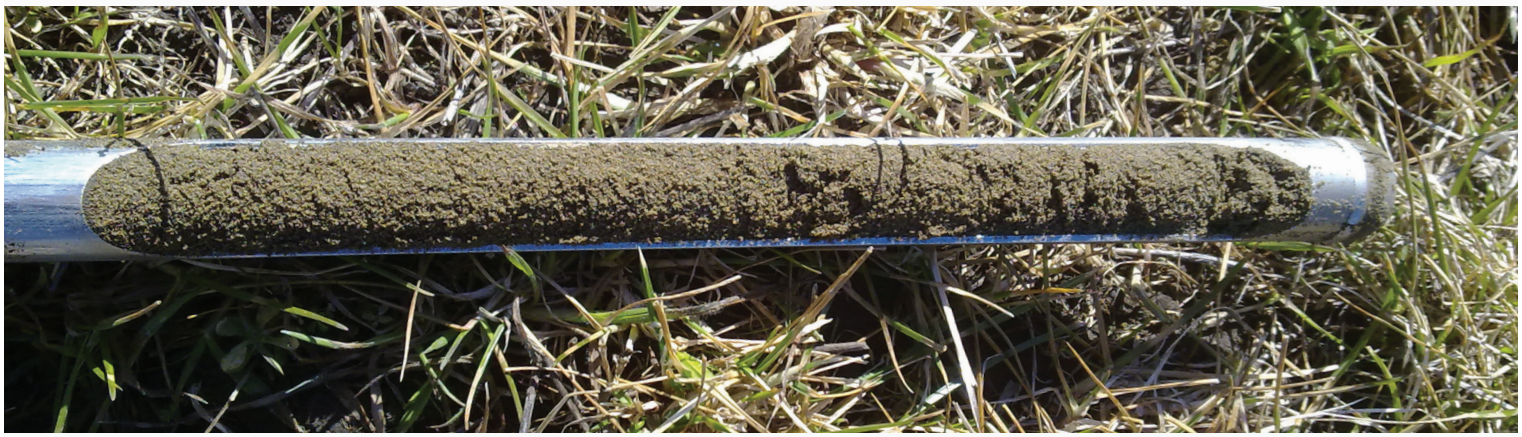
vantage NEW ZEALAND

GRID SOIL SAMPLING

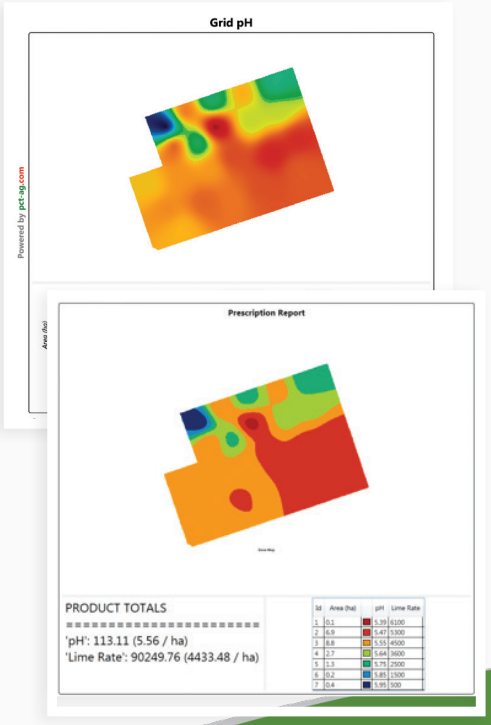


WHAT IS GRID SOIL SAMPLING?

Grid Soil Sampling is a method of collecting multiple soil samples from a paddock in order to give an accurate map of the variations in nutrient levels within that area. Thanks to GPS technology, the data is accurate and the process repeatable from the same points in the future. Typically the grid spacing is 1ha, however this can be altered to suit the need of the customer or using EM map soil zones as site location indicators. In all instances, one sample bag is taken with multiple cores per GPS location.

