Effect of salinity and sodicity stresses on physiological response and productivity in Helianthus annuus.

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Abstract:

Soil salinity and sodicity (alkalinity) are serious land degradation issues worldwide that are predicted to increase in the future. The objective of the present study is to distinguish the effects of NaCl and Na2CO3 salinity in two concentrations on the growth, lipoxygenase (LOX) activity, membrane integrity, total lipids, yield parameters and fatty acids (FAs) composition of seeds of sunflower cultivar Sakha 53. Plant growth, LOX activity and malondialdehyde (MDA) content were reduced by salts stresses. On the contrary, salinity and alkalinity stress induced stimulatory effects on membrane permeability, leakage of UV-metabolites from leaves and total lipids of sunflower shoots and roots. Crop yield (plant height, head diameter, seed index and number of seeds for each head) that is known as a hallmark of plant stress was decreased by increasing concentrations of NaCl and Na2CO3 in the growth media. Fatty acid methyl esters (FAME) composition of salt-stressed sunflower seeds varied with different levels of NaCl and Na2CO3.

Keywords:

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