TITLE: EFFICIENCY OF *Streptomyces* AS A GROWTH PROMOTER IN SOYBEAN CULTURE

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ABSTRACT

Soybean cultivation is one of the most important crops in Brazil and the world, and there are currently good yields for the application of growth promoting microorganisms. However, it is still necessary to have a commercial base of *Streptomyces* sp., as well as a recommended dosage for inoculant. The objective of this study was to evaluate the effect of *Streptomyce*s sp. In the phytotechnical characteristics and in the supply of soybeans. The experiment was conducted at the experimental station of the Federal University of Tocantins. The experimental design was a randomized block design consisting of four inoculant doses (0, 3, 6 and 12 g $kg^{-1}$of seed) with four replicates. One soybean cultivar was by M8644 IPRO®. The inoculant was autoclaved rice and then the spores were cast in powder (graphite) with a minimum of 2 x 10^9 CFU per gram of the inoculant. The evaluated particles were: aerial shoot mass in V3 and R2, height, number of internodes, number of particles per plant, initial number, final quantity and grain yield. Where a dose dosage was calculated in the V3 and R2 trials, in addition to maintenance in the initial and final an esthetics of the plants in the field. Beneficial effects on dry mass, height, number of internodes, number of seeds per plant, number of grains per plant and yield, number of plants and efficiency of the doses in V3 and R2 were observed. The optimum inoculant dose ranged from 7.5 to 8.5 g kg^{-1} of seed. The yield of soybean cv. M8644 IPRO® showed a significant quadratic response as a function of the *Streptomyces* inoculant doses applied with the use of graphite in seeds The inoculants had a capacity to increase production by an average of 20% more when it was to the control without inoculation. The soybean plants presented maximum response in the P at the doses of 8.89 and 6.80 g kg-1 of seed, harvest 2017/2018 and 2018/2019, simultaneously. The highest P was 2,817.74 (46.9 sacks ha^{-1}) kg ha^{-1} in the 2017/2018 harvest, while in the 2018/2019 harvest the highest P was 2,998.53 (49.9 sacks ha^{-1}) kg ha^{-1}. The increase in relation to plants that did not receive doses of the inoculant *Streptomyces* sp. (strain UFT-St26), represent about 11.47 and 15.56%, harvest 2017/2018 and 2018/2019, respectively.

Keywords: inoculants, *Glycine max*, actinomycetes