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Response of Faba Bean (*Vicia faba* L.) Crop to Potassium Soil Application and Zinc Foliar Application under Sandy Soil Condition

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Abstract: Our objective was to evaluate the effect of foliar spray with Zinc- EDTA twice under different levels of soil potassium application on yield and several physiological and agronomic traits as well as chemical traits of faba bean (*vicia faba* L.) grown in sandy soil. Therefore, two field experiments were carried out at the fields of two farmers in Nubaria region, Egypt, during two successive seasons. Soil potassium application was carried out at 45 days after sowing and before flowering initiation with three rates 0 , 25 and 50 kg K_2O as potassium sulphate (50 % K_2O) / feddan and foliar spray with Zn- EDTA twice ; without spray, one spray and two sprays of 200 and 300 g Zn- EDTA (14 % Zn) / feddan were sprayed at flowering initiation stage (50 days after sowing) and three weeks later , respectively .The results indicate that soil potassium application (K50) or two zinc foliar sprays (Zn2) alone were significantly increased seed yield / feddan by 290 kg with relative increase of 20% compared with control (K0 and Zn0) and this is highly related to the highest K- and Zn- uptake. The highest rate of potassium (K50) with two foliar applications by Zinc- EDTA (Zn2) recorded the highest significant seed yield (1.89 ton/feddan) by relative increase of 33 % .The interaction effects between potassium and zinc applications were produced the highest relative increase percentages in No. of pods / plant (12.6%), one-hundred seeds weight (12.1%), seed and straw yield (33% and 21.7%) compared to control treatment. It can be concluded that treatments of both high rate of potassium (K50) and foliar spray with Zn- EDTA twice improved K and Zn- uptake and K use efficiency and also components of faba bean which reflects all on increasing the seed yield under sandy soil conditions.

Keywords: Faba bean, sandy soil, Potassium soil, foliar spray with Zn- EDTA, yield, K, Zn- uptake, K- use efficiency.

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