



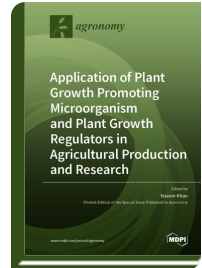
*Special Issue Reprint*

## **Application of Plant Growth Promoting Microorganism and Plant Growth Regulators in Agricultural Production and Research**

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Plant growth-promoting microorganisms (PGPM) are groups of rhizosphere microorganisms capable of colonizing the root environment. Some of the microbes that inhabit this zone are bacteria and fungi that are capable of efficiently colonizing roots and rhizosphere soil. These microorganisms can be used as biofertilizers for improving agricultural production even under stressful environmental conditions. In contrast to PGPM, plant growth regulators (PGR) are chemical compounds that significantly affect the growth and differentiation of plant cells and tissues. They function as chemical messengers for intercellular communication and play a vital role in plant signaling networks as they are involved in the plant developmental process and a wide range of biotic and abiotic stress responses. The application of PGPM and plant growth regulators/hormones or the synthesis of PGR and signal transduction, perception, and cross-talk creates a complex network that plays an essential role in the regulation of plant physiological processes. A better understanding of the mechanism of action of PGPM and PGR and their roles in plant growth and development, interaction and independence in their action, and hormonal crosstalk under stresses is essential for agricultural production and research. Therefore, this book has contributions in the form of research and review papers from eminent scientists worldwide and discusses the role of PGPM and PGR in agriculture production and research, their potentials as biocontrol agents, their effects on physicochemical properties of soil, innovation for sustainable agriculture, their role in seed transplanting, and their role in mitigating biotic and abiotic stresses.



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