

Fertilizer News

Work on your nitrogen management plans now

In the absence of a really profitable grain legume option in many areas, nitrogen (N) fertilizer remains a key driver of profitability for many graingrowers. Like other aspects of farm preparation, nitrogen management plans should be in place before the season begins - even when the plan is to wait and see what happens. That's because the key elements of a good nitrogen plan remain the same from year to year. Key elements are:

- How much nitrogen will be applied when the crop is sown.
- How much top-up N will be required (to be guided by in-season monitoring with tools like Fuel Gauges and plant analysis:
- followed by a post harvest review.



Growers should plan nitrogen management well before the season. Have yield targets in mind, know when you will be making your N decision and what tools you will be using to help make those decisions. Summit Fuel Gauges are an excellent help in deciding in-crop N. Speak to your local Summit Area Manager about planning your Fuel Gauges for the coming season.

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N up-front

There is nothing magical about the timing of N. If applied N is at no risk of loss to the plant - either through leaching, nitrification or volatilisation, then all required N could be applied at or before seeding.

The challenge is determining 'all required N' and this is related to expected yield, determined by time of emergence and stored soil moisture at the time of making the N decision.

Practically, most farmers have an idea of expected yield should an average season eventuate.

Based on this, an approximate total amount for N can be estimated.

As a rule of thumb, around one

quarter to one half of total N required could be applied in front of, or at seeding. For example, a 2.5 t/ha cereal crop requiring 60 kg/ha total N could have 15 to 30kg N/ha applied up-front.

For lighter soil types, particularly in higher rainfall areas, lower proportions of up-front N should be used as the leaching risk is higher.

Continued page 2.

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Nitrogen plans (cont.)

In low rainfall areas on heavier soil types where the risk of N loss is negligible, the up-front N may be the only N that is required if yield potential is low.

Under fertilizing with N up-front runs the risk of nitrogen deficiency particularly as the timing of additional supply for the crop is uncertain. For example, it may be planned to top-dress additional N at four to six weeks after seeding, but dry conditions may prevent any applied N getting into the root zone in an available form until much later.

In this scenario, the yield may be restricted due to N deficiency as the plant otherwise continues to grow well on adequate sub-soil moisture.

Top-up N

One or two top up N applications are usually made after the initial up-front N application. An estimate of potential yield can be made during early tillering for cereals and before bolting for canola.

Another assessment can be made at late tillering for cereals (or early flowering for canola) if stored moisture is very good, or there have been losses of already applied N.

Fuel Gauges

Summit Fuel Gauges can take a lot of guesswork out of top-up N decisions. Fuel gauges are one to two metre wide strips of abundant N fertilizer run out across the paddock workings just before or just after seeding. These strips and the adjoining crops, are read with a Greenseeker® (NDVI) to give a "greenness" record.

This information is put through the Summit Fertilizers N-Calc program and a recommendation for the most profitable N addition is calculated.

Fuel Gauges and the N-Calc system have been tested across Summit's Field Research program over the last four years and have consistently been shown to provide reliable N recommendations.

Plant analysis

Plant analysis is another way of assessing the current N status of a crop. However, growers should be aware of the limitations.

Plant analysis provides the plant's current N status, without indicating a range of additional N that may be required. There is also a delay from taking samples to receiving the analysis and then making a recommendation.

Despite these limitations, it remains a useful tool that can add valuable information to the nutrition picture. For example, revealing what other nutrients may be limiting the crop potential and the expected response to N.

Review after harvest

Yield and protein data can be very useful in looking at the adequacy of N for past cereal crops. Protein

