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Draught Tolerance: Need for Newer Strategies

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Abstract—*Drought is one of the major constraints on agricultural productivity worldwide and is likely to further increase. Draught is one of the key obstacles to increasing crop growth and productivity in many parts of the world. The world population is expected to reach 9 billion by 2050, necessitating continued increases in crop production to assure food security. Therefore, urgent need to find solutions to water-related problems such as drought and its impacts on food security. Microorganisms found in the rhizosphere of a plant play significant role in the growth and development of plants, therefore possibly aiding plants in tolerating abiotic stress caused by draught. In current scenario, microbial role in plant adaptation to drought stress is gaining more attention. This is easier and cost effective strategy. The mutual association of plant with soil microorganisms provides benefit to plants against water deficit conditions that form rhizosphere and the endosphere.*

Plant growth promoting rhizobacteria are the soil bacteria inhabiting around/on the root surface and are directly or indirectly involved in promoting plant growth and development via production and secretion of various regulatory chemicals in the vicinity of rhizosphere. There has been much research interest in PGPR (Plantgowth promoting bacteria) and there is now an increasing number of PGPR being commercialized for various crops. Today a lot of efforts have been made for searching and investigating the PGPB and their mode of action, so that they can be exploited commercially as biofertilizers. Various strategies have been adopted using these PRPR strains for developing biofertilizer. The hydrogel based biofertilizers have great potential to be promoted as low-cost and stable products forgrowing plants in draught conditions. We have isolated and characterized microbes from soil collected obtained Rajasthan. These microbes have been found to grow in high percentage of PEG supplemented medium at 65 degree C. These microbes have also shown PGPR activity .PGPR use will surely become a reality and will be instrumental to crucial processes that ensure the stability and productivity of crops in draught system.

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