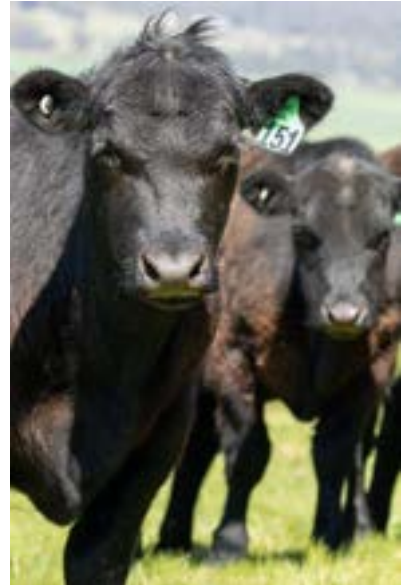


TFS Seasonal Update

2 December 2021

Matt Lieschke | Senior Agricultural Advisor
Local Land Services | Goulburn



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Today's session

Recent updates

- Regional map – alert function
- Pasture forecast – where is the weather data being pulled from?

New developments

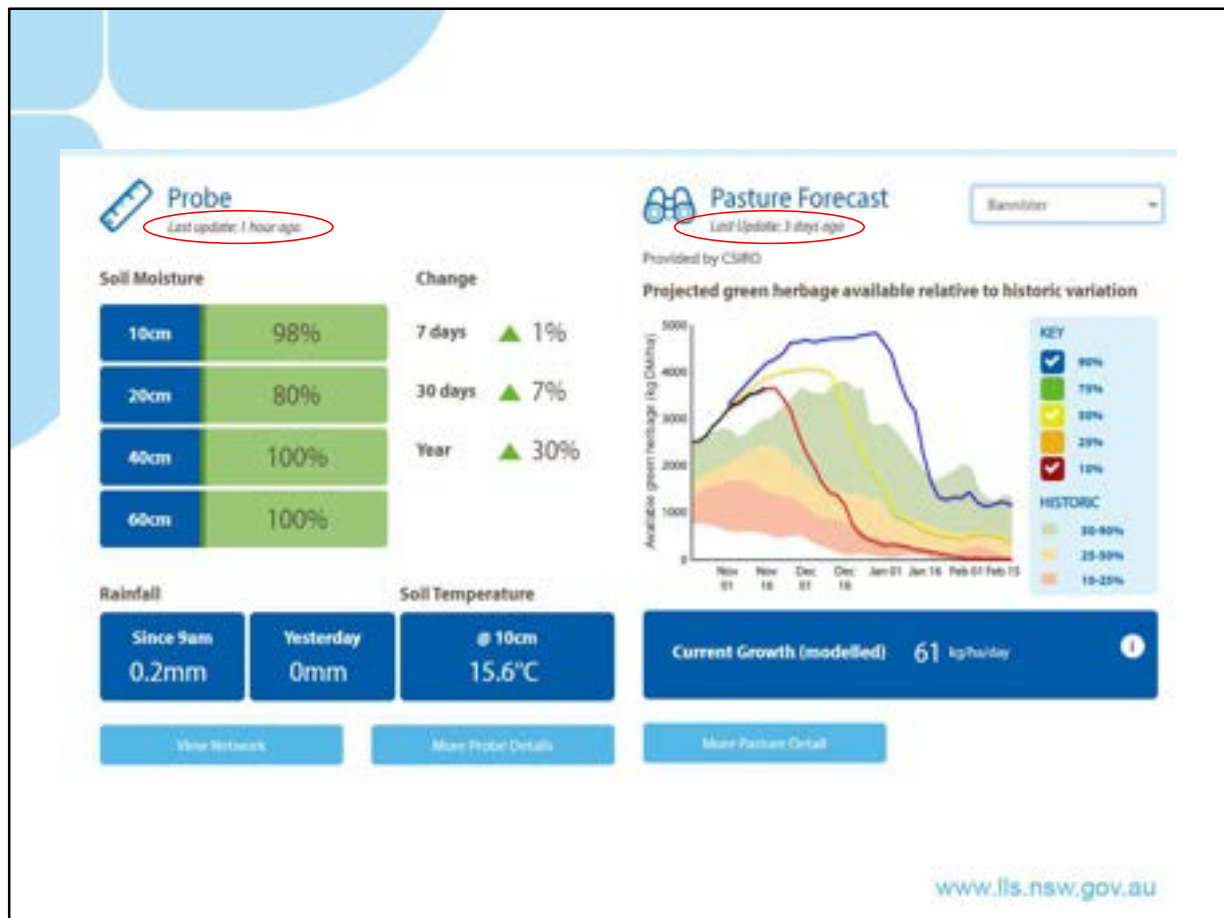
- 5 new sites
- Drought lot function

Seasonal update/ looking ahead

- what is farming forecaster indicating?
- issues and challenges this summer...



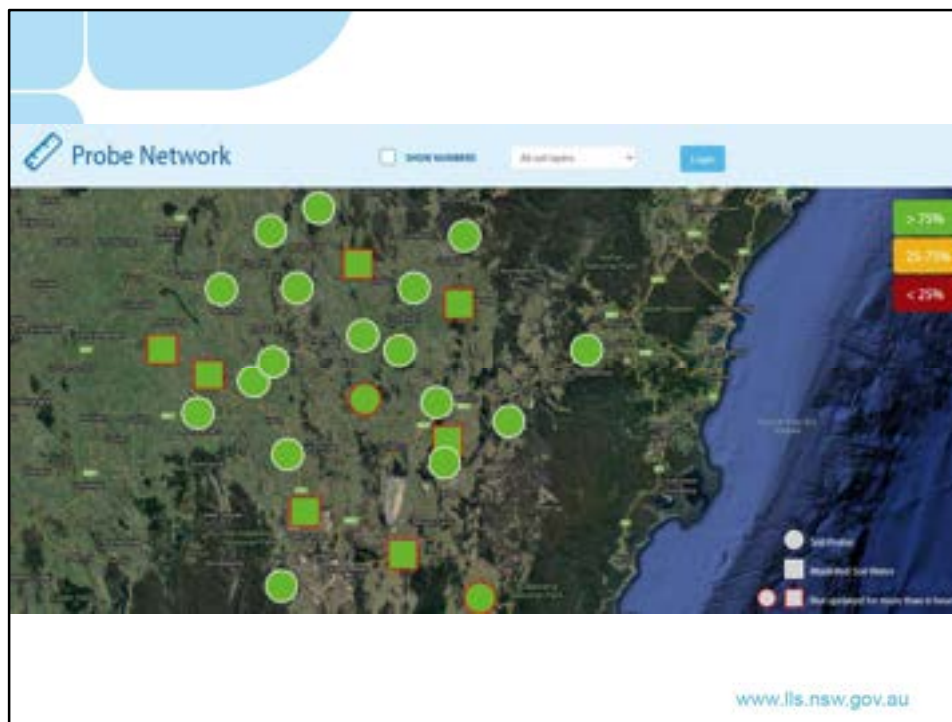
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All the data in the top left corner is from the moisture probe in the paddock. This info (soil moisture, soil temp and rainfall) is recorded every hour and sent via the 4G network to Farming Forecaster – look at the date and time stamp to check when the probe info was last updated.

