

Amelioration of The Adverse Effects of Salinity Stress By Using Compost, *Nigella Sativa* Extract or Ascorbic Acid in Quinoa Plants

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Abstract : Compost can enhance water holding capacity and fertility of soil and thus increase soil water availability and nutrient uptake by plants, but it is not clear whether it can also improve the ability of plants to recover after salinity stress. Quinoa plant was grown in soil with or without compost either with foliar spray *Nigella sativa* extract (25 & 50%) or ascorbic acid (200 mg/l). Irrigation plant with saline water with different concentrations (0.0, 4000 and 8000 mg/l). Salinity stress led to decreases in growth parameters, yield components, photosynthetic pigments and carbohydrate constituents. Meanwhile, salinity caused significant increases in some osmoprotectants as (free amino acids and proline) and some antioxidant enzyme activities. The cultivation of quinoa plant in the presence of compost and either ascorbic acid or *Nigella sativa* extract led to increases in growth parameters, yield components, photosynthetic pigments and carbohydrate constituents. More accumulation of the tested organic solutes of leaves (TSS, free amino acids and proline) and antioxidant enzyme activities. As a conclusion, the nutritional values of the yielded seeds of quinoa were improved when cultivated in the presence of compost and sprayed with 25% of *Nigella sativa* extract.

Key words: Antioxidant enzymes, Ascorbic acid, Compost, Quinoa, *Negella sativa* extract, Yield.