

Hunter Smarter Farming: Irrigating for Profit Project

MAKING EFFECTIVE IRRIGATION DECISIONS

July 2020 Irrigation Report: April-June period



Visit the website [HERE](#) for an abundance of practical irrigation resources and the latest seasonal video from the Gloucester soil moisture monitoring sites.

Key points of the period

- The forecasted rainfall of 100-200mm for the period did not eventuate, with April and most of May remaining dry with only 65mm recorded in late May and early June. This highlights the importance of now being ready to irrigate in Autumn when historically rainfall was more reliable.
- Both farms commenced irrigation on-time to maintain soil moisture in the lower extremities of the Readily Available Water (RAW) zone. Ideally irrigation applied 10 days earlier at Bowman Farm and on F6 at Kywong Flat would have resulted in soil moisture remaining nearer Field Capacity, more optimal for the development of young plants with short root rooting depths in early autumn.
- Neither site was able to lift soil moisture significantly, within the RAW, using the rate and frequency of irrigations they applied. Soil moisture did not return to Field Capacity until a significant rain event on the 6th of June.
- The immediate forecast is for no rainfall in the next 7 days with 75% chance of only 50-100mm until 30th September.
- With access to water from the Bowman River and on-farm storage at Bowman Farm, and from the Barrington River at Kywong Flat, both sites will need to use the easily accessed forecast and soil moisture data they have to use irrigation strategically to optimise yield in coming months.

SWAN Systems 7 day forecast

- The daily emailed forecast has continued to be a key piece of information for both Tom and Adam. Using soil moisture and forecasted rain and ETo data gives them confidence to make more proactive irrigation decisions.

Date	ETo*	Chance of Rain	Rain Range	Rain Estimate	Temp Range	Avg R. Humidity	Avg Wind Speed
	mm	%	mm	mm	°C	%	km/hr
Thu, 02-Jul	2.6	< 5	< 1	0.0	6-24	65	10
Fri, 03-Jul	1.6	35	0-1	0.7	9-20	71	6
Sat, 04-Jul	2.0	10	< 1	0.0	3-17	70	10
Sun, 05-Jul	1.7	< 5	< 1	0.0	1-19	72	7
Mon, 06-Jul	1.5	< 5	< 1	0.0	4-19	72	5
Tue, 07-Jul	1.6	5	< 1	0.0	4-19	72	6
Wed, 08-Jul	1.3	25	< 1	0.0	6-18	79	5
TOTAL	12.3			0.7			

[What is ETo?](#) Forecast provided by the [Bureau of Meteorology](#), © Commonwealth of Australia.

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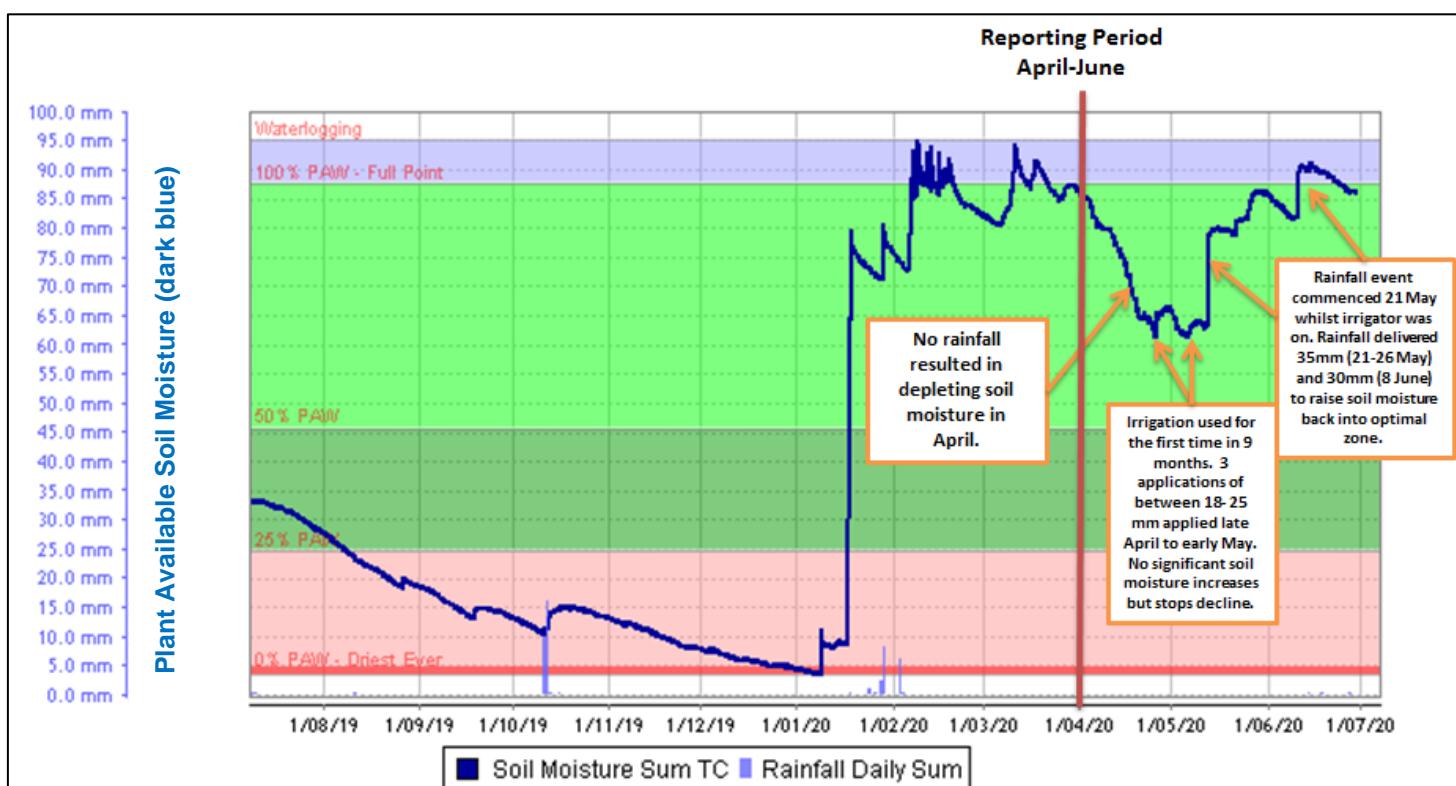
Bowman Farm Soil Moisture Commentary