The pasture forecast (top right hand corner of the homepage) is produced at the start of each month for the period ahead (generally the update occurs on the 3rd or 4th of each month). The black tracking worm is updated every 3 days - hence why it says '3 days ago' under the 'Pasture Forecast' heading.

This is important to note when looking at the next slide (regional map).



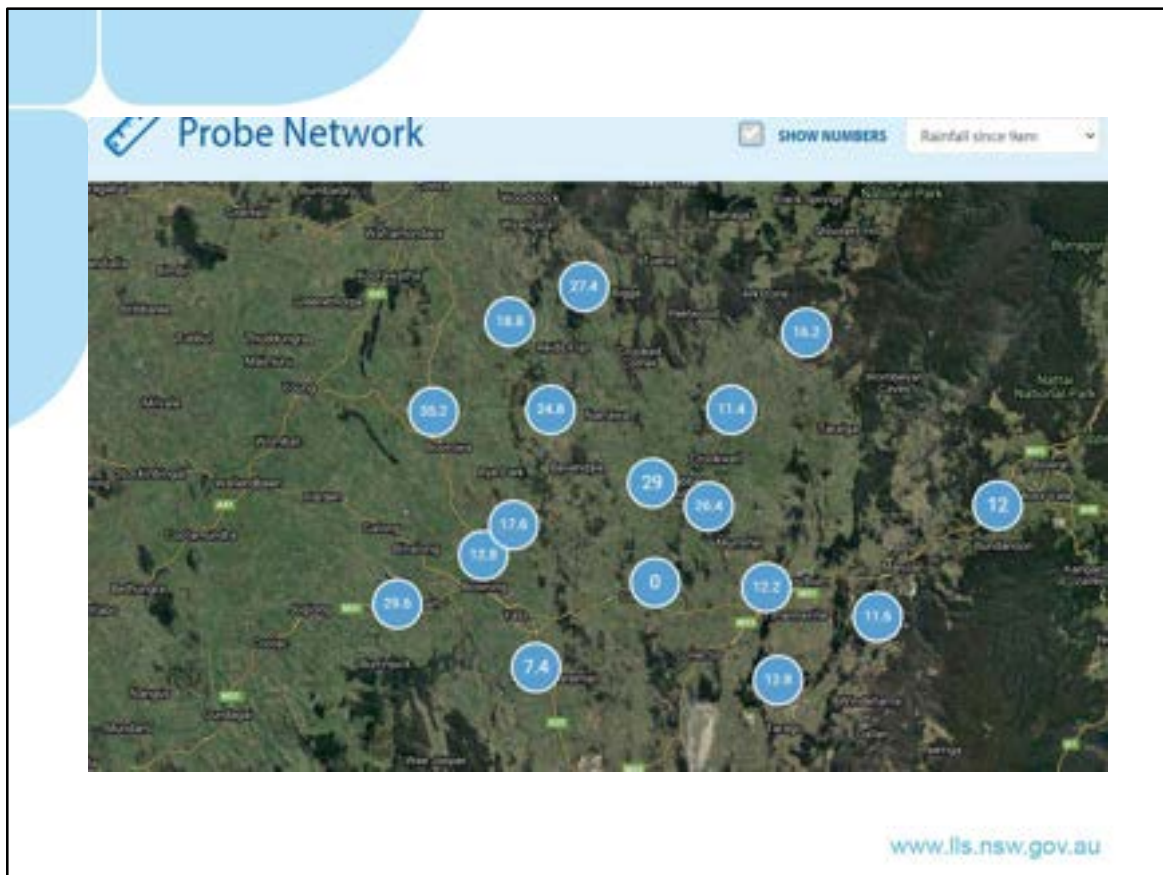
The regional map is always worth looking at as it gives you a much better picture of what's going on than looking at one probe alone.

The round pins are probes and the squares are the virtual sites (i.e. GrassGro info only). The virtual sites also show soil moisture, but this is a modelled PAW reading from the GrassGro farm system, not a probe measurement.

Remember, the probes are collecting data in the paddock every hour and this is then fed onto the website. If you hover your mouse over a site it will show the data was last updated.

A red circle appears if a site hasn't been updated for more than 6 hrs. This is important to note. When this screen shot was taken (18 Nov) there were 2 sites that were highlighted red.

The Bookham and M'bateman probes were down for approx. 3 months earlier in the year. At times these sites looked odd in terms of soil moisture, but that was because the readings were old. So it's important to check currency of info.