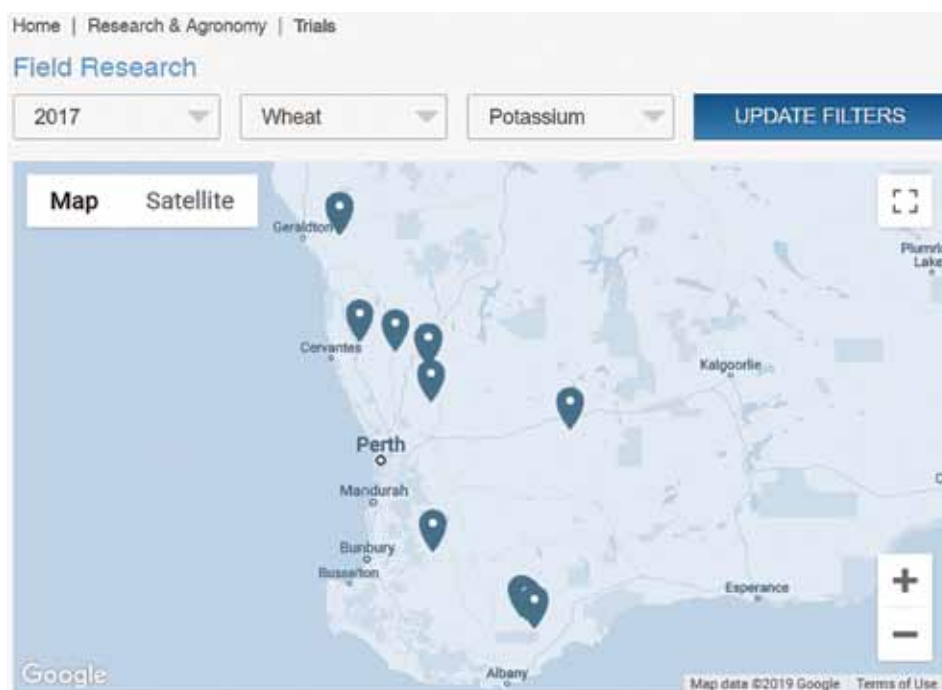
yield (yield x % protein) can give an indication of the adequacy of soil supply. From this information, useful adjustments can be made to the management of subsequent crops.

For example, a crop that yielded 3 t/ha with only 9% protein yielded 270 kg of protein/ha – indicating a low to moderate N supply.

Reviewing past protein yields can provide another tool for growers to assess adequacy of nitrogen supply.



Easy access to Summit trial results



Summit has recently upgraded the website to make viewing the results of our extensive Field Research program even more readily available. By using filters on a clickable map, farmers can select a year, a crop type and a nutrient (or any combination of the three) to access the results they are interested in.

Summit's Field Research team conduct a wide range of trials across the state, which include collaboration with the Department of Primary Industry and Regional Development (DPIRD), GRDC, agricultural colleges and schools, grower groups and others.

As well as an extensive examination of critical crop and pasture nutrition, in recent years we have looked at nitrogen responses

in different common varieties, the effect of nutrients on nematode populations and crop responses when soil is ameliorated with lime and deep ripping.

In collaboration with GRDC we are examining phosphorus and potassium responses in a multi-year project called "Increasing Profits from N, P & K Fertilizer Inputs." Summit also conducts trials and sponsors a number of grower groups across the state. These trials are also on the website.

Research from 2015 onwards is available for viewing and results from the latest season are being added regularly.

Go to summitfertz.com.au and click on Field Research Results.

Fine tuning fertilizer decisions after a high yielding season

Overall, growers experienced a good growing season last year. Most areas experienced decent opening rain in late May followed by a wet winter. Dry conditions in September did limit yield potential, however rain and cool conditions in October resurrected many areas to set up a fine harvest.

A season shortcoming was that a lot of grain had low protein. This meant more lower grades of wheat were delivered.

Even though many growers applied above average rates of nitrogen, the dry autumn and spring conditions may have limited nitrogen being mineralised from soil organic matter. Another contributing factor would be the decline of legumes in our farming systems and a decrease in soil organic matter levels, so there was less nitrogen available for the crops.

If we do a quick nutrient budget of what was typically removed by the crop last season, compared with what was applied, it's clear in many instances we will need to increase fertilizer rates this year to, at the very least, maintain soil nutrition.

For example, in a 3t/ha wheat crop about 70 kg of nitrogen, 10.5 kg phosphorus and 15 kg of potassium are removed (Table 1).

Similar nutrients are removed by a 1.5t/ha canola crop.

The removal of nutrients in a 7.5t/ha hay crop is 120 kg of nitrogen,

19 kg phosphorus and 90 kg of potassium.

Nutrient supplied in a fertilizer program of:

- 50 kg/ha MAPSZC plus 80 kg/ha UreaPlus, or
- 85 kg/ha Vigour and 80 kg/ha UreaPlus

is shown in kilograms in table 2 below.

In the wheat and canola example, the amount of nitrogen and potassium removed exceeds that applied to the crop, whereas the phosphorus is breakeven. Therefore any higher yields achieved or lower rates applied would reduce the soil supply further.

As we plan for this season's fertilizer requirements we need to take into account the amount of nutrients that were removed from the paddock in grain or hay.

Having some idea of the size of the export should be part of your management decisions, in particular for the long-term sustainability of your soil fertility program.

