

Título: MAIZE ENDOPHYTIC BACTERIA AND THEIR POTENTIAL AS PLANT GROWTH PROMOTERS AND BIOLOGICAL CONTROL AGENTS

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Resumo:

Many endophytic microorganisms have been reported to exhibit potential biotechnological applications, including the promotion of plants growth. This work aimed to isolate endophytic bacteria associated to leaves, sap and roots of Pioneer 30F35 Herculex hybrid corn crops, cultivated with and without phosphorus fertilization, and to analyze their ability of producing plant growth promoting factors. A total of 178 bacteria were isolated and identified by partial sequencing of the 16S rDNA gene. About 70% of the isolates were classified as Gram-positive, and the proportion of this group was higher among sap isolates (82%), followed by leaves (76%) and roots (57%) isolates. There was an equal distribution of the isolates from Actinobacteria, Firmicutes and Proteobacteria clades, and only one isolate (*Flavobacterium acidificum* RT3B-41) of Bacteroidetes phylum was found. The main genera found were *Microbacterium*, *Bacillus*, *Staphylococcus*, *Pseudomonas*, *Lactococcus*, *Enterobacter* and *Curtobacterium*. It was found that 81% of the isolates showed at least one potential plant growth promoter attribute *in vitro*. 57% of the isolates had the ability to produce auxin-like molecules, 31% were able to solubilize inorganic phosphate, 42% to mineralize phytate, 15% to antagonize pathogenic fungi and bacteria, and 43% of the sap and leaves isolates were able to produce siderophores. Bacterial densities were also computed and varied for each part of the plant (sap, leaves and roots), what have not happened regarding phosphorus fertilization treatments. However, both parts of the plant and fertilizer treatments had significant effect on the frequency of individuals able to produce plant growth factors as well as on the production or activity rates. These results open doors for investigations on using these isolates as growth promoters bioinoculants at the time of planting corn and as biological control agents, in order to increase the productivity of this crop species.

Palavras-chaves: endophytic bactéria, auxin, phosphate mobilization, antagonism, siderophores

Agência Fomento: CAPES, Fapemig, CNPq