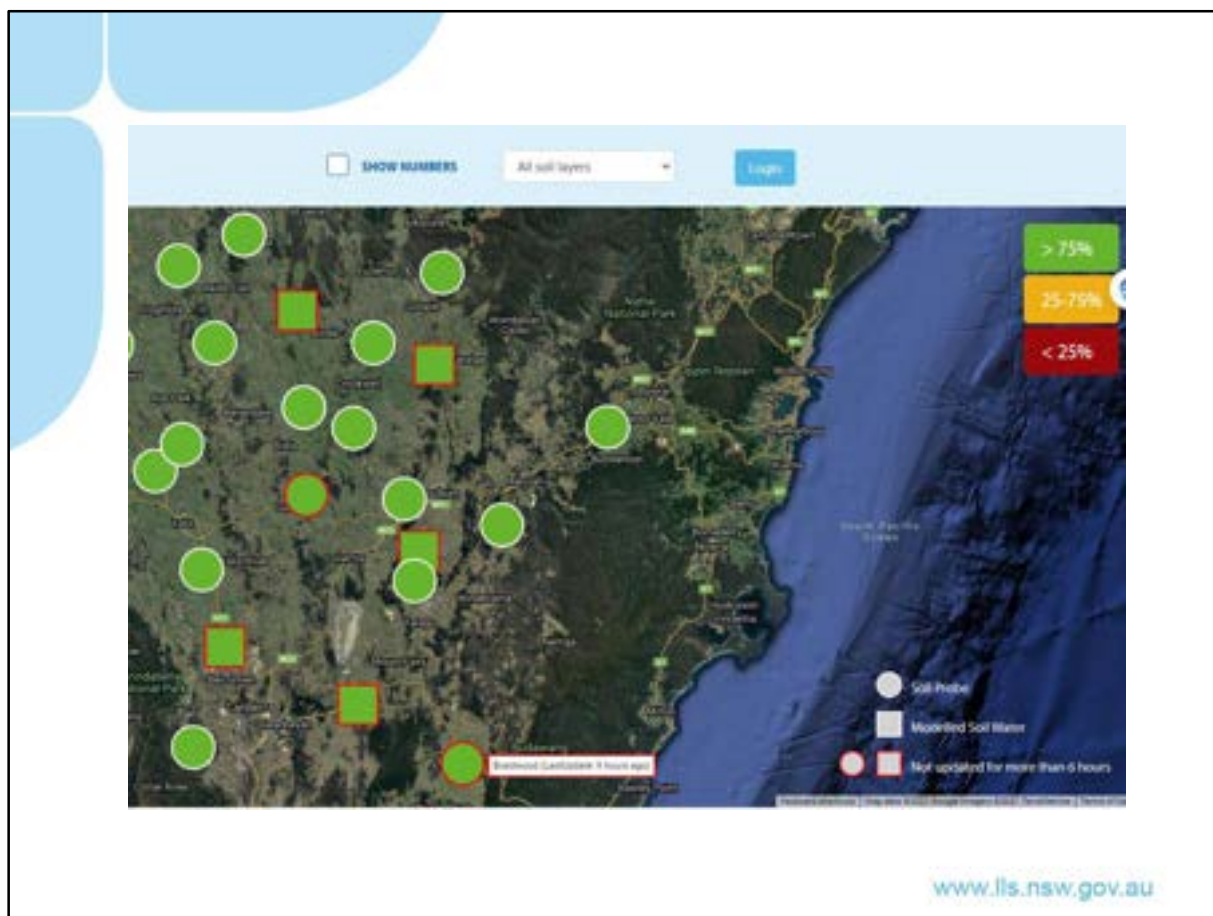
This is an old screen shot before the current warning system had been implemented. Here we are looking at rainfall since 9am.

What looks odd here? The Gunning site.

There are three likely scenarios of why Gunning is showing '0'

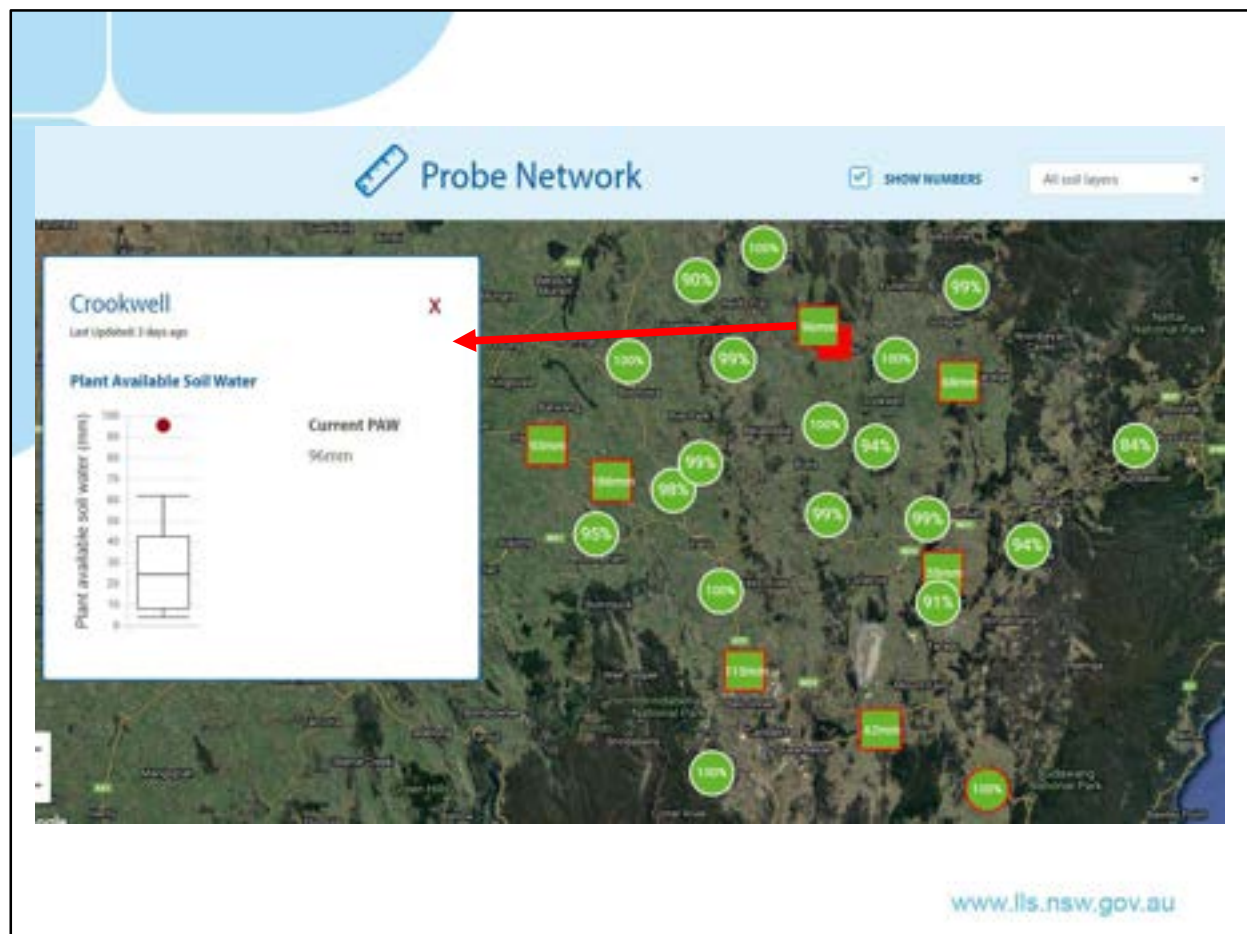
- i) Charles has been very unlucky and missed the rain
- ii) A blocked rain gauge
- iii) A data connection issue

The problem turned out to be data connection – the site hadn't been updated for 30 hours, so the rainfall data hadn't come through yet. An error like this would now be obvious as the site would have a red circle around it. So the red circle is a quick way to see if sites are up-to-date (within the last 6 hrs).



The red highlight will always be shown for the virtual sites as they are only updated every 3 days.

We were going to remove the red alert from the virtual sites, but decided to keep it to remind users that the soil moisture and rainfall info isn't real time – it's only updated every 3 days.



Click on a virtual site to see the rainfall and soil moisture info. Plant Available Water is presented as mm and the box plot shows where current soil moisture sits (red dot) in relation to the last 30 years.

