

## *The wheels roll again....*

It seems crazy that another winter crop has already begun with some farmers in southern Australia having only just finished harvest!

As we reflect on the season our clients have just had, the word “variable” comes to mind. It is hard to appreciate just how different the seasons were in the west versus the eastern states.

One thing that remains constant in any season is that timeliness holds the key to success.



Photo courtesy of Ben Beck who farms just north of Wagga. Interesting to note that his 30inch canola has out-yielded the 15inch canola in trials conducted over the past 2 years.

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# **AUSTRALIAN FIRST**

## ***Rapid Soil pH Mapping***

***PrecisionAgriculture is the first company in Australia to offer a rapid soil pH mapping service.***

We imported the pH Detector unit from America in December 2010 and mounted it on a Yamaha Grizzly 700 quad bike. Clients are using the pH maps to better understand lime requirements. Paddocks which measure significant soil pH (water) variability can also receive a variable rate lime prescription map.

The conventional technique to mapping soil pH is using a standard soil sampling probe and sending samples away for laboratory analysis. This process is slow and can add up to be relatively expensive. With the new system, we can increase our sample rate to one sample per minute which measures soil pH values at a depth of approx 5cm and logs these values along with GPS coordinates.

The quality of data is extremely important and for each paddock we use a two point calibration technique where soil samples are sent away to a laboratory and results cross-checked against our readings. We also calibrate the pH sensor using control solutions of pH 4 & pH 7.

**Andrew Whitlock using the pH detector near Willaura, Victoria**



# Variable Rate Lime

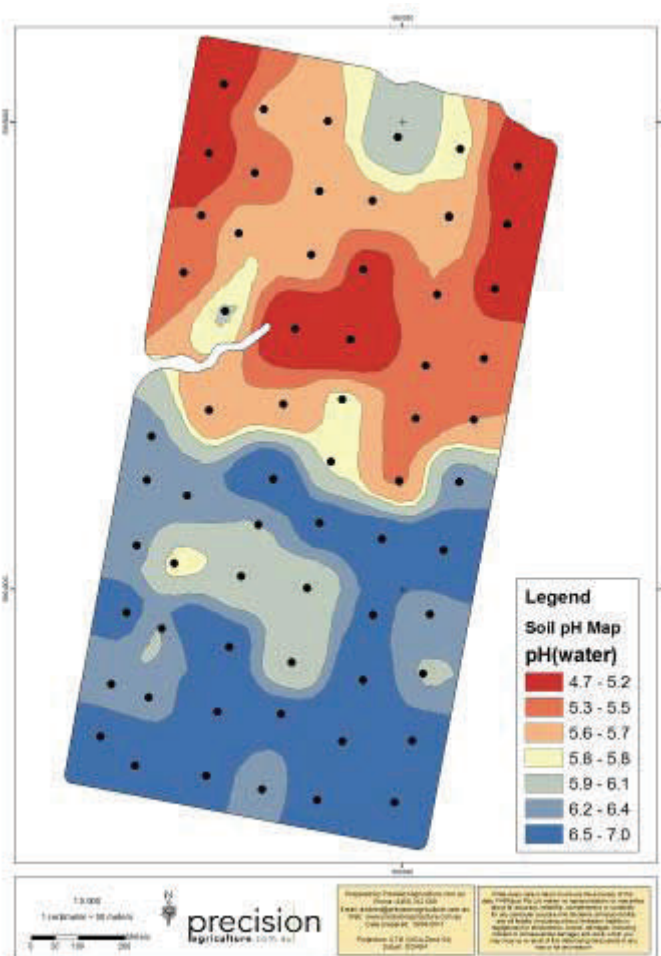
*Getting started with variable rate applications is not always a straight forward process. We know farmers have to purchase hardware, create the prescription maps, load the maps into the controllers, and have confidence with appropriate distribution rates.*

Variable rate lime makes clear sense as an entry point into precision agriculture. The process is easy to implement as there is a well understood relationship between pH values and lime requirements. Soil pH plays a major role with nutrient availability and many farmers already use contractors with variable rate capacity. **PrecisionAgriculture** works in partnership with contract spreaders to offer a complete variable rate application service.

