

NODULATION AND INITIAL GROWTH WITH SOYBEAN CO-INOCULATION BRADYRIZOBIUM IN SANDY SOIL

Ricardo Fachinelli¹, Renato Albuquerque Luz¹, Priscila Akemi Makino¹,
Rômulo Dutra Rasslan², Gessi Ceccon³

¹Agronomist, postgraduate at Federal University of Grande Dourados UFGD - MS, Brazil, rfachinelli@hotmail.com (corresponding author), renatoalbuquerque luz@gmail.com, priscila_akemi17@hotmail.com, luanmarlon@hotmail.com

²Undergraduate UFGD students in Agronomy, a trainee at EMBRAPA Western Agriculture, Dourados - MS, Brazil; romulo_rasslan@hotmail.com

³Agronomist, D. Sc in Agriculture, Agriculture Western Researcher at EMBRAPA, Dourados - MS, Brazil; gessi.ceccon@embrapa.br

The soybean yield is proportional to the availability of nutrients such as nitrogen. It is essential in amino acid biosynthesis process, chlorophyll, nucleic acids and nitrogenous bases. Currently, diazotrophic bacteria that increases the soybean yield belong to the genus *Bradyrhizobium*; nevertheless, there is the possibility to increase this benefit with the combination with other bacteria such as the genus *Azospirillum*. The aimed of this study was to evaluate nodulation in roots and initial growth of the BRS 1001 IPRO soybean with different inoculation treatments of *Bradyrhizobium* and *Azospirillum*. The study was conducted at Embrapa Western Agriculture, in Dourados, MS, Brazil in no heated greenhouse conditions glass cover and side with splint-galvanized wire. The plots were polypropylene pots containing 3 kg of dry soil. The experimental design was a randomized block with three replicates, and the following treatments: 1- no inoculation and no fertilizer, 2- nitrogen fertilizer, 3- *Bradyrhizobium* inoculation, 4- inoculation with *Azospirillum*, 5- and inoculated with *Azospirillum* and *Bradyrhizobium*. At V4 plant stage, plants were uprooted, washed and the nodes roots separated. The samples were oven dried at 40°C for dry weight determination. Data were subjected to ANOVA and averages were compared by the Tukey's test at $p < 0.05$. The highest values for number and weight of nodules and root dry weight were observed in the *Bradyrhizobium* inoculation isolated, no differing statically from co-inoculation, however, the treatment with nitrogen fertilization showed no nodulation. The shoot as dry weight of stems, leaf area and chlorophyll b showed greater values fertilized with nitrogen, although not statistically differ from the treatments with *Bradyrhizobium* and co-inoculation. We conclude that inoculation with *Bradyrhizobium* is equivalent to co-inoculation for number and weight nodules. Co-inoculation and inoculation with *Bradyrhizobium* are similar to the use of nitrogen fertilizer to shoot growth of soybeans.

Keywords: *Azospirillum brasilense*; *Bradyrhizobium japonicum*; no-tillage.

Acknowledgements: CAPES, UFGD, EMBRAPA Western Agriculture.