

ASSOCIATIVE DIAZOTROPHIC BACTERIA IN THE INITIAL DEVELOPMENT OF WHEAT SEEDLINGS

Batista, É.R.¹, Guimarães, S.L.¹; Paludo, J.T.S.¹; Rêgo, V.M.¹; Silva, N.L.¹; Silvério, A.T.¹

¹ UFMT – Universidade Federal de Mato Grosso – Campus de Rondonópolis (Rodovia Rondonópolis-Guiratinga, Km 06 (MT-270) - Bairro Sagrada Família)

Nitrogen is the element that most limits the crop development and the nutrient supply this can be achieved in part by biological nitrogen fixation process (BNF). Wheat is a crop that can benefit from the BNF in association with nitrogen fixing bacteria. The objective in the present study was to evaluate the effect of inoculation with diazotrophic bacteria on the early development of wheat seedlings. The experiment was conducted in gnotobiotics conditions in a randomized design. Treatments consisted of three bacterial isolates (H2, AZ8 and Y2), a commercial inoculant and an absolute control in six repetitions, totaling 30 experimental plots. Seeds were surface sterilized with 95% alcohol and then in a sodium hypochlorite solution 1% for three and ten minutes, respectively. Then washed ten times with sterile distilled water and they were germinated in culture medium 3% water agar. The plantlets were transferred to test tubes with 12.5 ml of Hoagland solution without nitrogen, containing 250 µL of the bacterial broth (10^8 cells ml⁻¹). The tubes were placed in BOD chamber adjusted to 25°C and 12-hour photoperiod. Fresh mass of shoots and roots, and the total fresh matter accumulation were evaluated. Data were subject to analysis of variance and means compared by Tukey test at 5% probability. The commercial inoculant resulted in the highest fresh mass accumulation of shoot and total in relation to absolute control, but did not differ from other inoculated treatments. The largest fresh mass accumulation of roots was also obtained with the commercial inoculant, which although has not differentiated from the absolute control and isolated Az8, showed higher increase compared to isolated H2 and Y2. More studies are needed in order to prove the nitrogen fixation potential by diazotrophic bacteria in association with wheat plants.

Keywords: Biological nitrogen fixation, gnotobiotics conditions, *Triticum aestivum*

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