O-72 (181)
THE QUEST FOR THE NEW PISTACHIO ROOTSTOCK: MORE SALINE TOLERANT

Dr. Mahmoud Reza Roozban, Dept. of Horticulture, College of Aburaihan, University of Tehran., Pakdasht, Tehran, Iran; mroozban@ut.ac.ir (Presenting author)
Ms. Pari Khademi, Department of Horticulture, College of Aburaihan, University of Tehran, Tehran Pakdasht, Iran; khademipari@gmail.com
Prof. Majid Rahemi, Department of Horticultural Science, Faculty of Agriculture, Shiraz University, Shiraz Shiraz, Iran; rahemi@shirazu.ac.ir
Dr. Hossein Hokmabadi, Damghan Pistachio Station, Agricultural and Natural Resources Research, Semnan Shahrood, Iran; Hokmabadi@pri.ir
Dr. Soheil Karimi, Department of Horticulture, College of Aburaihan, University of Tehran, Tehran Pakdasht, Iran; skarimi@ut.ac.ir
Mr. Iman Morovati, Department of Horticulture, College of Aburaihan, University of Tehran, Tehran Pakdasht, Iran; morovati_iman@ut.ac.ir

Salinity is one of the main limiting factors affecting plant growth and development, especially in arid and semi-arid regions. Although pistachio (*Pistacia vera* L.) is the most salt-tolerant nut trees, but increasing the salinity beyond the tolerable thresholds led to its loss of growth and productivity. Since most of the pistachio growing regions in Iran affected by water and soil salinity; hence breeding of pistachio rootstocks for salt tolerance is one of the available strategies in the situation. In the present research, two closed crosses between *Pistacia atlantica* Desf. (A) as pollen parent and *P. vera* L. 'Qazvini' (Q) and 'Sefid Pesteh Noogh' (S) as seed parent, were done, and relative salt tolerance of the varieties of 'Qazvini', 'Sefid Peste Noogh', 'Badami', 'Atlantica', and the hybrids of 'Qazvini'×'Atlantica'(Q×A) and 'Sefid Peste Noogh'×Atlantica(S×A) were evaluated on 4-month seedlings under greenhouse conditions. Salinity stress was applied to the plants by adding appropriate amounts of NaCl (8, 12 and 16 dS/m) to the greenhouse irrigation water (Control) during growing season. Growth and physiological parameters, and Na^+, K^+, Ca^{2+} concentration in the leaves were the most important traits measured at the experiment. Based on the data, the Growth parameters significantly were reduced with increasing salinity level, however, growth parameters of 'Badami', 'Qazvini' and the hybrid Q×A were significantly higher under salinity stress. Salinity stress induced proline and soluble carbohydrates accumulation in the leaves of seedlings and the highest levels were observed in 12 and 16 dS/m treatments. Q×A and 'Qazvini' had the highest prolin and soluble carbohydrates contents under salinity levels 12 and 16 dS/m. Na^+ concentration and the ratio of Na^+/K^+ in the leaves of plants increased with increasing salinity; however, salinity stress significantly reduced K^+ and Ca^{2+} in the leaves. Leaf membrane stability index, relative water content and osmotic potential significantly reduced in the leaves of salt-stressed plants and the lowest values were found in the 16 dS/m treatment. Q×A and 'Qazvini' were able to preserve leaf membrane stability index, relative water content and osmotic potential at higher levels under salinity stress. Concentration of photosynthetic pigments, chlorophyll a, b and total chlorophyll and carotenoids, were significantly decreased with increasing salinity level. Based on the results, it was concluded that the Q×A and 'Qazvini' may tolerate salinity stress more than the other genotypes.

Keywords: Pistachio, Salt Stress, Tolerance, Osmotic Potential, Relative Water Content (RWC), Na^+/K^+ Ratio