

Waterwise on the Farm

Sunny Valley Vineyard – 2009/2010 Season Update

18th May 2010

Irrigation System Component Costs:

Item	Cost
Labour	\$4413.75
Parts and Materials	\$11831.52
Additional items	
<i>100mm Water Meter and fittings</i>	\$ 1463.84
<i>Head works (labour, 100mm elbows, sockets, pipestand etc)</i>	\$1142.91
<i>Swivels</i>	\$500.50
TOTAL PROJECT COST	\$19352.52

New Irrigation System Performance:

Mean Application Rate: 7mm/hour

Distribution Uniformity: 82%

Coefficient of Uniformity: 87%

Scheduling Coefficient: 1.2

Irrigation Scheduling:

Irrigations commenced on 12th October 2009.

October: adequate soil moisture from spring rains, 0.25 crop factor, 3 irrigations of 3.5mm each. Evaporation avg 5.4mm/day

November: 0.25 crop factor (vine water usage increasing, starting to see drawdown at 30cm but soil moisture at 10 and 20cm remains high). 35mm of rainfall in 2 days filled the soil profile to 50cm. Evaporation avg 7.3mm/day

December: 0.3 crop factor. 3 irrigations per week scheduled. 3-4mm per irrigation event. To increase water penetration to 30cm, irrigations were scheduled on consecutive days. Soil moisture at 10-20 cm remains high but the vines continue to draw moisture from 30cm. Over the Christmas/New Year Break, soil moisture in the 0.5m profile dropped below the refill point for approx 7 days. The schedule was altered after this to a 0.44 to 0.5 crop factor. Veraison at end of December. Evaporation avg 10mm/day

January: 7mm (1 hour) irrigations were not sufficient to influence 30cm soil moisture levels so 14mm (2 hour) irrigations were scheduled for the rest of Jan. 3 x 14mm irrigation were scheduled each week which increased soil moisture to above the refill point. Evaporation avg 11mm/day.

February: 3 x 14mm irrigations continued for the month of Feb. Soil moisture for the whole profile (0-50cm) remaining above refill point of 85mm. Evaporation avg 8mm/day.

March: 3 x 14mm irrigations per week continuing. Runtime changed to 10mm per irrigation on the 12th March. Submersible pump seizure on 13th March. Crimson harvested mid March. Soil moisture depleted to 72mm (70mm Stress). On the 23rd March, 44mm of rain was recorded.

Soil moisture monitoring:

Max soil moisture - 120mm.

Refill soil moisture point – 85mm.

Stress point – 70mm.

35mm of Readily Available Water (RAW) in 0.5m soil profile (probe depth). 15mm reserve soil water. Total = 50mm in 0.5m.

Soil moisture equipment was vital as it enabled the schedule to be changed to irrigate deeper than 30cm.

Water Use Results:

Rain: 79mm (44mm on 23rd March included, 35mm for rest of summer)

Evaporation: 1362mm

Crop Water Demand: 537mm

Irrigation Applied: 509.5mm (5095 kL/ha). Collected from raingauges set in the vineyard.

Total Water Applied: 588.5mm (5885 kL/ha)

Water Meter: 6392 kL/ha (this meter needs verification and possibly calibration before this reading is accepted)

Note** pump stopped working on the 13th March. Irrigations would have continued up to May. Irrigation usage would have been around 6000 kL/ha

Production:

The 0.76ha of Crimson Seedless yielded 16kg/vine which is down on previous averages.

Although significant amounts of fruit was lost after the rainfall on the 23rd March, inspections in the vineyard showed that flowering and fruit set was below expected levels. Pruning practices?

This needs further investigation!

Important points to note:

- Depending on your soil type, it may be necessary to schedule irrigations in December and January using soil based methods (Rootzone RAW and soil moisture monitoring), rather than using crop factors and evaporation figures (even with the extra 10% added for sprinkler systems). Crop factors and evaporation may not be adequate to irrigate to a depth of 30-40cm.
- From observations in the vineyard, longer (making sure that wetting fronts reach the bottom of the rootzone) and less frequent irrigations should be scheduled. There was a higher occurrence of powdery mildew this season that could be attributed to the 3 x 14mm irrigations per week.