P44 Diversity of Nitrogen-Fixing Endophytic Bacteria from Corn and their Potential Plant – Growth – Promoting Activity

Márcia M. Cerigioli, Itamar S. de Melo

Embrapa Environment, C.P. 69, 13820-000, Jaguariúna-SP, Brazil

Endophytic bacteria are ubiquitous in most plant species, residing latently or actively colonizing plant tissues locally as well as systemically. Many studies have demonstrated that endophytic bacteria may stimulate host plant growth. There are several possible mechanisms for plant growth including nitrogen fixation, phytohormones production, biological control of plant pathogens and enhancement of nutrients. In this report, the diversity of nitrogen-fixing bacterial endophytes within roots of corn was characterized by fatty acid methyl-esters (FAME). The most frequently isolated groups were Pseudomonas putida, Stenotrophomonas maltophilia, Ochrobacterium anthropi and different Bacillus species. From 90 bacterial strains evaluated, 49 produced high levels of indoleacetic acid (IAA), with members of the genera Pseudomonas and Ochrobactrum producing up to 18µg.mL-1 of IAA. More than 50% of these bacteria bear the nif genes and, some of them, including, Bacillus megaterium, Microbacterium saperdae, Stenotrophomonas maltophilia and Ochrobactrum anthropi increased root and shoot dry weight of corn, showing that these bacteria could be used in plant growth promotion and grain yield.