The effect of salt stress on morphological traits and essential oil content of Iranian and foreign yarrow (*Achillea millefolium* L.) genotypes

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Abstract

The effect of salt stress on morphological and essential oil content of 10 Iranian and foreign *Achillea millefolium* genotypes was investigated in a pot experiment in Research Greenhouse of Isfahan University of Technology in 2014. The factorial experiment, based on randomized complete blocks design, was performed at four salinity stress levels (0, 5, 10 and 15 dS/m) andn ten *Achillea millefolium* genotypes with three replicates. Results revealed that salinity stress of 15 dS/m significantly decreased the plant height, leaf area and width, length of ligulate florets, flower diameter, number of florets in inflorescence, days to flowering, days to 100% flowering and dry weight of the herbs. The salinity stress at 15 dS/m increased essential oil content by 18.75% compared to control treatment. The UK, Slovenia, Spain, Japan, Kandovan (Iran) and Lorestan (Iran) genotypes were not able to produce flowers in high salt stress conditions. The interaction of salinity stress and genotype was significant for all traits except for leaf width and length of ligulate florets. The US and Canada genotypes possessed the highest essential oil content and dry matter weight. The US and UK genotypes can be suggested for green space, under salinity stress conditions, due to their low height and high flower diameter. Most of the studied traits did not show significant differences at 5 and 10 dS/m salinity stress levels. Plants had good resistnce to 10 dS/m salinity stress. Moreover, evaluated traits of plants were significantly different at 15 dS/m level. Based on the obtained results, the 10 dS/m salinity level can be suggested to cultivate this plant.

Keywords: Salinity stress, Yarrow, Essential oil, Ornamental traits.

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