

Title: GENETIC AND PHENOTYPIC VARIABILITY OF BACTERIA OF THE GENUS *Burkholderia* ASSOCIATED WITH GRASS *Brachiaria decumbens* Starf.

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Abstract:

Bacterial community associated plants can promote various features of interest, such as the biological nitrogen fixation, phosphate solubilization, indole acetic acid and extracellular enzymes production, among others, helping the plant in its establishment and development. Different bacterial genera are found in association with the plant and they are able to inhabit different niches. In this sense, the aim of this study was to evaluate the genetic diversity of three bacteria of the genus *Burkholderia* spp. (UAGB199, UAGB230 and UAGB238) isolated from the root endophytic niche, as well as to assess the influence of phenotypic characteristics in the genetic evaluation. The genetic diversity was assessed by the BOX-PCR technique (BOX-primer 1AR). Previous reviews for characteristics of biological nitrogen fixation, solubilization of inorganic phosphate (at different temperatures 28 and 38° C and concentrations of NaCl, 0.1, 3.0 and 5.0%), indole acetic acid production and extracellular enzymes (amylase, lipase and protease) were used for phenotypic characterization. In both evaluations of diversity, it was used the statistical software PAST version 1.90. The profiles of bands observed were transformed into binary and spreadsheet used to obtain a similarity dendrogram calculated through the Jaccard coefficient and clustered UPGMA algorithm (Unweighted Pair-Group Method with Arithmetical Average). Band profiles demonstrated 100% similarity among the UAGB230 and UAGB238 strains. For the UAGB199 bacterium was presented 70% similarity with the others. To assess the genetic matrix-like strains phenotypic 100% demonstrated physiological potential of their peers. The BOX-PCR test identified high similarity among the strains. Phenotypic characteristics negatively influenced the genetic similarity-phenotypic.

Keywords: BOX-PCR, endophytic bacteria, plant growth promotion.