- The Valley® Pivot has been used for the first time in ten months at the site with 4 irrigations applied.
- Prior to irrigation start-up, a system check found a flat tyre and pipes that had been damaged by cockatoos. The system was repaired and overhauled ready for effective operation.
- Whilst ETo totalled 43mm from April 1-14, no irrigation was applied so soil moisture declined.
- Ideally, irrigation should have commenced 5-10 days earlier to maintain RAW at a higher level, but the irrigations applied (each between 18-25mm) stopped declining soil moisture until good rainfall arrived over the 21st- 26th May.
- Soil moisture started to decline again until the 6th of June delivered 30mm rainfall, lifting soil moisture above Full Capacity. Tom reported that waterlogging was not an issue.
- Almost immediately soil moisture has begun to decline, and with no rainfall forecast in the coming seven days, irrigation will be required to maintain optimal levels by *at least* matching the 7-day forecasted total ETo of 12mm.
- Supplement irrigation will be part of the management requirements of this site for the next three months, with very little rainfall predicted.
- With irrigation available to the study site, the current mixed pasture will be pushed through until November when a maize or forage sorghum will be planted.

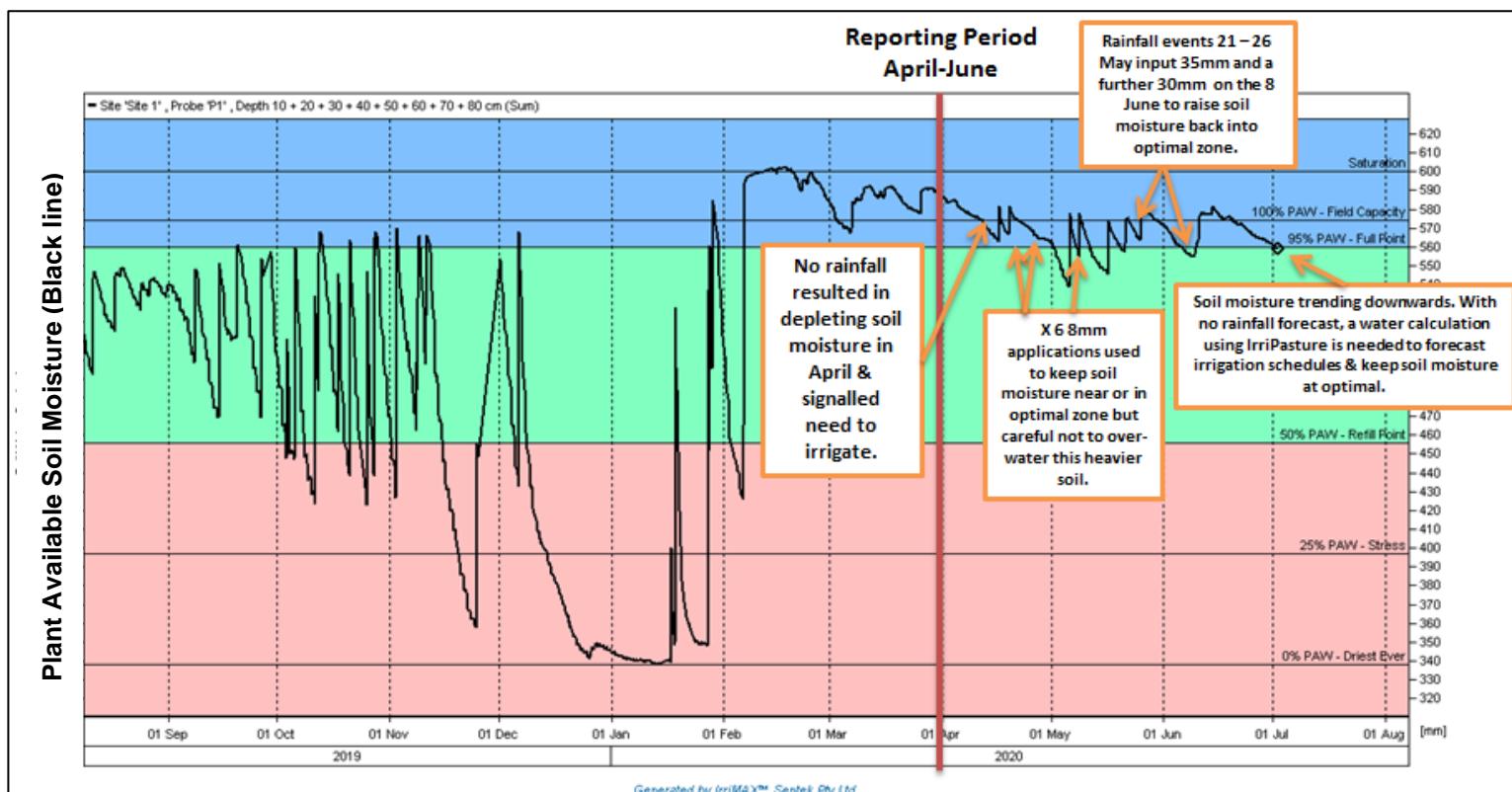


Tom Middlebrook. The study site at Bowman Farm remains a Barley/Italian Rye/Brassica mixed pasture and is responding well to irrigation.

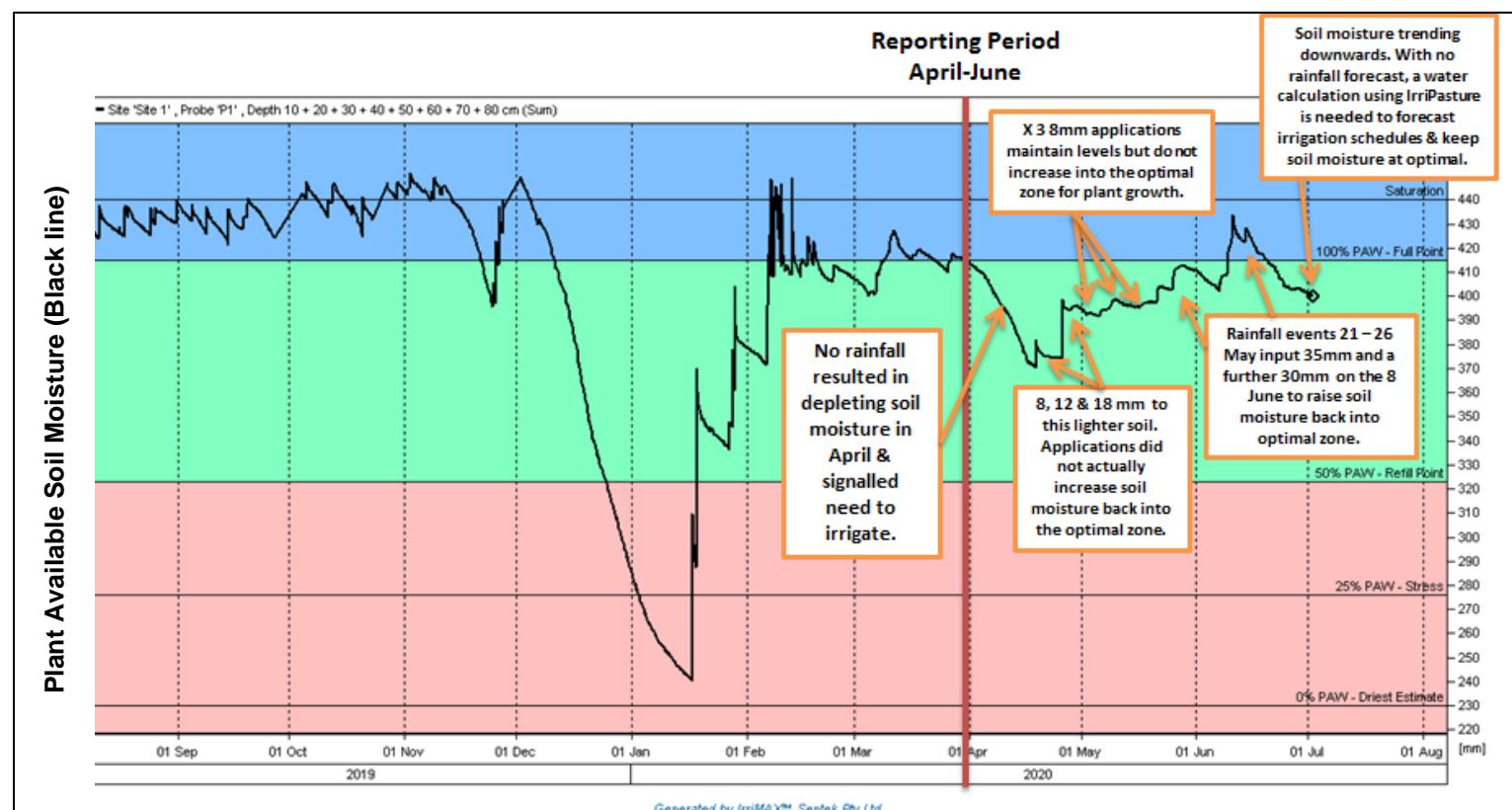
Seasonal Summaries for Bowman Farm- Barley/Italian Rye/Brassica mixed pasture



