

TITLE: BACTERIA OF THE GENUS *Burkholderia* TOLERANT TO SALT AND WATER STRESS

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ABSTRACT:

Brazilian agriculture is one of the most important economic sectors in the country. The Brazilian Northeast is rather undermined with the irregularity of precipitation and soil salinity, which hinders the development of plants by increasing production costs. The use of microorganisms with the potential to promote plant growth can reduce the use of chemical inputs, producing in a sustainable way. Some bacteria of the genus *Burkholderia* have biotechnological characteristics, among these the phosphate solubilization, biological nitrogen fixation, auxin production, and exopolysaccharides (EPS) production, the last mentioned feature is responsible for tolerate abiotic stress situations benefiting plants. Based on this context, the aim of this study was to evaluate the growth of bacteria of the genus *Burkholderia* under water and salt stress. Eight bacterial strains (UAGC741, UAGC739, UAGC942, UAGF09, G1, G2, G28, G29) were evaluated. Water stress was caused by sorbitol in the middle of solid culture. In addition to the water stress, the salt stress was caused by different concentrations of NaCl (1.0; 2.5; 5.0%). Treatment control was culture medium without any stress condition. The strains were incubated at 28° C for 72 hand the experiment done in triplicate. It was observed that the hydric stress didn't influence bacterial growth. For the treatments with different concentrations of NaCl, It was observed a reduction in bacterial growth due to the increase of the salt concentration in the culture medium. The UAGC942, G2, G29 strains showed greater tolerance. Only the UAGC739 strain hasn't grown on 5.0% concentration of NaCl. With the acquired results concluded that the bacteria have high resilience to water deficit and saline, revealing potential candidates for plant growth promoting experiments in saline soils in conditions of water stress.

Key words: abiotic stress, exopolysaccharide, plant growth promotion.

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