







Using Stem Water Potential for Wine Grape Irrigation Management

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Over the years, scientists have studied several ways to use the pressure chamber to measure water potential.

-  Leaf water potential
-  Predawn leaf water potential
-  Stem water potential
-  Shaded leaf water potential








Leaf Water Potential

-  Most common when pressure chambers were first introduced
-  Bare or uncovered leaf
-  Measured midafternoon
-  Measurements are variable

Predawn Leaf Water Potential

- 🍷 Bare or uncovered leaf
- 🍷 Measurements are made in the dark before sunrise
- 🍷 Minimizes measurement variation
- 🍷 Reflects water status after recovery
- 🍷 Measurements inconvenient

Stem Water Potential

-  Bagged or covered leaves
-  Measured midday from 12 – 4 pm
-  Select leaves from the lower shaded canopy
-  Bagged leaf reaches equilibrium with the water conducting system
-  Convenient measurement and reduces variation

Shaded Leaf Water Potential

- 🍷 Measured midday
- 🍷 Wrap leaf in a damp cloth
- 🍷 Convenient and reliable technique
- 🍷 Shaded reading average about -1 to -2 bars more tension



Most of our work has been on
Walnut, Almond and Prune

*One year of experience with
Chardonnay wine grapes in
Manton area of Tehama County*


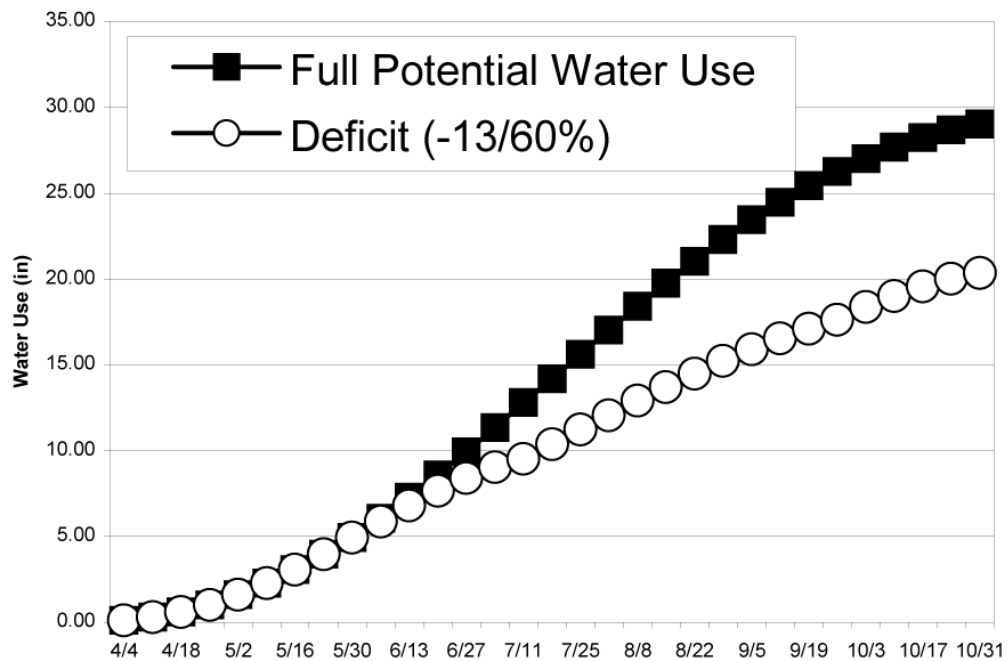


Figure D-4. Cumulative Water Use of Full Potential and Deficit Strategy (-13/60%), Lodi Average ETo



