

Guidelines for interpreting laboratory data on the suitability of irrigation water for
GRAPES (Wine, Raisin, Table)

(acceptable range for pH: between 6.5 – 8.4)

The Problem and related constituents	No Problem	Increasing Problem	Severe problem ⁵
Salinity: stunts vine growth ECw ¹ (dS/m or mmhos/cm) ECw ¹ (uS/cm)	< 1 1000	1.0 – 2.7 1000 - 2700	>2.7 > 2700
Permeability: affects the rate of water movement into and through soil ECw ¹ (dS/m or mmhos/cm) ECw ¹ (uS/cm) SAR ² (estimates permeability hazard)	>0.5 >500 <6	0.5 – 0.2 500 – 200 6 – 9	< 0.2 < 200 >9
Toxicity³: specific ions that can injure and affect vine growth Sodium (meq/l) Sodium (ppm or mg/l) Chloride (meq/l) Chloride (ppm or mg/l) Boron (ppm or mg/l)	< 20 <460 <4 <140 <1	---- ---- 4 to 15 140 to 525 1 to 3	---- ---- >15 >525 >3
Miscellaneous Bicarbonates (meq/l) Nitrate-nitrogen ⁴ (ppm or mg/l)	<1.5 <5	1.5 to 7.5 5 to 30	>7.5 > 30
Notes: ¹ ECw = Electrical Conductivity of water. This is a general measure of the overall salinity of water. It can be reported either in units of deciSiemens/meter (dS/m) or microSiemens/centimeter (uS/cm) ; dS/m x 1000 = uS/cm ² SAR = Sodium Adsorption Ratio. Calculated by the testing lab from the relative amounts of sodium, calcium, magnesium in water ³ Individual ions may be reported either as milliequivalents per liter (meq/l) or parts per million (ppm); Parts per million is the same as milligrams per liter (mg/l) ⁴ Include the nitrogen applied with your irrigation water when planning your fertilizer program so you don't apply too much. Multiply nitrate-nitrogen by 2.7 to determine the pounds of nitrogen per acre-foot of water. ⁵ Special management practices and favorable soil conditions are required to successfully produce grapes with water of this quality			
<i>Excerpted from: Raisin Production Manual, University of California Agriculture & Natural Resources Publication 3393, Chapter 15: Interpretation of Soil and Water Analysis</i>			