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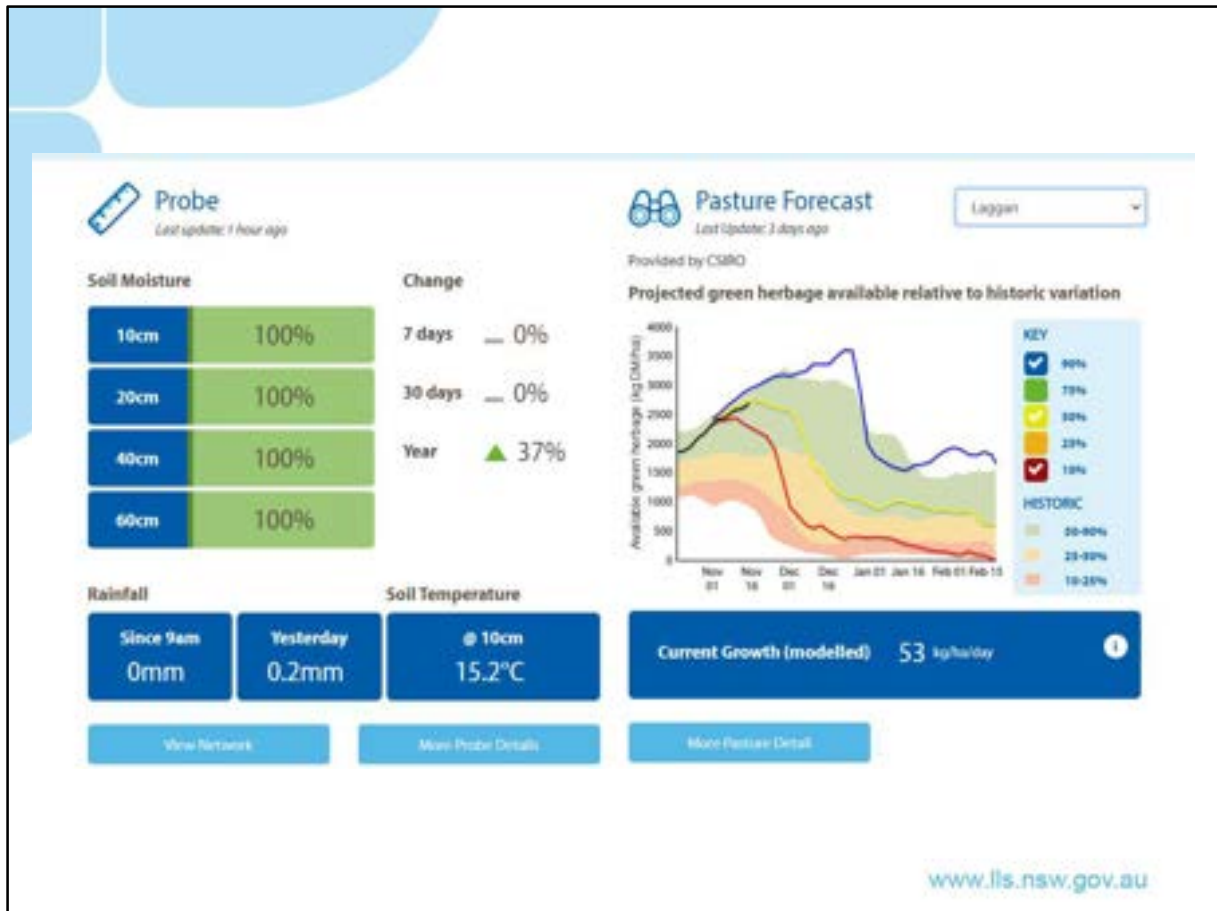
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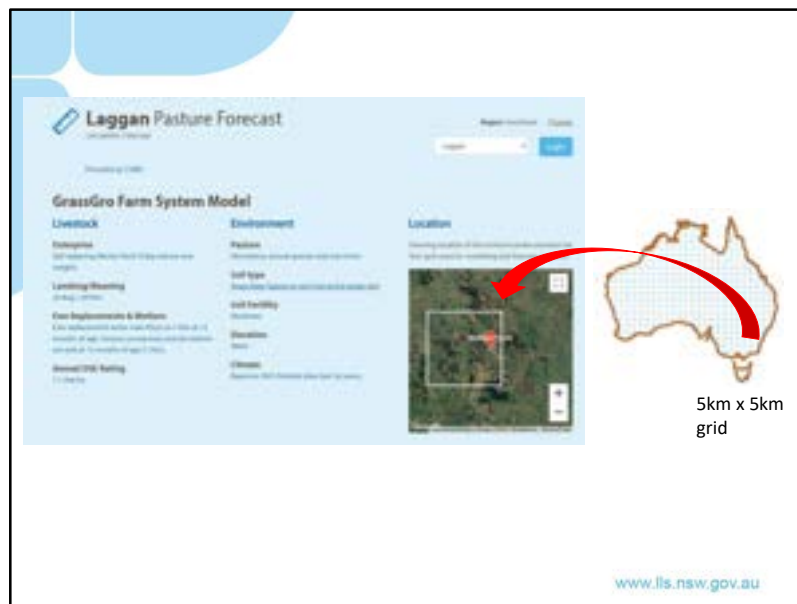


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The pasture forecast is based on a modelled farm system that is typical for the local area and is driven by long term historical climate data for that location.

Click on “More Pasture Detail” to pull up extra info.



The top of the “More Pasture Detail” page contains a summary of the parameters that have been used when building the GrassGro model for each site. That information has been there for around 12 months. The new bit is the map with a red pin and the white box. The red pin is where the probe is located and the white box shows where the gridded data is being pulled from to produce the pasture outlook.

What is gridded data?

In an ideal world we would have a BOM weather station sitting right next to the moisture probe with 30+ years of climate data. This weather data would feed into GrassGro to produce a pasture forecast for that location. Unfortunately that’s not the case and often the rainfall and climate at the closest BOM station is quite different to where a probe is.

To get around this we use gridded data. Gridded data are synthetic rainfall and climate datasets which are based on observational data from BOM. These datasets contain daily rainfall, maximum and minimum temperatures, evaporation and so on – all the climate records that the GrassGro model needs to run. The grid resolution is approx. 5km x 5km.

We use the GPS coordinates of where the probe is located to grab the relevant gridded data. So the white box shows where the gridded data is being pulled from to run the GrassGro model and produce the pasture outlook.

So in other words, the pasture forecast could be viewed as a pasture forecast for that 5km x 5km grid based on the soil type, pasture type and livestock enterprise shown on the website.

The benefit of having this information on the website is you can see where the grid sits geographically and compare this with your weather. Use the rainfall graph on the website to check how your rainfall compares to the 30 year average. Are you wetter or drier than the gridded data? You need to take this into account when looking at the pasture forecast.

