Title: EFFECT OF AZOSPIRILLUM BRASILENSE DOSES ON GERMINATION AND INITIAL GROWTH OF RICE

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Summary:

The intensive use of fertilizers in agriculture, especially the nitrogen ones, has raised the production costs, in addition to causing a lot of environmental damage. The association of diazotrophic bacteria with plant roots of rice aims to trigger the biological fixation of this plant nutrient. These bacteria still stimulate root growth, through the production of growth-promoting substances. Thus, the objective of this work was to evaluate the effect of *Azospirillum brasilense* doses on germination and initial growth of rice. The experiment was installed in two phases: (a) physiological assessment of seed, when the vigor and germination tests have been installed, with four replications of 50 seeds in germination plant germitest paper rolls, and the counts of germination made to 5 and 14 days. The length of seedlings was also held in germitest paper rolls, with 20 seeds per repetition. The emergency test was conducted in expanded polyethylene trays, with 128 individual cells, containing the commercial substrate Plantmax, kept in the greenhouse, with the evaluations carried out to 14 days after sowing; (b) another experiment was installed in 5 dm3 polyethylene vessels containing soil and kept in the greenhouse with controlled irrigation. The plants were maintained until the reproductive phase to assess the height, the number of tillers, the leaf number, the culm diameter, the dry matter mass of the shoot and root and the number of grains per panicle too. The seeds used in the experiments were inoculated with five doses of *A. brasilense*: 0, 50, 100, 150 and 200 mL kg^{-1} of seeds, using the commercial product Azototal which contained 2 x 10^{-8}ufc. mL-1 of Ab-V5 and Ab-V6 strains. Increasing the doses of *A. brasilense* provided increased length of the shoot and the decrease in root length of seedlings of rice. Besides the beneficial effect promoted by biological fixation nitrogen, the *A. brasilense* also promoted the production of the following phytohormonics: cytokinin and ethylene. Thus, the positive effect of the growth of the aerial part might be due to the increase of exogenous cytokinin microbial concentrations, while the root growth might be dependent on the production of ethylene by the plant. Also reduction of abnormal seedlings with increased doses of *A. brasilense*. The other characteristics were not affected by the *A. brasilense*.

Keywords: Oryza sativa, diazotrophic bacteria, biological inoculation