

Effect of Irrigation Water Salinity on Morphological, Physiological, and Biochemical Characteristics of Two Lisianthus Varieties (*Eustoma grandiflorum*)

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Abstract

In order to investigate the effect of salinity on morphological, physiological and biochemical characteristics of Lisianthus, a pot experiment was conducted hydroponically in sand. Two Lisianthus varieties ('Champagne' and 'Pure White') and four NaCl concentrations (0, 20, 40, 60 mM) were combined factorially based on a complete randomized design with four replications. The result showed that as salinity increased plant height and fresh and dry weights decreased. Also, chlorophyll *a* content, photosynthesis rate, and relative water content of plants treated with 60 mM NaCl were, respectively, 31%, 62%, and 20%, lower than the controls. In addition, root length increased with increasing salinity, so that in plants treated with 60 mM NaCl root length was 43% larger than the controls. Further, electrolyte leakage and Malondialdehyde (MDA) content increased with increasing salinity. Results revealed that dry weight, plant height, and photosynthesis rate in 'Pure White' were, respectively, 47%, 27%, and 31% higher than in 'Champagne'. Moreover, under salinity stress, 'Pure White' could maintain better morphological and physiological characteristics, i.e. plant height, dry weight, relative water content and cell wall stability compared with 'Champagne'.

Keywords: Stress, Photosynthesis rate, Sodium chloride, Electrolyte leakage, Hydroponics.

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