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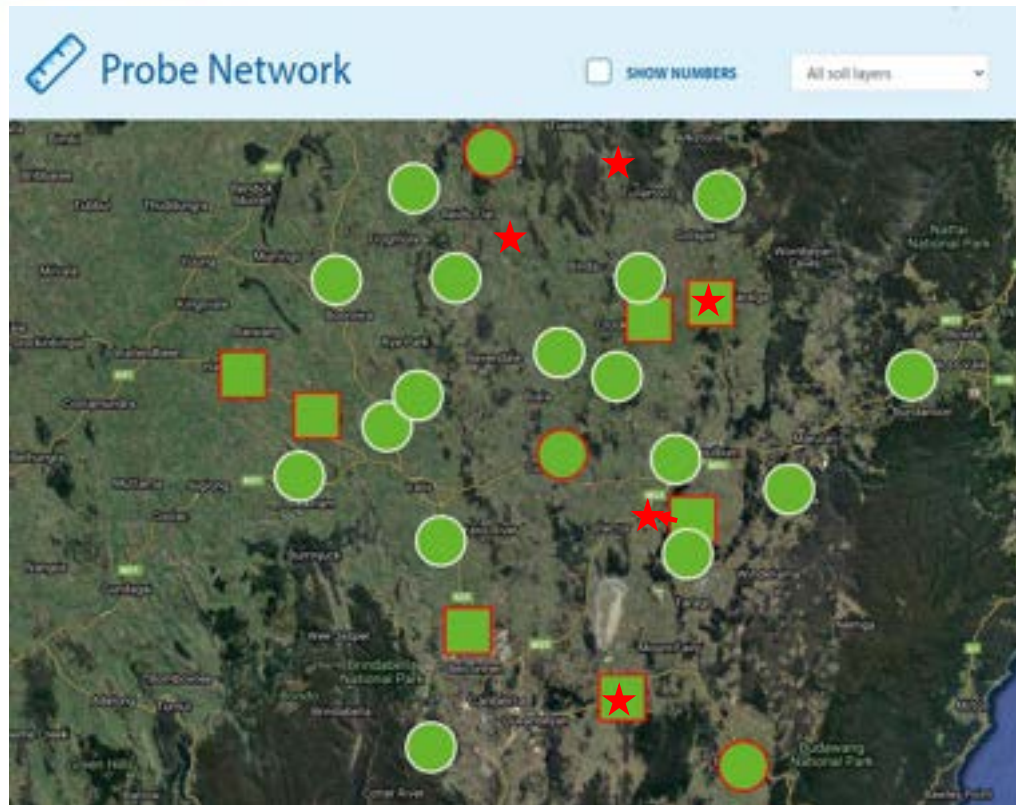
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New sites



Five new moisture probes have just been installed.

- 1) Crooked Corner
- 2) Peelweed
- 3) Taralga
- 4) Woollogorang
- 5) Bungendore

These sites will take some time to settle in and collect sufficient data to enable calibration.

Drought lot feature

- CSIRO are currently working on a new destocking function for GrassGro (NSW DPI funded)
- Stock will go into confinement feeding once GC/ Herbage Mass thresholds are met
- New function will mimic closer to what happens on farm during drought
- Use Stockplan to develop your own drought strategy



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At present there is no destocking capability that sits within GrassGro. So when we hit drought, the GrassGro farm system continues to operate at the normal stocking rate (DSE rating stated on the website) and stock are supplementary fed in paddocks to maintain condition (e.g. breeding females reach Condition Score 2, stock are fed a maintenance ration).

With the new development, GrassGro will put stock into a droughtlot when ground cover or herbage mass thresholds are met and come out of the droughtlot when green feed reaches a certain level (e.g. 600kg DM/ha green). In this way, ground cover and supp feeding costs (\$/hd) will closer mimic to what happens on farm during drought.

If FF is indicating a significant dry period is approaching, farmers can then use Stockplan (NSW DPI tool) to analyse different destocking strategies. FF is the indicator tool, Stockplan is the tool where you can really customise a drought plan to your own situation.

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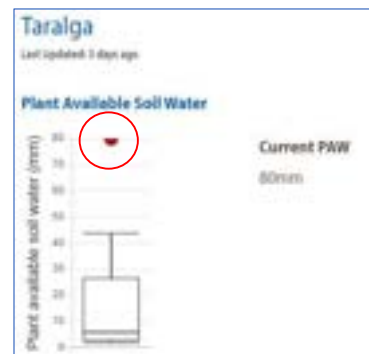
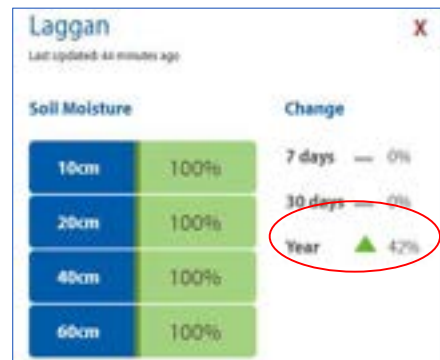
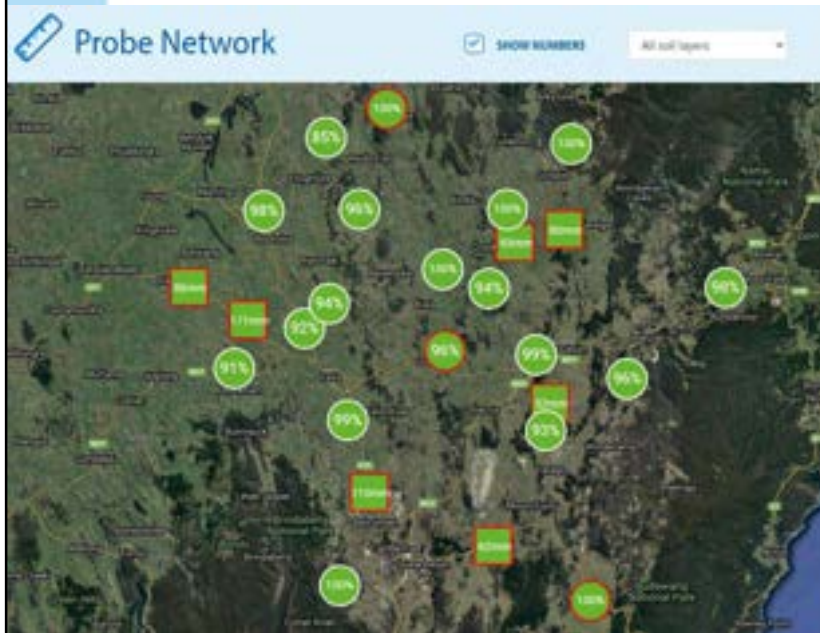
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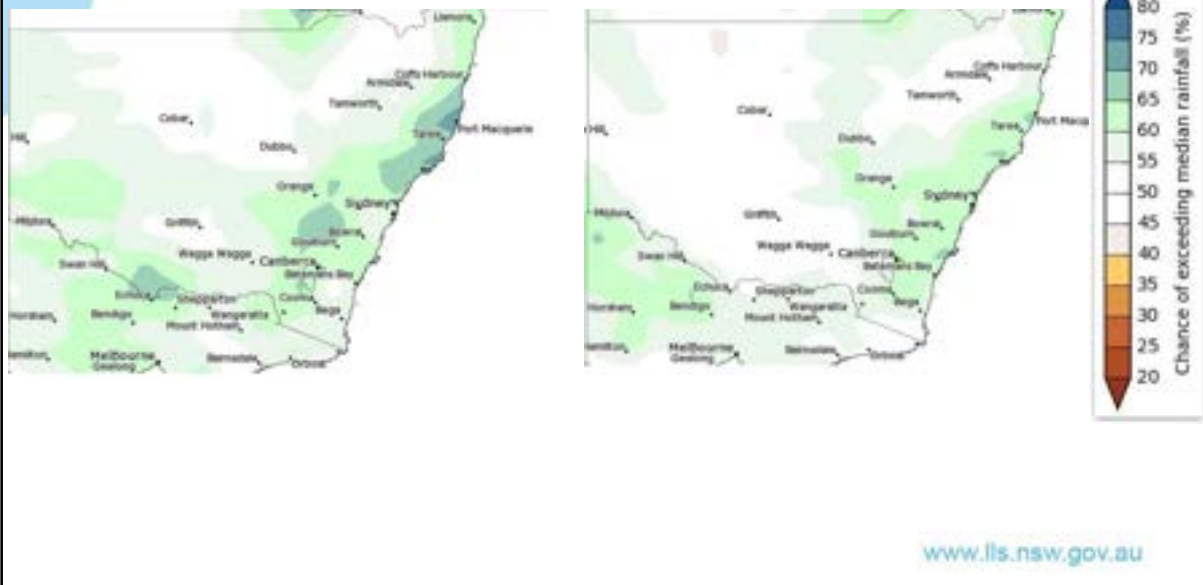
A lot wetter than this time last year



