Among Endophytes	25
DAVID B. COLLINGE, HANS J. L. JØRGENSEN, MEIKE A. C. LATZ, ANDREA MANZOTTI, FANI NTANA, EDWARD C. ROJAS AND BIRGIT JENSEN	
3 Application of Formulated Endophytic Entomopathogenic Fungi for Novel Plant Protection Strategies	52
VIVIEN KRELL, DESIRÉE JAKOBS-SCHOENWANDT AND ANANT V. PATEL	
4 Crossing Frontiers: Endophytic Entomopathogenic Fungi for Biological Control of Plant Diseases	67
LORENA BARRA-BUCAREI, ANDRÉS FRANCE AND PAZ MILLAS	
5 Emerging Methods for Biological Control of Barley Diseases Including the Role of Endophytes	93
ANNA K. HØYER, HANS J. L. JØRGENSEN, BIRGIT JENSEN, BRIAN R. MURPHY AND TREVOR R. HODKINSON	
6 Phosphate Nutrition in Root-Fungus Interactions	120
WAEI YAKTI, DIANA R. ANDRADE-LINARES, BERNARD NGWENE, MICHAEL BITTERLICH, GÁBOR M. KOVÁCS AND PHILIPP FRANKEN	
7 From Darkness to Light: Emergence of the Mysterious Dark Septate Endophytes in Plant Growth Promotion and Stress Alleviation	143
CHARLOTTE BERTHELOT, MICHEL CHALOT, CORINNE LEYVAL AND DAMIEN BLAUDEZ	

Part III Diversity and Community Ecology of Endophytes

- 8 Microbispora Dominate Diversity of Endophytic Actinobacteria from Australian Rice Plants** 167
FITRI WIDIANTINI AND CHRISTOPHER FRANCO
- 9 Isolation, Diversity and Potential Use of Endophytes in the Biomass and Bioenergy Crop *Miscanthus*** 188
JET BEEKWILDER, BRIAN R. MURPHY, EGIN MAC MATHUNA, AARON BARRY AND TREVOR R. HODKINSON
- 10 Life Within the Leaf: Ecology and Applications of Foliar Bacterial Endophytes** 208
C. RUTH MCNEES, ISAAC V. GREENHUT, AUDREY D. LAW, MUHAMMAD SALEEM AND LUKE A. MOE
- 11 Meta-Omics Approach to Unravel the Endophytic Bacterial Communities of *Brassica napus* and Other Agronomically Important Crops in Response to Agricultural Practices** 232
RIDHDHI RATHORE, KIERAN J. GERMAINE, PATRICK D. FORRISTAL, JOHN SPINK AND DAVID N. DOWLING
- 12 The Influence of Endophytes on Cork Oak Forests Under a Changing Climate** 250
DANIELA COSTA, RUI M. TAVARES, PAULA BAPTISTA AND TERESA LINO-NETO

Part IV Endophytes for Novel Biomolecules and In Vitro Methods

- 13 Endophytic Fungi: A Quintessential Source of Potential Bioactive Compounds** 277
VINEET MESHAM AND MAHITI GUPTA
- 14 Enhancing Secondary Metabolite Production in Medicinal Plants Using Endophytic Elicitors: A Case Study of *Centella asiatica* (Apiaceae) and Asiaticoside** 310
SHUBHPRIYA GUPTA AND PREETI CHATURVEDI
- 15 In Vitro Methods for Plant-Microbe Interaction and Biocontrol Studies in European Ash (*Fraxinus excelsior* L.)** 328
ANINDITA LAHIRI, GERRY C. DOUGLAS, BRIAN R. MURPHY AND TREVOR R. HODKINSON

Part V Application and Commercialisation of Endophytes in Crop Production

- 16 The Science Required to Deliver *Epichloë* Endophytes to Commerce** 343
LINDA J. JOHNSON AND JOHN R. CARADUS
- 17 Plant Growth-Promoting Bacteria Field Trials in Europe** 371
KAREN O'HANLON
- 18 Prospecting Crop Wild Relatives for Beneficial Endophytes** 390
BRIAN R. MURPHY, FIONA M. DOOHAN AND TREVOR R. HODKINSON

Index

411

Colour plates can be found between pages 204 and 205.