

Effects of salinity stress on some yield parameters and morphological characteristics of spearmint (*Mentha spicata* L.) in hydroponic conditions

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Abstract

Mint is an important medicinal herb that is cultivated in different parts of the world. In order to investigate the effects of salinity stress on morphological characteristics of spearmint (*Mentha spicata* L.), an experiment was conducted in 2013, based on complete randomized design, under hydroponic conditions, at Research Greenhouse of Faculty of Agriculture, Ferdowsi University of Mashhad, Iran. Treatments were five salinity levels (0, 30, 60, 90 and 120 mM of sodium chloride) with four replications. Growth medium was 2:1 cocopeat to perlite, and complete nutrients solution was used. Supplying plants' nutrients was twice a week along the irrigation water application. When plants' height was 30 cm, salinity treatments were applied and were continued till full flowering. At the end of the experiment, morphologic traits including plant height, number of main stems, number of lateral branches, leaf area, specific leaf weight, stem diameter, number of nodes, fourth internode length, and spike length were measured. Results showed that salinity stress had significant effects on leaf area, fresh and dry weights of leaf, stem and root, plant height, number of lateral branches, number of nodes, fourth internode length, and spike length. The highest leaf area, leaf dry weight, plant height and number of lateral branches were observed in control treatment. The lowest leaf area and leaf dry weight were obtained in salinity level of 120 mM, and the lowest plant height and number of lateral branches were observed in salinity levels of 90 mM and 120 mM. Salinity had no significant effect on fresh weight of shoot to root ratio, fresh weight of leaf to root ratio, specific weight of leaves, number of main stems and stem diameter. According to the results, it appears that spearmint is sensitive to salinity stress and it can't tolerate salinity levels higher than 30 mM sodium chloride.

Keywords: Environmental stresses, Glycophytes, Physiologic traits.

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