If your paddock's phosphorus and potassium levels are marginal, then you should apply at least what has been removed by the crop to maintain adequate soil levels.

If you have not been applying potassium to your paddocks, or have been using reduced fertilizer rates in recent years, then a better harvest could allow some additional investment



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in potassium for 2019.

When making a fertilizer plan you also need to take into account the fertilizer use efficiency of the applied product. In the case of nitrogen the nutrient use efficiency may only be 50 percent, which means only half the applied nitrogen is taken up by the plant.

The remainder may be leached, taken up by weeds or tied up in organic matter.

Nutrient replacement budgeting is just one option for determining your fertilizer needs. Other tools like soil testing can be used to find out whether you need to immediately apply additional nutrients to replace those exported in grain or hay.

Summit soil analysis is a tool to assist in deciding how much fertilizer to apply as it provides an understanding of the quantities of available nutrients in the soil and where in the soil profile they are located.

These analytical results are interpreted using models developed from trials conducted in Western Australia.

The models also take into account potential yield, soil type, past crop rotations and soil constraints like pH or aluminium levels.

More information can be provided by your local Summit Area Manager.

Table 1. Typical nutrient removal for wheat, canola and cereal hay

	N	P	K	S	Cu	Zn
	kg/ha removed				g/ha removed	
Wheat (3.0t/ha)	69	10	15	4	15	87
Canola (1.5t/ha)	60	10	14	15	6	60
Hay (7.5t/ha)	120	19	90	11	38	188

Table 2. Nutrient replacement with the following fertilizer regimes (kg/ha)

	N	P	K	S	Cu	Zn
MAPSZC (50kg/ha) & UreaPlus (80kg/ha)	43	9.9	0	10.7	0.1	0.2
Vigour (85kg/ha) & UreaPlus (80kg/ha)	46	10.2	10.2	10.9	0.08	0.17

New tools for SummitQ

Summit Fertilizers is looking forward to the 2019 season with substantial expansions to the SummitQ productivity package already in place and more planned for the future.

SummitQ stands for the technical services offered by Summit. Managed and delivered by Summit Area Managers using their local knowledge and experience, SummitQ delivers best practice fertilizer recommendations. Included in the SummitQ

package are:

- InSITE
- Fuel Gauges
- Field Research

inSITE

The tools now being offered within InSITE are an exciting expansion to the Summit soil and plant analysis service. Delivering analysis and interpretation, Summit InSITE will continue to offer fast turn-around times and the backup of the local Area Manager.

Available for 2019 is electronic in-paddock recording of site-specific data through the Summit Farm2Lab APP. For example, soil sampling plans can be uploaded directly to the lab from a tablet in the paddock, or, alternately, samples can be 'taken on the fly' by selecting sites and tagging them with their GPS location, directly from the tablet.

Connection through the Summit Farm2Lab APP will remove the necessity for paper forms and enable much quicker paddock information transfer to the lab.

Data can also be transferred much more quickly and efficiency, direct from the lab to the Area Manager.

On a web-based platform, it allows for visual analysis of data via trend maps for nutrients and soil characteristics (e.g. pH, PBI) for both top-soil and sub-soils.

Summit analysis models are continually updated and validated against the latest field research data to ensure information is as current as it can be.

Growers will also notice changes to Summit reports which can now be consolidated for a whole farm view.

Carried out in the drier summer months, soil analysis is the best tool for planning fertilizer strategies for the

