



Microbial Biofertilizers and Biopesticides: Nature's Assets Fostering Sustainable Agriculture

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Abstract

Natural products obtained from microbes, plants and animals find their potential use as biofertilizers and biopesticides sustaining and enhancing crop production and protection. Among them microbes and their metabolites with excellent plant growth-promoting and biocontrol properties have been identified, mass produced successfully, appropriately formulated and are commercially available for use. Compounds of microbial origin which make them efficient biofertilizers and biopesticides enhancing plant growth and providing protection from various biotic and abiotic stress include production of plant growth-promoting hormones like auxins, gibberelins, cytokinins and 1-aminocyclopropane-1-carboxylate deaminase (ACCD); production of antagonistic compounds such as antibiotics, crystal proteins, hydrolytic enzymes, siderophores, hydrogen cyanide, etc. Additionally, these beneficial microbes also compete for food and habitat with phytopathogens or parasitize the pests and eliminate them. Majority of the microbes and their bioactive molecules are target specific, eco-friendly and biodegradable and play an important role in preserving the ecosystem. These eco-friendly natural products could either supplement or replace the hazardous agrochemicals thereby minimize or nullify their use. Screening and selection of

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