Abstract

Effect of Growth Regulators on Morphological and Physiological Characteristics of European Bullion under Drought Stress

In order to evaluate the effect of irrigation and application of chemical and nano fertilizers on quantitative and qualitative characteristics of Borage an experiment was carried out in a split plot based on randomized complete blocks design with three replicates at Agricultural Research Station of Zabol University in 2017. Irrigation as the main factor in two levels control (50 mm evaporation of pan evaporation class A), and drought stress (100 mm evaporation of pan evaporation class A) and nutrition treatments in six levels (1. control 2. Hamoon green 3. Hamoon green + Calcium nitrate 4. Hamoon green + Calcium sulfate 5. Hamoon green + Nano iron 6. Hamoon green + NPK) were considered as sub factor. Hamoon Green was applied in three steps of 4-6 leaf, early flowering and two weeks prior to harvest at concentration 1 liter in 10 liters of water. Nano iron spraying was applied in two stages of 4-6 leaf and early flowering stage to a concentration of two per thousand. The results showed that drought stress reduced the plant height, Flowering Shoot, yield, economic yield, flower number, chlorophyll a, carotenoid and RWC significantly reduced dry yield, biological yield, protein, K and Ca. Application of fertilizer treatments had a significant effect on all traits, and the highest plant height, yield, economic yield, chlorophyll b, biological yield, Na, K in Hamoon Green + calcium sulfate and the highest number of flowers, chlorophyll a, carotenoid, carbohydrate, Mucilage, RWC, dry yield, proline, protein, flavonoid, catalase, ascorbate peroxidase and anthocyanin in Hamoon Green + calcium nitrate and highest Flowering Shoot, Polyphenol oxidase and Ca were obtained from Hamoon Green. According the results obtained, Hamoon Green's application can be used to increase the productivity of the borage.

Keyword: foliar application, deficit irrigation, Medicinal plants, Nanoparticles, Hamoon Green

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The Thesis Submitted for the Degree of Master of Science (in the field of Horticulture Science)

Title:

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September 2018