

# WEATHER OR NOT



361 Trungley Hall  
Road, Temora  
NSW 266



P: (02) 6980 1333  
E: [farmlink@farmlink.com.au](mailto:farmlink@farmlink.com.au)



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## WELCOME

Welcome to the first of our new look Weather or Not newsletters. We will be delivering six newsletters on a monthly basis right through to December 2015. Eight sites in the FarmLink district have been set up with soil moisture probes installed by Cropsol Consulting Services and Yield Prophet by the BCG. Weather or Not provides an overview of the seasonal prospects, crop resources and climate and weather analysis and the agronomic implications of each. Weather or Not outlines the latest agronomic considerations and nitrogen inputs at the relevant growth stage.

In this first edition, we provide you with some of the basics of Yield Prophet and soil moisture probe interpretation

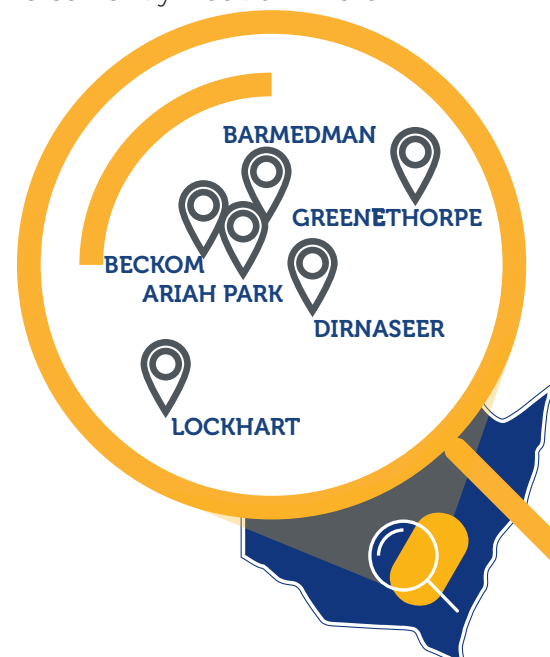
to help you get the most out of the reports plus an overview of the climate and early crop nutrition considerations.

We've had good summer rain and early sown cereal and canola are reaching the 5 leaf stage but with colder months approaching growth is expected to slow down.

With good rain over summer, we have high soil water levels and soil tests are showing good nitrogen levels at depth. This means good yield potential that is worth protecting but keeping the seasonal forecast in mind at the same time. El Niño has been declared with the latest model outlooks from the Bureau of Meteorology suggesting Pacific Ocean seas surfaces are likely to continue rising. This climate indicator is often associated

with below-average winter and spring rainfall over eastern Australia and above-average daytime temperatures over the southern half of the country. It is also associated with the extension of the frost 'window'.

Another climate influencer, the Indian Ocean Dipole (IOD) is currently neutral. There







are warmer than normal temperatures in the Indian Ocean, which normally means more rainfall for Australia, however several models are predicting temperatures to cool as El Niño takes over. The June to August outlook is for average to lower than average rainfall in Eastern Australia. Accuracy is moderate at this time of year.

A great source for understanding the seasonal outlook is the Climate and Water Outlook June-August video on the Bureau of Meteorology's website at <http://www.bom.gov.au/climate/outlooks/#/overview/video>

## ABOUT

Yield Prophet is an on-line crop production model providing real-time information about a growing cereal or canola crop. It is an adaptation of APSIM which generates crop simulations and reports to assist in matching crop inputs to yield

potential. This potential is presented as a probability distribution. Soil water values are obtained from soil moisture probes with capacitance sensors installed in the root zone of the crop. The sensor reading changes in response to the amount of water in the soil providing an indication of soil moisture in real-time. The measurements are passed on by telemetry to the web.

The Yield Prophet crop simulations are created by combining the essential components of growing a crop including:

- a soil test sampled prior to planting
- a soil characterisation selected from the Yield Prophet library of ~1,000 soils as representative of the production area
- historical and current climate data taken from the nearest Bureau of Meteorology (BOM)

weather station or current climate data from your privately owned weather station (optional)

- individual crop details
- fertiliser and irrigation applications during the growing season.

Yield Prophet simulations mimic the biological and physical process in crop growth and development for each year of the climate record to give an indication of crop yield potential and current crop resources. The estimates are based on optimal growing conditions and does not account for external factors such as frost, disease and waterlogging. This is particularly obvious when considering the upper limit of yield potential calculations.

The soil moisture probes give a reading of soil water. These values are generated by measuring the reflectance from an electric field emitted by the sensor to give a raw



reading. These readings are then converted into a meaningful value by passing them through a calibration curve for the particular soil. A common misconception is that they are actual readings of soil moisture.

## CONSIDERATIONS

Given crops are now sown, attention turns to in season crop inputs. It's important to understand yield potential and what might limit a crops ability from reaching that potential, while keeping a close eye on the costs of production, particularly with the prospects for spring. Yield Prophet will provide a range of attainable yield estimates and outputs relating to crop resources.

In terms of nutrition, it is worth getting into the habit of monitoring crops early. Soil tests prior to sowing are a good indicator soil nutrition. In lieu of this early crop vigour and growth can be an indicator of soil fertility so monitor early to ensure

the crop is not limited by any deficiencies. At GS15 in cereals, if your plant numbers are low you could consider applying a small amount of N to boost topsoil fertility to increase the potential for tillering.

Same goes for monitoring pests; damage to young crops can be devastating and where insects are concerned, keep an eye on district reports. On your own farm, insects can't be detected from your ute window! Time to get down on your hands and knees to inspect. Might be a good school holiday activity if you have a spare helper or two.

## RESOURCES

To view the full Yield Prophet reports online, go to: [www.yieldprophet.com.au](http://www.yieldprophet.com.au) in the user login area, Username: farmlink, Password: farmlink

To view each paddock, select from the 'Select Grower' dropdown menu. The information provided is in Read-Only format.

