EFFECT OF SALINITY ON SEEDLING GROWTH OF CITRUS ROOTSTOCKS

Reetika*, R.P.S. Dalal¹ and Harshita Singh²

¹Department of Horticulture; ²Department of Vegetable science Chaudhary Charan Singh Haryana Agricultural University, Hisar-125004, Haryana, India Email: ritikapanwar18@gmail.com

Received-07.04.2021, Revised-18.05.2021, Accepted-29.05.2021

Abstract: The experiment was carried out at screen house of the Department of Horticulture, CCS Haryana Agricultural University, Hisar for the two consecutive years during the year 2018-19 and 2019-20 to extrapolate the effect of rootstock and salinity on seedling parameters of nine different citrus rootstocks. Seedling height, stem diameter, number of leaves per plant and number of seedlings emerged per seed were adversely affected when subjected to soil salt stress from control (0.07 dS/m) to 7 dS m⁻¹) Among all rootstocks, Rangpur lime, followed by Volkamer lemon and Cleopatra mandarin were found better with relatively less reduction at 7 dS m⁻¹ over control, whereas Pectinifera, followed by NRCC-4 and Alemow were found inferior which showedrelatively high reduction at 7 dS m⁻¹over control in respect of seedling height, stem diameter and number of leaves per plant at seedling stage.

Keywords: Citrus, Rootstocks, Salinity, Seedling growth

REFERENCES

Adams, S.N., Ac-Pangan, W.O. and Rossi, L. (2019). Effects of soil salinity on citrus rootstock 'US-942' physiology and anatomy. *Hort Science*, **54**(5): 787-792.

Alam, A., Ullah, H., Attia, A. and Datta, A. (2020). Effects of salinity stress on growth, mineral nutrient accumulation and biochemical parameters of seedlings of three citrus rootstocks. *International Journal of Fruit Science*, **20**(4): 786-804.

Anjum, M.A., Abid, M. and Naveed, F. (2000). Effect of soil salinity on the performance of some citrus rootstocks at seedling stage. *Pakistan Journal of Biological Sciences*, **3**(12): 1998-2000.

Aparicio-Durán, L., Hervalejo, A., Calero-Velázquez, R., Arjona-López, J.M. and Arenas-Arenas, F.J. (2021). Salinity effect on plant physiological and nutritional parameters of New Huanglongbing disease-tolerant citrus root stocks. *Agronomy*, **11**(4): 653.

Bowman, K.D. and Joubertb, J. (2020). Citrus rootstocks. In: Talon, M., Caruso, M. and Gmitter, F.G., (Eds.), The Genus Citrus, first ed. Woodhead Publishing, Elsevier.

Dixit, A. and Mohan, J. (2012). Indian citrus ring spot disease: Effect on the quality of production in fruits of resistant and susceptible varieties of Kinnow (*citrus reticulata*) and its control measures. *Journal of Plant Development Sciences*, **4**(4): 549-552.

Egamberdieva, D. and Lugtenberg, B. (2014). Use of plant growth-promoting rhizobacteria to alleviate salinity stress in plants. In *Use of Microbes for the Alleviation of Soil Stresses*, 1: 73-96. Springer, New York, NY.

Helaly, M.N.M. and El-Hosieny, A.H. (2011). Effectiveness of gamma irradiated protoplasts on improving salt tolerance of lemon (*Citrus limon L.*

Burm. f.). American Journal of Plant Physiology, **6**(4): 190-208.

Lea-Cox, J.D. and Syvertsen, J.P. (1993). Salinity reduces water use and nitrate-N-use efficiency of citrus. *Annals of Botany*, **72**(1): 47-54.

Lopez-Climent, M.F., Arbona, V., Pérez-Clemente, R.M. and Gómez-Cadenas, A. (2008). Relationship between salt tolerance and photosynthetic machinery performance in citrus. *Environmental and Experimental Botany*, **62**(2): 176-184.

Maas, E.V. (1993). Salinity and citriculture. *Tree physiology*, **12**(2): 195-216.

Murkute, A.A., Sharma, S. and Singh, S.K. (2010). Biochemical alterations in foliar tissues of citrus genotypes screened in vitro for salinity tolerance. *Journal of Plant Biochemistry and Biotechnology*, **19**(2): 203-208.

Nieves, M., Garcia, A. and Cerda, A. (1991). Effects of salinity and rootstock on lemon fruit quality. *Journal of Horticultural Science*, **66**(1): 127-130.

Palchoudhury, S., Saha, B., Das, S., Biswas, M.K. and Biswas, K.K. (2019). An improved and efficient organogenic regeneration protocol using epicotyl segment of *in vitro* grown kagzilime (*citrus aurantifolia*) seedling. *Journal of Plant Development Sciences*, 11(7): 389-395.

Şahin-Çevik, M., Çevik, B. and Coşkan, A. (2020). Identification and Expression Analysis of Salinity-induced Genes in Rangpur lime (*Citrus limonia*). *Horticultural Plant Journal*, **6**(5): 267-276.

Simpson, C.R., Nelson, S.D., Melgar, J.C., Jifon, J., Schuster, G. and Volder, A. (2015). Effects of salinity on physiological parameters of grafted and ungrafted citrus trees. *Scientia Horticulturae*, **197**: 483-489.

*Corresponding Author

Storey, R. (1995). Salt tolerance, ion relations and the effect of root medium on the response of citrus to

salinity. Functional Plant Biology, 22(1):101-114.