

## EFFECTS OF ROOT-ZONE NUTRIENT CONCENTRATION ON CUCUMBER GROWN IN ROCKWOOL

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### Abstract

We applied a new method to control root zone salinity, to investigate the effects of two constant levels of nutrient concentration in the rhizosphere (3.2 and 7.0 dSm<sup>-1</sup>) on growth, yield as well as water and nutrient uptake of cucumber.

The method is based on switching between two nutrient solutions (1.7 and 3.8 dSm<sup>-1</sup>), the latter obtained adding extra nutrients at the same ionic concentration ratio as in the basic nutrient solution. In this way we managed to maintain the root-zone EC constant and around the prefixed values in both treatments; the mean EC were  $3.54 \pm 0.08$  and  $6.87 \pm 0.11$  in low EC and high EC respectively.

Extra-nutrient salinity had no effect on the dry matter production in cucumber plants and on its partitioning. However, the fresh biomass, particularly the marketable yield were significantly reduced by salinity. This reduction was the result of a decline in mean fruit weight, fruit number and a larger incidence of unmarketable fruits. The salinity treatment determined a significant decrease of leaf area and SLA, being the leaves dry biomass similar in both treatment, as well as the ratio between differentiated fruits and leaves. As expected, the dry matter percentage of high-concentration fruits was always higher, obviously because the lower water content.

Indeed the total water uptake was 10% lower than low EC treatment. In the paper we discuss these results in the light of water and nutrient uptake and use efficiency.