

Effect of Irrigation Water Salinity on Growth and Nutrient Elements Content of Three Seedling Rootstocks of Ber (*Ziziphus* spp.)

M. Alihour¹*, A. Torahi, and H. Dialami

Assistant Prof., Date Palm and Tropical Fruits Research Center, Horticultural Sciences Research Institute, Agricultural Research, Education and Extension Organization (AREEO), Ahvaz, Iran.

alihour¹_m@hotmail.com

Research Instructor, Date Palm and Tropical Fruits Research Center, Horticultural Sciences Research Institute, Agricultural Research, Education and Extension Organization (AREEO), Ahvaz, Iran.

azitorahi@yahoo.com

Research Instructor, Date Palm and Tropical Fruits Research Center, Horticultural Sciences Research Institute, Agricultural Research, Education and Extension Organization (AREEO), Ahvaz, Iran.

Dialamy-s@yahoo.com

Abstract

Growing salinity tolerant plants is a suitable way for usage of saline water resources. This research was carried out for identification of salinity tolerant ber rootstocks. The experiment was conducted using factorial arrangement based on randomized complete design in three replications. The treatments were four irrigation water salinities of 0.3, 3, 6, and 9 dS/m and three ber (*Ziziphus* spp.) species including *Ziziphus mauritiana*, *Ziziphus nummularia*, and *Ziziphus spinachristi*. The results showed that water salinity treatments had significant effect ($P < 5\%$) on plant height, leaf number, leaf chlorophyll, stem diameter and leaf N, Na^+ and Ca^{2+} concentrations. There was significant ($P < 5\%$) difference between ber species on plant vegetative attributes and leaf N and Na contents. Furthermore, interaction of water salinity and ber species had significant effect ($P < 5\%$) on plant vegetative characters and leaf N, Na and Ca content. With increasing irrigation water salinity to 9 dS/m, the leaf number and stem diameter had significant decrease, while leaf Na^+ concentration increased significantly. When irrigation water salinity increased from 3 dS/m to 6 and 9 dS/m, the plant leaf number decreased by 3.8-8.4% and 25.1-41.3 percent, respectively, while stem diameter was reduced by 1.7-28.1% and 30.0-77.9 percent, respectively. Leaf Na^+ concentration increased by 1.67-2.73 and 1.64-3.36 times with increasing irrigation water salinity from 3 dS/m to 6 and 9 dS/m, respectively. Therefore, saline water resources could be used in irrigation of ber seedlings.

Keywords: Drain water, Saline water, Vegetative growth, *Ziziphus mauritiana*, *Ziziphus nummularia*.

1- Corresponding author: P.O. Box 61355-16, Date Palm and Tropical Fruits Research Center, Ahvaz, Iran.

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