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Effect of inoculated rock phosphate with thiobacillus and aspergillus on corn growth

M. Mohammady Aria[1] , A. Lakzian[2], GH. Haghnia[3] , A. Fotovat[4] and H. Besharati[5]
1. M.Sc. Student of university of mashad
2. Associated Prof. of university of mashad
3. Prof. of university of mashad
4. Assistant Prof. of soil and wather research center
5. Assistant Prof. of university of mashad.

A large number of studies have showed that direct application of rock phosphate, instead of phosphate fertilizer isn't suitable. increasing the efficiency of direct use of rock phosphate was the main purpose of this research. Mixing of rock phosphate with sulfur, organic matter and inoculating with sulfur-oxidizing bacteria and phosphorous-soluilizing fungus, is good internative for increasing efficiency and applicability of rock phosphate. In order to This experiment was carried out in lab condition, using completely randomize factorial design with 24 treatments and 3 replication. The treatment include applying sulfur at three rate, 0(S0), 20% (S1), vermicompost at two rat, 0 (V0), 15% (V1), and inoculation with Thiobacillus tiooxidanc (B), aspergillus niger (F) , applying both Thiobacillus tiooxidanc, Aspergillus niger (BF) and without inoculation and testing increasing period of incubation. A green house experiment was carried out to evaluate the treatment(that had maximum water soluble-p) grow with corn. The treatment were: rock phosphate with 20% sulfur, 15% vermicompost, Thiobacillus and Aspergillus (BFS20V15) at three rat: 440 kg/ha (BF1) , 880 kg/ha (BF2), 1320kg/ha (BF3), triple super phosphate (TSP), and control without phosphorus. In bioassay water soluble phosphorus, during incubation period 60 days were analyzed. Higher rates of available P were obtained in treatment with rock phosphate with 20% sulfur, 15% vermicompost, Thiobacillus and Aspergillus (BFS20V15). In the green house experiment, shoot dry matter, p uptake in plant were determined. The experiment showed maximum yield resulted from BF3 with the shoot dry weight 7.2 gr per pot and no significant different with the triple super phosphate (7.5gr) at 5% level. Also highest rate p-uptake resulted from BF3. there was significant different between treatment BF3 and TSP on p-uptake. Result indicated that we can substitute rock phosphate inoculated sulfur-oxidizing bacteria and phosphorous-solublizing fungus for super phosphate.

Keywords: Thiobacillus thiooxidanc, Aspergillus niger, Rock phosphate, Up take-p, Corn

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[1] Corresponding author Email: sara_aria2002@yahoo.com