



## Nectarine

# Water Use Study Karragullen, 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:** Strip spray microjets

**Application Rate:** 28mm/hour

The orchard manager commenced irrigation in the Nectarine block on the 9th of November 2007.

Evaporation at this time was ranging from 6-9mm, temperatures 22-29 degrees, and humidity 13-50% (Perth Airport weather station).

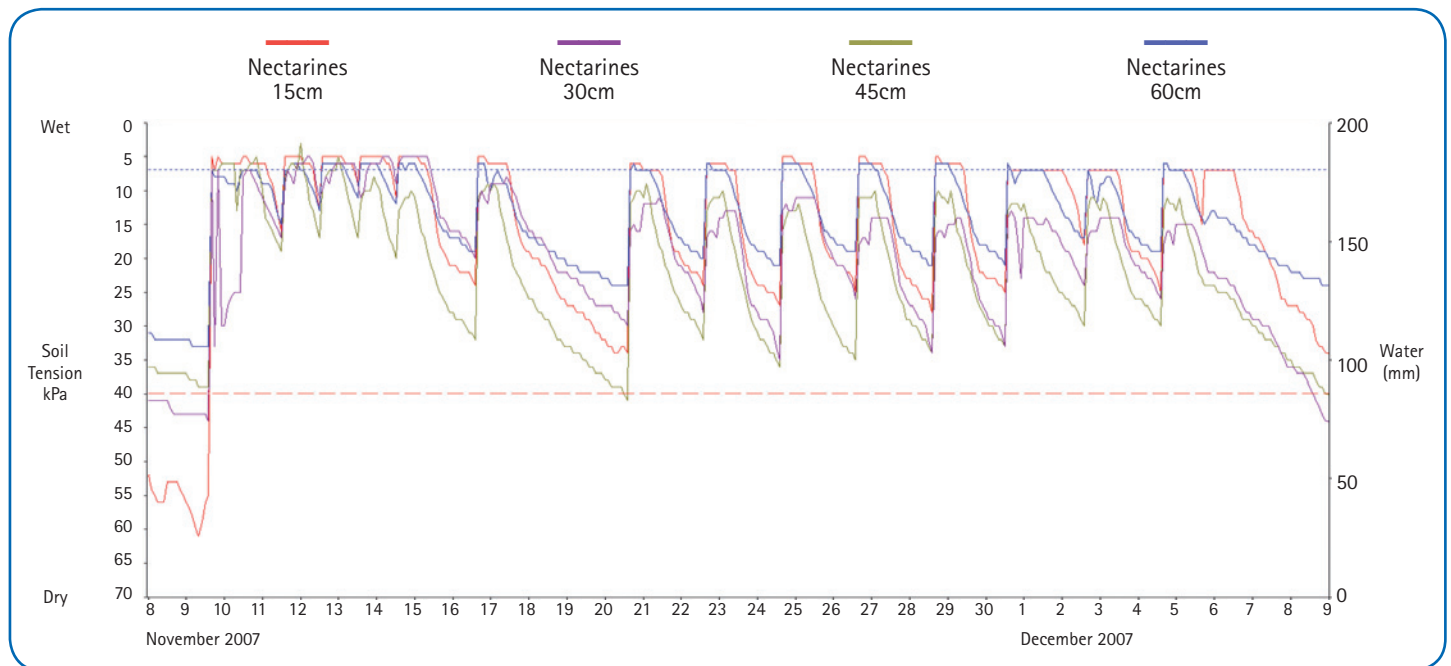
Soil moisture remained steady during late October to early November (-25 to -30kPa @ 30cm).

During the first week, irrigations were scheduled daily for 1.5 hours. This increased soil moisture @ 60cm to approx -8kpa and on the gravelly soil type -8kpa is saturated. Irrigations were leaching quickly through the profile and below the rootzone. The lower level of the rootzone is estimated at 45cm.

This profile was a result of over irrigation and not compensating for the high output of the strip spray sprinklers in a relatively small area. The graph below shows this "wet" profile from the 10-16 November 2007.

It is difficult to ascertain the amounts of water leached through the profile due to the technology used (gypsum blocks) but assumptions can be made that when the soil is wet (-8kpa) and then more water is added through Irrigations then leaching may occur (especially on soils with high gravel content).

From this profile, the irrigation schedule was changed from daily to once every two days from the 20th Nov 2007. During this period, irrigations were 1 hour (approx 130L from each strip spray). With this schedule change, soil tension was reduced at 60cm from -8kPa to -15kPa which indicated a reduction in irrigation passing 60cm (quantity unknown). Evaporation at this time was averaging 6-9mm per day.



During fruit set and development, the Summer Bright nectarines were irrigated every day for 1 hour until the 22nd January 2008. Evaporation averaged 10mm per day.

The irrigation schedule was altered from the 22nd January to every second day for 1 hour in duration. Soil tension (15,30 and 45cm) fluctuated between -10kPa after an irrigation to -40kPa two days after the irrigation. Some moisture stress was placed on the plant at this time with the soil tension reaching -40kPa at 45cm deep.

The Summer Brite Nectarines were harvested the prior to the 13th February 2008. 10,500kg of grade 1 and 2 fruit was picked from the block which is 0.3ha in size. The 2007 harvest was 6,040kg.

Post Harvest: The trees continued to receive 1 hour irrigations every second day until the 30th March when the irrigation ceased and rainfall started with 141mm in April 2008.

### Future Irrigation Scheduling

The irrigation system on the Summer Bright nectarines delivers a relatively large amount of water in a small area. Approx 130 litres of water spread over 4.5m<sup>2</sup> is equivalent to 28mm if irrigation. Combining the important figures of soil texture, rootzone depth and gravel content, 14.4mm of water is available to the trees. To fill the rootzone, 30mins of irrigation is needed. Based on the old schedule of 1 hour per day and a pump out put of 12,000L/hour, approx 6,000L could be saved per day if the schedule was changed to match soil water holding capacity.



**Perth Region NRM Inc.**

80 Great Northern Highway (Corner Bishop Road)  
MIDDLE SWAN WA 6056

Tel: (08) 9374 3333 Fax: (08) 9374 0685

Email: [enquiries@perthregionnrm.com](mailto:enquiries@perthregionnrm.com)

[www.perthregionnrm.com](http://www.perthregionnrm.com)