



Partial Replacement of Integrated Mineral Fertilizer through Biofertilization to Maximize Economic Yield of Faba Bean under Saline Soil Conditions

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Abstract : In 2014/2015 and 2015/2016 seasons, two field experiments were conducted at private farm, El-Qantra Sharq, Ismailia Governorate, Egypt to evaluate the effect of partial substitution of 50% and 25% of NPK addition rates recommended by the Ministry of Agriculture (40 kg N fed.⁻¹, 100 kg P₂O₅ and 70 kg K₂O fed.⁻¹) using biofertilization with *Rhizobium radiobacter* sp strain, *Bacillus megatherium* as (dissolving phosphate bacteria) and *Bacillus circulans* (enhancing potassium availability) on faba bean (*Vicia faba* L., cv. Masr 3) phosphate dissolving bacteria. 100-seed weight, N, P and K content as well as K-uptake by faba bean seeds gave the maximum values under Biofertilization + full NPK fertilizer recommended dose (full-RD). Pod and seed yields as well as seed protein content and protein yield as well as N and P-uptake by seeds were increased significantly and gave the highest values due to the treatment of Biofertilization + 75% of NPK fertilizer recommended dose (NPK-RD). Fertilized treatments decreased values of soil EC and pH and increased soil available N, P and K content after harvest. The treatment of Biofertilization + 75% NPK-RD was superior to other treatments.

Key words: Bio inoculation, NPK fertilization, faba bean, saline soil.