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In vitro Assessment of Tomato (Lycopersicon esculentum) and Cauliflower (Brassica oleracea) Seedlings Growth and Proline Production under Salt Stress

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Abstract : Tomato and Cauliflower seedlings were grown in-vitro under salt concentrations (0, 2, 4, 8, and 10 dSm-1) with objectives to investigate; (1) The effect of salinity on seedling growth and free proline production, (2) the correlation between seedling growth and proline contents, (3) comparative salt tolerance of both species. Different concentrations of salt showed considerable effect on percent (%) germination of seeds, length and biomass of shoot and root and also showed effect on percent water content of both plants seedlings. Germination rate in cauliflower was two times higher than tomato even at highest salt concentration (10 dSm-1). Seedling growth of both species was less effected at low salt concentrations (2 and 4 dSm-1) but at high concentrations (6 and 8 dSm-1) the seedling growth of both species was significantly decreased. Particularly the tomato root was highly significantly reduced. The proline level linearly increased in both species with increasing salt concentrations up-to 4 dSm-1 and then declined. The cauliflower showed higher free proline level than tomato under all salt treatments. Overall, the cauliflower seedlings showed better growth response along with higher proline contents on comparison with tomato seedlings.

Keywords : NaCl (Sodium Chloride), EC (Electrical Conductivity), MS (Murashig and Skoog), ANOVA (Analysis of Variance), LSD (Least Significant Differences)
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