

Salt-Induced Modulation in Biomass Production, Pigment Concentration, Ion Accumulation, Antioxidant System and Yield in Pea Plant

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Abstract : Salinity is one of the most important environmental factors that limit the production of crop plants to the greatest proportion than any other ones. Salt-induced changes in growth, pigment concentration, water status, malondialdehydes (MDA) and H₂O₂ content, enzymatic and non-enzymatic antioxidants, Na⁺, K⁺ content and yield attributes were examined in the glasshouse on ten pea (*Pisum Sativum* L.) accessions, namely '13240', '18302', '19666', '19700', '19776', '19785', '19788', '20153', '20155', '26719' were subjected to non-stress (0 mM NaCl) and salt stress (100 mM and 150 mM NaCl) in pots containing sand medium. The results showed that salt stress at level 150 mM substantially reduced biomass production, leaf water status, pigment concentration (chlorophyll 'a', 'b', 'carotenoid content' total chlorophyll), K⁺ content, quantum yield and yield attributes as compared to plants treated with 100 mM NaCl. Antioxidant enzymes, Catalase (CAT), Peroxidase (POD), Superoxide dismutase (SOD) and Ascorbate peroxidase (APX), proline content, total soluble protein, total amino acids, Malondialdehyde content (MDA), Hydrogen peroxide (H₂O₂) content and Na⁺ uptake markedly enhanced due to the influence of salt stress. On the basis of analyses (expressed as percent of control), of 10 accessions of pea plant, two were ranked as salt tolerant namely ('19666', '20153'), four were moderately tolerant namely ('19700', '19776', '19785', '20155'), and three were salt sensitive namely ('13240', '18302', '26719') at 150 mM NaCl level.

Keywords : antioxidant enzymes, ion uptake, pigment concentration, salt stress, yield attributes

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