

Using TriSCAN to monitor salt accumulation in a vineyard

Salinity in vineyard soils can be detrimental to plant health and yields, but it can also have a negative impact on wine quality and in some cases lead to rejection of fruit at the winery due to excessive wine taint. Therefore monitoring and management of soil salinity levels can be critical to successful wine grape production.

The build-up of soil salinity was particularly identified to be of concern on a vineyard in Southern Australia, one of Australia's premium wine producing regions. The vineyard is irrigated with relatively saline (3 dS/m) water. Sentek's TriSCAN probes were installed at carefully selected locations, with sensors providing information on both soil moisture and salinity on a near-continuous basis, from multiple depths within the soil profile.

Soil moisture and salinity data was viewed in Sentek's IrriMAX software and showed how salinity build-up in the profile could be monitored and managed.

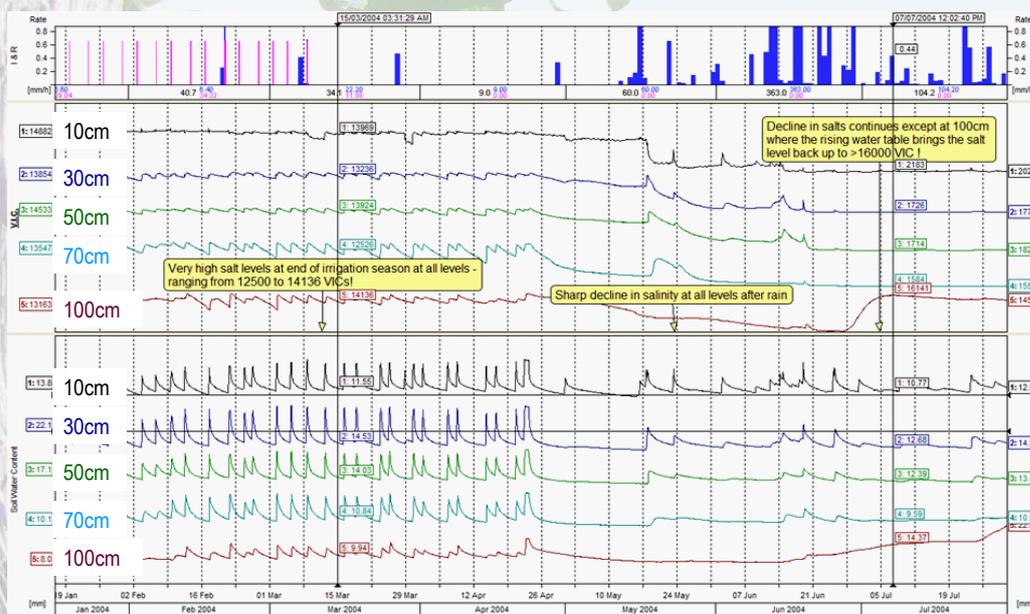
The before and after photographs illustrate the consequences of a "blind" approach, where salinity was measured but the information was not reacted to as part of the management strategy. Before the irrigation season, the canopy was reasonably healthy, whereas at the end of the irrigation season, the canopy showed severe leaf burn due to high salt levels.



Early season



Late season



Data from the TriSCAN probes are shown in the IrriMAX software graph above. It shows nearly a full growing season, from mid spring to the end of winter. It shows how the salt accumulates (increasing VIC levels) with successive irrigations through to the beginning of April, after harvest. Salt levels peak at the end of the irrigation season (irrigation is plotted with the pink bar graphs). The rainfall through winter (blue bar graphs) leaches the salt from the profile, restoring almost the entire profile to the pre-season salinity level. The exception is the lowest level which is impacted by a rising water table.

This information can influence current management strategies. Irrigators with a limited supply of good quality water can use the graphed salinity data to manage leaching irrigations for maximum effectiveness.