Not all paddocks have a level of pH variability worth managing with variable rate lime—however the majority of the paddocks we have mapped do! Here is an example of a paddock with pH<sub>water</sub> values ranging from 4.7 to 7.0.

We used a 2ha grid to collect our samples, however we can also collect strategic samples based on other information such as yield or satellite imagery. Going down the path of strategic sampling increases the capacity to map more paddocks per day and reduces costs.

The actual lime application rates need to take into account soil characteristics such as aluminium levels and CEC which should be attainable from previous soil test results.



It is interesting to understand why soil pH variability exists in a paddock. In this example there is a combination of paddock history and soil type/elevation effect.

The likely return on investment from variable rate lime varies between paddocks. In this example 68% of the 124ha paddock does not require any lime (saving almost \$6000).

For further information about **PrecisionAgriculture's** soil pH mapping service visit [www.precisionagriculture.com.au](http://www.precisionagriculture.com.au)

# Simple Thoughts for Inter Row Sowing

*Selecting your row spacing width will have an impact on almost every aspect of your farming system.*

Farmers moving to a wider row spacing should be doing so with a farming system approach in mind, which will present the need to re-consider agronomic management to ensure yield potential is maintained. Such management decisions are likely to include sowing rates, time of sowing, fertiliser rates and methods/chemicals for weed control.

A simple calculation to keep in mind when determining the number of planting units across a planter:

Divide your target working width by your target row spacing which will give you the correct number of planting units required

I.e.  $900\text{cm} / 30\text{cm} = 30$  planting units

You will need to consider whether you want to have a centred planting unit or not—this will have an effect on crop rows relative to wheel tracks. An uneven number of planting units means you will have a centred planting unit.

When measuring up your planter don't forget to take into consideration the guess rows. Your effective working width is determined by measuring from outside unit to outside unit plus the addition of one row spacing width. It is the effective working width value that you enter into your autosteer system!

Further information specifically about setting up your planter for inter row sowing can be found in our "Inter Row Seeding Tech Note".



Andrew Whitlock has recently been involved in a GRDC project which has developed a comprehensive manual about managing heavy stubble in a no till farming system—booklets will soon be available via the GRDC website.



# Near Real-Time Variable Rate Nitrogen

*As you all know we place a strong focus on measuring the actual crop in order to determine variable rate applications.*

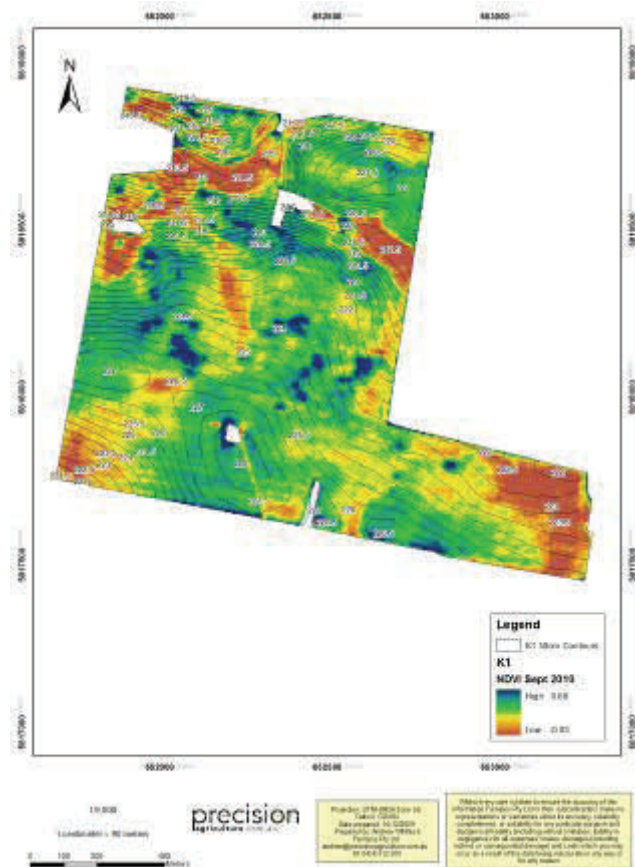
This year we are offering variable rate nitrogen management support through satellite imagery. In order to make this work we need EARLY ordering of imagery!!!

