

On the spot with soils

Border Ranges - Richmond Valley Landcare Network Incorporated



Working with soil grid mapping and variable rate fertiliser on dairy farms

The issue

It is well documented that there is significant variability in pasture and forage productivity within dairy farms in northern NSW. This can be attributed to historical management and soil variation occurring between and within paddocks.

Fertiliser is typically broadcast in blanket applications based on the assumption that the nutrient status within paddocks is relatively uniform. This results in over-fertilising and wastage in some areas and under-fertilising and poor pasture growth in others.

The solution

In 2019 a trial commenced to test the cost benefit of GPS-guided variable rate fertiliser application and the accuracy of current commercial precision agriculture soil fertility methodologies.

This soil grid mapping approach creates spatial soil maps based on a combination of detailed soil analyses and a proprietary developed algorithm to determine nutrient availability at a 10 x 10 m level. At this 100m² scale, GIS-guided spreaders can apply variable rates of fertiliser or amendments like lime.

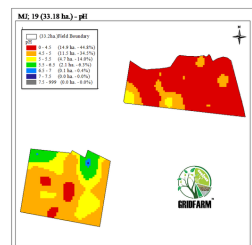
This trial is being carried out on two dairy farms in the Richmond River catchment with soil and pasture sampling occurring annually over four years. Within the trial area paddocks are split with the control areas receiving blanket nutrient application rates and treatment areas with nutrients and soil amendments applied at applicable variable rate. The Border Ranges Richmond Valley Landcare Network in collaboration with Sub-Tropical Dairy and supported by the participating dairy farmers to manage the trial and analysis of data.

The impact

Results from year 1 soil mapping indicated lime, Potassium, Phosphorus and Sulfur to be the principal amendments applied with lime application rates in Year 1 varying from zero up to 3.5 tonnes p/ha.

Whilst the budget for the trial is relatively small, participating farmers are conducting additional monitoring providing data on the pasture response to the amendment rates. Subsequent soil mapping will identify how effective the variable rate delivery system is in addressing the patchiness of soil fertility in paddock. It is expected that improving soil pH on farms will lead to greater availability of important nutrients, improving productivity and reducing fertiliser costs.

This project is supported by North Coast Local Land Services with funding from the Australian Governments Regional Land Partnerships component of the National Landcare Program.



Key facts

- Comprehensive assessment over 5 years
- Working with 2 north coast dairy farms

Project Partners



Your Levy at Work



The Local Landcare Coordinator Initiative Program that enables the promotion of these case studies on the Gateway, is funded by the NSW Government and is supported through the partnership of Local Land Services and Landcare NSW

