

## PHYSIOLOGICAL BASIS OF DIFFERENTIAL TOLERANCE IN RICE TO SALINITY

*M. Aslam, Ijaz Ahmad, I. A. Mahmood, J. Akhter and S. Nawaz  
Saline Agriculture Research Cell, Department of Soil Science, University of Agriculture  
Faisalabad.*

### ABSTRACT

*In a pot experiment, behaviour of five rice varieties towards NaCl salinity (0 and 8 dS m<sup>-1</sup>) was studied. All growth parameters and yield components decreased with increasing soil salinity. Sodium, chloride, zinc and phosphorus concentrations in the leaf tissues of all genotypes increased while K<sup>+</sup> concentration decreased at high salinity. Amongst the genotypes, KS-282, NIAB-6 and IR-9 were rated as salt tolerant because these produced higher paddy yield at high salinity. Salt tolerant varieties maintained low concentration of Na<sup>+</sup> Cl<sup>-</sup> and P beside the assured supply of K<sup>+</sup> and Zn in their tissues. The K:Na and Zn:P ratios were also superior in the salt tolerant genotypes...*

### INTRODUCTION

Different physiological characters are related to salt tolerance in plants (Flowers et al., 1977; Yeo and Flowers, 1984; Aslam et al., 1993b). Plants exposed to saline environment may overcome excess to ions in the root medium through different physiological traits such as compartmentation (pushing the undesirable ions into vacuoles),

The salinity levels were ECe 106 (control) and 8.0 dS m<sup>-1</sup> was developed by mixing calculated amount of NaCl in the respective pots before the transplanting of rice seedling. A recommended dose of N (two splits) P, K and Zn was also added at this stage to ensure adequate nutrient supply. Six, thirty-day old seedling of each genotype (NR 1, KS 282, NIAB 6, IR 9 and IR 1561) were transplanted in pots at two salinity levels. After a week interval 3 plants pot<sup>-1</sup> were kept. All the treatments were repeated thrice following CRD of layout. Crop was grown to maturity. Second leaf from the top was sampled at panicle initiation stage for Na<sup>+</sup>, K<sup>+</sup>, P, Zn and Cl<sup>-</sup> determinations. Na, K and Cl, were analyzed from leaf sap while P and Zn from dried material after diacid wet digestion.

### RESULTS AND DISCUSSION

#### Growth and yield

Sharp differences among genotypes were observed because of substrate salt concentration. Tillering, shoot and panicle length was the highest at control (ECe 1.6 dS m<sup>-1</sup>) whereas, sterility