

EFFECT OF MANIPULATING NUTRIENT SOLUTION SALINITY ON THE GROWTH OF CUCUMBER *CUCUMIS SATIVUS* L. GROWN IN NFT

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Abstract:

Cucumber plants *Cucumis sativus* L. grown in NFT at 2.5/8.5 and 8.5/2.5 day/night nutrient solution salinity were compared with those at constant salinities of 2.5 and 8.5 mS cm⁻¹. Day time and night time were 14 and 10 h. Growth seems to be affected by factors influencing the total water uptake by the plant such as the time and duration of exposure to salinity. Fruit yield per plant was reduced in the same pattern as vegetative growth. The diurnal measurements of the plant water potential showed that the plant water status was rapidly affected by the changes in the root osmoticum. The results show a greater effect of high salinity during the day than during the night, which indicates clearly that salinity acts through its effect on water uptake by the plant.

1. Introduction:

Crop salt tolerance is usually related to the relative reduction in yield for a given salt concentration compared with the yield of plants grown under non-saline conditions. Plant water potential decrease as salinity levels in the root zone increase (Cerda et al 1979). Several studies have shown that reduced yield of salt-affected plants are generally associated with reduced values of leaf water potential (Acevedo et al 1971; Hoffman and Ralins 1971). Cucumber plant growth and yield are related indirectly to the water potential of the root environment through the influence that this has on the water potential and water balance of the plant (Al-Harbi 1991).

Plant water uptake is regulated by the demand and supply. The supply is mainly controlled by the difference in water potential between the root and the root media, while uptake also depends on the resistance to water flow through the plant. The effect of salinity on water availability is to decrease the osmotic potential of the nutrient solution, so reducing the water flow into the root.

The negative effect of salinity on the plant water relations is very obvious during periods of high demand due