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Chapter 4 - Mode of action of different microbial products in plant growth promotion

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Abstract

As we all are aware of the deleterious and ill effects of various chemical pesticides and inorganic fertilizers, the agricultural community has to move towards an alternative having a sustainable and eco-friendly approach. Through various researches and plant-microbe interactions studies, we now know the roles of microbes in plant growth promotion. Microbes directly benefit the plant by solubilization and mineralization of minerals through processes like nitrogen fixation, phosphorus solubilization, heavy metal mobilization etc. The secondary metabolites produced by microbes such as IAA, cytokinin, gibberellin, kinetin, siderophores, HCN, and ACC deaminase modulates the plant physiological functions and thereby the plant's growth. The microbial product also promotes plant growth indirectly by decreasing the inhibitory effect and suppressing various deleterious phytopathogens. In this book chapter, the major microbial product, their mechanisms and mode of action have been highlighted to comprehend their role in plant growth and development along with developing future insights.

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Keyword

Sustainable agriculture; Solubilization; Mineralization; IAA; Cytokinin; Gibberellin; Kinetin; Siderophores; HCN; ACC deaminase