

# CASE STUDY: PASTURE

## TR & RC ROKEBRAND



### CASE STUDY

**Producer:** Tim Rokebrand

**Location:** Apsley, VIC

**Annual Average Rainfall:** 550 mm

**Soil Type:** Variable

**Enterprise:** Sheep (self-replacing merinos and prime lamb production) and cattle

### BACKGROUND

Tim Rokebrand farms 560 hectares of gently undulating country near the Victoria/South Australian border. Much of the property consists of low-lying heavy clay soils, with deeper loams on the rises.

Several years ago Tim was frustrated by deteriorating pasture quality across the farm. Undesirable species like silver grass and onion weed were increasing and clover content was falling despite a history of conventional soil sampling and fertiliser and lime applications. He wanted more precise soil information that would help him diagnose and respond effectively to the underlying problem.

In 2019, at the recommendation of Western Ag agronomists Kate Pfitzner and Nathan Tink, Tim first contracted Precision Agriculture (PA) to undertake grid-based soil sampling across a small area of his property. Since then, he has gone on to grid map his whole farm with the information used to drive variable rate applications of lime, gypsum and single superphosphate (SSP).

### STRATEGY

Tim progressively mapped around 110ha each year starting with the poorest performing paddocks and working up the list. Each paddock is divided into a 2ha grid with a soil sample taken on a transect across each square. Soil samples are tested for pH, phosphorus (P), and exchangeable cations (Calcium Ca, Magnesium Mg, Sodium Na, and Potassium K). The results are provided as maps of soil conditions across each paddock (see example

in *Fig. 1a*) which are easily transformed into variable rate prescription files (*Fig. 1b*) for use in spreading machinery. Tim also performs a complete pasture renovation on one of the paddocks each year, using the maps as a guide for this process.

### RESULTS

“The main thing, is that it has alerted us to the enormous variability inside paddocks,” explains Tim. “I thought I had fenced in soil type, and most of this country has had blanket spreading of SSP for donkey’s years, and yet we still find huge variability over the paddock and the farm”.

Soil acidity was one issue that was quickly identified and ameliorated using variable rate lime applications. Acidity was particularly high in the areas where clover content had reduced by the most. Tim began by spreading lime to reach a target pH of 5.5 but has since increased his target pH to 6 to achieve a more optimal growing environment and create a buffer against ongoing acidification that will allow for a longer time between lime applications.

*Fig. 1a* is an example of one paddock that varied from pH 4.6 (very acidic) up to 5.8. A conventional soil test on a transect would have returned the average pH of 5.0, hiding the extent of the issue and contributing to the decline of acid-sensitive clovers across large parts of the paddock.

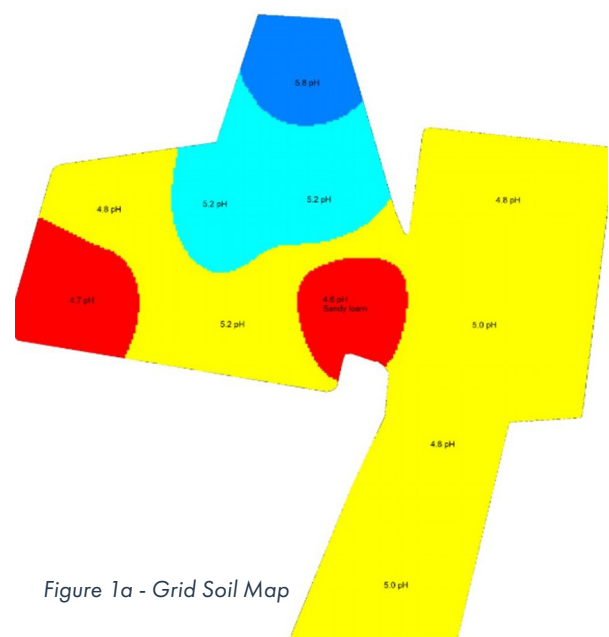


Figure 1a - Grid Soil Map

Mapping has also helped revealed sodicity issues in some paddocks that made complete sense in hindsight.

“One particular paddock used to be very prone to waterlogging; you’d get bogged in any sort of wet weather even when all the paddocks around it were still fine” says Tim.

After variable rate gypsum applications based on the exchangeable sodium percentage (ESP) from grid soil sampling, these issues have been ameliorated and trafficability is back to normal.

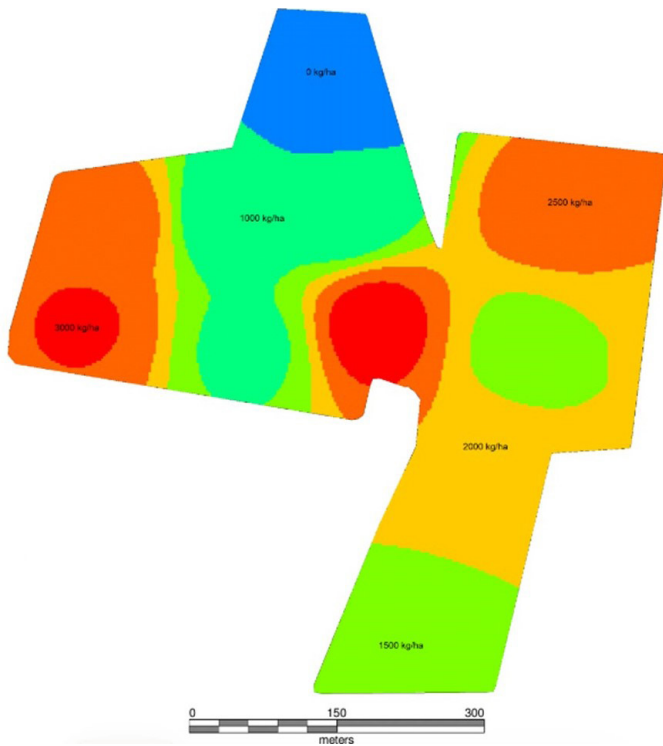


Figure 1b - Variable Rate prescription map

## CONCLUSIONS

Tim has found the process easy, reviewing the maps with his agronomist and making decisions about appropriate targets, Precision Agriculture is able to quickly create customised prescription maps that plug straight into his contractors variable rate machinery.

But it is the results that have kept Tim coming back for more. 80% of the farm has now received variable rate lime and/or gypsum, and pasture quality and clover content has really responded. The gypsum applications have also helped ameliorate previously unidentified areas of sodicity leading to reduced waterlogging and better pasture growth and trafficability.

“I’m probably not spreading any less lime and gypsum but it’s getting where it’s needed and not where it’s not needed”, says Tim. However, there are some individual paddocks where the savings generated by more efficient applications already exceed the additional cost of grid sampling even without considering any potential benefits from improved pasture production, animal growth and carrying capacity.

For other people considering giving variable rate a go, Tim recommends trying 100ha of grid sampling first to get an idea of potential issues and benefits. “If it comes up that it’s all perfectly uniform and don’t need anything then that’s still a good result, but if you don’t look you’ve got no idea.”

## ACKNOWLEDGEMENTS

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