

Antioxidant Defence Systems, Lipid Peroxidation, and Photosynthetic Variables in Salt-Sensitive and Salt-Tolerant Soybean Genotypes in Response to Salt Stress

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Abstract : We have investigated the effects of salt stress on the stability of plant growth, water relations, photosynthetic variables, lipid peroxidation and antioxidant system in salt-tolerant (PK-327) and salt-sensitive (PK-471) soybean genotypes. Ten-day-old salt-tolerant and salt-sensitive soybean plants were subjected to 0-150 mM NaCl for 15 days. While the growth of genotype PK-327 was not affected significantly up to 75 mM NaCl treatment, the growth of the PK-471 was reduced significantly beyond 25 mM NaCl treatments. Salt stress caused severe impairments in photosynthetic variables like photosynthetic rate, chlorophyll fluorescence and chlorophyll content, being more pronounced in salt-sensitive genotype than in salt-tolerant. The activities of antioxidant enzymes (superoxide dismutase, catalase, ascorbate peroxidase and glutathione reductase) were higher in PK-327 than in PK-471 at various levels of salt treatments. It is concluded that tolerance capacity of PK-327 against salinity can be associated with the ability of this genotype in keeping an active photosynthetic system and strong antioxidant defence system.

Keywords : salt stress, soybean, antioxidant, photosynthesis

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