To use Yield Prophet on your farm, contact the Birchip Cropping Group on 03 5492 2787.

To have moisture probes installed on your farm, contact Cropsol Consulting Services on (02) 6962 9407.

For more information on El Nino and the Indian Ocean Dipole, visit [www.bom.gov.au/climate](http://www.bom.gov.au/climate)





# ARIAHA PARK NW (PROBE 1)

**Crop type:** canola  
**Cultivar:** unkown  
**Sowing date:** 20 April 2015  
**Soil type:** sandy clay  
**Directional guide:** -34.2482 | 147.1984

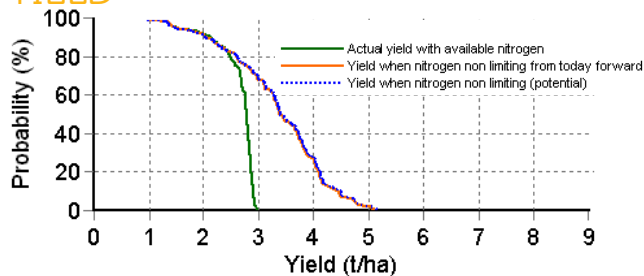
This paddock has high canola yield potential ranging between 1 and 5t/ha for the worst and best season finishes respectively. This high yield potential is reflective of the very favourable stored soil water and nitrogen conditions with 91mm and 146kg/ha respectively at the time of this report.

The soil moisture probe data shows the response to good rainfall down to 58cm in the new 2015 year and rainfall registering down to 1 m in subsequent rainfall events.

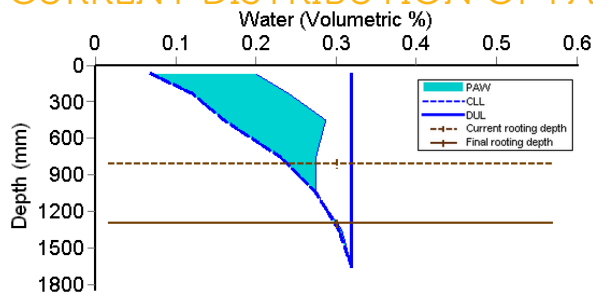
The yield prophet soil water distribution chart shows plant available water to a similar depth.

Separation of the nitrogen limited and nitrogen unlimited curves is occurring at the 80% probability indicating that in 4 out of 5 years, or given at least a decile 2 season finish, this crop could benefit from additional nitrogen. That said, with 146kgN/ha in the soil the crop is adequately resourced to not require additional N for at least a month. N applications on this paddock should not be considered until later in the season when greater knowledge about its prospects are known. If you are planning to apply more N, make sure you run the Yield Prophet Crop report and (i) check the current level of nitrogen and water stress on the crop; and (ii) take the seasonal outlooks into account.

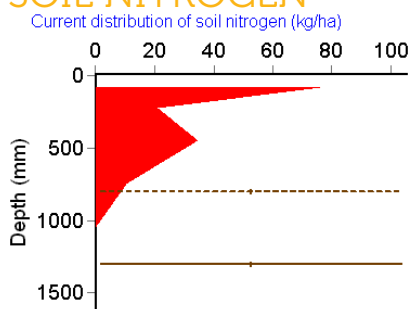
## YIELD



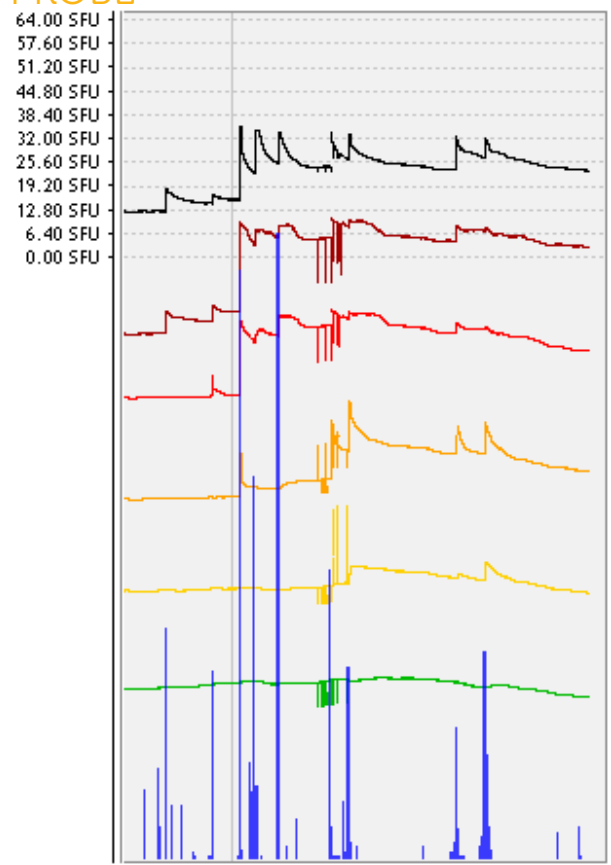
## CURRENT DISTRIBUTION OF PAW



## SOIL NITROGEN



## PROBE



1/01/15  
 ■ 1 SM 028cm ■ 1 SM 038cm ■ 1 SM 058cm ■ 1 SM 078cm  
 ■ 1 SM 098cm ■ 1 SM 118cm ■ Daily Rain (9am)

