



Australian Government  
Department of Agriculture  
and Water Resources



Smarter Irrigation for Profit Project

## Hunter Optimised Dairy Irrigation Farm (NSW)

### 'Glenhaven' Irrigated Pasture Update March 2018

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#### Irrigation Report

##### Irrigation tips for April

The weather outlook for April is for normal conditions with median rainfall (which is 25 mm) and median temperatures (Max 25°C, Min 10°C). Streamflow is forecast to be in the average range. Pastures should be irrigated in accordance with evapotranspiration (ET) measurements or soil moisture readings to avoid stress and lost production. Consider not entirely filling the profile to increase the opportunity for rainfall capture if rainfall looks likely.

##### Comment for March

March continued the run of dry weather with only 38.2 mm of rain recorded at Scone airport. The long-term median rainfall for March is 53 mm. The reference crop evapo-transpiration (ET<sub>o</sub>) for Scone airport was 161.3 mm. The forecast of median rainfall and temperatures did not eventuate, with the Upper Hunter experiencing another particularly dry and hot spell.

The lucerne was not irrigated at all in March. Rainfall recorded at Glenhaven was 38 mm, about the same as Scone airport. From 'IrriSat', up to 26<sup>th</sup> March, the crop water use (ET<sub>c</sub>) at Glenhaven was about 95 mm. Assuming that all rainfall was available to the plants, the crop was supplied with 38 mm, so the crop water demand was under-supplied by at least 57 mm and the pasture was in stress for the entire month. This crop is being dried off for a change to winter pasture. Reference crop water use (ET<sub>o</sub>) at Glenhaven was 138 mm, indicating that the crop coefficient (K<sub>c</sub>) was much less than 1.0 confirming that the Lucerne growth has slowed significantly (Refer to the Agronomy Report for further detail.).

The seasonal summary of irrigation, rainfall and soil moisture from the Scheduling Irrigation Diary (SID) overleaf demonstrates the growing season to the end of March and shows that the pasture was stressed (ie. The green line was below the red line) for all but the first 11 days of the month. For the rest of the month, the crop was in stress as the summer pasture phase was wound down.

(A dairy specific version of the SID is now being trialled by dairy farmers of the *SID for Dairy* and *Hunter Starting Smarter* project participants in the Hunter & Mid-Coast NSW regions. This has resulted in a new format of summary graphs)

This Project is funded by Dairy Australia and the Australian Government Department of Agriculture and Water Resources as part of its Rural R&D for Profit program.

The project is also supported in the Hunter region by the following organisations:

