

Exogenous application of arginine alleviates the adverse effects of NaCl-salt stress on *Calendula officinalis* L.

Salinity is one of several climate change has impacts. Salinity in the water and soil has a negative effect on the growth and productivity of horticultural crops. Arginine has surfaced as a non-toxic plant-growth governor that augments the resistance of plants to salt-stress. Our objective was to assess the effects of exogenous foliar application of arginine on growth, yield, osmoprotectants and biochemical traits, as well as antioxidant-system of NaCl-salt-stressed pot marigold plants. Two successive (2020/2021-2021/2022) pot trials were conducted using four NaCl-salt concentrations (50, 100, 150 mM, plus control; non-NaCl-salt) combined with three arginine levels (3, 6 mM, plus control; non-arginine-sprayed plants). Higher-NaCl-salinity-concentration showed a significant decrease in plant growth, yield, leaf total chlorophylls, nutritional status, while exhibiting a substantial increase in Na^+ , Cl^- , osmoprotectants and biochemical constituents, in addition antioxidants activity. Exposing plants to 150 mM of NaCl-salt decreased herb dry weight by 34.7%, No. of inflorescences by 30.4%, but increased Na content by 200.7%, Cl by 36.7%, and proline by 216.3% compared to control. Nevertheless, the foliar-arginine application enhanced growth, yield, and antioxidant activity. Higher-arginine-treatment (6 mM) increased flower contents of total-carotenoids by 3.67%, phenolics by 8.77%, flavonoids by 11.8%, DPPH by 5.25%, and 13.6% accumulation of free amino acids in leaves compared to un-treated plants. Finally, exogenous-arginine-treatment had a mighty potential to encounter the effects of NaCl-salt stress on pot marigold plants.