# ARIAH PARK SW (BLOCK 1 EAST PROBE)



**Crop type:** canola

**Cultivar:** 45Y86

**Sowing date:** 22 April 2015

**Soil type:** sandy loam changing to sandy clay at depth

**Directional guide:** -34.383 | 147.1494

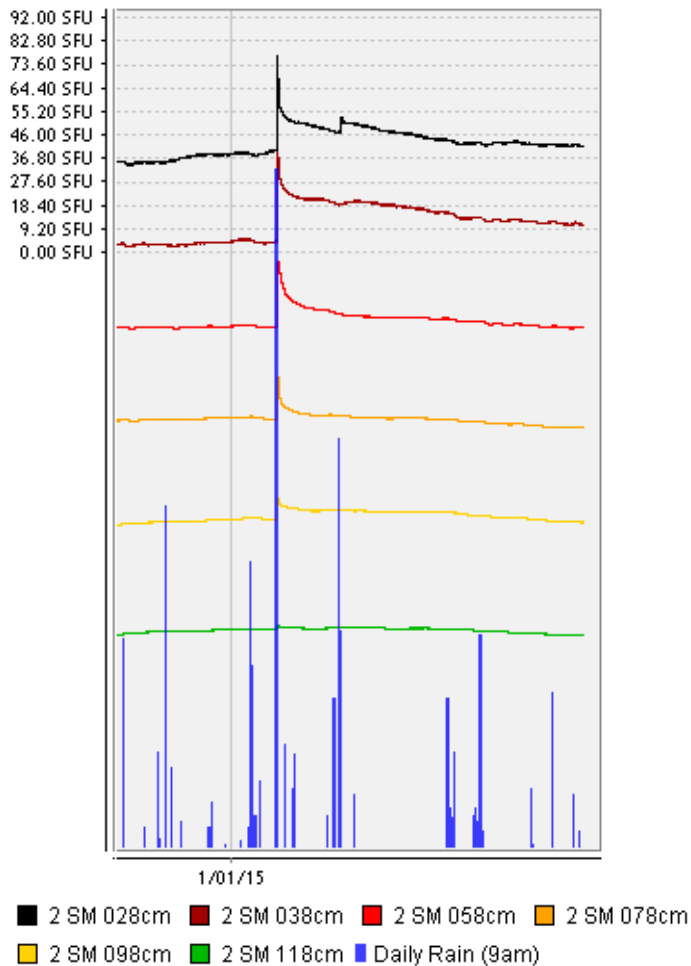
This paddock has high canola yield potential ranging between 1 and 5t/ha for the worst and best season finishes respectively. Like many paddocks in the district, this paddock has started with good soil moisture due to good rain prior to sowing.

The soil moisture probe shows good rainfall was received early in the new year with one rainfall event corresponding with soil water increases down to one metre.

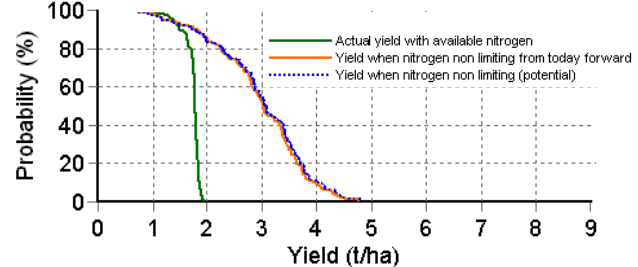
There is 75 mm of plant available water and a 74 kg/ha N currently available to the crop.

The yield potential between unlimited nitrogen and available nitrogen is considerable with the probability curves separating at approximately 90%. That is, in 9 out of every 10 years, or in a decile 1 year at least, this crop would benefit from additional N. 28 kg/ha of nitrogen has been applied to this paddock and more will be required to preserve the crop's yield potential. Monitor this paddock for opportunities to apply nitrogen.

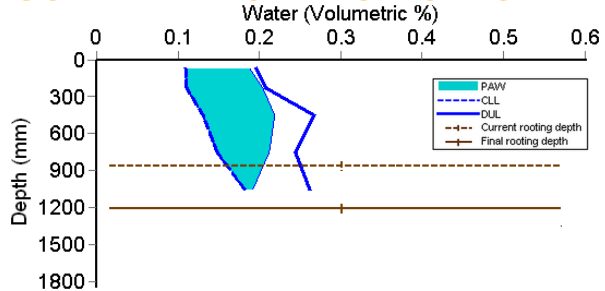
## PROBE



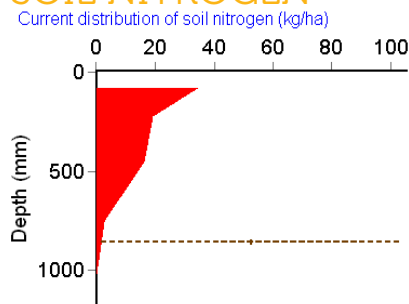
## YIELD



## CURRENT DISTRIBUTION OF PAW



## SOIL NITROGEN





# BECKOM NORTH (PROBE A)

**Crop type:** wheat  
**Cultivar:** H45  
**Sowing date:** 19 May 2015  
**Soil type:** sandy clay  
**Directional guide:** -34.2895 | 146.9493

This wheat crop is just emerging under good conditions where plant available water is good with a total of 64 mm and soil nitrogen levels are more than 40 kg/ha at the current rooting depth with 112 kg/N total soil N available.

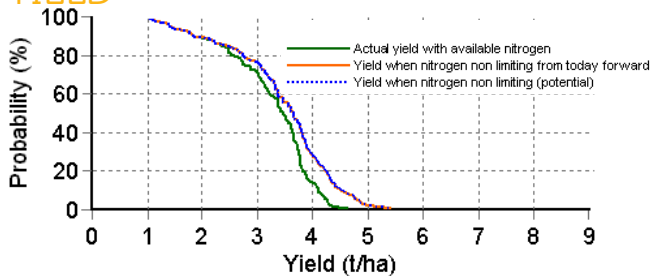
The soil moisture probe data shows increases in soil moisture content recorded in mid-January 78cm down the soil profile.

The yield potential ranges between 1 and 5t/ha for the worst and best season finishes respectively.