A wetter than average summer predicted

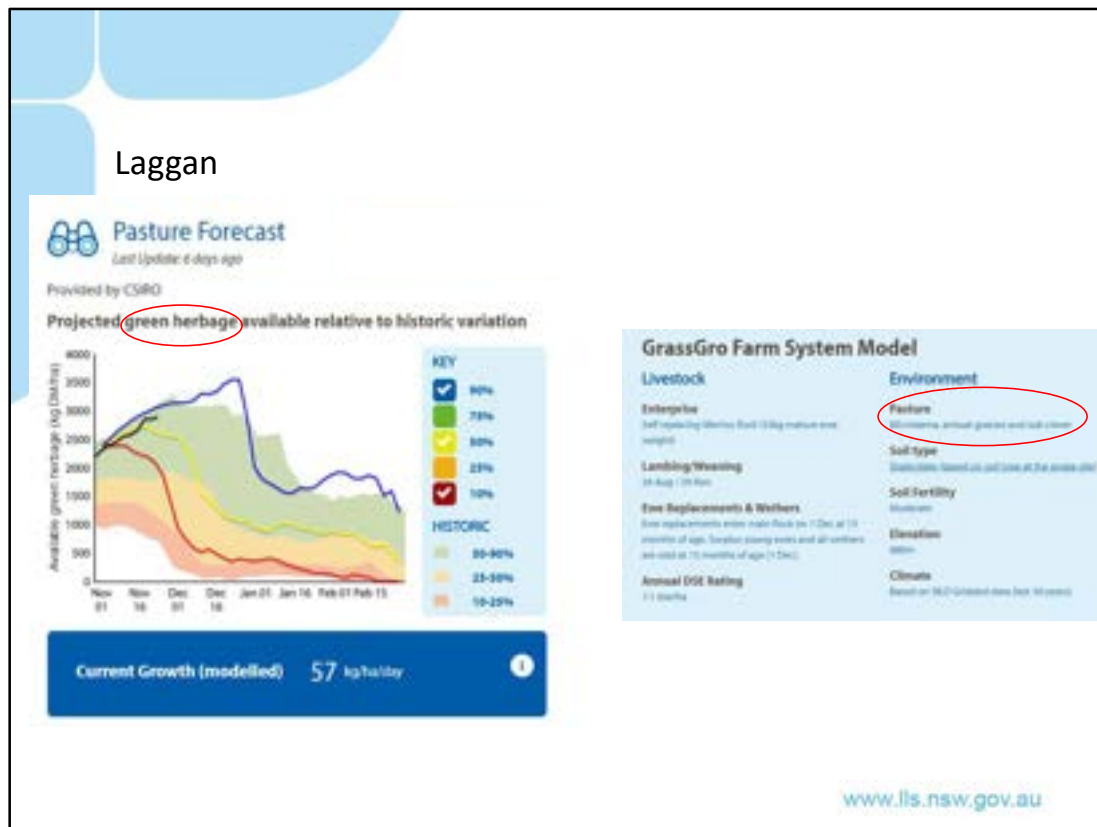
December

January



The odds are also pointing towards a wetter than average summer period. La Niña has become established in the tropical Pacific and is likely to be maintained until late summer.

In summary, we have a full profile of soil moisture heading into summer and a 60-65% chance of above average summer rainfall.



What does Farming Forecaster say?

Regardless of what site you select, Farming Forecaster shows that current green herbage is up around the 90th percentile or better at end of spring.

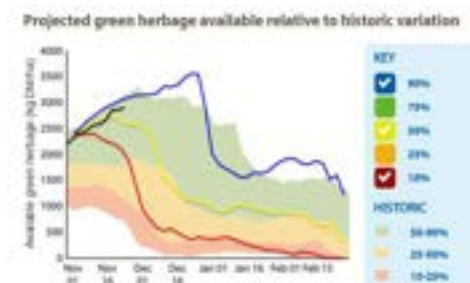
However, it is also indicating a drop off in green herbage as we progress through summer.

It's important to remember this graph is **only showing the green component** and not the total pool of feed. Over the next month there will be a lot of material that shifts from the green pool to the dead pool.

The other thing to remember is that the pasture outlook doesn't take the summer active species into account. The majority of summer growth will be from tropical (C4) species – e.g. paspalum, kangaroo grass, red grass and all the summer 'weeds'. These species are not being picked up by Farming Forecaster and can provide quick and large volumes of feed.

