

# Bioprospecting of diazotrophic bacteria and response to nitrogen fertilization for Mombaça grass in Colorado do Oeste, Rondônia.

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Among the nutrients most demanded by plants, nitrogen is one that is not found in significant quantities in the soil, requiring nitrogen fertilization, which generates high costs for producers. Thus, the use of diazotrophic bacteria can make a significant contribution to pastures and reduce costs. The objective was to isolate, identify, and select diazotrophic bacteria in Mombaça grass (*Megathyrsus maximus* cv. Mombaça) cultivated with different nitrogen doses in the municipality of Colorado do Oeste – Rondônia during the dry season of the year. Samples of Mombaça grass were collected at IFRO - Campus Colorado do Oeste, separated into roots and aboveground parts, then washed, disinfected, and triturated with saline solution. Serial dilutions were performed and inoculated on specific semi-solid culture media (NFB, JNFb, JMV, and LGI). Fifteen different strains were isolated, which were tested in a greenhouse along with a commercial inoculant and a control. They were inoculated on Mombaça grass seeds and planted in 500 mL containers containing sand and vermiculite for 40 days after emergence (DAE), where SPAD, height, and leaf area were evaluated. After obtaining the greenhouse results, the two best strains were selected and taken to the field. A randomized block design was adopted in a 4x4 factorial scheme, consisting of 4 seed treatments, two selected strains (IFRO01 and IFRO03), a commercial inoculant based on *A. brasilense* strains Abv5 and Abv6s, and a treatment without inoculation, combined with 4 nitrogen doses (0, 50, 100, and 200 kg.ha<sup>-1</sup>), totaling 16 treatments with 4 replicates. The experiment was conducted from February to August 2021. Productivity, dry matter percentage, leaf percentage, crude protein, and neutral detergent fiber were evaluated. The data obtained were subjected to analysis of variance, Scott-Knott mean grouping test, and regression analysis at a 5% probability level. In the greenhouse results, some strains showed statistically significant results regarding plant height and leaf area. In the field evaluation, there was no significant difference in the assessed parameters. However, inoculation provided higher values for most variables, and nitrogen doses showed significant results. The treatments without inoculant showed a difference in leaf percentage, with the IFRO03 inoculation and 50 kg.ha<sup>-1</sup> of nitrogen resulting in 1.7 t/ha<sup>-1</sup> of dry matter, while the control with 50 kg.ha<sup>-1</sup> of nitrogen produced 1.2 t.ha<sup>-1</sup> of dry matter.

**Key words:** Nitrogen Fixation, Plant Growth-Promoting Bacteria, *Poaceae*, *Megathyrsus maximus* cv. Mombaça.

## Bioprospecção de bactérias diazotróficas e resposta à adubação nitrogenada para capim Mombaça em Colorado do Oeste - Rondônia

Neste estudo, buscou-se isolar e selecionar bactérias diazotróficas no capim Mombaça. A pesquisa foi desenvolvida no IFRO - Campus Colorado do Oeste, Rondônia, durante a estação seca de 2021. Com amostras de capim Mombaça coletadas foram isoladas 15 estirpes bacterianas, onde foram selecionadas 2 e testadas em campo. Os resultados de campo mostraram que a inoculação não apresentou resultados significativos, porém o tratamento com a estirpe IFRO03 e 50 kg.ha<sup>-1</sup>, que alcançou 1,7 t.ha<sup>-1</sup> de matéria seca, em comparação com a testemunha e 100 kg.ha<sup>-1</sup> que obteve 1,2 t.ha<sup>-1</sup>.

**Palavras-chave:** Fixação Biológica de Nitrogênio, Bactérias promotoras de crescimento vegetal, *Poaceae*, *Megathyrsus maximus* cv. Mombaça.

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