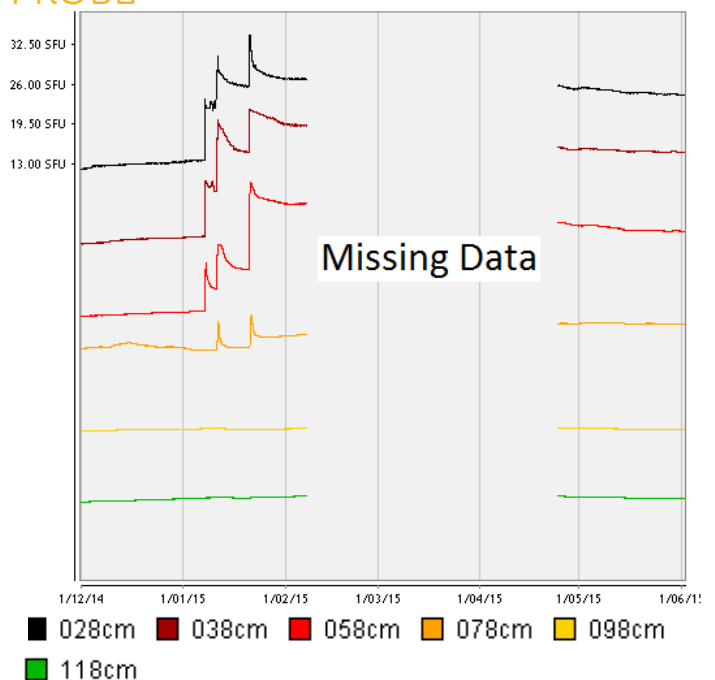
The potential yield curve for available nitrogen and potential yield with unlimited nitrogen are tracking closely together with a less than 0.5 t/ha yield benefit for applying nitrogen. This indicates that additional nitrogen is not required at this stage.

Monitor crop and reassess nitrogen requirements at growth stage 30.

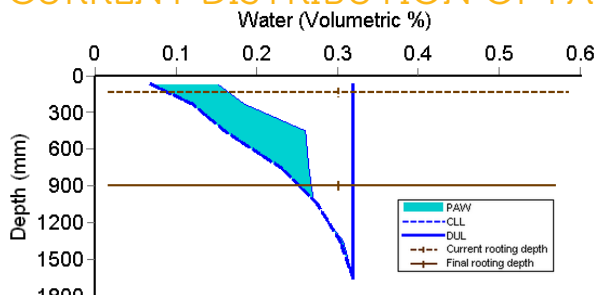
## YIELD



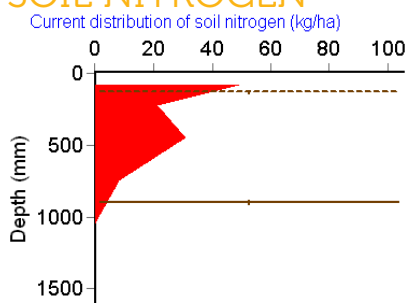
## PROBE



## CURRENT DISTRIBUTION OF PAW



## SOIL NITROGEN



# GREENETHORPE WEST (PROBE 0)



**Crop type:** canola

**Cultivar:** unknown

**Sowing date:** 26 April 2015

**Soil type:** sandy loam over a sandy clay and heavy clay

**Directional guide:** -34.013 | 148.2542

This paddock has good canola yield potential ranging between 0.5 and 5t/ha for the worst and best season finishes respectively. At the 20% probability mark there is only a 0.5 t/ha yield difference between the nitrogen limited and nitrogen unlimited curves suggesting that there 1 in 5 years, or in a decile 8 rainfall season, a yield increase is likely with the application of nitrogen. The actual growing season rainfall decile for this site is currently 8.

The current distribution of soil nitrogen graph shows excellent nitrogen levels at depth (total 194 kg/ha). This is higher than in other paddocks sampled in the Farmlink region and

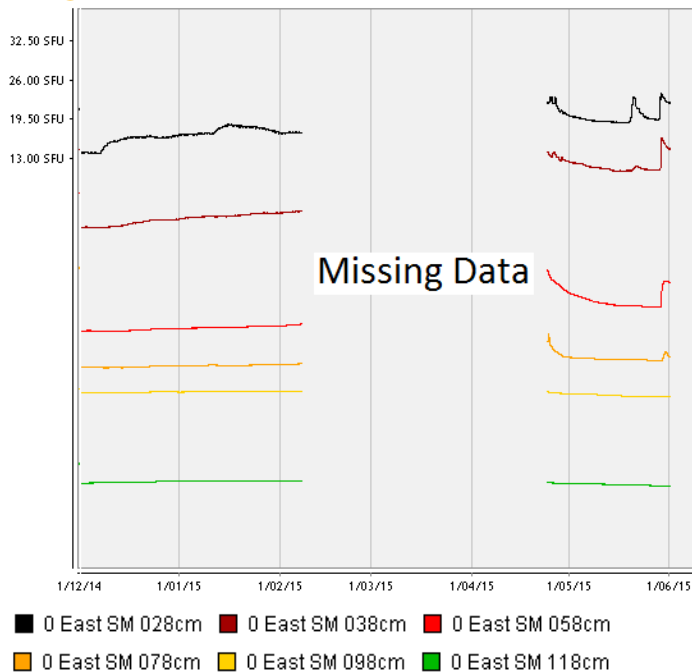
therefore suggests a potential subsoil constraint issue where the crop isn't accessing the nitrogen at depth (around 1m).

Soil constraints can severely restrict tap root penetration and hence water and nutrient uptake.

