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Chapter 4 - Microbial services for mitigation of biotic and abiotic stresses in plants

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Abstract

Abiotic and biotic stresses present a major barrier to agricultural production. Intensive studies have signified an enormous prospect of plant growth-promoting in mitigating various abiotic stresses (salinity, drought, cold, heavy metal toxicity, etc.) and biotic stresses in plants. Improved plant growth and productivity, and enhanced tolerance to various abiotic stresses and biotic stresses due to microbial inoculants, have been illustrated in different crop plants. Plant growth-promoting rhizobacteria as potential natural resources alleviate these stresses in plants by displaying different mechanisms such as production of phytohormones, 1-aminocyclopropane-1-carboxylate deaminase, exopolysaccharide, and volatile compounds; induction of systemic resistance; and improving soil physicochemical properties. Exploration of microorganisms as bioinoculants is a promising tactic for improving crop productivity under abiotic and biotic stresses.

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Keywords

Abiotic stress; biotic stress; PGPR; plant growth; ACC deaminase

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