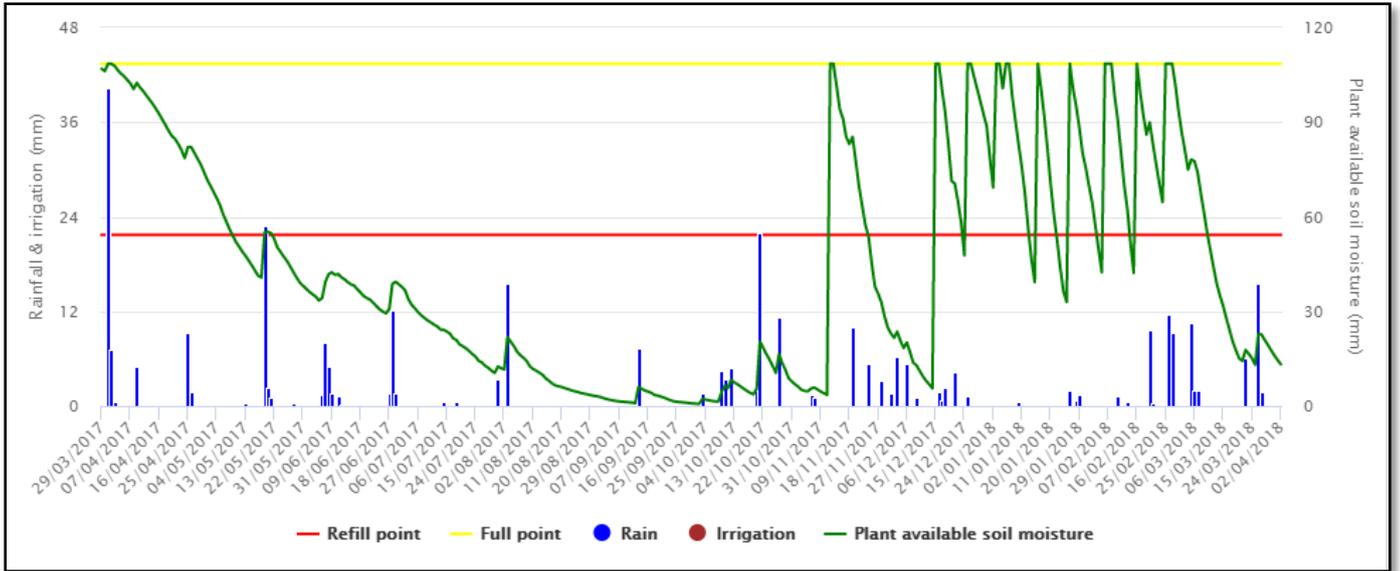


Local Land  
Services  
Hunter



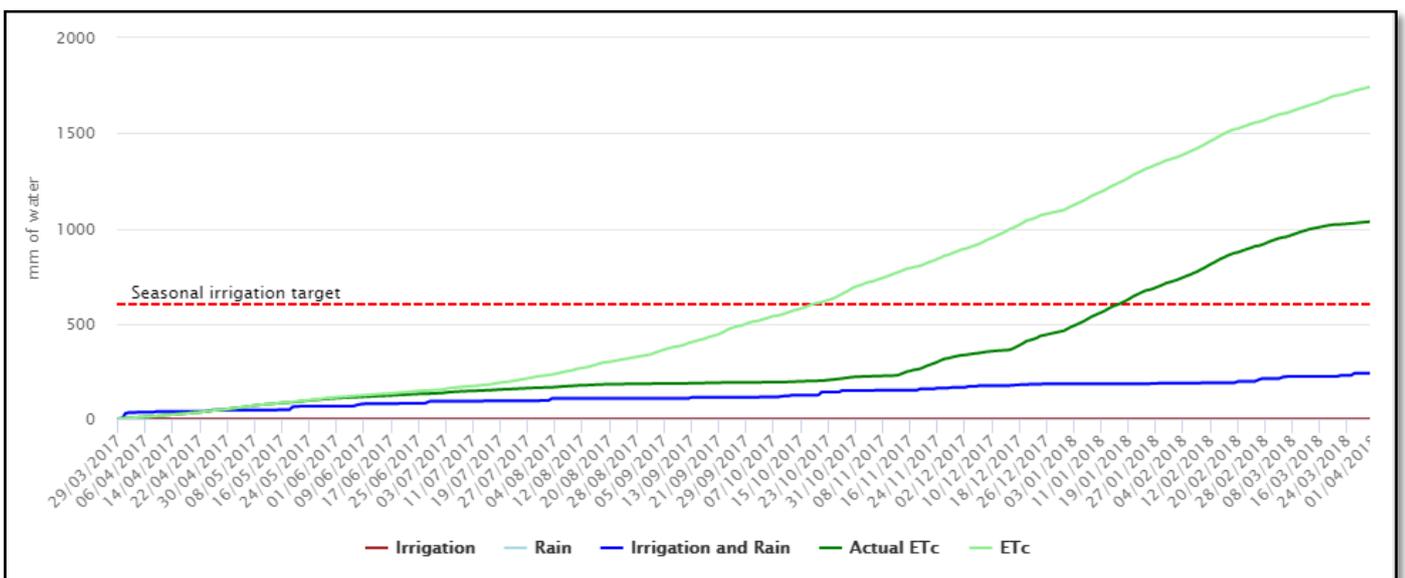
Seasonal summaries from the Scheduling Irrigation Diary (SID) for Glenhaven

**Pivot Glenhaven – Irrigation, Rainfall and Soil Moisture Summary**



The drying of the soil profile and the increasing stress of the pasture is also evident in the cumulative ET, rainfall and irrigation summary (below). It shows that during March the gap between Actual ETc (dark green line) and the Rainfall + Irrigation (dark blue line) is widening. (The figures are very different from previous months' summaries because SID for dairy trial, many of the figures have not carried over and have started from zero. The trend of the curves is where the information is to be found for this month.)

