

Quantifying the response of growth and physiological parameters of stevia (*Stevia rebaudiana* Bertoni) medicinal plant to salinity stress under controlled conditions

Z. Noori Akandi¹, H. Pirdashti^{2*}, Y. Yaghoubian³ and V. Ghasemi Omran²

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Abstract

The present study was aimed to investigate the response of growth and physiological parameters of stevia (*Stevia rebaudiana* Bertoni) medicinal plant to salinity stress under controlled conditions in 2014. The experiment was conducted as randomized complete blocks design with three replications, in fall of 2014. Treatment was ten levels of salinity stress (0, 30, 60, 90, 120, 150, 180, 210, 240 and 270 mM of NaCl). Regression analysis of data indicated that response of some measured traits such as stem diameter, plant height, number of green leaves per plant, relative water content (RWC), chlorophyll *a*, *b*, leaf greening (SPAD value), leaf fresh weight, root dry weight and total dry weight linearly decreased when NaCl concentration increased in the growing media. Number of green leaves per plant and leaf greening (SPAD value) had the highest sensitivity to salinity stress. However, the response of some parameters such as electrolyte leakage, chlorophyll *a/b* ratio, fresh weight of stem, root, shoot and whole plant, and dry weight of leaf, stem and shoot was described by a segmented model. In conclusion, results revealed that physiological traits in stevia plant were more sensitive to salinity stress than morphological traits.

Keywords: Salinity stress, Relative water content, Electrolyte leakage.

1. Agron. Dept., Sari Agric. Sci. and Nat. Resour. Univ., Sari, Iran.

2. Agron. Dept., Genet. and Agric. Biotech. Inst. of Tabarestan, Sari Agric. Sci. and Nat. Resour. Univ., Sari, Iran.

3. Agron. Dept., Ramin Agric. Sci. and Nat. Resour. Univ. of Khuzestan, Ahvaz, Iran.

* Corresponding Author, Email: h.pirdashti@sanru.ac.ir