

**GROWTH AND PHYSIOLOGICAL RESPONSE OF 'HASS' AVOCADO (*Persea americana* Mill.)
ON CLONAL ROOTSTOCKS IRRIGATED WITH ISOTONIC SOLUTIONS WITH INCREASING
CHLORIDE CONCENTRATIONS**

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Cl effects, independent of osmotic effects of salinity, were quantified for 'Hass' scions on 'Duke 7' or VC rootstocks (ARO-Volcani Center) (1.5 years from grafting) cultured in sand irrigated with isotonic nutrient solutions ($3 \text{ dS}\cdot\text{m}^{-1}$) containing Cl at 2, 4, 8 or $16 \text{ meq}\cdot\text{L}^{-1}$ attained with NaCl, CaCl_2 , NaSO_4 and MgSO_4 (high to low Cl treatments provided in $\text{mmol}\cdot\text{L}^{-1}$: Na 6.1-5.2; Ca 2.6-7.2, Mg 6.0-5.0, SO_4 11.5-0.5). After 12 months, 'Hass' on 'Duke 7' biomass was lowest at $16 \text{ meq}\cdot\text{L}^{-1}$ Cl (greatest leaf Cl concentration), whereas growth of 'Hass' on VC rootstocks was unaffected by greater leaf and root Cl concentrations. Obviously, Cl-exclusion was not essential to Cl-tolerance of 'Hass' on VC rootstocks. 'Duke 7' and 'VC 241' excluded Na; 'Hass' on 'VC 239' had high leaf Na. Cl-sensitivity of 'Hass' on 'Duke 7' was independent of tree nutrient status. Leaf arginine, proline, putrescine, spermidine, spermine, and starch concentrations for 'Hass' on 'Duke 7' were 54% to 80% lower at 16 versus $2 \text{ meq}\cdot\text{L}^{-1}$ Cl, but were 10% to 400% greater for 'Hass' on 'VC 239'. Leaf IAA and cytokinin concentrations were greater for 'Hass' on 'Duke 7' at the highest Cl (lowest Na:Ca) treatment; the reverse was true for 'Hass' on 'VC 239'. Clearly factors within 'Duke 7' or VC rootstocks cause greater sensitivity or tolerance, respectively, of 'Hass' scions to Cl. No rootstock excluded Cl from the scion. Thus, none is recommended for use in programs breeding for salinity tolerance or orchards utilizing saline irrigation water.