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Title

Evaluation of bio-fertilizers for alleviating effects of deficit irrigation on growth, flowering and quality of cut flower of *Polianthes tuberosa* L.

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Abstract:

The limited sustainable production of plants is accrued due to water deficit and lack of access to sustainable water sources. Application of biofertilizers can be enhance plants stability under limite irrigation conditions. Current study conducted for investigate effects of three different biofertilizers on growth, flowering and quality of *Polianthes tuberosa* L. at 1400 to 1401 in the research greenhouse of Faculty of Agriculture, University of Zabol. Experiment carried out in a factorial design with completely randomized approach and three replications in pots. First factor irrigation treatments includ; 100% , 80%, 60%, and 40% of field capacity. Second factor biological fertilizers includ: three biofertilizers of mycorrhizal fungus, algae extract, and humic acid. There are eight treatments include; control, substrate inoculation with mycorrhizal fungus, and foliar application of seaweed extract (500, 1000, and 2000 ppm), and humic acid (150, 300 and 600 ppm). Morphological and physiological indices such as the length of flowering stem, flower diameter, fresh and dry weight of the flowering stem, number of leaves per plant, fresh and dry weight of the leaves, fresh and dry weight of the stem and root, chlorophyll contant, phenol, proline, carbohydrate, and flavonoids have been measured. Results showed that the growth and development of *Polianthes tuberosa* were affected by different irrigation levels and biofertilizers treatments, signifigantly. The highest morphological characteristics were observed under 100% field capacity irrigation. irrigation level in 40% of the field capacity and 600 ppm of humic acid had the most negative effect on plant growth indices. Water deficit during plant growth reduced the shoot and root weight, ultimately lead to reduction of yield. Under stress conditions levels of proline, carbohydrates, and flavonoids were increased. And the highest levels of these physiologic indices were found under 40% irrigation.

Keywords: humic acid, low irrigation, mycorrhiza, seaweed