**Pivot Glenhaven – Cumulative Crop ET, Rainfall and Irrigation**



### Outlook from 'Irrisat'\* for April

		Glenhaven		
		ETo	Chance of rain	Forecast
Wed	4	3.5	27%	Mostly cloudy until evening
Thurs	5	3.4	6%	Partly cloudy in the morning
Fri	6	3.5	6%	Clear throughout the day
Sat	7	3.0	3%	Partly cloudy in the morning
Sun	8	3.5	6%	Clear throughout the day
Mon	9	3.7	6%	Clear throughout the day

\*Using data from both Landsat satellites and on-ground weather stations, Irrisat is a web based tool more broadly used in the cotton industry to calculate crop coefficients and forecast crop water use. The *NSW Smarter Irrigation for Profit project* has been trialling its application to dairy pasture systems.

### Data records for March

#### ETo at Scone Airport (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
7.7	6.4	5.3	5.7	4	2.3	5.2	6.2	5.7	6	5.1	5.6	5.9	4.9	4.7	6.3	6.7
18	19	20	21	22	23	24	25	26	27	28	29	30	31	<b>Total</b>		
7.7	6.9	7.2	2.5	2.6	4.1	4.2	6.9	4.5	4.4	3.8	3.8	4.4	4.6	<b>161.3</b>		

#### Rainfall received at Scone Airport (mm)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
				10.6	2	2										
18	19	20	21	22	23	24	25	26	27	28	29	30	31	<b>Total</b>		
				6	0.2			15.6	1.8					<b>38.2</b>		

#### Rainfall at Glenhaven (mm) (manual rain gauge)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
				10.6	2	2										
18	19	20	21	22	23	24	25	26	27	28	29	30	31	<b>Total</b>		
				6				15.6	1.8					<b>38</b>		

#### Irrigation events (mm) (from Scheduling Irrigation Diary)

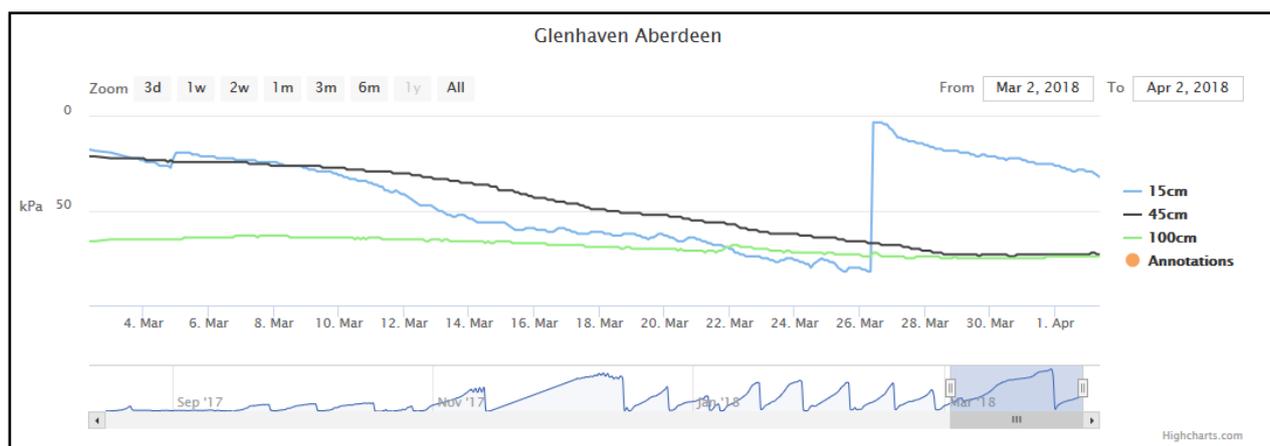
Date	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Glenhaven																	
Date	18	19	20	21	22	23	24	25	26	27	28	29	30	31	<b>Total</b>		
Glenhaven															<b>nil</b>		

