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EFFECT OF SALINITY AND TYPES OF FERTILIZATION ON GROWTH, FLOWERING AND CHEMICAL CONSTITUENTS OF *POLIANTHES* *TUBEROSA*, L.

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ABSTRACT

The experimental trial was conducted throughout two successive seasons (2014 and 2015) at the nursery of Horticulture Research Institute, Agriculture Research Centre, Giza, Egypt. It aimed to study the individual and the combined effects of different salinity levels (0, 1000, 2000 and 4000 ppm) of water irrigation and different types of fertilizer treatments (chemical (N: P: K 1:1:2), organic (actosol at 5%, bio-fertilizers (EM at 5%, yeast extract at 5% and garlic extract at 500 ml/l) on the growth, flowering, and chemical constituents of *Polianthes tuberosa*, L. plant for achieving the hope to rationalize water consumption in Egypt by using saline water for irrigation, besides producing plants of high quality. The results emphasized that number of days from planting to flowering was progressively increased by raising salinity levels. Supplying plants with the highest level (4000 ppm), significantly decreased spike stem length and diameter. Meanwhile, significant increment in rachis length and fresh weight of stem spike were observed due to supplying plants with the lowest salinity level (1000 ppm) in both seasons. Additionally, using the same level (1000 ppm) slightly raised number of florets/spike comparing with control in the two seasons. Chlorophyll (a and b), total chlorophyll and carotenoids accumulation in the leaves showed an increment due to using saline water at the lowest level (1000 ppm). Meanwhile, proline content in the leaves progressively increased as salinity level increased.

All fertilizer treatments improved plant quality and chemical constituents, where using either actosol or EM at 5% were the best treatments used in raising spike stem length and diameter, fresh weight of spike stem with producing the highest number of florets/spike. Meanwhile, applying yeast extract at 5% occupied the first rank in prolonging the time required from planting to flowering followed by plants which received either EM or actosol at 5%.

Chemical constituents of the plant were also affected by the different fertilizer treatments, where receiving plants either EM or actosol at 5% improved chlorophyll a and b and total chlorophyll content in the leaves. Meantime, yeast extract at 5% occupied the second rank in raising chlorophyll (b) and total chlorophyll in plant leaves. Also, carotenoids content was increased in response to EM at 5%. Meanwhile, supplying plants with actosol (5%) recorded the highest proline content in the leaves followed in the second rank with significant effect by plants which received EM (5%).

From the aforementioned results, it could be advise to use the lowest salinity level (1000 ppm) in irrigation combined with using either EM or actosol at 5% or

yeast extract at 5% in some instances for improving *Polianthes tuberosa*, L. spikes quality with rationalizing the water consumption under local condition.

Key words : actosol, EM, garlic extract, N: P: K. *Polianthes tuberosa*, yeast extract, salinity.