*Figure D-6. Leaf Water Potential
Lodi Merlot 6/11/99*

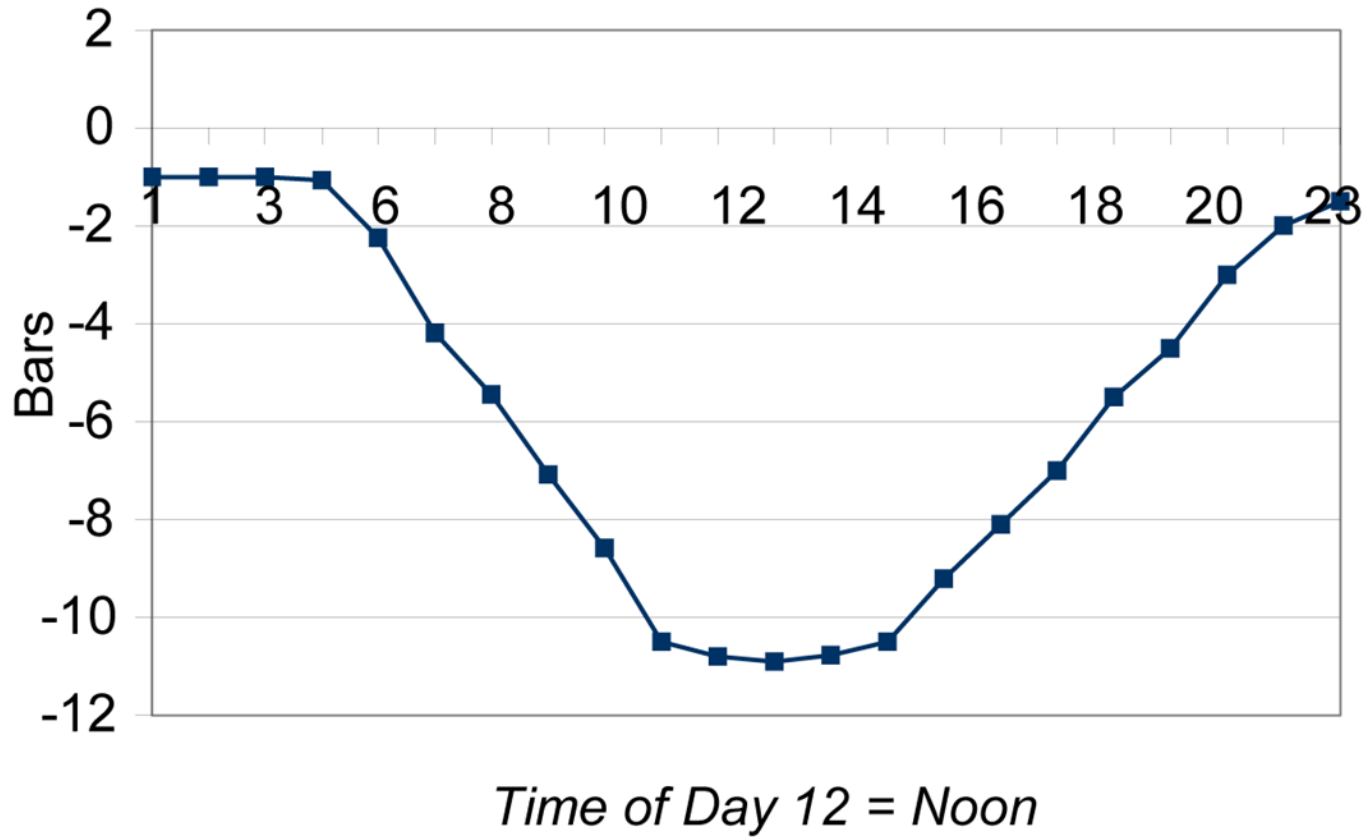
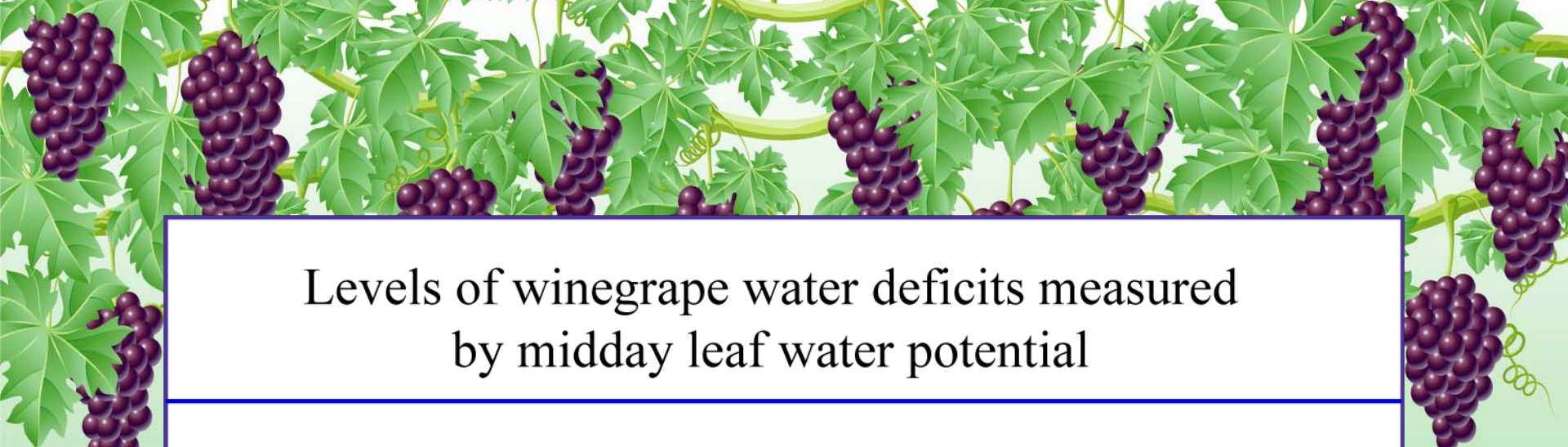



