ABSTRACT

Two field experiments were carried out at The Agricultural Research Station of Giza, Agricultural Research Center (A. R. C.), during the winter seasons of 2000/2001 and 2003/2004. The aim of this study was to investigate the effect of organic manure and bio-mineral fertilizers as a total or partial replacement of mineral fertilizers on faba bean. Three levels of organic manure (garbage compost *i.e* 0, 20 and 40 m^3/fad) and six treatments of bio and mineral fertilizer *i.e* zero nitrogen + 15.5 P_2O_5 + 12 K_2O , 15 kg nitrogen + 15.5 P_2O_5 + 12 K_2O , zero nitrogen + 7.75 P_2O_5 + 6 K_2O, 15 kg nitrogen + 7.75 P_2O_5 + 6 K_2O, Phosphorin (Bio fertilizer) and Phosphorin + 12 K_2O

A strip plot design with 4 replications was used. Organic manure levels were assigned in vertical strips and bio and mineral fertilizers were assigned in the horizontal strips. the results could be summarized as follows:

1. Organic manure application delayed heading and maturity and favorably affected growth, yield and yield components, seed and straw yields were increased by organic manure application. Increasing organic manure rates to the highest level (40 m^3/ fad) increased plant height, number of branches/ plant, number of leaves/ plant, number of days to 50 % flowering as well as both fresh and dry weight of faba been plants, stems and leaves. Moreover, organic manure application affected significantly the number of pods/plant, weight of pods/plant, number of seeds plant, weight of 100 seeds

and induced pronounced increases in seed crude protein, total carbohydrates and ash percentages.

2. The combination of 15 Kg N + 15.5 P_2O_5 + 12 K_2O gave the highest values of plant height, number of branches/plant, number of leaves/plant number of days to 50 % flowering meanwhile the lowest values of the above traits were recorded with the combination of zero N + 7.75 P_2O_5 + 6 K_2O.
3. The use of bio-fertilizer phosphorin alone showed significant superiority for all studied growth traits over the two treatments of phosphorus and potassium fertilizers and enhanced flowering compared with the other studied treatments.
4. The available results revealed clearly that all studied harvest traits, *i.e* number of pods and seeds/plant, weight of pods/plant, weight of 100 seeds as well as seed and straw yields/fad. Were affected by the studied treatments of both bio and mineral fertilizers.
5. The effect of the interaction between organic manure and bio-mineral fertilization treatments was significant in the two growing seasons on the following traits, number of branches/plant, number of days to 50 % flowering, plant, stems and leaves fresh and dry weights. Moreover, the effect of the above interaction showed significant effect in one out of the two seasons on plant height, number of leaves/plant, weight of pods plant, number of pods/plant and both seed and straw yields/fad.

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