

PHYSIOLOGICAL AND HISTOLOGICAL STUDIES ON SALT TOLERANCE OF PEAR SEEDLINGS GROWN ON DIFFERENT ROOTSTOCKS

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ABSTRACT

This work has been carried out during 2005 and 2006 seasons on “LeConte” pear seedlings budded on four rootstocks. The present work was placed in two separate experiments, the first was carried out at the Experimental Farm of the Faculty of Agric. Kafrelsheikh Univ. to study the response of “LeConte” pears on four rootstocks, *P. communis*, *P. beutilifolia*, *P. calleryana* and quince to the irrigation with saline water (0, 1000, 1500 and 2000 ppm of NaCl plus CaCl₂ in a mixture of 1: 1 by weight) and the role of rootstocks in increasing salt tolerance of the scion. The second was conducted during 2005 and 2006 seasons on one year old “LeConte” pear budded on the same mentioned four rootstocks to study the possibility of using liquid organic fertilizer (as a soil and soil + foliar spray at 3000 ppm with Actosol which contain 2.9% humic acids and 10-10-10 NPK) and some growth regulators (Amcotone and PBZ at 50 ppm for each of them & GA₃ at 100 ppm as foliar spray) to reduce the harmful effects of salinity in soils which suffering from salinity trees were grown at Sakha Agricultural Research Station Farm, Kafr El-Sheikh Governorate. The results could be summarized as follows: salinity treatments significantly decreased growth parameters, nutritional status, leaf water content, leaf chlorophyll content, spongy tissue thickness and xylem rows ion vascular bundle of leaf and cortex thickness, diameter of vasc. cylinder, No. of arches and No. of vessels/arch of stem. On the other hand, salinity treatments significantly increased toxic ions, leaf praline content, osmotic pressure, thickness of both cuticle and epidermis layers of the two leaf surfaces as well as palisade tissue thickness, and thickness of epidermal cell and pith diameter of stem. Salt tolerance of *P. beutilifolia* and *P. calleryana* rootstocks was higher followed by *P. communis*, while the lower salt tolerance was recorded by quince rootstock. Humic acid and the growth regulator treatments markedly minimized the harmful effects of salinity and enhanced pear salt tolerance leading to enhancing the morphological, physiological and anatomical characteristics.

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