Figure D-6 illustrates a typical mid-season vine water status measured over a 24-hour period.

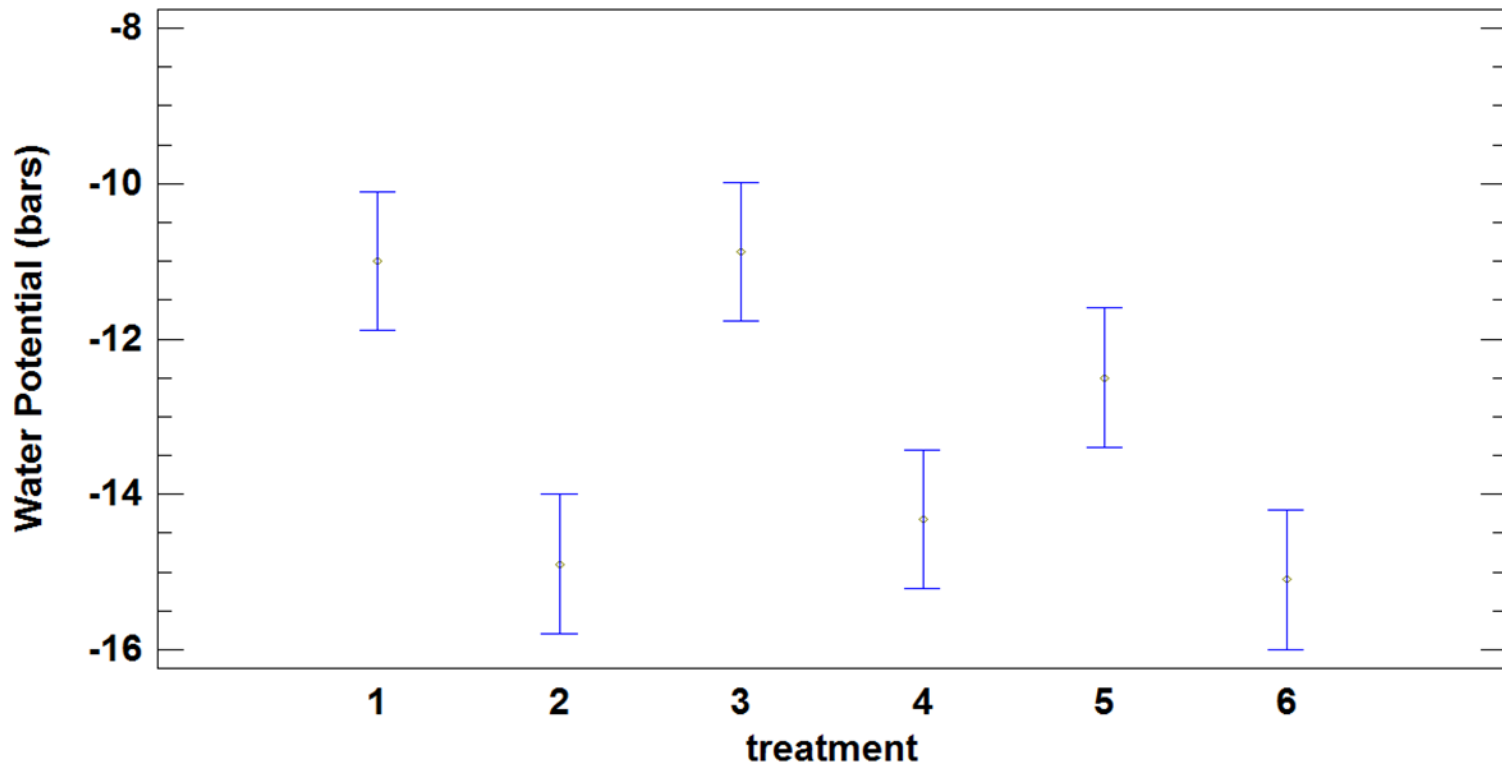


Levels of winegrape water deficits measured
by midday leaf water potential

