

Diversity, Phyto Beneficial Activities and Agrobiotechnology of Plant Growth Promoting Bacillus and Paenibacillus

Authors : Cheba Ben Amar

Abstract : Bacillus and Paenibacillus are Gram-positive aerobic endospore-forming bacteria (AEFB) and most abundant in the rhizosphere, they mediated plant growth promotion and disease protection by several complex and interrelated processes involving direct and indirect mechanisms that include nitrogen fixation, phosphate solubilization, siderophores production, phytohormones production and plant diseases control. In addition to their multiple PGPR properties, high secretory capacity, spore forming ability and spore resistance to unfavorable conditions enabling their extended commercial applications for long shelf-life. Due to these unique advantages, Bacillus species were the most an ideal candidate for developing efficient PGPR products such as biopesticides, fungicides and fertilizers. This review list all studied and reported plant growth promoting Bacillus species and strains, discuss their capacities to enhance plant growth and protection with special focusing on the most frequent species Bacillus subtilis, B. pumilus ,B. megaterium, B. amyloliquefaciens , B. licheniformis and B. sphaericus, furthermore we recapitulate the beneficial activities and mechanisms of several species and strains of the genus Paenibacillus involved in plant growth stimulation and plant disease control.

Keywords : bacillus, paenibacillus, PGPR, beneficial activities, mechanisms, growth promotion, disease control, agrobiotechnology

Conference Title : ICAB 2016 : International Conference on Agriculture and Biotechnology

Conference Location : Jeddah, Saudi Arabia

Conference Dates : January 26-27, 2016