TITLE: THE EFFECT OF THE APPLICATION OF *A. niger* IN THE PROMOTION OF GROWTH AND ABSORPTION OF PHOSPHORUS BY THE CORN

AUTHORS: BRANDÃO, M.H.[1,2]; OLIVEIRA, S.L.[1,2]; FUGA, C.A.G.[2]; SOARES, C.M.S.[2]; MENDES, G.O.[3]

INSTITUTION: 1. CENTRO UNIVERSITÁRIO DE PATOS DE MINAS (Rua Major Gote, 808, Caiçaras, Patos de Minas - MG, CEP: 38.700-207, BRASIL); 2. NOOA CIÊNCIA E TECNOLOGIA AGRÍCOLA LTDA (Rodovia BR 365, Km 428, Patos de Minas - MG, CEP: 38.700-000, BRASIL); 3. UNIVERSIDADE FEDERAL DE UBERLÂNDIA – CAMPUS MONTE CARMELO (Rodovia LMG 746, Km 01, Monte Carmelo – MG, CEP: 38.500-000, BRASIL).

ABSTRACT:

Considering the great importance of phosphorus (P) in agriculture and the low efficiency of phosphate fertilization, some management strategies are adopted to reduce soil loss processes. Among the strategies available, nevertheless still little explored, the use of phosphate solubilizing microorganisms is promising. The objective of this experiment was to evaluate the application of the *Aspergillus niger* fungus on the growth and content of P in maize in association with different sources of phosphorus. The experiment was carried out in a field condition in an experimental area in the Municipality of Patos de Minas (MG) in a clayey Yellow Red Latosol. The FS1 isolate of the fungus was used, from which the conidia were extracted for application of the treatments. The experiment had six treatments: (1) control, (2) triple superphosphate (TS), (3) natural phosphate (NP) from Pratápolis, (4) *A. niger*, without phosphate fertilization, (5) *A. niger* and TS and (6) *A. niger* and NP from Pratápolis. A dose of 70 $kg.ha^{-1}$ of P_2O_5 was used for treatments with phosphate fertilization and 0.1 g of spores of *A. niger* per kilogram of seed. The experimental design was distributed in randomized blocks with four replicates. The maize plants were harvested at the reproductive phenological stage R3, evaluating the dry mass of leaf, stem, reproductive part and total aerial part, and analyzed the P content in the leaf and stem. Through the dry mass and P content, the content of phosphorus in the leaf, stem and aerial part was calculated. The data were submitted to analysis of variance, and when significant, the means were compared by the LSD test at 5% probability. The leaf and stem dry matter variables did not present a significant effect. For the parameter dry mass of reproductive part, only the two treatments with TS application showed a significant difference in relation to the control. Regarding the dry mass of total aerial part, all the treatments differed significantly from the control, except for the *A. niger* and FN treatment of Pratápolis, but these ones did not differ between each other. Thus, it was not possible to conclude if the application of *A. niger* FS1 was able to promote growth in maize. The content of P in leaf, stem and aerial part also did not present a statistical difference, concluding that the fertilization and the fungus did not have effect in the increase of the absorption of phosphorus by the plant.

Keywords: fungi, solubilization, *Zea mays* L.