

Assessing five citrus rootstocks for NaCl salinity tolerance using mineral concentrations, proline and relative water contents as indicators

ABSTRACT

Changes in concentrations of Na, Cl and K, proline and Relative Water Content (RWC) of five citrus species (Cleopatra mandarin, Carrizo citrange, Tiwanica, Bacraii and Shaker) grown in four NaCl salinity levels (0, 25, 50 and 75 mM NaCl) for the purpose of assessing their magnitude of susceptibility to salinity and estimating the salt tolerance degree were studied. The Na and Cl concentrations increased whilst K concentration in leaves decreased with increasing NaCl concentration in the rootzone. Shaker and Cleopatra mandarin accumulated optimal concentration of the ions in their tissues. Increasing NaCl concentration reduced RWC and increased proline content in plant tissues. Shaker and Cleopatra mandarin rootstocks maintained relatively higher leaf RWC and proline in comparison to other rootstocks. Cleopatra mandarin and Shaker showed to be markedly less affected by salinity up to 50 mM NaCl and could bear the highest salinity levels (75 mM) imposed in this study.

Keyword: NaCl salinity; Citrus rootstocks; Salt tolerance