



BOOK OF ABSTRACTS

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Irrigating Table Grapes in Arid Regions with Low Quality Water: Effects of Salinity and Excess Boron

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Early ripening table grapes are an increasingly economically attractive crop in arid and semi-arid regions where cultivation is dependant upon the availability of large amounts of irrigation water. Unfortunately, water resources in such areas are often limited and the salinity of available irrigation water tends to be high. The response of grapevines (*Vitis vinifera* L. cv. Sugraone) to salinity, excess boron, and combinations of the two have been studied under controlled conditions in a series of lysimeter, pot and field experiments. Salinity-reduced transpiration in grapevines is measured as early as 30 days after budburst and biomass production and evapotranspiration found to be linearly related. Leaf conductance, transpiration, and net photosynthesis are reduced as a function of irrigation water salinity. Grapevine response to salinity involves a short-term mechanism where, as soon as salinity is experienced, transpiration and growth are reduced; as well as a long-term catastrophic mechanism involving increased Na and Cl content of leaves and vine mortality. Onset of mortality occurs earlier for higher salinities and death rates increase as the duration of exposure to salinity increase. Excess Boron in soil solution causes reduced growth (trunk size), reduced nodal lengths between leaves on branches, and causes severe visual toxicity symptoms including necrotic leaves. In spite of this, B in soil solution at concentrations reaching up to 0.33 mM did not reduce biomass or fruit production. Increased salinity causes reduced foliar B accumulation.