

AGRONOMIC PERFORMANCE OF SOYBEAN CO-INOCULATED WITH RHIZOBIUM AND PLANT GROWTH-PROMOTING BACTERIA IN MATO GROSSO DO SUL - BRAZIL

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As the world demand for food grows, there is a necessity to increase production. However, conservationist techniques are needed for sustainable production. As a result, the use of nitrogen fixing bacteria (NDF) and plant growth promoters bacteria (PGPB) inoculated in commercial crops such as legumes and grasses has been increasing. Since this technic contributes to increased production while allowing a partial or even total reduction of chemical fertilizers, such as nitrogen fertilizer in soybean production, then reducing further soil contaminations. The aimed of this work was to evaluate the effects of co-inoculation of Bradyrhizobium and Azospirillum bacteria on the development of the soybean crop on the season 2016/17. The experiment was conducted in a rural property located in the municipality of Vicentina - MS, Brazil. The soil classification is dark-red latosol (Oxisol), and the climate of the region, according to the Köppen climate classification, is tropical monsoon Am. The experiment consisted of three treatments that were arranged in randomized blocks design with eight replicates per treatment. The treatments consisted of seeds inoculated with Bradyrhizobium japonicum, Bradyrhizobium japonicum + Azospirillum brasilense and control. Soybean cultivar used was M 6410 IPRO that were sowed spaced at 0.45m between rows with a plant population of 270 thousand per hectare, and a fertilization of 200 kg/ha-1, NPK formula 02-20-18. The following traits were to evaluate: plant height at maturation, stem and root dry mass yield per plant, number of pods per plant, number of grains per pod, final plant population per hectare, one hundred grain weight and grain yield. The data were submitted to analysis of variance and averages compared by the Tukey's test ($p < 0.05$). According to the results, there was no statistical difference for the studied variables, therefore the inoculation with *B. japonicum* and co-inoculation with *B. japonicum* + *A. brasilense* did not differ from the treatment without inoculation. Perhaps the seed treatment of fungicide and insecticide, and the low rainfall in the establishment of the culture provided the mortality of the bacteria, threatening the efficiency of the biological fixation of nitrogen.

Keywords: Bradyrhizobium japonicum, Azospirillum brasilense, BFN

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