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Morphological and Physiological Responses of Seagrape (*Coccoloba uvifera* L.) Seedlings of Different Provenances to Salt Stress

Raúl C. López Sánchez[1], Ernesto Javier Gómez Padilla[1], Roeland Samson[2], Patrick Van Damme[3], Miajil Bullain Galardis[1], Juan Antonio Torres Rodriguez[1], Amadou Ba[4], Ludovic Pruneau[4], Bettina Eichler-Loebermann[5]

[1] *University of Granma, Fac. of Agricultural Sciences, Cuba*
[2] *University of Antwerp, Dept. of Bioscience Engineering, Belgium*
[3] *Ghent University, Dept. of Plant Production - Lab. for Tropical Agronomy, Belgium*
[4] *Antilles University, Guadeloupe*
[5] *University of Rostock, Fac. of Agricultural and Environmental Sciences, Germany*

Abstract

Seagrape (*Coccoloba uvifera*) is a small tree widely distributed along the Atlantic, Caribbean and Pacific coasts of the American tropics and subtropics. It is an important tree for edible fruits, ornamental plantings and coastal windbreaks. Although its tolerance to salt stress was reported, physiological information on the salt tolerance mechanisms at seedling state is not available. The effect of salt stress on some morphological and ecophysiological traits of seagrape seedlings of different provenances was evaluated under greenhouse conditions. Plants were subjected to different salt levels by adding NaCl (Control, 5, 15, and 25 dS.m^{-1} NaCl) during four weeks. The morphological (shoot height, root length, root and shoot weight and root/shoot ratio) and physiological (leaf water content, root water content, chlorophyll fluorescence, specific leaf area and leaf area) traits were evaluated. The salt stress levels had negative effects on morphological traits of seagrape seedlings, whereas the seedlings showed different responses on salt stress in dependence of their provenance. At the highest level of salt stress the seagrape seedlings did not survive. Shoot height and root length were reduced up to 38 % and 27 %, respectively, at 5 dS.m^{-1} and up to72 % and 73 %, respectively, at 15 dS.m^{-1}. The reduction of dry weight was between 43 % at 5 dS.m^{-1} and 74 % at 15 dS.m^{-1}. Salt stress also reduced the water content in roots and shoots. This salt stress test with seagrape seedlings can be an effective approach to screen salt tolerance of seagrape genotypes. However, it is necessary to carry out more studies with seed of other provenances and *in situ* experiments to obtain further information about salt tolerance of seagrape.

Keywords: *Coccoloba uvifera*, provenances, salt stress, tolerance

Contact Address: Bettina Eichler-Loebermann, University of Rostock, Fac. of Agricultural and Environmental Sciences, J. von Liebig Weg 6, 18059 Rostock, Germany, e-mail: bettina.eichler@uni-rostock.de