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Chapter 9 - Multifunctional growth-promoting microbial consortium-based biofertilizers and their techno-commercial feasibility for sustainable agriculture

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Abstract

The world's population is predicted to reach more than nine billion people by 2050, a third more people than there are now to feed (FAO, 2018). Therefore, advances in biologically based technology need to be implemented immediately if we are to boost crop output, attain worldwide food safety, and guarantee enough nutrition. Intense and commercial agriculture's overreliance on chemical fertilisers and pesticides has been linked to the emergence of new environmental dangers and climate change. As a sustainable method for the creation of eco-friendly substitutes to synthetic fertilisers, the direct and indirect utilisation of advantageous microbial inoculants is quickly receiving attention. The ability of multiracial growth-promoting microbial consortium-based biofertilizers to promote soil nutrients, reduce biotic and abiotic stresses, increase soil microbial diversity, and ensure food safety is what makes them so admired. Growing organic agriculture and consumer perceptions of safe and healthful foods in the wake of the pandemic COVID-19 incidence are the key factors driving the enormous demand for microbiological inoculants or biofertilizers around the world. This chapter critically assesses the state-of-the-art in the application of microbial strains of bacteria and fungus as microbial consortium biofertilizers and the significant contributions made by these beneficial microbes to preserving soil fertility and boosting crop output.

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