



# Irrigation Diary

## About the Tool

Irrigation Diary is one tool in the KMSI (Knowledge Management System for Irrigation) suite of web based software tools. The irrigation diary is a simple web tool that aims to replace the paper diary that growers use to record rainfall and irrigation amounts. The benefit of the Irrigation Diary is that it can generate an irrigation schedule to show which fields require irrigation and when. Another benefit of the Irrigation Diary is that it can generate summary data at any time through the season, including the total crop water requirement, total in season rainfall, total irrigation applied at the push of a button.

Ross Stuhmcke grows stone fruit, persimmons and figs under micro sprinkler irrigation in the Lockyer Valley.

Ross currently keeps good records of when he irrigates to calculate fertiliser application rates and has used Irrigation Diary on 8 blocks of stone fruit to see how the tool can help him manage water.

### Step 1—Setting up (Farm, Soil and Crop information)

Ross entered his farm name and address and the Irrigation Diary found the closest Bureau of Meteorology (BoM) weather station to automatically collect default rainfall and evapotranspiration data. Ross has a rain gauge at the farm and decided to use his rainfall data as it is more accurate for his farm.

Ross then entered the crop grown in each of the 8 blocks and details on the soil type, picking dates and his expected irrigation refill point (%).

### Step 2—Entering Rainfall and Irrigation data

The irrigation amounts from his paper diary were entered into the Irrigation Diary for 8 blocks of stone fruit for the 2011 season (see figure below). Ross had measured the application rate (mm/hr) of the microsprinklers and he had recorded how long each irrigation had lasted. Therefore, he was able to calculate the total depth of application in each irrigation. Ross used his own rainfall data and the evapotranspiration data was provided by the software from the BoM station at University of Queensland Gatton.

The Irrigation Diary indicated the amount of evaporation each day. It also showed him how much in-season rainfall the crop had received and how much irrigation water he had applied to each block. There is a counter that shows him how many days he has until he needs to irrigate again (based on a refill threshold that he nominated).

Blackboy Ridge			MON	TUE	WED	THU	FRI	SAT	SUN	Total in	Total	Irrig. due	Actual
Field	Crop	Graphs	31 OCT	1 NOV	2 NOV	3 NOV	4 NOV	5 NOV	6 NOV	crop rain (mm)	irrig. (mm)	in (days)	harvest date
		Evap	4	4.8	5.8	7.3	6.2	4.7	5.6				
	RTU1	Rain	4	0	15	0	0	0	25				
D Red	Peach	Irrigation	0	22	0	0	0	0	0	1267.8	363	finished	21/11/2011
6	Peach		0	22	0	0	0	0	0	1267.8	414	finished	21/11/2011
7	Peach		0	22	0	0	0	0	0	1293.2	414	finished	21/11/2011
8	Nectarine		0	22	0	0	0	0	0	1293.2	414	finished	21/11/2011





# Irrigation Diary

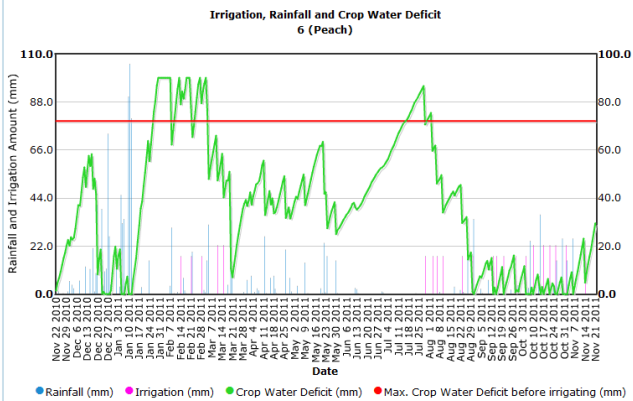
## Step 3—Producing Reports

The Irrigation Diary produces 2 reports; a Scheduling Report and a Complete Report

The Scheduling Report gives a list of when each block needs irrigation and how much water (mm) is necessary to refill the profile. This report can be printed off and given to the person responsible for turning on the irrigation system to each block.

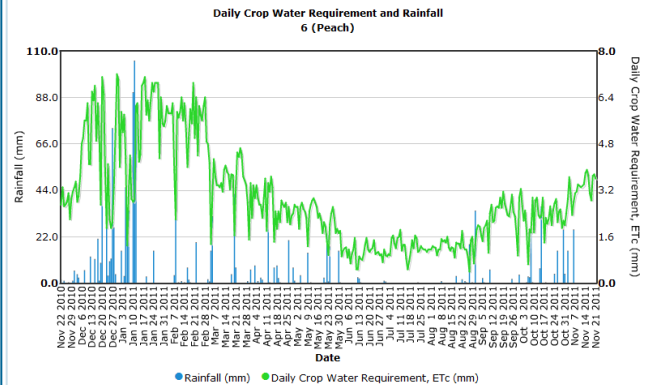
The Complete Report generates summary tables and graphs of total rainfall, irrigation and crop water use.

The first graph shows how the crop water deficit (green line) changed over time with rainfall and each irrigation. As the plant used the soil moisture, the deficit increased. The graph shows that the soil moisture deficit increased above the limit that Ross set (red line) in January and February 2011. It also increased above the limit before the fruit began filling in July. Ross then increased the frequency of irrigations to ensure that there was no water stress on the plant right through to picking in November.

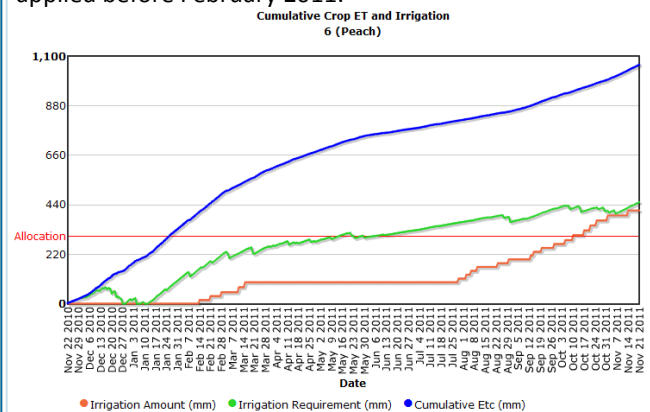


Ross is using Irrigation Diary with the current season of persimmons and figs. He will compare his capacitance probes and the “scheduling report” from Irrigation Diary to make decisions on when to irrigate.

The second graph shows the daily crop water requirement through the season (green line) and rainfall (blue line). There is a clear change through the season with a peak demand in summer of approximately 7.5 mm/day.



The third graph shows a cumulative total for the crop water use (blue line), how much irrigation water the crop needed (green line) and how much irrigation water was actually applied (red line). The graph shows that the crop used approximately 1,000 mm in the 2011 season. This was made up of ~440mm of irrigation with the remainder rainfall). Ideally the timing and amount of irrigation applied should match the plants irrigation requirement. This graph shows that the amount of irrigation applied matched the plant requirement but the timing of each irrigation was lagging due to no irrigation water being applied before February 2011.



Ross will use the complete reports to compare 2011 season with seasons to come.