Seasonal Summaries for Kywong Flat- Paddock F3 Italian Ryegrass/ White Clover



Seasonal Summaries for Kywong Flat- Paddock F6 Oats



Kywong Flat Soil Moisture Commentary

- Adam has employed two separate irrigation strategies to the different soil types of F3 and F6 over the period rather than a fixed rate across the entire pivot area.
- Soil moisture has been consistently optimal on F3 where he has applied smaller applications of 8mm more frequently from mid-April, after the prolonged dry spell. This was a good strategy on this site where water-logging can occur though was successfully avoided by not over-watering.
- F3 has experienced strong daily growth, however, with soil moisture levels again on a downward trend, reactivation of the previous strategy within the next 7-10 days is advised.
- Soil moisture levels depleted more rapidly in April on F6 where the soil is lighter and deeper than F3.
- By the time irrigation commenced, soil moisture was still within RAW but higher rates of irrigation over 3 applications of 8, 12 and 18mm were needed to make any significant difference to raising moisture levels back into the optimal zone.
- Following rainfall from the 21-26th May lifted soil moisture rapidly, and again on the 6th of June, to above Full Capacity.
- Soil moisture has continued to decline since this rainfall and with none predicted in the next seven days, an application of at least 20mm within the 7 days will increase soil moisture to ideal levels again.
- Over the period there has been 3 grazings of the oat crop on F3, with a further 2 planned before termination and sowing to lucerne/chicory again in August/September as a summer forage crop.
- F3 will continue as Italian rye/ white clover until the transition to Kikuyu around November. Interestingly, the Kikuyu has persisted beneath the winter pasture over the period, Adam puts this down to the fact there has been no frosts and hopes it will see the Kikuyu bounce back quickly in late Spring because of this persistence.

Forecast tips

- The rainfall forecast for the next three months is a 75% chance of between 50-100mm.
- At Kywong Flat, reduced rainfall will assist to manage the heavier soils that are prone to saturating on F3.
- With irrigation water available, both farms should monitor soil moisture levels closely and use irrigation to keep soil moisture within the Readily Available Water (RAW) zone- and it will certainly be needed.
- Learning from this period, it will be important to commence irrigation earlier as soil moisture trends downwards. This means irrigation will be needed in the coming 7-10 days.
- The SWAN Systems 7 day forecast Rainfall & ETo daily email notification provides timely and as accurate as available information straight to your smartphone. This information allows a simple water balance to be undertaken. Register: <https://weatherwise.swansystems.com.au>



Adam Forbes near paddock F3- Italian Rye/ White clover which was well managed by applying smaller irrigations of 8mm more frequently over the period to the heavier soil.

Prepared by Marguerite White (ICD Project Services)

Hunter Smarter Farming: Irrigating for Profit Project Manager

Email: mwhite@icdprojectservices.com.au

Phone: 0447 500 415