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Response of New Potato Cultivars to Different Levels of Potassium Application under Egyptian Conditions

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THE RELEASE of four new potato (*Solanum tuberosum* L.) cultivars namely Eden, Hermine, Soleia and Safrane into the Egyptian agricultural system, necessitates the development of appropriate potassium fertilizer recommendations.These new cultivars in comparison with common grown cultivar Diamant, were treated with four potassium levels, *i.e.*, 60, 80 ,100 and 120 kg K_2O per fed., in the form of potassium sulfate (48%). Each of the five cultivars showed different response to potassium application treatments. The highest plant height, number of leaves and stems as well as number of tubers and its quality were obtained by Eden cultivar. In comparison to other K_2O rates, all cultivars showed similar trends to the highest K_2O rate where the highest plant height, number of tubers, tuber yield were recorded. Total carbohydrates (%), dry matter content (%) and starch increased significantly only with 120 kg of K_2O/fed. The interaction between cultivar and potassium rate resulted in increasing vegetative growth, yield and improving quality of potato tuber. The highest and lowest interactions were recorded with cultivars Eden and Soleia treated with 120 and 60 Kg K_2O respectively.

Kewwords: Potato (*Solanum tuberosum* L.), Cultivars, Potassium application, Quality and yield.

Potato (*Solanum turberosum* L.) is one of the major crops contributing to the world's food requirement. It has a high biological value because it is a rich source of starch and having the protein of high biological value (Eppendorfer and Eggum, 1994). In Egypt, potato occupies 200.000 feddan (4200m^2) with a total production of 2 million tons. The French potato cultivar development program released many new cultivars, *i.e.* Solia, Safrane, Hermine and Eden. Each cultivar has morphological and developmental characteristics that differ from the common grown cultivar Diamant. Eden is late maturing, mean while Solia, Safrane and Hermine are early maturing cultivars. On the other hand Diamant is medium maturing cultivar.

Consequently each cultivar has unique K fertilizer requirements. Potassium acts as a somaticum in plants, and is a basic element necessary for translocation of sugars and synthesis of starch (Westermann *et al.*, 1994). Therefore potassium is considered as an integral component of the balanced fertilization of potato crop to improve yield as well as quality of the tuber (Tandon and Sekhon, 1988).