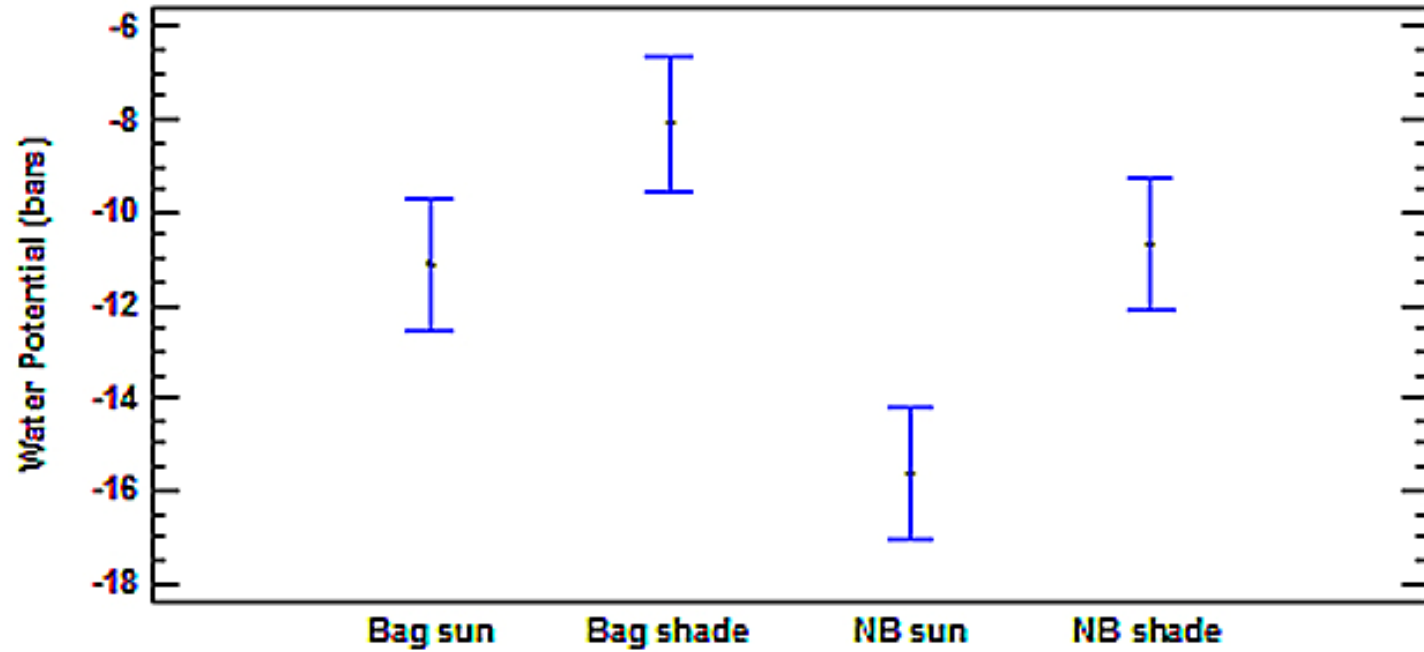
1	less than -10 Bars	no stress
2	-10 to -12 Bars	mild stress
3	-12 to -14 Bars	moderate stress
4	-14 to -16 Bars	high stress
5	above - 16 Bars	severe stress



