

The effect of superabsorbent polymers on morphological traits of rosemary (*Rosmarinus officinalis*) under drought stress

A. Ziaei¹, M. Moghaddam^{2*} and B. Kashefi³

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Abstract

In order to study the effects of superabsorbent polymers and drought stress on some morphological characteristics of *Rosmarinus officinalis*, a pot experiment was conducted as factorial, based on completely randomized design with four replications, in which factors included four levels of drought stress (irrigation up to 100, 75, 50 and 25 percent of field capacity (FC) level, respectively) and two levels of superabsorbent (without superabsorbent, and with one g superabsorbent per kg) in the Research Greenhouse of Islamic Azad University, Saveh Branch. The investigated traits were plant height, number of primary branches, fresh and dry weights of aerial parts, roots and whole plant, and also dry weight of leaves and stem. Results of this study showed that interaction effect of these two factors was significant on all of the examined characteristics, except plant height, dry weight of leaves and ratio of leaf to stem dry weight. The highest number of primary branches (9.55 branches/plant), fresh root weight (17.7 g/plant), dry root weight (10 g/plant) and total dry weight of the plant (33.75 g) was observed in 100% FC treatment with superabsorbent application. Also, the highest dry weight of leaves (12.3 g/plant), dry weight of stem (13.3 g/plant), fresh weight of shoots (58.3 g/plant), dry weight of shoots (23.8 g/plant) and whole-plant fresh weight (71.7 g/plant) were obtained in 100% FC treatment and without superabsorbent. Based on the results of this study, irrigation of rosemary at the field capacity level improves most of its morphological characteristics.

Keywords: Medicinal plants, Drought stress, Superabsorbent, Morphologic traits.

1. Islamic Azad Univ., Saveh Branch, Iran.

2. Dept. of Hort. Sci., College of Agric., Ferdowsi Univ. of Mashhad, Mashhad, Iran.

3. Dept. of Agric., Islamic Azad Univ., Damghan Branch, Iran.

*: Corresponding Author, Email: m.moghadam@ferdowsi.um.ac.ir