

TITLE: *Leifsonia* sp. native of the Caatinga can mitigate the effects of the water deficit in maize plants.

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ABSTRACT:

Drought is a natural phenomenon that limits crop growth and consequently damages the agricultural sector. The search for alternatives that aim to reduce the water requirement of these crops has been the focus of several studies currently. The use of drought-tolerant bacteria has become an alternative in solving this problem. The main this work was to evaluate the effect of *Leifsonia* sp. strains isolated from the Caatinga on the induction of water deficit tolerance in maize plants. Five maize seeds of the Catete variety were planted in pots containing 500 g of soil. After the emergence, the plants were inoculated with 20 mL of bacterial suspension containing 10^8 CFU mL⁻¹ of three strains of bacteria of the genus *Leifsonia* sp. (S1.5, S1.10 and S1.12). Then the plants were submitted to two treatments: 1- recommended daily watering for culture and 2- complete suspension of irrigation for 8 days. The treatments were performed in triplicate. After this period irrigation was reintroduced, for six days, to the group submitted to the water deficit. The plants were kept in germination chamber with photoperiod (light / dark 16/8 h) and temperature alternation (28 / 22°C). The evaluated parameters were aerial and root length, fresh shoot and root mass and dry shoot and shoot mass. The obtained data were submitted to the Skott-Knott average test ($P < 0.05$) using the Sisvar software. There was an increase in root length for all the isolates tested when submitted to the water deficit condition, of 79.5%, 60% and 54.6% for the isolates (S1.10), (S1.5) and (S1.12), respectively. For the aerial part length, the increment was 59.2%, 57.9%, 37.5%, for the isolates (S1.5), (S1.10) and (S1.12), respectively. In the variable fresh mass of the aerial part there was variation of 25.3%, 80% and 100% increase, for the isolates (S1.12), (S1.5) and (S1.10), respectively. The fresh root mass increased by 58.3% for the treatment inoculated with the strain (S1.5). For the dry mass of the aerial part the increases were 27%, 39% and 74% and roots of 4%, 32% and 48% in the plants inoculated with the isolates (S1.12), (S1.5) and (S1.10), respectively. All plants inoculated with the bacteria of the genus *Leifsonia* sp. presented a significant increase for the evaluated parameters. These data show the possibility of applying the isolates to reduce the negative effects caused by drought.

Key words: climate change, drought, rhizobacteria.