Title: CORN PLANTS GROWTH IN INTERACTION WITH DIAZOTROPHIC BACTERIA

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Summary:

The association of diazotrophic bacteria with corn plants may provide part of the nitrogen need of this culture, since these bacteria are microorganisms able to colonize the surface of roots and rhizosphere as well as internal tissues of various vegetable species. The aim of this study was to evaluate the effect of inoculation of nitrogen fixing bacteria in growth promoting of corn plants commercial variety. Two experiments were carried out under greenhouse conditions from August to December of 2014 in the experimental area of the *Instituto Federal de Educação, Ciência e Tecnologia de Mato Grosso* – Campus São Vicente. In the first experiment two commercial inoculants were evaluated, alone and in combination, as well as increased by nitrogen fertilization. In the second experiment was evaluated a commercial inoculant, the combination of two bacteria strains, as well as the combination of these bacteria increased by nitrogen and micronutrient fertilizer. The plants were grown in pots of 3 dm^3 capacity filled with the commercial non-sterile plantmax® substrate. The experimental design was completely randomized with 10 replicates. The plant growth promotion effects were observed 45 days after inoculation, using the parameters: plant height, root and stem dry matter, chlorophyll content and the total nitrogen in the leaves. In the first experiment was observed positive effect of inoculants increased by nitrogen fertilization on plant development, but no difference between them. In the second experiment it was observed that the bacterial strains used showed potential greater than the commercial inoculant in plant growth promoting. However, both sources of inoculum were more efficient in plant development when combined with nitrogen and micronutrients. The use of homologous bacteria added the association these bacteria with corn plants is an important alternative for the development of their core structures, causing them to increase the uptake of water and nutrients, improve the light absorption efficiency of photosynthesis and with consequent increase in productivity of these plants.

Keywords: growth promotion, biological nitrogen fixation, inoculant