

**Title: RESPONSE OF CORN PLANTS TO *AZOSPIRILLUM BRASILENSE* INOCULATION AND NITROGEN LEVELS**

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**Summary:**

Diazotrophic bacteria have the potential to be used as biofertilizer in different crops and the application of this alternative fertilizer will reduce the need for N application in these crops, since an efficient nitrogen use is an essential factor for a sustainable agriculture and the world agribusiness. *Azospirillum* spp. is a nitrogen-fixing rhizobacteria that colonizes several plant species and produces different substances with hormonal activity, important for the plant development. The aim of this study was to evaluate the effect of *Azospirillum brasilense* inoculation and nitrogen fertilization in corn plants growth. The experiment was carried out under controlled conditions of greenhouse in the experimental area of the *Instituto Federal de Educação, Ciência e Tecnologia de Mato Grosso – Campus São Vicente*. The experimental design was completely randomized with 6 treatments: 150 kg N ha<sup>-1</sup>; inoculated plants with *A. brasilense*, strains Abv5 and Abv6, and four N rates (0, 100, 160 and 200 kg N ha<sup>-1</sup>) and non-inoculated plants, with 8 replicates. The plants were grown in pots of 3 dm<sup>3</sup> capacity filled with the commercial non-sterile plantmax<sup>®</sup> substrate. The plants were analyzed 45 days after inoculation, using the parameters: plant height, root and stem dry matter, chlorophyll content and the total nitrogen in the leaves. It was observed that the inoculated plants with strains Abv5 and Abv6 as well as the fertilized plants with 150 kg N ha<sup>-1</sup> showed greater content on leaf area. Inoculated and non-inoculated plants not differed between them on chlorophyll content in their leaves. However, all inoculated plants plus nitrogen fertilizer showed greater chlorophyll content on the leaves, compared to control plants. Fertilized plants with 150 kg N ha<sup>-1</sup> and inoculated plants plus N rates (100 and 160 kg ha<sup>-1</sup>) accumulated higher dry matter content. The results obtained in this study confirm the commonly greater contribution of bacteria inoculation associated with small doses of nitrogen as well as the inoculation of nitrogen-fixing bacteria in corn plants can be an alternative strategy that can provide nitrogen nutrition to these plants in an efficient and sustainable manner.

**Keywords:** biofertilizer, endophytic, rhizobacteria.