



## **Precision Agriculture Field day Casterton Tuesday, May 23 2023 Wrap-up Article**

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17 farmers and advisers attended a precision soil management for improved pasture productivity field day hosted by Richard Edgar at “West Cuyuac”, Nareen in western Victoria.

Precision Agriculture at Ballarat have established three Producer Demonstration Sites with funding from Meat and Livestock Australia (MLA) with the aim of investigating the economic benefits of variable rate fertiliser applications in high rainfall intensively grazed pasture systems. There are three sites, one at Nareen (north of Casterton) and two in the lower south east of SA.

There are 12 paddocks of about 25 ha each across the three sites (three different properties) in 6 pairs. Each paddock has been sampled in a 2-ha grid to a depth of 10cm to assess variability in pH, P, S and K along with exchangeable cations and trace-elements copper and zinc.

One paddock in each pair has then received a variable rate application of one nutrient (chosen by the farmer + advisor based on soil test results), whilst the other paddock has received a conventional blanket application (control). Management within the pair has been kept as identical as possible.

Animal movements in each paddock has been recorded using AgriWebb and pasture availability measured every 15 days using Cibo Labs Pasture Key service (10m10m pixels).

The Nareen site was zone soil sampled in December 2020 and again in December 2022 and as result was the site for the first field day. The other two sites in south east SA have only been zone soil sampled once, so field days will take place after the next zone soil sampling in December 2023.

### **What has been learnt so far?**

Results from the Nareen site builds on information learnt from an earlier zone soil sampling study undertaken by the Grassland Society in south east SA in January 2018 “*Nutrient mapping on broadacre grazing properties in south east SA, Tim Prance, T Prance Rural Consulting, January 2019*” An abstract is in the 60<sup>th</sup> annual conference proceedings July 2019 Creswick, Victoria p.92

Zone soil sampling has confirmed there are large variations in all soil nutrients, plus pH, across paddocks grazed by livestock even if the soil is apparently even and paddocks relatively flat. For example, at “West Cuyuac” Olsen soil P in one paddock varied from 8 to 30 mg/kg P, available S varied from 3 to 8 mg/kg, available K between 62 and 129 kg/kg and pH<sub>(CaCl2)</sub> between 4.7 and 5.6.

Importantly transect sampling didn’t always pick up these differences. For example, in one paddock if available K had been determined using a east west transect, it would have been 137 mg/kg but only 102 mg/kg using a north south transect.

In this demonstration, the application of either variable rate P fertiliser in one paired paddock, or variable rate K fertiliser in another paired paddock, resulted in less variability in soil P or soil K levels compared to the blanket rate over the whole paddock (control) after zone soil sample results were compared between 2020 and 2022. However, there were no \$ fertiliser savings resulting from a variable rate application compared to a blanket rate, although in other parts of south eastern



Australia, farmers have paid for the cost of zone sampling in one year by reducing fertilizer application rates in zones where less is required.

At the time of the field day where there were no differences in either dry grazing days/ha or kg/ha monthly pasture availability between either of the variable rate and the control paddocks. It is possible differences may still show up in the future.

This demonstration site has shown that a one-off zone soil sampling could be economically beneficial if it is used to determine transect sampling paths for future soil fertility monitoring. More learnings are expected as the other two demonstration sites reach completion next year.

Richard thought the recent CiboLabs Pasture Key satellite imagery for May provided a reasonable estimate of current pasture availability at "West Cuyuc".