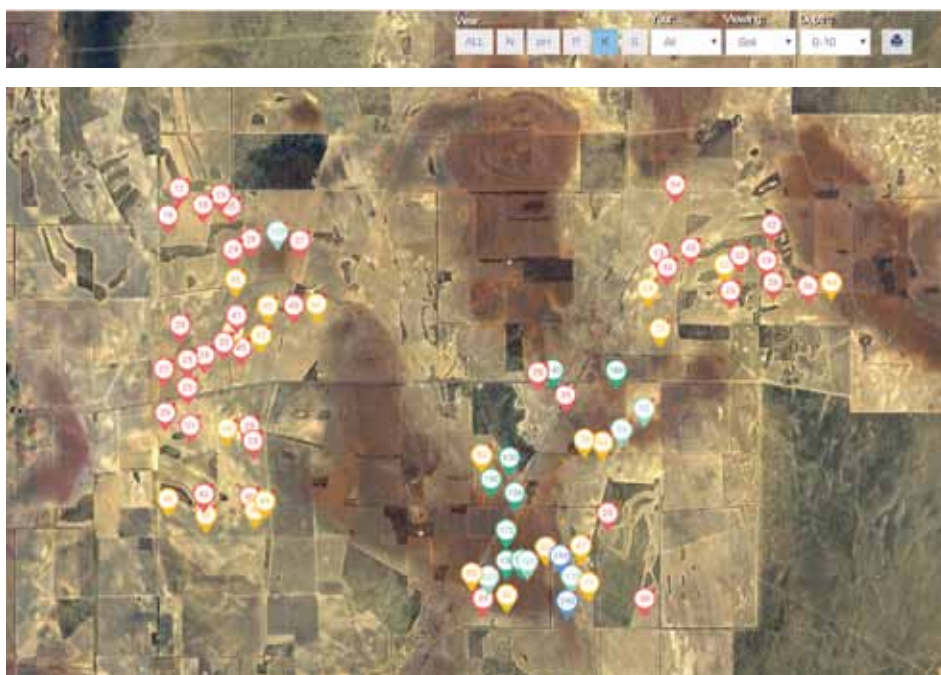


Figure 1. A recently generated Summit distribution trend map for potassium (K) across three years for top-soil and sub-soil samples. K levels change with the different soil types from yellow sandplain (low at 36) to the edge of the red soil (marginal at 54) to high in the heavy red soils.

coming season. Farmers looking to test their soils this season should start by contacting their local Area Manager.

Fuel Gauges

The benefits of continuous, in-season nutrient monitoring is evident as more farmers connect with the Summit Fuel Gauge program. In-paddock Fuel Gauges enable Summit Area Managers to measure nutrient responses against farmer practice. Using NCALC software to analyse GreenSeeker data, responses of cereals and canola to nitrogen can be predicted to optimise yield.

Field Research

Field research is another important tool within SummitQ that Area Managers use every day to help farmers keep up-to-date.

Data from trials is analysed and used to improve products, keep farmers abreast of the latest in nutrition research and to continually improve SummitQ to provide the best in-field advice.

Field Research trial results are available on a convenient clickable map on the Summit Website.

For more information on SummitQ, growers should contact their local Summit Area Manager.

Contact details are on the Summit website; www.summitfertz.com.au

SummitQ inSITE

SummitQ inSITE can provide a guide to whether you need to apply additional nutrients to maintain productivity.

It assists in deciding how much fertilizer to apply as it provides an understanding of the quantities of available nutrients in the soil and where in the soil profile they are located.

The analytical results are interpreted using models developed from trials conducted in Western Australia. These models also take into account the potential yield, soil type, past crop rotations and soil constraints like pH or aluminium levels to determine a fertilizer recommendation for the coming year.

Your local Summit Area Manager can provide more information on the impact of nutrient removal after last year's crop, the effect of summer rain on soil nitrogen and results of SummitQ inSITE.

Value to crops from nitrogen applications after pasture legumes

For many farmers, legume pastures provide high quality livestock grazing with the added benefit of fixing soil nitrogen (N) for subsequent crops. How much of that N in organic form is available to the crop however, depends largely on seasonal conditions.

It's an important area of Summit research, because growers need to know if organic N can support the following crop's needs, or if more is needed.

Nitrogen mineralisation from organic matter requires warm wet weather. This mainly occurs in spring or sometimes earlier in the season if summer rains are sufficient to keep the soil moist for an extended period.

In seasons where there is low summer rainfall and as a consequence negligible N mineralization, crop potential may be held back by limited N availability early in the growing season.

To further investigate this issue, Summit established an N trial in the Chapman Valley in Sceptre wheat that followed a *Biserrula pelecinus* pasture phase. Various N rates were applied at seeding or during the season

Yield at the site was high, with almost 300 mm rainfall received for the growing season that started with a break on 25 May. The addition of N as urea at seeding, UAN at the end of July or split between both increased yield by up to 2 t/ha more than reliance on Biserrula-fixed N and showed a trend of higher protein (Figure 2), although the protein difference was not statistically significant.

Screenings in all plots were >5%, resulting in AGP1 delivery grade across the board. Nonetheless, due to the high yields, gross margins were high. All treatments where fertilizer N was applied returned greater profit than where it was not (Figure 3). Some treatments indicated a staggering >\$500 increase in profit per hectare over and above a 4 t/ha crop with no N applied.

From the yield produced, grain harvest will have exported between 90 and 140 kg/ha of N. With only up to 60 kg N/ha applied, it follows that a

significant proportion of N for the crop came from stored soil N including that fixed by the Biserrula.

