RECENT ADVANCES IN RESEARCH OF BACTERIAL ENDOPHYTES AND THEIR ROLES AS AMELIORATORS OF ABIOTIC AND BIOTIC STRESSES

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PREFACE

Maize plants use a variety of strategies to gain adaptive advantages in varying conditions, such as the ability to tolerate abiotic stress (e.g., drought or heat due to climate change) in order to grow, reproduce, and defend themselves. Creating relationships with bacteria that encourage plant growth is one of these tactics. Plants can have bacteria attached to them as endophytes, rhizospheres, or rhizoplanes.

Microbial endophytes are symbionts that live within plant tissues and do not cause disease symptoms in their host plants. They have been the subject of recent research due to their ability to promote plant growth and their advantageous roles in the responses of plants to abiotic stress. This study focuses on the vital role that endophytic bacteria play in plant health and the various ways in which they stimulate plant tolerance to abiotic stress. Through the production of secondary active compounds that shield plants from pathogens like insects and fungi, the endophytic microbial community can promote plant growth. Additionally, endophytes can produce extracellular enzymes that are essential for the colonisation of endophytes within their host plants. Microbial endophytes can break down dangerous compounds to allow plants to grow in contaminated soils, and they can also act as agents that promote plant growth by producing phytohormones. Through a variety of strategies, endophytes control plant growth in challenging environments like salinity, drought, temperature, heavy metal stress, and nutrient stress. This book might present fresh ideas for using endophytic inoculants in agricultural settings to counteract abiotic stresses and boost crop productivity worldwide.

CONTENT

1. Current Scenario of Endophytic Microbes: Promising Candidates for Abiotic and Biotic Stress Management for Agricultural and Environmental Sustainability - *Dr. Ch. G. Gupta* **..... 1**

1.1 Introduction: 2
1.1.1 Endophytes Microbes: An Introduction: 2
1.1.2 Beneficial Microbes for Sustainable Agriculture: 3
1.1.3 Applications of Endophytes in Agriculture: 4
1.2 Review of Literature: 5
1.3 Objectives: 7
1.4 Research Methodology: 7
1.5 Result and Discussion: 7
1.6 General Classification of Endophyte: 9
1.7 Role of PGPR In Agriculture: An Overview: 12
1.8 Role of Endophytes in the Management of Abiotic Stress: 13
1.9 Conclusion: 17
1.10 References: 18

2. Role of Bacterial Endophytes in Agriculture: Present Status and Future Perspectives - *Prapti Gogoi, Tankeswar Nath, Basanta Kumar Borah, Manab Bikash Gogoi, Binoy Kumar Medhi* **..... 20**

2.1 Introduction: 20
2.2 Role of Bacterial Endophyte in Agriculture: 22
2.2.1 Plant Growth-Promoting Activities: 22
2.2.2 *Plant Protection:* 25
2.3 Future Perspective: 26
2.4 Conclusion: 28
2.5 References: 28

3. Plant Growth-Promoting Bacterial Endophytes - *Dr. Tanmay Ghosh* **..... 31**

3.1 Introduction: 32
3.2 Plant-Growth-Promoting Endophytes (PGPES): 33
3.3 Review of Literature: 34
3.4 Objectives: 36
3.5 Research Methodology: 36
3.6 Result and Discussion: 36
3.6.1 Plant Growth Promotion Mechanisms: 39
3.7 Conclusion: 45
3.7 References: 45

4. Bacterial Endophytes: Recent Developments and Applications - *Gudepu Renuka* **.....47**

4.1 Introduction:.....48
4.2 Review of Literature:.....50
4.3 Objectives: 51
4.4 Research Methodology:.....52
4.5 Result and Discussion:.....52
4.5.1 Biocontrol of Plant Pathogens: 53
4.5.2 Applications of Bacterial Endophytes:.....55
4.6 Conclusion: 60
4.7 References:.....60

5. The Role of Biotic and Abiotic Components in Biodiversity - *Gudepu Renuka* **.....62**

5.1 Introduction:.....62
5.2 Review of Literature:.....65
5.3 Objectives: 66
5.4 Research Methodology:.....66
5.5 Result and Discussion:.....67
5.5.1 Abiotic and Biotic Factors:.....67
5.6 Conclusion: 71
5.7 References:.....72

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