INTERACTION BETWEEN SALINITY AND CROP CYCLE: EFFECT ON YIELD AND QUALITY OF LETTUCE

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ABSTRACT

The 55% of groundwater is saline, particularly in arid and semi-arid regions where it is needed most for irrigation. The aim of this research was to simulate two real conditions: 1) the recent intrusion of sea water into the fresh water table and 2) the prolonged use of saline water on already salinized soil.

We investigated the effects of salinity on yield, nitrate content, lypophilic, hydrophilic and Vitamin C antioxidant activity of lettuce.

The lettuce 'Cambria' was irrigated with water at five levels of salinity (0.7, 0.9, 1.8, 3.6 and 7.2 dS m-1 ECw) and two growing cycle were completed (Winter Transplant and Spring Transplant) for evaluating the possible interaction with salinity.

Salinity reduced yield, fresh weight, and heads diameter and leaf area with more evident damages in winter cycle. The nitrate content was never higher than European limits and it decreased at increasing salt concentration. The salt stress didn't cause an increase of antioxidant activity, but this was higher in the spring cycle, probably due to photo-oxidative strtyess (high light intensity).

It seems that irrigation with water at EC not greater than 1.8 dS m-1 reduces leaves nitrate content, without to compromise excessively the yield and nutritional quality of lettuce.

KEYWORDS: Lettuce, Antioxidant Activity, Nitrate Content, Salt-Tolerance