



FACT SHEET

IRRIGATION WATER QUALITY TESTING

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Water quality guidelines recommended for irrigation and general on-farm and domestic use have been developed by the Primary Industries and Natural Resource Management Ministerial Councils.

The guidelines cover several water parameters that should be analysed to ensure your water is suitable for its intended use. At Winechek, we have packaged the major parameters into a convenient and cost-effective Irrigation Water Testing Bundle. This will give you an overview of the quality of your water and identify any issues that may be affecting water quality. The bundle includes the following tests:

pH

The acidity or alkalinity of water should be monitored to ensure it is within a certain range to limit corrosion and fouling of pumping, irrigation, and stock watering systems.

Salinity & Electrical Conductivity

High levels of soluble salts in water can result in reduced plant productivity or the elimination of crops and native vegetation.

Sodium Adsorption Ratio (SAR)

SAR is an assessment of sodicity, which is the presence of a high proportion of sodium ions relative to other cations. High SAR values in water can affect soil properties by making the soil more dispersible and erodible, restricting water entry, and reducing the ability of the soil to conduct water. These factors limit leaching so that salt accumulates over long periods of time, giving rise to saline subsoils.

Sodium

As well as the effect of sodium on sodicity, excessive amounts in irrigation water can cause foliar injury, particularly following sprinkler application.

Calcium, Magnesium & Hardness

The hardness or softness of water is based on the level of dissolved calcium and magnesium salts. Soft water has a tendency to be corrosive, while hard water can result in clogging, encrustation and scaling of pumping equipment, pipes and sprinklers. It is therefore recommended that waters be maintained at a certain hardness level to minimise corrosion and scaling.

Iron

Iron is an essential micro-nutrient in soils, however iron dissolved in irrigation water can cause problems when it precipitates on plant leaves (light-brown spotting) or in irrigation equipment (clogging of drip systems). As such, there are recommended limits to the concentration of iron in irrigation waters.

Copper

Although copper is essential for healthy plant growth and is an important component of several plant enzymes, elevated levels of copper in irrigation water may have a direct phytotoxic effect on plants.

Potassium & Potassium Adsorption Ratio (PAR)

Winery wastewaters used for irrigation can have high levels of exchangeable potassium. While potassium is involved in the translocation of sucrose to the grapes and is important in balancing berry pH, excessive potassium in berries can lead to higher than desired pH and the formation of potassium bitartrate.

The potassium adsorption ratio (PAR) describes the ratio of K^+ to Ca^{2+} and Mg^{2+} . High PAR values in water with low EC values can affect soil properties by making the soil more dispersible.





WATER QUALITY GUIDELINES

PARAMETER	VALUE	COMMENTS
pH	<5 5 – 6 6 – 8.5 >8.5	High corrosion potential Likelihood of corrosion Recommended range Increased fouling potential
Electrical Conductivity & Salinity	<65 mS/m 65 – 130 mS/m 130 – 290 mS/m 290 – 520 mS/m 520 – 810 mS/m >810 mS/m	Very low salinity Low salinity Medium salinity High salinity Very high salinity Extreme salinity
Sodium Adsorption Ratio (SAR)	2 – 8 8 – 18 18 – 46 46 – 102	Limit for extremely sensitive crops Limit for sensitive crops Limit for medium sensitive crops Limit for high sensitive crops
Sodium	<115 mg/L 115 – 230 mg/L 230 – 460 mg/L >460 mg/L	Limit for sensitive crops Limit for moderately sensitive crops Limit for moderately tolerant crops Limit for tolerant crops
Hardness	<60mg/L CaCO ₃ >350mg/L CaCO ₃	Increased corrosion potential Increased fouling potential
Iron	<0.2mg/L <10mg/L	Long-term trigger value Short-term trigger value
Copper	<0.2mg/L <5.0mg/L	Long-term trigger value Short-term trigger value
Potassium Adsorption Ratio (PAR) (Risk values are for waters low in EC, typically <65mS/m)	1 – 5 5 – 10 10 – 20 20 – 40	Low to medium risk of soil dispersion Low to high risk Medium to high risk High to very high risk

NOTE: The values in the above table are taken from the Australian and New Zealand Guidelines for Fresh and Marine Water Quality, developed by the Natural Resource Management Ministerial Council (NRMMC) and the Primary Industries Ministerial Council (PIMC). Values for PAR were obtained from CRC Care. They should not be used as a sole determination of the suitability of irrigation water. Other factors such as soil characteristics, climate, plant species and irrigation management must also be considered.

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