What does this mean?

- GrassGro Farm Systems have been set up to model pasture growth during the growing season (autumn to spring) using temperate pasture species
- Summer and early autumn is a weak point of the tool as the majority of summer growth will be from tropical (C4) species
- Is this a problem?
- No - the challenge this summer will be managing pasture quality and the large volume of carry-over feed.



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Key message is that the pastures in GrassGro are based on **temperate pasture species which largely grow from Autumn break through to spring.**

Microlaena has been added to most sites to give a bit of summer growth in the model when conditions allow, but summer and early autumn is the weak point of the pasture forecast.

Is this a problem?

Not really, the issue or major challenge over the next 3-4 months will be managing pasture quality and the large volume of carry-over feed.

Some issues & challenges this summer...

Pasture quantity vs quality

- Carry-over feed will be of lower quality than normal
- Pasture quality will have a major impact on stock performance (esp. young stock)

Animal health

- worms and flies



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There's no doubt that this summer is going to be a difficult summer to manage for a range of reasons.

There's the pasture quantity challenge – there's always a trade-off between quantity and quality. The carry over feed will be of lower quality than normal and we know that pasture quality has a big impact on livestock performance.

On the other hand, with the amount of soil moisture in the system and outlook from BOM, there's a good chance we'll have some green pick during summer – how much green feed will just depend on the amount and frequency of rain events and how hot it gets.

The downside with any summer rain is that it will add to the animal health issues that we are already dealing with – worms and flies.

What paddocks do I target?

- Paddocks that have been grazed through spring
- Paddocks that you want to bounce away next autumn
- Legumes?
- Fire risk?



High priority paddocks - crash graze ASAP while pasture quality is similar across the paddock

It's impossible to keep all paddocks under control, so it's a matter prioritizing and focusing on a small area of the property. What paddocks might you target?

Paddocks that have been grazed this spring – these will be a bit easier to get on top of. Not ideal from a worm management perspective, but that's the see-saw of agriculture. Often there's compromises we need to make. In this case it's worm management vs pasture quality.

Selecting paddocks that you want to set up for the future and really bounce away next autumn. It's also important to remember that any grazing you do now to open paddocks up will be more responsive to summer rainfall.

Legumes – you might give priority to paddocks that you are concerned about from a legume perspective. Legume germination and establishment next autumn will be hindered in paddocks that are carrying a large over-burden of dead material.

Fire risk paddocks.

What paddocks do I target?

Burning could be a useful tool next autumn - start working on firebreaks now if this is something you might use



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For those paddocks that you don't get on top of this summer, a cool burn next autumn could be a useful tool to remove the dead carry-over feed. If this is a strategy that you might use, start working on firebreaks now (e.g. slashing)

Cattle – looking ahead

- Pasture quality will be key to performance
- Monitor dug pats → aim for 60% + digestibility
- If digestibility < 60%, use protein-based supplements to lift performance



Lactating cows

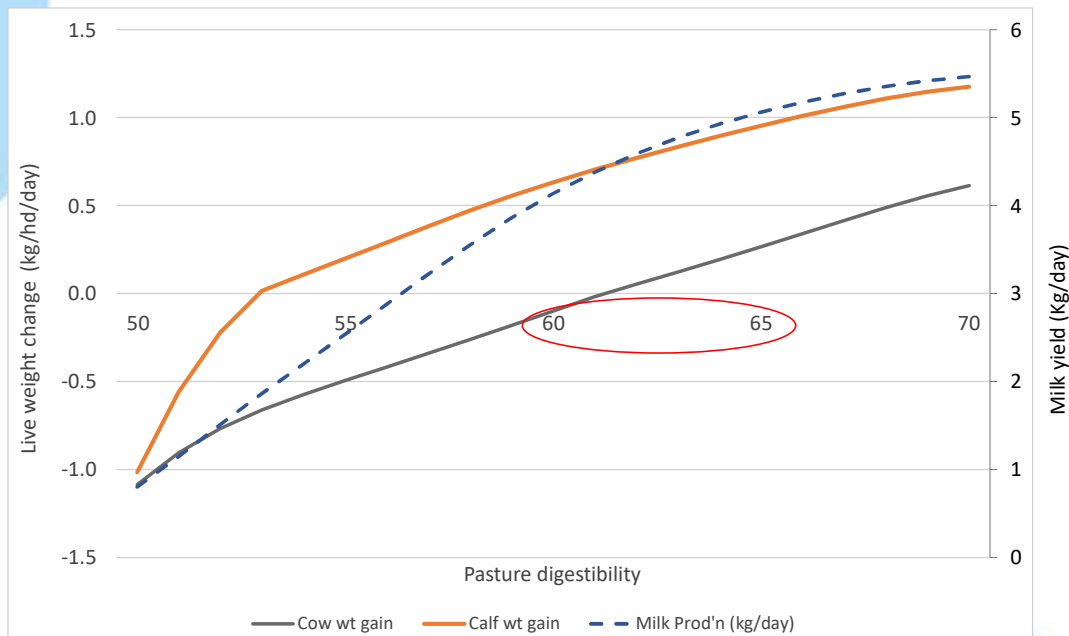
- Licker drums (urea, molasses + water)
- Molasses based commercial mixes

Weaners, young cattle

- Dried Distillers Grain
- Cereal grain + lupins
- Protein meals, cottonseed etc.



Digestibility and cow/calf performance



This graph was produced using Grazfeed and shows the impact of pasture digestibility on cow/calf performance.

Assumptions: cows and calves grazing 3t/ha of temperate pasture ranging in digestibility from 50 to 70%. Calves are 4 months of age (i.e. early August calving).

Note the impact of pasture quality on lactation and calf performance, especially when digestibility falls below 60%.

When pastures go from green to brown at the end of spring, this is the point when digestibility sits in the 60-65% range.

The aim is have cows and calves grazing pasture >60% to prevent calf growth rate from slipping.

