

# GROWTH AND NUTRIENT COMPOSITION OF TOMATO AND CUCUMBER SEEDLINGS AS AFFECTED BY SODIUM CHLORIDE SALINITY AND SUPPLEMENTAL CALCIUM

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**ABSTRACT:** The effect of three levels of salinity (2.0, 4.0, and 8.0 mS/cm) on growth and ion composition of tomato and cucumber seedlings was examined with and without addition of 7.4 meq/L calcium chloride ( $\text{CaCl}_2$ ). The corresponding sodium/calcium (Na/Ca) ratio of the irrigation solution were 4.0 and 1.8 at salinity level 4.0 mS/cm, and 12 and 4.8 at salinity level 8.0 mS/cm. Seedlings growth of tomato and cucumber was generally reduced with increasing salinity level. Cucumber was more salt-sensitive than tomato. Shoot and root dry weight of cucumber was increased by decreasing Na/Ca ratio at 4.0 mS/cm salinity. Sodium and chloride (Cl) accumulation was increased and Ca was decreased in salinized plants. Reducing Na/Ca ratio under saline condition reduce the accumulation of Na in tomato roots. The effect of salinity on the uptake of nitrogen (N), phosphorus (P), potassium (K), Na, Ca, chloride (Cl), iron (Fe), zinc (Zn), manganese (Mn), and copper (Cu) in the root and shoot was also determined.

## INTRODUCTION

Tomato and cucumber are the main greenhouse crops in Saudi Arabia. In 1992, the total production of tomato and cucumber was 63 and 55 thousand tons, respectively. More than 50% of total production was produced in the central region. The quality of irrigation water in this region was classified as a medium saline to very saline water (Al-Onran, 1987). The dominant cations in the irrigation water were Na and Ca (Garawi and Alhendi, 1993).

In the greenhouse, soil salinity is caused by the use of low nutrient fertilizers, by rising water tables and by the saline irrigation water (Sonneveld, 1988). Tomato