

Role of Osmoregulators for Enhancing Salinity Stress Tolerance in Chickpea

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Abstract : This study aimed to improve the deleterious effects of salinity stress in chickpeas using both proline and glycine betaine as osmoregulators. The aim was achieved using foliar spraying with different concentrations of proline (5 mM and 10 mM) and glycinebetaine (10 mM and 20 mM) to chickpea plants grown in pots under salinity stress (3000 mg/l NaCl) at the greenhouse of the National Research Centre, Egypt, during two successive seasons 2021/2022 and 2022/2023. Results indicated that all applied treatments caused significant increases in most of the investigated parameters of chickpea plants irrigated with either tap water or saline solution relative to the corresponding control. It is worth mentioning that proline treatments were more effective than glycine betaine treatments in increasing the salinity tolerance of chickpea plants, reflected in their quality and quantity. Moreover, proline treatment at 5mM was the most pronounced treatment in alleviating the deleterious effect of salinity on chickpea plants.

Keywords : cicer arietinum L., osmoprotectant, proline, glycinebetaine salinity tolerance

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