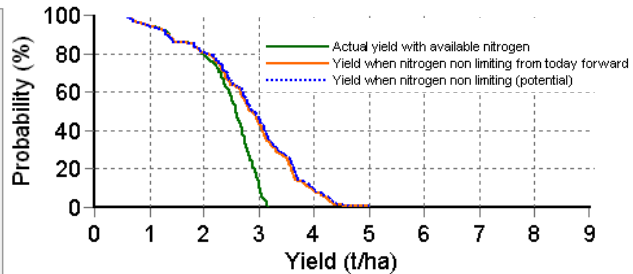
Total soil plant available water is 59mm with a plant available water capacity of 107mm. More rainfall is therefore expected to increase yield potential. Monitor this paddock closely for signs of deficiency and reassess at stem elongation.

Soil moisture probe data is registering soil water content increases in May down to 78 cm.

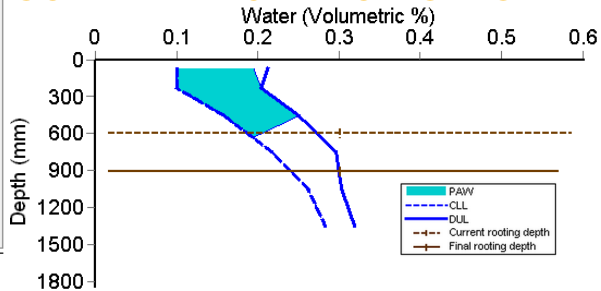
## PROBE



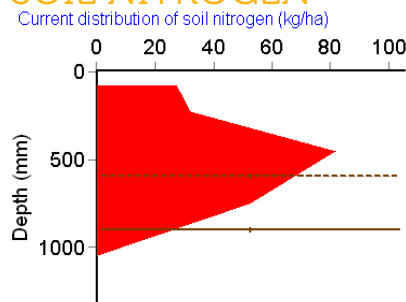
## YIELD



## CURRENT DISTRIBUTION OF PAW



## SOIL NITROGEN





# DIRNASEER NE (PROBE 0)

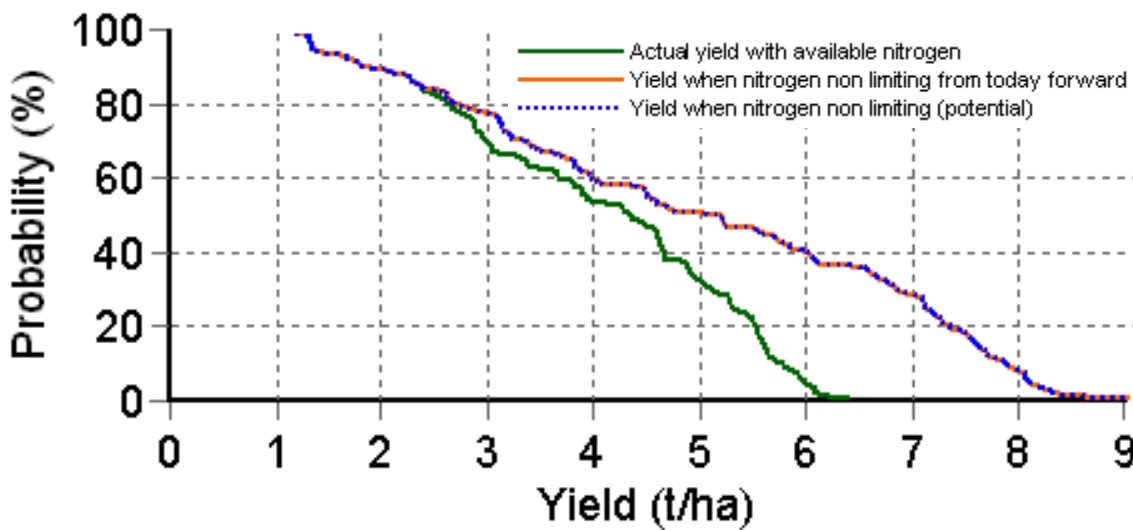
**Crop type:** wheat  
**Cultivar:** Sunvale  
**Sowing date:** 13 May 2015  
**Soil type:** red chromosol  
**Directional guide:** -34.6131 | 147.7621

Growing conditions are excellent for this wheat crop with total soil plant available water at 78mm and 28mm currently available in the root zone.

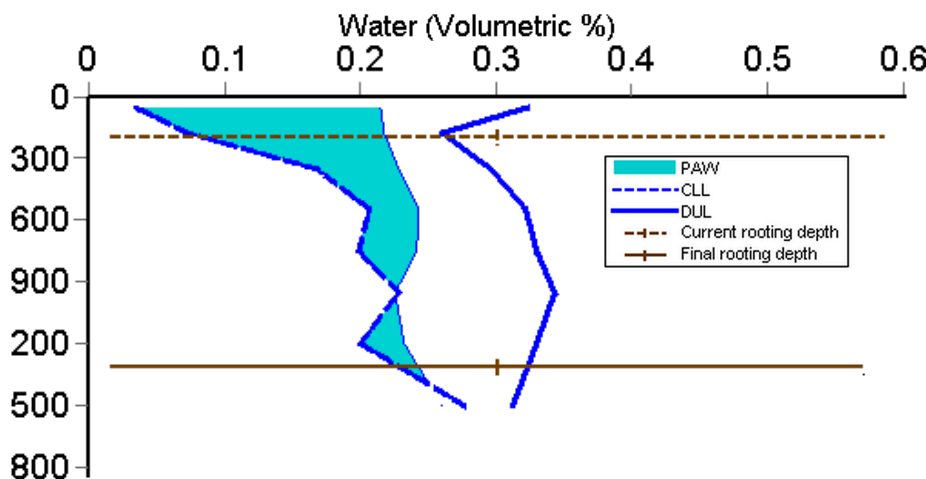
In situations like this; where you have good yield potential, monitor for other factors such as weed, disease and pest pressures and check other paddocks that may benefit more from topdressing.