The Readily Available Water (RAW) at soil probe sites in the Upper Hunter region:

Soil probe site	Crop	Root depth	Soil texture	RAW
Glenhaven	Lucerne	100 cm (assumed)	Light Medium to Sandy Clay	48 mm
Garoka	Mixed pasture	40 cm (assumed)	Sandy Clay	24 mm
Rossett Park	Mixed pasture	40 cm (assumed)	Light Medium to Medium Clay	22 mm
Dalara	Mixed pasture	40 cm (assumed)	Clayey Sand to Loamy Sand	18 mm

Soil moisture watch

Glenhaven soil probe traces as at 3/04/18



The dry month of March was characterised by the intentional drying of the profile for the end of the summer pasture phase. The exception is the small spike on March 5<sup>th</sup> from the small rain event and the larger spike on March 26<sup>th</sup> which was a significant rain event. This rainfall reached only the top soil layer and stimulated some late growth evident by the consistent slope of the 15 cm trace (blue line) from March 27<sup>th</sup>.

All three sensors show the drying trend with the lower two not receiving any moisture from the rain events but the slope flattened a little, indicating that the rate of drying decreased in response to the rain reaching the 15 cm layer. At the larger rainfall event, there was a slight flattening for about a day at around –3 kPa indicating slight waterlogging at this depth.

Note: The dates from the SID and the Tain soil moisture loggers do not always agree. This is due to how data is logged and recorded. The SID data extracted from the Scone weather station is generally a day or more behind, as the BOM records any event up to 9:00am as occurring on the day before. The dates of irrigations and on-farm rainfall input by the farmer will depend on his method of record keeping and could easily be a day or two different from the BOM. Water movement through the soil profile will vary depending on how much water is already there and some other factors. The Tain loggers record in real time – as long as the time register is correct – so are usually a day different to the BOM.

## Agronomy Report

### Agronomy tips for March

- Winter forage sowing should be well underway.
- The use of dry cows and heifers can be valuable in controlling excess crop/pasture residues before planting winter forage.
- Early sown Ryegrass and Brassica crops are close to being grazed. Ensure these crops are well anchored before commencing grazing.
- Slugs have been an issue in some areas. Monitor establishing crops and pastures closely for any insect and slug damage. Act promptly if required.
- Consider Nitrogen applications to aid pasture growth moving into to cooler months.

### Lucerne based pasture for direct grazing

Since the commencement of the project the following activities have occurred.

- 16<sup>th</sup> July - Barley Sown
- 12<sup>th</sup> October – Cut for Hay Silage
- 7<sup>th</sup> November – Grazing Commenced (8 feeds)
- 7<sup>th</sup> December – Grazing Commenced (7 feeds)
- 27<sup>th</sup> December – Grazing Commenced (6 feeds)
- 23<sup>rd</sup> January – Grazing Commenced (7 feeds with Milking Herd, residual clean up with Dry Cows and Heifers).
- 26<sup>th</sup> February – Grazing Commenced (13 feeds with 190 cow milking herd)

### February/March Grazing

The dry matter under the pivot was measured before grazing commenced on the 26<sup>th</sup> February using the electronic pasture meter. The results showed: -

- An average dry matter of 1621kg/DM/ha was measured.
- A range of 181kg/DM/ha to 2660kg/DM/ha.
- 13 Grazing's from this Pivot due to a reduced herd size.
- Following the Milking herd, 3 weeks grazing by 60 Dry Cows.
- The area is now to be direct drilled to Prairie Grass. An application of Sprayseed will occur the day before sowing to check the current Lucerne Crop.

To find out more about the Smarter Irrigation for Profit- Hunter Optimised Dairy Irrigation Farm Project, please contact:

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Make sure you keep up to date on the project by following:

[www.facebook.com/SmarterIrrigation](https://www.facebook.com/SmarterIrrigation)

or by regularly visiting the project website page at:

[www.dairyingfortomorrow.com.au/tackling-specific-issues/water/smarter-irrigation-for-profit](http://www.dairyingfortomorrow.com.au/tackling-specific-issues/water/smarter-irrigation-for-profit)