

Title: GENETIC DIVERSITY OF THE *Burkholderia* COMMUNITY IN SOILS CULTIVATED WITH *Brachiaria decumbens*

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Abstract:

Grasses of the genus *Brachiaria* spp. are among the main forages sources utilized to the development of the Brazilian livestock, because they have greater adaptability and resistance to limiting agents such as acidity and low soil fertility. Higher development are reached through applications of chemical fertilizers when required, else causing extensive damage in different parts of the ecosystem. Alternatively, the inoculation of nitrogen fixing bacteria enables better development of the plant with reduced costs and no pollution of the environment. The bacteria belonging to the genus *Burkholderia* are among those that stand out as plant growth promoting by the ability of some species have the capacity of solubilize inorganic phosphate, fix nitrogen, produce auxin, and others substances that can help and improve plant growth. Therefore, the objective of this study was to evaluate the genetic diversity of *Burkholderia* community present in soils cultivated with *Brachiaria decumbens*, inoculated with plant growth promotion bacteria. Six soils submitted to different treatments were analyzed. Containing five soils inoculated with bacterial isolate and a control soil without bacterial inoculum, with three repetitions each. After the extraction of genomic DNA from soils, specific PCR was performed for Burk gene for subsequent digestion with the enzyme Hae III. Profiles bands were observed by agarose gel electrophoresis 2.5%, converted into a binary spreadsheet for obtaining the dendrogram dissimilarity, calculated by the Euclidean coefficient using the software PAST®. The generated dendrogram allowed the visualization of the distance between the samples analyzed. It was observed that a large part of the samples showed high levels of dissimilarities, showing a low similarity between those individuals. As a result, it can be claim that the inoculation provides an increase in genetic variation between bacteria of the genus *Burkholderia*.

Keywords: bacterial diversity, genetic variability, grass *Brachiaria*, inoculation.

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