This is a 4 step process:

1. You place your order for satellite imagery using our Free Mapping Quote [www.precisionagriculture.com.au](http://www.precisionagriculture.com.au) by July 15th 2011.
2. We capture the satellite imagery and create crop biomass (NDVI) maps for your paddocks of choice, around early tillering.
3. You receive maps via email and in partnership with your agronomist go out and collect 0-60cm deep N soil tests based on the zones from the imagery (these maps have an accurate scale allowing you to easily scout using just the hard copy maps).
4. You implement your desired N management strategy — if variability is great enough then variably apply N (we can create prescription maps for any controller on the market).

If you have a GPS unit then we can provide GPS coordinates for sampling and we can also provide the satellite imagery in a format ready to be entered into your paddock record keeping software (assuming it has GIS capabilities).

The paddock on the right is an example of what a crop biomass (NDVI) map looks like. In this example we were also able to overlay contours to better understand the effect of water logging. The red and yellow areas represent reduced crop biomass, presenting an opportunity for variable rate N, assuming N is a limiting factor. Ground-truthing the image with local knowledge and soil sampling is extremely valuable!



# The Boys Head to NZ

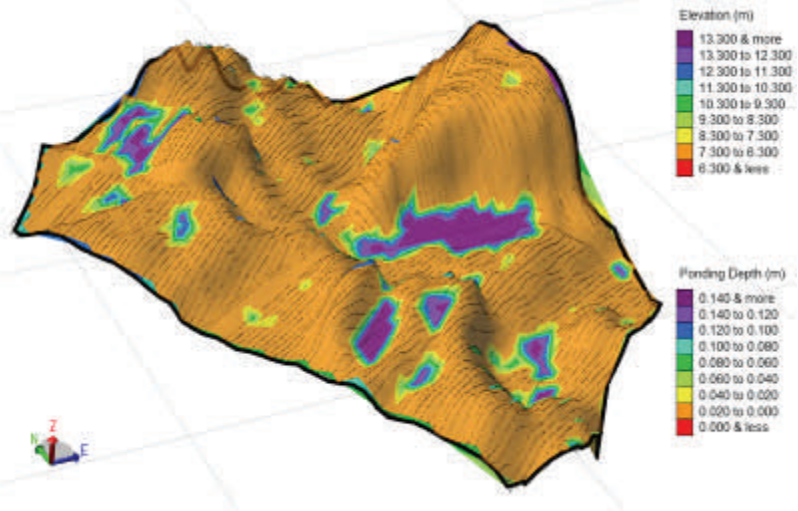
*In early May, Tim and Andrew travelled to New Zealand for the Landwise conference (see [www.landwise.org.nz](http://www.landwise.org.nz)). Besides enjoying the sites and local brews, we had the opportunity to visit farms around Hawkes Bay and Auckland, thanks to the kind hospitality of James Powrie and Dan. Bloomer*



One of the best farms we visited was AS Wilcox near Auckland, where they have been practicing CTF in onions and potatoes on a large commercial scale for a couple of years. The soil has responded well, and so has vegetable quality. A significant finding is that around 45% less soil is being transported to the pack house as a result of less soil sticking to the CTF-grown potatoes.