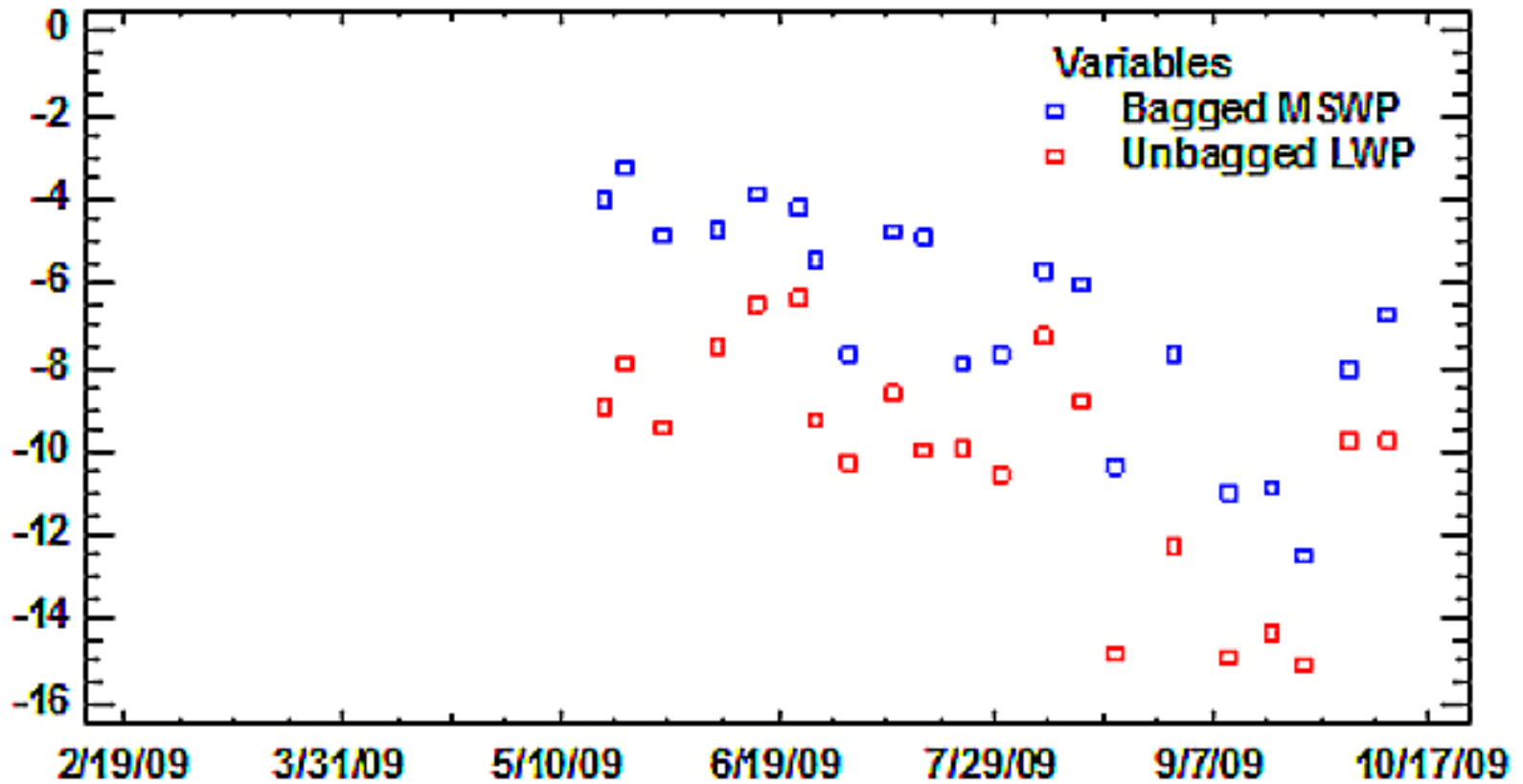
Sun Leaves bag vs No Bag for 3 days in September



Measurement Method Effect Upon Water Potential 8/20



Bagged MSWP and Unbagged Bag LWP Comparison



Plot of Bagged MSWP vs Date

