

# Growth and flowering in salt-stressed avocado trees

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## Abstract

The effect of salinity (0, 5, 10 and 20 mM sodium chloride) on the growth, ion composition and flowering response of Fuerte scion grafted to rootstocks of Mexican, Guatemalan and Mexican × Guatemalan (Zutano) race is described. Scions on the Mexican and Zutano stocks were less tolerant of salinity than scions on the Guatemalan stock based on measurements of stem diameter and biomass. The less tolerant trees also contained higher concentrations of sodium and chloride in leaves. The entry of sodium into scions on the Mexican and Zutano stocks was associated with increased succulence of stems and leaves. This response altered the mineral composition of the leaves. Leaf potassium and nitrogen per unit of dry weight increased on the Mexican stock given 20 mM sodium chloride. By taking account of the changes in succulence, however, it could be demonstrated that potassium and nitrogen concentrations on a leaf water basis remained close to control values. Calcium ion failed to make the adjustment, and the already low calcium levels were further reduced by succulence. Succulence was responsible for a 25–37% dilution of sodium and chloride in the leaves of scions on Zutano and Mexican stocks, given 20 mM sodium chloride.

Salt stress promoted the flowering of Fuerte scion. Low salinity (5mM sodium chloride) failed to stimulate flowering in trees on the Guatemalan stock. High salinity (20mM sodium chloride) was detrimental to flowering in scions on the Mexican stock and resulted in reduced numbers of floral buds, flowers per bud, inflorescences per bud and flowers per inflorescence.

The experimental results are discussed in relation to the salinity situation in the irrigated horticultural areas along the River Murray.

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