

EFFECT OF NaCl SALINITY ON GROWTH OF CUCUMBER Cucumis sativus L. GROWN IN NFT.

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Abstract

The response of cucumber plants (Cucumis sativus L) to salinity at four salinity concentrations (2.5, 4.5, 6.5 and 8.5 mS cm⁻¹) was studied. The fresh and dry weight of the root and shoot were significantly reduced with increasing nutrient solution salinity, while the dry matter percentage was increased. The root:shoot ratio was not affected. Total yield was significantly reduced when salinity increased. Plant water uptake and relative water content were significantly reduced at high salinity condition. Plant water potential was decreased with increasing salinity levels. Similarly, the transpiration rate and stomatal conductance were reduced by increasing salinity. The photosynthetic rate was unaffected by salinity. Ca and K% in the dry matter of the root and leaves were decreased while the Cl and Na% were increased with increasing nutrient solution salinity.

1. Introduction

Salinity is often defined as the presence of an excess concentration of soluble salt in the root media sufficient to suppress plant growth (Mass and Nieman 1978). It is considered as one of the oldest problem in agriculture. Salinity can arise either from one or the interaction of several factors which may include water quality, climate, soil properties and irrigation water during the process of evaporation.

Salinity in general reduces plant growth. Salt stress consist of two influences; osmotic stress caused by increase in the external osmotic pressure of the soil solution due to high concentration of salt and the physiological / biochemical effect of cation and anion balance in the plant cell (Munns and Termaat 1986). Plants vary in their response to salinity level of the root media depending on their ability to adjust osmotically their cell structure.