Dairy UP Workshop

P1a - Application of remote sensing to improve pasture management

Friday 21st February 2025

What was the workshop for?

The main objective of the workshop was to share the results and key messages of Project P1a (Unlocking the potential of Kikuyu-based pasture – remote sensing to improve pasture management) with a small group of consultants and industry stakeholders to discuss:

- What do attendees think and how do they see it working?
- How can these findings help your farmers or your consultancy be more effective?
- What other applications/uses do you see emerging from this work?

What was presented?

A detailed presentation including methodology and key results of the research (conducted on 15 farms within NSW over a 2-year period) was presented, including some examples of the type of information gathered and what it can tell us about pasture growth and utilisation. This was followed by a time for questions and then a discussion around the on-farm implications of the research.

A recording is available here: https://youtu.be/Wbni5s2hyHU

Summary of key results

- P1a proved that remote sensing works, but it requires frequent (fortnightly) data 'training' (i.e. entering additional biomass data from a plate meter)
- The project methodology developed by Dairy UP enabled:
  a) Estimation of total pasture grown (i.e. differences in biomass between readings)
  b) Automatic identification of grazing events on each paddock of a farm
  c) Determination of the pre-grazing and post-grazing pasture biomass present, which in turn shows the pasture utilised/grazed by the cows at a grazing event (i.e. measured pasture biomass just before as well as immediately after grazing and used the difference to calculate pasture consumed by the cows). This also allows quantification of the total pasture consumed per paddock/ha/farm
  d) Estimation of pasture use efficiency, being how much pasture was used as a proportion of pasture grown (e.g. 10 ton DM/ha grown, with 6 ton DM/ha utilised gives a pasture utilisation of 60% - or (6/10)*100)
  e) Estimation of pasture losses relative to pre- and post-grazing targets
  f) More accurate ranking of paddocks/areas (e.g. irrigation vs dryland) of the farm
  g) Identification of paddocks/areas with relatively lower pasture utilisation, which in turn enables farmers and their consultants to explore and find the cause/s.

  Many of these features have been or are being incorporated in Pasture.io
- Overall, the key outcome of all the above is that farmers and consultants using these remote sensing pasture management tools would be empowered to assess and quantify losses (and thus potential

gains) in pasture utilisation. This enables, on individual basis, the estimated impact on profitability of the business.

Summary of discussion points

How would you see this working?

- The key findings around pasture management (pre and post grazing residuals) are highly valuable, however there was a general sentiment that the need to regularly calibrate the satellites to maintain accuracy is a real barrier to the tool itself
- The data captured, and information created, allows for evidence-based decision-making and can help drive pasture utilisation as much as possible
- Overall feedback was positive in relation to the key learnings and extension opportunities related to pasture management (and feed quality)

Can this help your farmers or your consultancy be more effective? If so, why?

- Strong positive response around how a tool such as this enables proactive consultancy (i.e. forward planning and management based on predicted pasture biomass)
    - This includes pasture allocation, but also factors that drive pasture growth and farm performance (e.g. fertilisation, water use, supplementation)
- As above, a tool such as Pasture.io supports informed and objective decision-making
- It can support consultant-farmer discussions, particularly if the consultant can't be physically on-farm at the time of the consult
- Results (even without the tool) can assist in the identification of grazing management deficiencies

What do you see as other application or benefits of this research?

- It would be useful if this tool could be used in conjunction with other technologies (e.g. virtual fencing, feed rations, financial modelling, fertiliser and water use) – would be a significant support to assist with decision-making on feed rations/allocations and farm management activities/planning
- Data can be useful in other models (e.g. carbon emissions estimations)
- Can assist in long term planning on an individual farm (e.g. evaluate pasture or feeding regimes, or suitable alternatives)
- Act as a "diagnostic" tool of sorts by helping to objectively understand what is contributing to current utilisation/performance (e.g. is it management, infrastructure, milk production driven)
- Challenge still remains as to how to manage excess pasture

Additional questions and comments

- Would like to see more about how grazing targets correlate with pasture quality
    - *Ties in with Project 1e*
    - *Opportunity to combine results from multiple projects*
- Given the need for calibration, this could be a barrier to adoption of the technology in its current form
    - *The project team are looking for solutions to make the technology more user-friendly*

- *When a model encounters situations it hasn't seen before it can't make accurate predictions – more training data will likely reduce the need for frequent calibration*

- Do we know the $ value differences in different utilisations?
  - *Can be calculated – additional information to be added in by project team*
- What can farmers do to improve utilisation in a cost and management effective way?
  - *Discussed multiple options/suggestions, including:*
    - *Cut and store (or sell?) surplus (reduce paddock rotation, and take paddocks out of rotation to harvest)*
    - *View it as a crop not a weed*
    - *Raise awareness of the quality of kikuyu when managed and grazed appropriately*
    - *Increase cow numbers (e.g. bring young stock back onto the farm to graze the excess pasture, or bring in other animals?)*
- Feel the overwhelming message is to avoid having longer rotations (looking at impacts of feed quality and utilisation)
  - *Ties in with the above point of what can be done to manage additional growth when cows can't consume at the same rate as pasture grows*
- Sometimes farmers don't want to be constantly pedal to the metal and pushing all the time, so when there is an excess it can give some breathing space
- Challenging to manage pasture use efficiency, as it's a balance between feast and famine as pasture growth constantly changes

Where to from here?

We envisage different potential actions/activities across the RD&E spectrum:

- Research: a need to investigate how to automate the training of the satellites so neither farmers nor service providers need to take measurements on the ground, and/or look into alternative technologies that can address issues with regular readings (e.g. on the ground technologies eliminate issues with cloud cover).
- Development: based on the positive response at this first workshop, should we be working on increasing/expanding awareness/impact across more consultants and service providers? How is this to be done (e.g. more workshops, videos, factsheets and short reports, social media, comms channels etc.)?
- Extension: Opportunity to use project outputs and messages to increase awareness of impact of management on pasture utilisation. Also to co-develop extension messages and activities together with other organisations e.g. DA, RDP's, LLS, DNSW and DPIRD.