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## RESPONSE OF UPLAND COTTON GENOTYPES TO SALINITY AT EARLY GROWTH STAGES

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### Abstract

Salt tolerance was studied in eight upland cotton cultivars (CIM-446, CIM-473, CIM-496, CIM-499, CIM-506, CIM-554, CIM-707 and SLH-284) under four NaCl salinity concentrations (50, 100, 150 and 200 mM) and control. Significant ( $p \leq 0.01$ ) variations were observed among cultivars, salinity concentrations, and cultivar by salinity interactions for various growth traits and ions ( $K^+$  and  $Na^+$ ) accumulation in dry shoot and root tissues. As compared to control, the growth variables were decreased by increasing concentrations of NaCl; however, greatest reduction was observed at salinity stress of 200 mM. The uptake of  $K^+$  and  $Na^+$  were inversely proportional, and  $Na^+$  accumulation was least in control and gradually amplified as the salinity increased. The  $K^+$  absorption was highest in control and gradually decreased through increased salinity in shoot and root tissues. The foliage has more capacity for  $Na^+$  accumulation than roots which ensured increased  $K^+$  absorption in roots. The  $K^+/Na^+$  ratio of various genotypes differed significantly at various NaCl concentrations. Cultivar CIM-707 by having medium  $K^+/Na^+$  ratio, showed better  $K^+$  utilization, and identified as most tolerant genotype to salinity. Such studies are useful in identification of salt tolerant cotton genotypes for salt affected areas, and farming community can benefit by getting optimum yield from cultivar CIM-707.

**Keywords:** *Gossypium hirsutum* L., growth variables,  $K^+$  and  $Na^+$  accumulation,  $K^+/Na^+$  ratio, NaCl salinity, shoot and root tissues

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