

Title: MORPHOGENETIC CHARACTERIZATION OF *BACILLUS* spp OBTAINED FROM SOIL UNDER NATURAL AND DIFFERENT CULTURE SYSTEMS

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Abstract:

The soil is a main habitat of the Plant Growth-Promoting bacteria (PGPB). These microbial species are of high relevance to agriculture, since they help the development and performance of agronomically important crops. They can act directly growth promoters, producing compounds that assist or facilitate the entrance of nutrient for the plants; or indirectly as biological control agents, reducing or preventing the action of pests and diseases. Several entomopathogenic genera have been studied, highlighting the *Bacillus* spp., which have, amongst other attributes, the ability to produce endospores, toxins and antibiotics. In order to successfully apply this potential agent, a great understanding of their ecology is necessary, as well as the diversity, distribution and metabolic activities of this important microorganism. In this context, this study aimed to isolate and characterize morphologically and genetically native soil bacteria of the genus *Bacillus* spp., under natural and different managements of cultivation, aiming to recognize new strains with potential biocontrol agents. The bacteria were isolated in a specific medium with thermal shock from soil of six different managements: M1 - Soybean 1, M2 - Horticulture, M3 - Pasture, M4 - Agropastoril system, M5 - Native Forest and M6 - Soybean 2. The morphological distinction was carried out with 208 bacterial colonies leading to selection of 25 representative individuals. These were genetically characterized utilizing PCR-ARDRA technique in the intergenic region (ITS) 16S-23S rDNA using cleavage with three type II endonucleases. The 25 isolates were clustered by ARDRA-morphological congruence analysis using the Unweighted Pair Group Method and Arithmetic Average (UPGMA) algorithm and the similarity index of Jaccard was 80%. This review has led the formation of a total of 12 groups (G). The management under agropastoril system showed the greatest diversity, followed by native Forest, which pointed to the importance of the presence of exudates as signaling molecules for selection of rhizospheric community. In general, the results pointed to the agropastoril system (M4) as a conservation management in terms of morphological and genetic diversity.

Keywords: *Bacillus* sp., morphological typing, PCR-ARDRA, soil.