

## Effect of Salinity Stress on Some Physiological and Biochemical Responses of Four Fig (*Ficus carica* L.) Hybrids

M. Zarei, M. Azizi, M. Rahemi\*, A. Tehranifar and S. Davarpanah<sup>1</sup>

Soil salinization, resulting from the accumulation of water-soluble salts in the soil, adversely impacts on agricultural production including figs. To investigate the effects of different salinity levels (0.6, 4, 6 and 8 mmhos.cm<sup>-1</sup> NaCl) on four fig hybrids, an experiment was performed as factorial based on completely randomized design. The investigated seedlings were offsprings of 'Sabz' as maternal parent and four caprifigs namely 'Pouz Donbali'(P), 'Khormaei'(K), 'Shahanjiri'(Sh) and 'Daneh sephid'(D); (S×P, S×K, S×Sh and S×D). Salinity at level 8 mmhos.cm<sup>-1</sup> increased proline (9.18-fold), carotenoids (8.04%) and stomata density (54.13%), and also decreased relative water content (15.24%), starch (39/42%), length (23.68%) and width (24.60%) of stomata and stomata conductance (73.59%) compared with the control treatment. With increasing salinity level to 6 mmhos.cm<sup>-1</sup> increased total soluble sugars, Chl<sub>b</sub> and total Chl in comparison with the control treatment. The most proline, Chl<sub>a</sub>, Chl<sub>b</sub>, total Chl, carotenoids, total soluble sugars, starch was measured in S×K hybrid, whereas the lowest relative water content was measured in S×D hybrid and the lowest Chl<sub>b</sub> and total Chl was measured in S × Sh hybrid. Moreover, S × Sh hybrid had the most decrease in stomata length and width and most increase in stomata density under the salinity condition, while the lowest stomata density was found in S×K hybrid. Moreover, the most and lowest changes in the percentage of stomata conductance under treatment 8 mmhos.cm<sup>-1</sup> in comparison with the control treatment were found in S×P and S×K hybrids, respectively. Among the studied hybrids, S×K was shown salinity tolerance more than other hybrids and it is possible to use of this hybrid in the salinity soils up to 8 mmhos.cm<sup>-1</sup>.

**Keywords:** Carotenoids, Chlorophyll, Proline, Starch, Stomata Conductan.

1. Former Ph.D. student, Professor of Horticulture, Department of Horticultural Science, Faculty of Agriculture, Ferdowsi University, Professor of Horticulture, Department of Horticultural Science, Faculty of Agriculture, Shiraz University, Professor of Horticulture and Former Ph.D. student, Department of Horticultural Science, Faculty of Agriculture, Ferdowsi University, Mashhad, Iran.

\* Corresponding author, Email: (rahemi@shirazu.ac.ir).