Yield potential is excellent ranging between 1.1 and 9t/ha for the worst and best season finishes respectively. Yield potential worth preserving in the current soil N status is 157 kg/ha and current crop available N is 63 kg/ha. This crop has adequate nitrogen until growth stage 30.

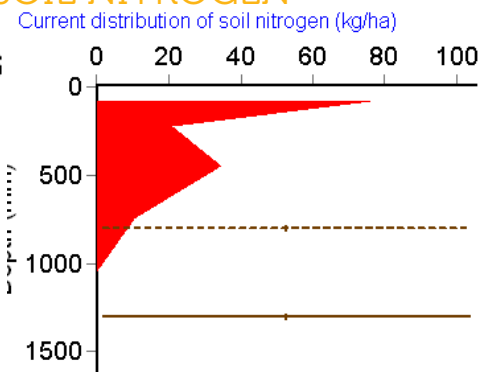
## YIELD



## CURRENT DISTRIBUTION OF PAW

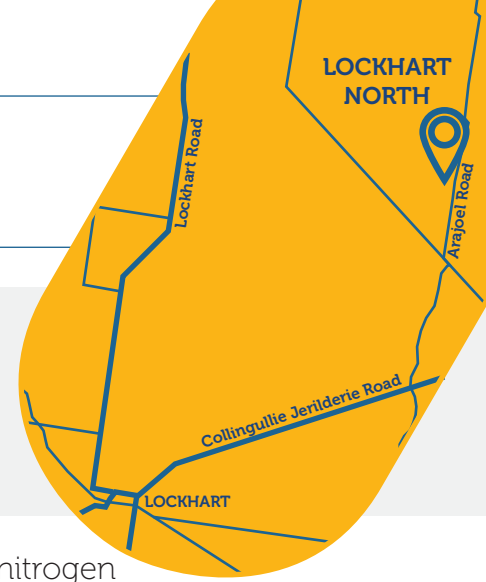


## SOIL NITROGEN





# LOCKHART NORTH (PROBE 0)



Crop type: wheat

Cultivar: Suntop

Sowing date: 5 April 2015

Soil type: sandy clay loam over light clay

Directional guide: -35.1036 | 146.8754

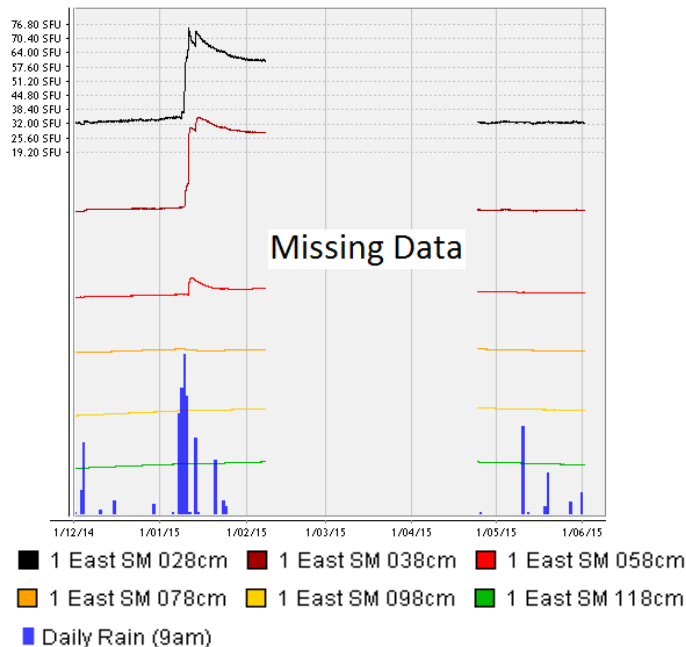
The grain yield outcome curve in this graph shows a 2.5t/ha yield potential difference between the N limited and N unlimited yield potential with a difference of approximately 3 t/ha and 7 t/ha respectively. There is 50% probability of yielding a 3 t/ha wheat crop with the currently available soil moisture and the seasonal outlook but a 5.5t/ha yield potential, if nitrogen is applied.

With good soil moisture and a current growing season rainfall decile of approximately 7, applying more nitrogen to avoid limited growth at this late tillering stage could be considered.

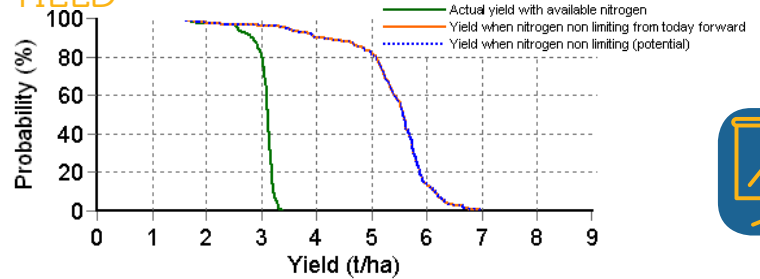
This paddock has low nitrogen levels with 45 kg/ha currently available and the bucket is emptying in the current rooting depth with 66 mm PAW water available at the rooting depth.

This is consistent with the soil moisture probe data showing a considerable spike in soil water at the 28 and 38cm depths in response to several days of rainfall but no changes in soil moisture at depths of 78cm or lower.