Digestibility and dug pats

Faeces shape and consistency is a good indicator of digestibility and rumen function

				
Green Shiny No fibrous matter Extreme slipping	No coning Cake-mix consistency Small even length Fibrous matter only Slip.	2 or 3 cones but broad and flat Irregular length Fibrous matter shorter Breaks in clumps	Increased cone development but not pronounced 1-2 cm fibrous matter Cones soft to break up	Highly cones Cones 2-3 cm long Fibrous matter
72-75%	68-70%	60-65%	55-60%	50% & less

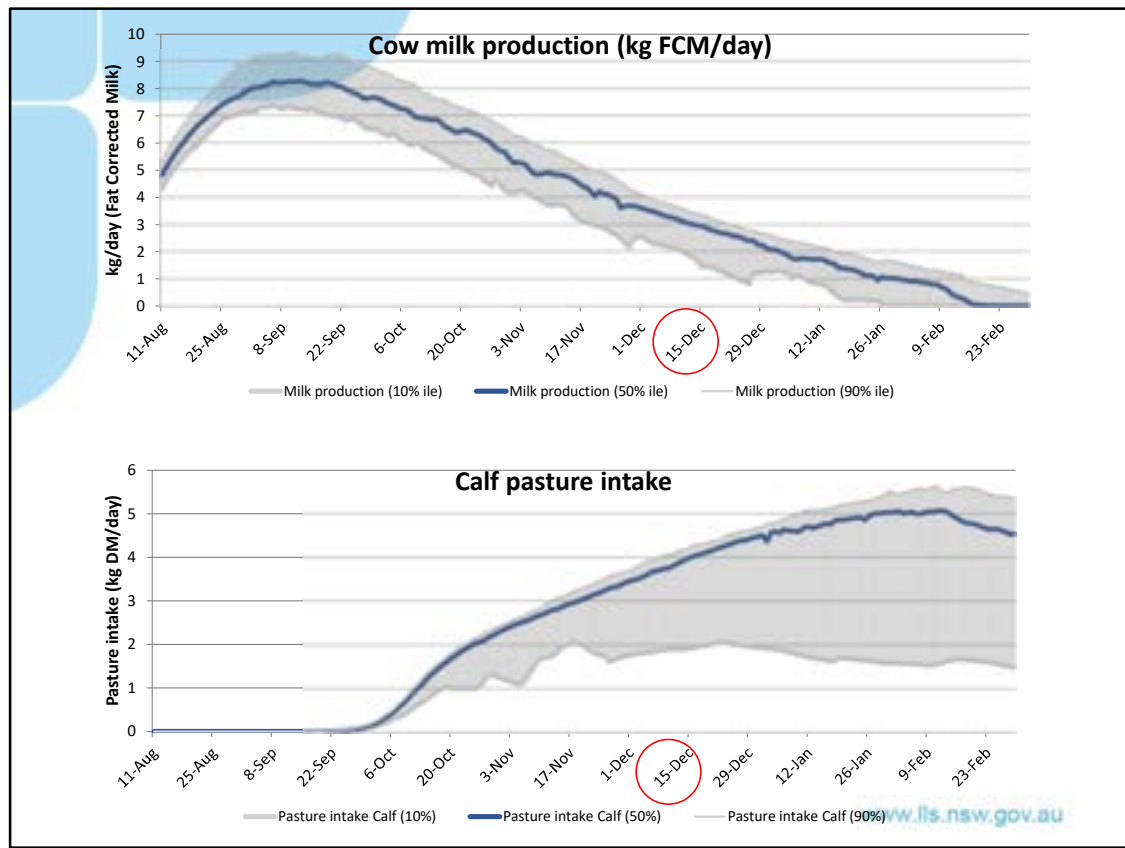
The best way to monitor digestibility is to have a close look at what's coming out the back end. This is giving you very quick feedback on cow and calf performance.

Monitor the fresh dung pats. 2 or 3 cones is ok (60-65% digestibility). If they start to increase beyond 2 or 3 cones high and look like the 55-60% example, this is the trigger to start offering protein supplements.

Setting up a creep gate or hotwire to exclude the cows is a good way to direct the high quality supplement straight into the calves.

There is some good info on the NSW DPI regarding creep feeding:

<https://www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/feed/creep-feeding-beef-calves>



These graphs highlight what happens to milk production and pasture intake of the calf during lactation.

By around 2.5 months of age approx. 50% of the calf's daily energy intake is coming from pasture. This increases to around 75% by 4 months of age.

Two key messages here:

- i) In the next couple of months, when you are monitoring dung pats for digestibility, you are actually assessing pasture quality for the calf as the calf is now primarily relying on the pasture to meet its energy and protein requirements.
- ii) If green feed over summer becomes a limiting resource, consider early weaning and allocating the high quality green feed to the calf. The benefit here is you aren't wasting the high quality feed on the cow. Also, once weaned, cows can then be allocated to paddocks of poorer quality to do a 'clean up' job, giving you greater management flexibility.

Sheep – looking ahead

- Crash graze priority paddocks with ewes immediately after weaning
- Allocate weaners to best feed available
- Supplement weaners if green pick is lacking
→ min 11 ME and 13% protein
- Weigh lambs every 4-6 weeks to check they are going forwards
- Keep a close eye on worms
- Monitor ewe condition – they aren't immune to poor quality pasture



Summary

- ID high priority paddocks and crash graze ASAP (then move to lower priority paddocks)
- Have a strong focus on pasture quality, especially for young and lactating stock
- Keep a close eye on worms
- Monitor ewe condition

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Planning ahead...

Paddock crashed grazed in
Dec '20

Paddock was NOT crashed
grazed in Dec '20

28 Oct 2020

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Planning ahead...

Paddock (7ha) was crashed grazed in Feb 2021 with 500 wethers to try and remove dead material

3 Feb 2021

In early Feb the paddock on the RHS was crash grazed to try and remove/bust up the old dead material. Unfortunately this wasn't effective as there was some green pick under the dead material. The wethers were seeking out the green pick and weren't interested in the low quality dead material.

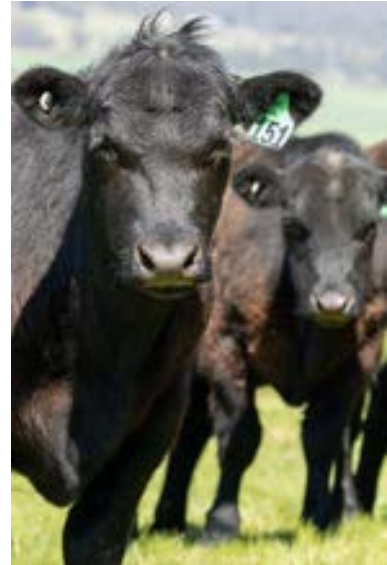


5 months after the crash graze and the old dead feed is still abundant and is having an impact on pasture growth rate through shading and also having an impact on pasture quality.

Key learnings from this experience are:

- i) Crash grazing/cleaning up paddocks is much more effective in late spring than summer. Once the pasture contains a mix of old dead material and new green growth, it's very hard to force sheep onto the old, poor quality feed.
- ii) Any crash grazing done in late spring will not only set the paddock up for the following autumn break, but it's also in an ideal state to take advantage of any summer rain (short and long term benefits).
- iii) In our planning and setting pasture targets we need to be looking well ahead into the future. The old carry-over feed takes a LONG time to break down and has a negative impact on pasture growth rates, digestibility and legume performance.

Thank you



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