



Strawberry

Water Use Study Neerabup, Western Australia



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This project is supported by Perth Region NRM, through funding from the Australian Government's Caring for our Country.

Irrigation System: Fixed Overhead Impact Sprinklers and Drip line (T-Tape)

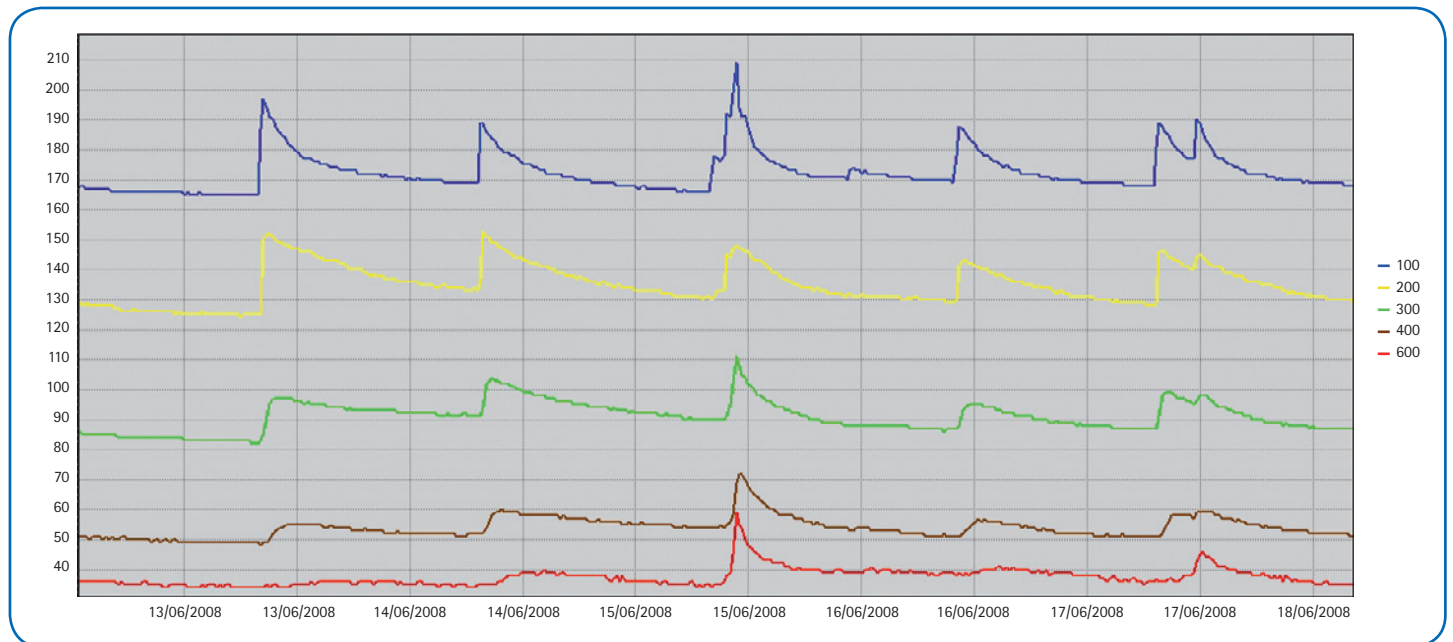
Application Rate: 9.2 mm/hour for overhead sprinkler system, 20 mm/hour for the 0.75L/hour dripline @10cm spacing and 11mm/hour for the 1.1L/hour dripline @30cm spacing.

The strawberry crop was planted on the 1st May 2008 and production ceased on the 19th November 2008, a growing season of 203 days.

During the first month of growth, the bare-rooted transplanted strawberries needed overhead irrigation to establish the root system, sometimes three irrigations per day to prevent drying out. During the first week of establishment, the highest water usage for the season was recorded over the 1.865 ha area and irrigation wetting fronts were moving through to 600mm depth. Consistent rainfall after the first week reduced water usage and assisted with establishment.

Irrigations with drip tape commenced on the 5th of June and were scheduled to replace evaporation of approx 2.5mm/day. This was equal to 8mins (100mL) for the 10cm dripline and 13mins (238mL) for the 30cm dripline. A frequency of 1 irrigation per day was sufficient to keep the irrigation within the rootzone.

Due to limitations with the accuracy of the irrigation controller and time taken to fill irrigation lines, 2.5mm was the minimum amount applied during June and July. Department of Agriculture and Food research suggests that irrigation could have been reduced to 70% of evaporation during this period. One irrigation per day continued through June and July. Two irrigations were scheduled on 17th June to investigate accuracy of scheduling. As seen in the figure below, two irrigations in one day moved through to 600mm and past the rootzone of the plants. A large rainfall event is evident on the 15th June.



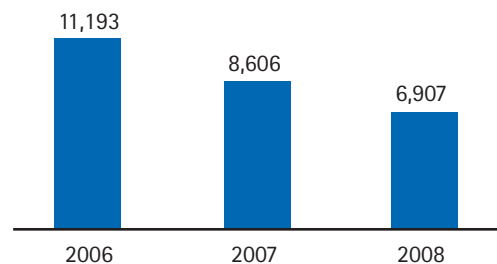
During August, daily evaporation reached a max of 5.2mm and an average of 4mm. Irrigation schedule was altered to deliver 150mL (12mins) in the 10cm dripper area, but no change was made to the 30cm dripper area due to soil moisture monitoring results.

Two irrigations of 187mL (15mins) each were scheduled during September/October in the 30cm dripline area. Soil moisture monitoring showed that wetting fronts moved through to the bottom of the rootzone (400mm) and did not pass 600mm. Two irrigations of 100mL or 2.6mm (8 mins) were scheduled during September for the 10cm dripline. During September/October, the timing of these two irrigations was critical to avoid irrigating past the rootzone. 7 hours was the optimum time between irrigations to avoid water movement past 400mm. 5 hours between irrigations caused water to move past 600mm. In late October and early November, three irrigations of 8 mins in the 10cm and 30cm dripline area were scheduled on days with higher evaporation (9.4mm) and this maintained soil moisture to 400mm.

The strawberry property has undergone continual improvement with irrigation scheduling since 2006 and groundwater usage in kL/ha has decreased significantly since 2006. Research from the Department of Agriculture and Food suggests that strawberries can be grown with approx 6,000-7,000 KL/ha – with low covers. During 2008, there were no covers on the strawberry crop, so there was still room for improvement.

Water usage results are as follows:

Water Usage 06-08 (KL/ha)



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