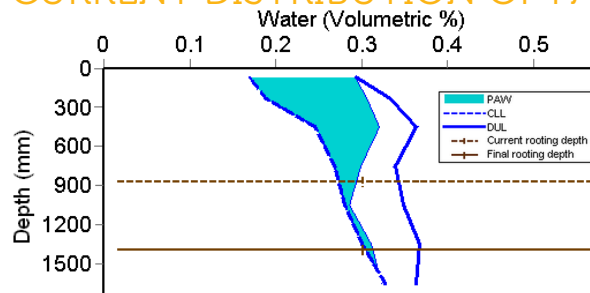
## PROBE



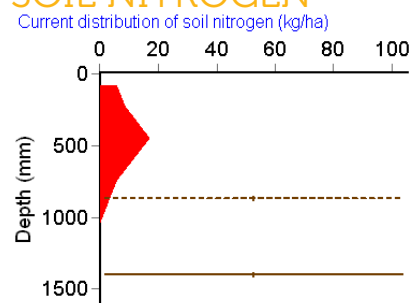
## YIELD



## CURRENT DISTRIBUTION OF PAW



## SOIL NITROGEN





# TAIC Paddock 16 (PROBE A)

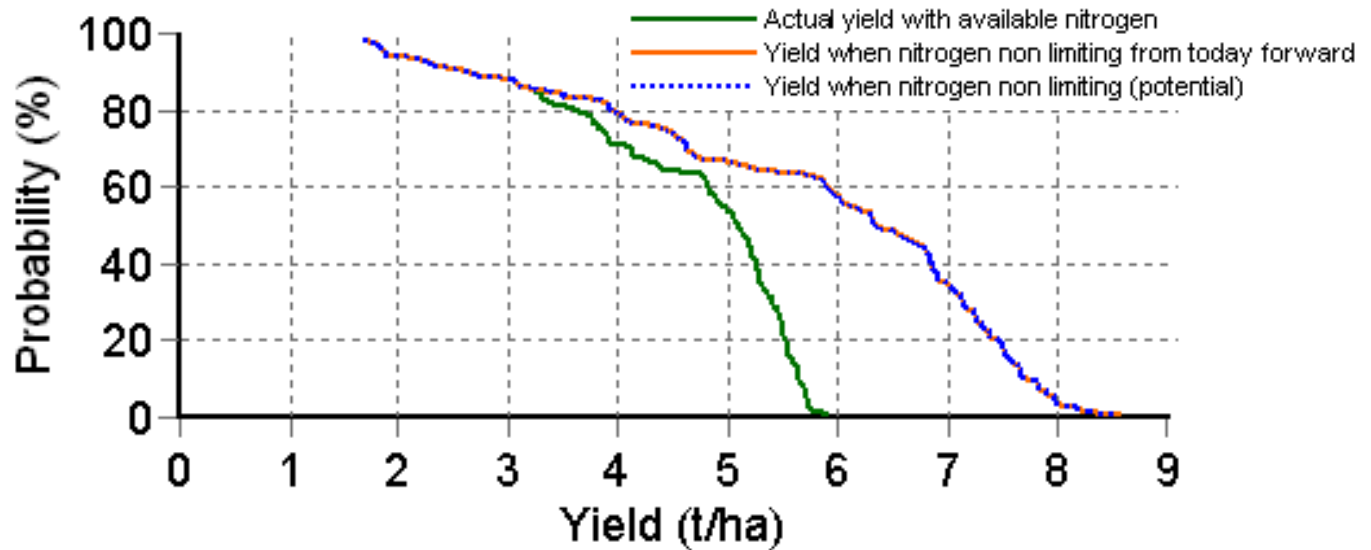
**Crop type:** wheat  
**Cultivar:** Spitfire  
**Sowing date:** 10 May 2015  
**Soil type:** sandy clay  
**Directional guide:** -34.4171 | 147.5316

As this wheat crop approaches the two leaf stage (GS12), plant available water is good in the root zone (98mm total) and the available nitrogen is high in the top 10cm (currently 117 kg/ha available) and total of 170 kg/ha. This means that yield potential is excellent and ranges between 1.5 and 9 t/ha for the worst and best season finishes respectively.

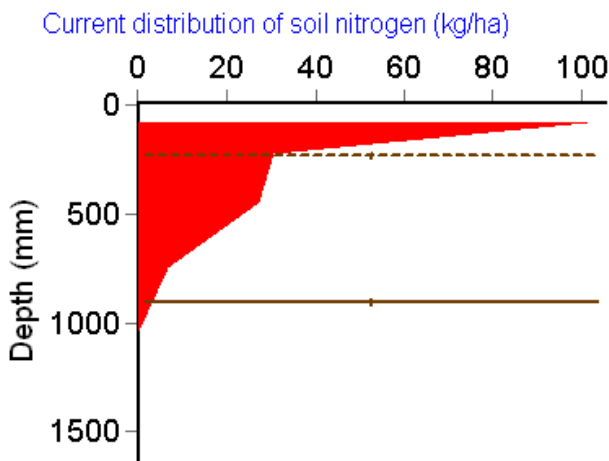
The gap between the N limited and the N unlimited curve widens from 1 to 2 t/ha from approximately at 60%. This indicates there is a benefit in applying nitrogen if climatic conditions are right.

This crop is unlikely to require topdressing at this stage and has adequate available nitrogen to get it through to the end of tillering (GS30) so run Yield Prophet and consider applying nitrogen at this, or a later stage.