With rainfall nearing 1500mm/year, drainage is a major issue (see ponding analysis on right). We are planning to impart our Australian drainage knowledge onto farms in NZ, and hopefully lift productivity. Given farming land is \$10,000/acre, and profits from horticultural crops are much higher than what we are used to in dryland farming, this shouldn't be too hard!

3D Ponding Risk Map for an 18ha Paddock



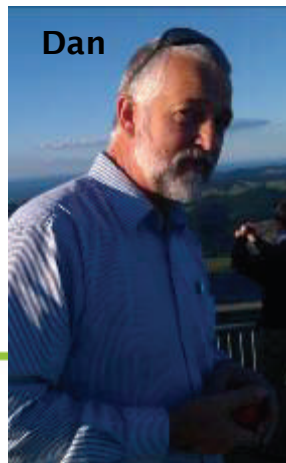
Hawkes Bay



Permanent Beds—Lettuce



James



Dan



Wilcox Visit



# *The Wash-up after the Queensland Floods*

*The floods in Queensland were devastating for communities, families, and farmers.*

PrecisionAgriculture and Condamine Alliance ([www.condaminealliance.com.au](http://www.condaminealliance.com.au)) teamed up to provide free satellite maps to farmers in flood affected areas—over 1,000,000ha of high resolution imagery was captured directly after the floods.

The uptake by farmers, agronomists, and community groups was astonishing; with over 250 website registrations, 200 maps produced, and over 30 farm visits to help those directly affected. Over 100,000ha of farming land was inundated from the Condamine River alone (from the Great Diving Range to Chin-chilla), and the river was over 7km wide at its widest point (shown below). The key learnings from the flood were:

1. Stubble cover is king. Where there were growing sorghum crops or failed winter crops (chickpea and wheat) there was a lot less erosion. The change to more summer cropping, and also a shift towards no-till, saw a massive reduction in soil erosion than what was expected.
2. Irrigation infrastructure was significantly damaged. Head-ditches and tail drains caused problems, but this was to be expected given the volume of water flowing down the Condamine river, and that most irrigation occurs adjacent to the river.
3. The soil erosion/damage is worst where creeks and waterways broke their banks (photo below shows Tim bogged in a silt fan whilst RTK mapping). In some areas three creeks came together to cause significant loss.
4. Layouts worked well on the floodplain and slopes, but there are still some refinements to make. Anecdotal evidence suggests that water is flowing quicker, but there were fewer wet spots in tracks allowing operations to happen sooner.



**Good Effort Tim**

**Flood Imagery over  
Darling Downs QLD**

# Remote Camera System Launch

*We have launched our two remote camera systems—see what it looks like for yourself.*

**PrecisionAgriculture** has recently begun selling two fully remote camera systems, in response to demand from our clients. The two systems offer the ability to log in remotely through a customized website, and view real-time or stored photos of your crop, through, gate, fuel, or other asset.

The cameras are fully wireless and have a nextG modem, solar panel, battery, and stand. They also importantly manage their power carefully, so as not to reduce battery life. There are no data cards to download unlike other systems.

Being completely transportable, you can move the camera around the property over time or during a crop phase. This ensures you get best value from your investment.



If you wish to log in and have a look at some images from our own system, visit [www.precisionagcam.com](http://www.precisionagcam.com) Username: **demo**, password: **demo**.

Our camera is now being positioned in a paddock at Chinchilla—log in whenever you like to see the progress through the season.

Prices start at around \$6,600 plus GST. A weather station can be added for an extra \$2,500 to give fully automated camera and weather information to your website that you can access from your computer or phone—in fact anywhere you can get internet access, even at the beach!!!

Interest in these products has been greater than expected; however not surprisingly given the changing nature of farming in Australia—less people and greater distances to travel. We also have had enquiries from government and power companies for remote monitoring in dangerous or inaccessible areas.

Log in regularly to check the progress or contact Tim for more information.



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