Plant Growth Promoting Bacteria: Promising Avenues for Sustainable Agriculture and Climate Change Resilience

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Abstract

Climate change is a significant threat to the global food security and agricultural productivity. The sustainable living of ever-burgeoning global population needs more folds of food than the current; Moreover, there are various unavoidable conditions such as less availability of agricultural land, lack of water resources, environmental changes and calamitous diseases were significantly affected the present food scenario. However, using various conventional and classical techniques reached limited success but it's not enough to meet food demands. So, one of the promising approaches is that using of plant-associated microbes have definitely leads to positive progression in the food production by eco-friendly manner. Here, beneficial microorganisms have been attracted with root exudates followed by the colonization in the interior regions of the plant. These microbes referred as the endophytes. Earlier finding also confirmed the endophytic microbes interaction into the plants significantly improved the crop yield as well as tolerance to various abiotic stresses through mitigating various intra and internal signalling machinery. This proposed book chapter mainly focused on the endophytic microbiome to mediate various environmental stresses and to enhances the crop productivity for sustainable agriculture.