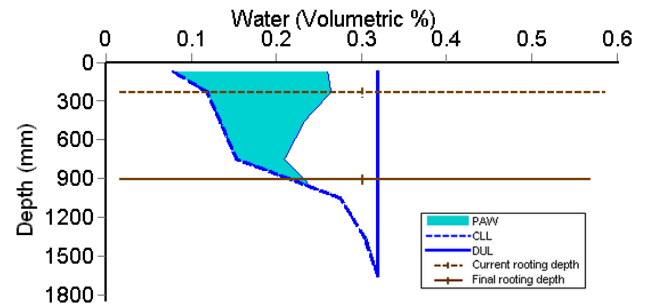
## YIELD



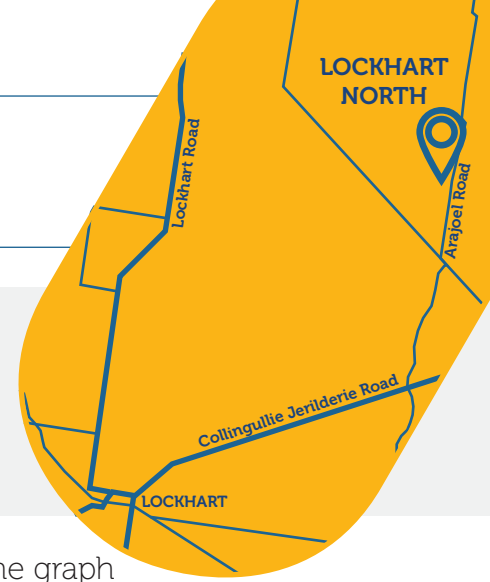
## SOIL NITROGEN



## CURRENT DISTRIBUTION OF PAW



# LOCKHART NORTH (PROBE 1)



Crop type: canola

Cultivar: Bonito

Sowing date: 22 April 2015

Soil type: sodosol

Directional guide: -35.1036 | 146.8754

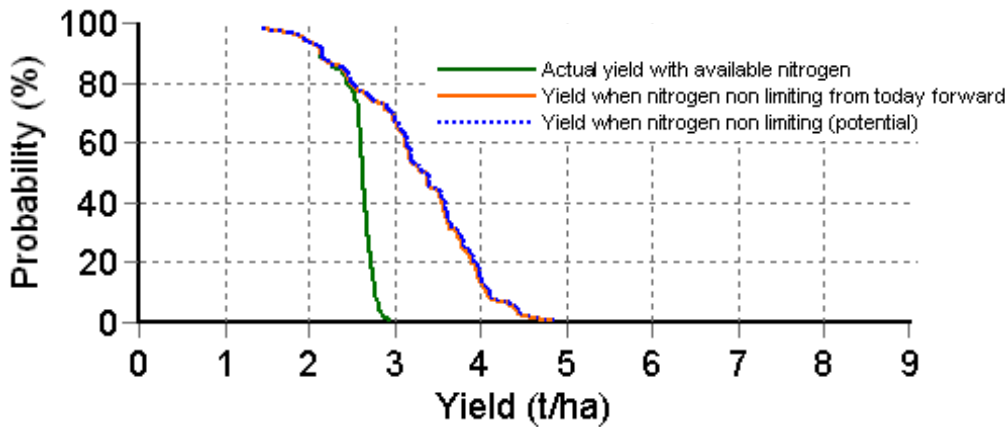
This canola crop has good yield potential with 172 kg/ha available N, possibly due to the field pea crop last year, and 90mm available soil water.

Like many paddocks in the district, this paddock received good rainfall in January with moisture penetrating down to nearly 1 m. Subsequent rainfall events have failed to alter the moisture probe readings too much.

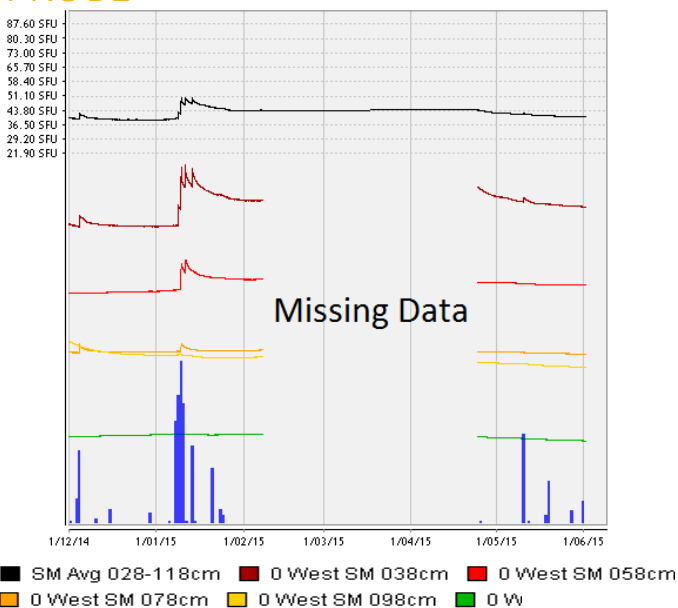
The grain yield outcome graph shows that there is a 4 out of 5 year chance (80%) of growing a 2.5 t/ha canola crop with the currently available soil nitrogen.

The nitrogen unlimited and nitrogen limited curves start diverging at this 80% probability point showing that the addition of nitrogen can increase yields by up to 2 t/ha. This crop has adequate nitrogen for at least a month so monitor and reassess then.

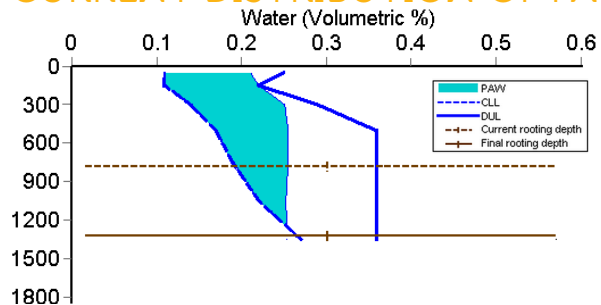
## YIELD



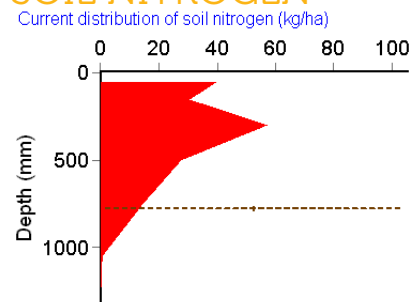
## PROBE



## CURRENT DISTRIBUTION OF PAW



## SOIL NITROGEN







**P: (02) 6980 1333**  
**W: [www.farmlink.com.au](http://www.farmlink.com.au)**  
**E: [farmlink@farmlink.com.au](mailto:farmlink@farmlink.com.au)**



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