Project update

P1a: Satellite monitoring on NSW dairy farms

Remote pasture management

This project is exploring new management options using advanced remote sensing technologies and monitoring systems for Kikuyu-based dairy systems in NSW.

The aim is to develop the tools for dairy farmers to make in-time grazing management decisions based on their farm's actual pasture cover and growth.

Dairy UP technical officers are working with dairy farmers in the north, mid and south coast NSW regions to adapt the *Pasture.io* monitoring system for Kikuyu based pastures for representative dairy conditions in NSW.

Pasture.io is a decision support tool that uses high resolution satellite images and local information (e.g. weather soil and farm management data) to help farmers monitor their pastures and make grazing management decisions. Utilising machine learning technologies, the software predicts pasture cover biomass and forecasts its production. It has been developed and validated for perennial ryegrass pastures and is used commercially in Australia and overseas.

Dairy UP's work aims to expand its application to Kikuyu pastures for NSW dairy farms.

Dairy UP monitor farms

The Dairy UP team is working with a network of 14 dairy farms across a variety of dairying regions to collect physical data including pasture cover, composition, quality and management.

For the first year, this involved a technical officer visiting each farm weekly to measure pasture cover with a rising plate meter and collect pasture samples for quality analysis. The results were compared with the predictions made by *Pasture.io*.

Unlocking the potential of Kikuyu

Dairy UP's P1 project aims to unlock the potential of Kikuyu pastures used by NSW dairy farmers. P1 is a suite of five projects that collectively explore new management options to grow and utilise more Kikuyu over summer and increase the productivity of Kikuyu-based pastures.

P1a: Remote pasture management using advanced sensing technologies

P1b: Antinutritional Factors (toxicity)

P1c: Genetic diversity of Kikuyu

P1d: Environmental Impact of Kikuyu-based systems

P1e: Real time prediction and manipulation of Kikuyu's nutritive value for animals.

This document provides an update on P1a Remote Pasture Management.

Year 1 progress update (June 2023)

Analysis of the first year's data has shown that satellite imagery alone is not accurate enough to make management decisions for Kikuyu pastures with confidence. Despite this, the decision support tool was seen by farmers as a smart platform to follow farm management and to coordinate activities with the staff.

Results so far indicate that satellite-imagery needs to be calibrated regularly (fortnightly) to provide accurate estimates of Kikuyu pasture cover and other measures to underpin grazing management decisions. This calibration involves incorporating fortnightly pasture cover measured with a rising plate meter from five representative paddocks on the farm.

As the software has the capacity for machine learning, this interval may be able to be extended in the longer term. However, for now, the Dairy UP team is investigating the effectiveness of fortnightly calibration on the actual grazing management decisions on the monitored farms.

We recognise that fortnightly monitoring of five paddocks with a rising plate meter is unlikely to be incorporated into the regular schedule by most dairy farms. However, if the practice proves effective, Dairy UP will investigate variations on the work flow, such as the fortnightly monitoring being performed by a service provider, or if a single farm can be monitored to calibrate *Pasture.io* for a number of neighbouring farms.

Next steps

From July 2023, Dairy UP technical officers will start visiting monitored farms fortnightly to measure five paddocks using a rising plate meter to calibrate sat*ellite-driven predictions*. For those farmers interested, the visits will be an opportunity to discuss pasture cover and growth, grazing management decisions and potential insights from the use of a management tool like *Pasture.io.*

The pasture data collected by Dairy UP can be used to calibrate satellite imagery from any other similar software.

More info

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