By grid soil sampling you can then do variable rate applications of nutrients, which can:

- Reduce fertiliser and lime expenditure
- Reduce soil nutrient variability
- Improve yields and pasture performance where soil nutrients are limiting factors
- Help you manage your fertiliser and lime more sustainably with targeted placement
- Reduce environmental impact by eliminating application to areas where soil nutrients are already high
- Return to the exact same GPS coordinates in the future to monitor the effects of rates and management practices
- Equip the grower with the tools of accountability and traceability, which going forward will become very important requisites of farming best practice



THE PROCESS AND RESULTS:

- Create a grid soil sampling plan (+/- 1ha grids or off EM zones) in conjunction with the farmer/manager
- Take the soil samples from each location using the plan loaded into a handheld GPS
- Send the soil samples off to the laboratory for processing
- Create soil nutrient maps for pH, Olsen P, K, Mg, Ca, Sulphate Sulphur and Cation Exchange Capacity
- Discuss with the farmer the soil nutrient map results for each map/paddock
- In the above example the pH as a result of sampling ranges 0.62 pH units which is moderate variability

GRID SOIL SAMPLING

THE PROCESS AND RESULTS CONT.

- In conjunction with the farmer and fertiliser company decide on a fertiliser strategy that puts the right fertiliser in the right place and meets the farmer's goals

- From here the soil nutrient variability map can be broken into 'zones' based on pH change which can then have different application rates applied to each zone to bring the pH level in all zones back to the target level

- In the pH image overleaf, two columns can be seen down the bottom. One is the average pH in each zone and the other is the amount of Lime to be applied in kg/ ha to each zone.

- Under the 'Product Totals' header the Lime Rate value in brackets is the average Lime Rate to be applied to the paddock.

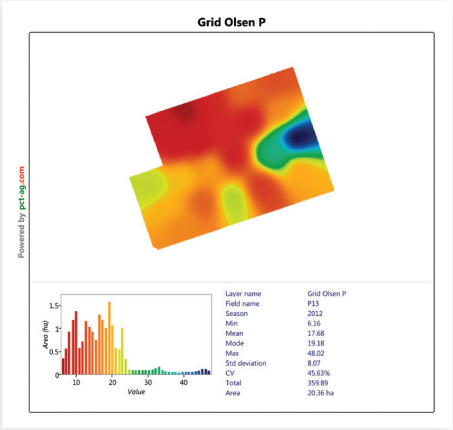
- Because the pH levels were so low in this paddock, a moderate rate of Lime is still being applied to this paddock, resulting in no further saving of lime. Instead, a redistribution will reduce the variability and increase the effectiveness of other fertilisers that are applied.

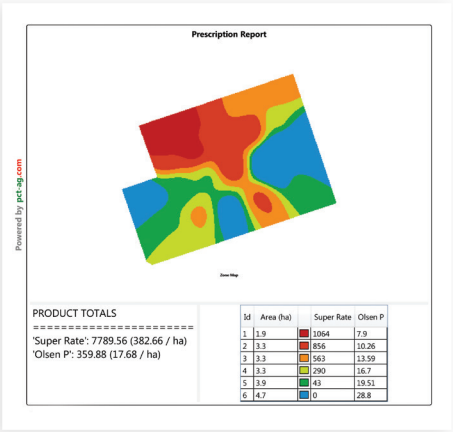
- In the Olsen P example, variability over the paddock is high, with a range of 41.86

- Due to the variability in this field some areas needed Superphosphate and some areas didn't need any

- The product was distributed so that an area low in Olsen P received more Superphosphate than areas high in Olsen P which received no Superphosphate at all. The rest were dosed at rates in-between

- Placing fertilisers via variable rate application in the areas where they are needed most not only helps to reduce the total amount of fertiliser used, it also increases the sustainable management of inputs within the farming enterprise.





A low amount of only 382.66 kg/ha of Superphosphate was applied to this paddock which is a decrease of 67.34kg/ha from the 450kg/ha rate that would have been applied. This totals a saving of approximately $441 across the paddock.

SUMMARY

- The more information available the more targeted the recommendations and applications can be.

- The additional topography related layers (e.g. Landscape Change, Slope & Aspect) can be very useful in determining areas that might need to be managed in a different way rather than only in accordance with soil type. This is a useful management tool to combat potential nutrient leaching or nutrient best practice issues.

- A sound picture can be built up about how prone an area is to water ponding/water shedding when looking at layers such as Landscape Change or Slope.

- The two EM layers are predominantly used to determine zones to be used for differential application or management of inputs, although grid spacing's can be used.

For more information, contact:

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