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Alleviate the harmful effects of saline reclaimed soil conditions on growth and productivity of onion plants using ascorbic acid and organic fertilizer

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SUMMARY

A filed trial was conducted during the two successive seasons of 2007/2008 and 2008/2009 in the Experimental Farm at Demo (reclaimed soil with salinity at 7.84 and 8.01 dSm^{-1} in the two seasons, respectively), Faculty of Agriculture, Fayoum University to investigate the influence of farmyard manure soil application at the rates of 0, 10, 20 and 30m^3 $fed.^{-1}$, ascorbic acid foliar application at the rates of 0, 100, 200, 300 and 400mgl^{-1} and their combinations on the possibility of improving growth, yield of onion (*Allium cepa* L.) plants under the above mentioned conditions. In comparison with zero rate of farmyard manure, all other rates significantly increased vegetative growth characters (i. e. plant height, No. of leaves $plant^{-1}$, leaves fresh weight $plant^{-1}$, raw bulb fresh weight $plant^{-1}$, total fresh weight $plant^{-1}$, leaves dry weight $plant^{-1}$, bulb dry weight $plant^{-1}$ and total dry weight $plant^{-1}$), total yield and some chemical constituents under study (i.e. total chlorophyll, total carotenoids, N, P and K of leaves and / or bulbs). The same results were obtained with all ascorbic acid rates; 100, 200, 300 and 400mgl^{-1} as compared to the zero rate. Economically, ascorbic acid treatment at the rate of 300mgl^{-1} combined with soil fertilization treatment at the rate of 20m^3 $fed.^{-1}$ proved to be the best and may counteracted the inhibitory effects of salinity on onion plants.

In view of above mentioned results, it has been concluded that spraying onion plant (cv. Giza 6), producing with the soil fertilized by the farmyard manure at the rate of 20m^3 $fed.^{-1}$, with ascorbic acid at the rate of 300mgl^{-1} could be counteracted the adverse conditions particularly, salinity up to 5000ppm and consequently, economic yield is obtainable.