Effect of salinity on some physiological variables of 11 chickpea genotypes under hydroponic conditions

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Abstract

Chickpea (*Cicer arietinum* L.) is highly sensitive to salinity and selection of chickpea genotypes that are moderately tolerant to salinity can help to expand chickpea cultivation in saline areas. Eleven chickpea genotypes were grown in a hydroponic system containing different NaCl concentrations (8 and 12 dS m^{-1}) and control (Hoagland solution) in order to study the effects of salt stress on physiological traits. The results showed that with increasing salinity, the concentration of photosynthetic pigments, carotenoids, proline, soluble sugars and radical scavenging activity (DPPH) in leaves and roots was increased. Among the studied genotypes, MCC674, MCC759, MCC544 and MCC783 showed superiority in most traits. Genotypes that contain higher concentration of chlorophyll, carotenoids, soluble carbohydrates, proline and DPPH in shoots were more resistant to salinity. The correlation between physiologic traits and sodium concentration in leaves was positive. Production of photosynthetic pigments, carotenoids, proline, soluble sugars and DPPH was higher in sensitive genotypes. The resistance index in 12 dS m^{-1} salinity stress showed that resistant genotypes to water stress (MCC760 and MCC333) were also resistant to salinity. But, in 8 dS m^{-1} stress level, the MCC759 sensitive to aridity, was moderately resistant to salinity.

Keywords: Photosynthetic pigments, Carotenoids, Proline, Soluble sugars.

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