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Chemical composition, nitrate content, and yield of lettuce (*Lactuca sativa* L.) grown under different concentrations of NaCl*

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Abstract

Global climate change observed in recent decades and the impact of anthropopressions have led to a gradual deterioration of the physical properties of and chemical properties of soil and water. One of the most important factors determining the quality of water used in a hydroponic system is salinity. The aim of this study was to determine the induced effect of sodium chloride on yield, content of selected nutrients and sodium and nitrates in aerial parts of butterhead lettuce (*Lactuca sativa* L.) cultivar 'Zeralda F1' grown hydroponically. The trials were conducted at the following concentrations of NaCl: 0 (control treatment), 10, 20, 40, 60, 80 and 100 mmol dm⁻³. In the range of NaCl concentrations from 10 to 80 mmol dm⁻³, no significant differences in fresh weight yield of lettuce were found. Significantly the lowest weight of aerial parts of lettuce was obtained at a sodium chloride concentration in the nutrient solution of 100 mmol dm⁻³ compared to the control combination. An increase in the concentration of NaCl in the nutrient solution resulted in an increase in the sodium content and a decrease in the content of phosphorus, potassium, and magnesium in the aerial parts of the lettuce. The iron and manganese content with the induced effect of sodium chloride in all combinations was significantly lower than in the control combination. There was a significant reduction in the nitrate content of the aerial parts of the lettuce caused by increasing concentrations of sodium chloride in the nutrient solution. The sodium chloride content in the concentration range 40-100 mmol dm⁻³ had a significant effect on increasing the dry matter content and decreasing the relative water potential (RWC) in the range of 60-100 mmol dm⁻³.

Keywords: salinity, sodium, nitrate, RWC, macronutrients, micronutrients,

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