It appears that mineralisation did not occur either to the extent required or at the rate required to supply crop demand at all times through the growing season. Supplementary N provided a readily available source of N to drive yield and profit higher than where the crop relied on the Biserrula N fixation alone. In this trial greater benefit was found from later in-season N application and the best agronomic result came from split N.

Key trial messages

- Nodulated pasture legumes such as Biserrula capture and fix N, some of which will be available to following crops.
- In this trial we saw that N from preceding Biserrula was not sufficient to maximise the potential of Sceptre wheat.
- Application of urea and UAN substantially improved yield and returns.

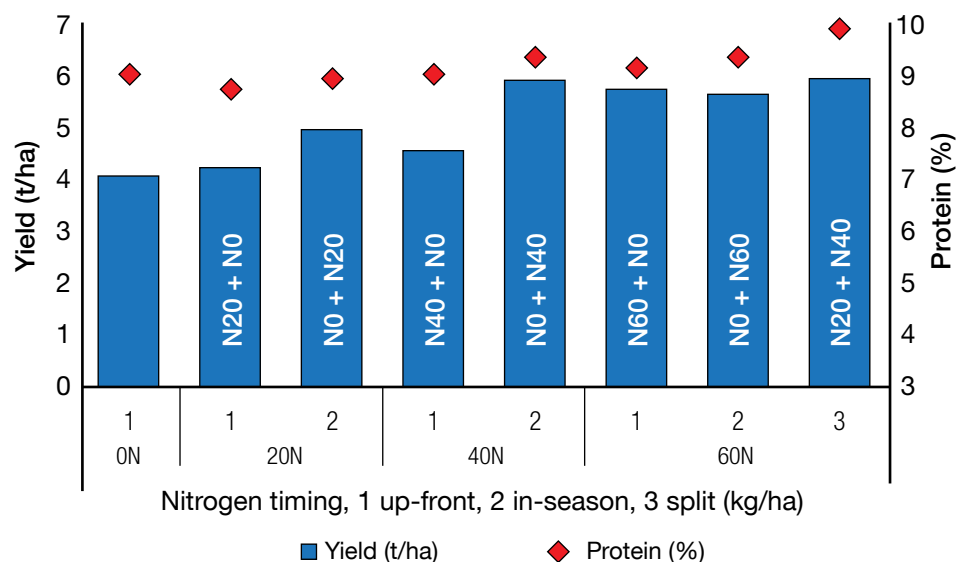
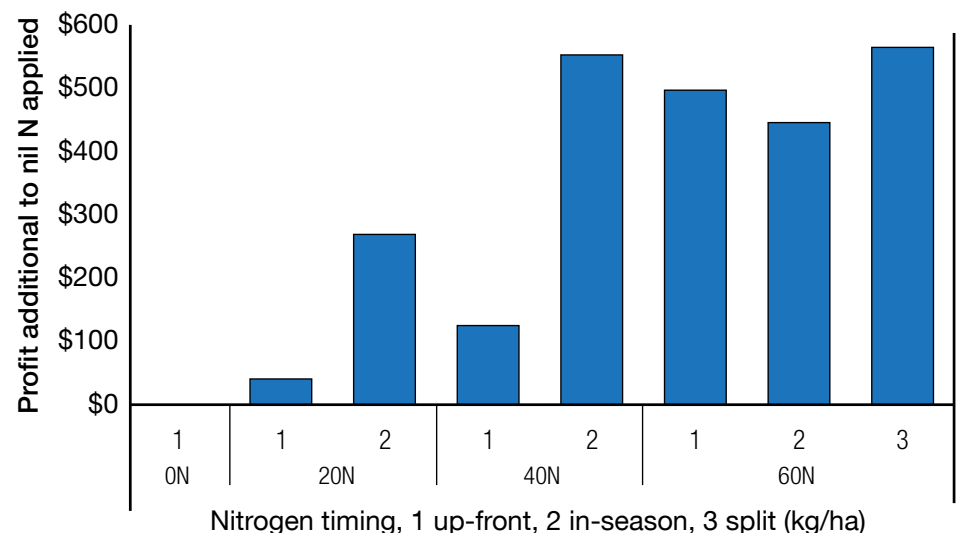


Figure 2 above. High Sceptre wheat yields on a Biserrula stubble were improved by the addition of N in the 2018 Chapman Valley trial, with in-season applications out-performing up-front N. Figure 3 below. Yield improvement with N application resulted in impressive profit margin increases.



Achieving faster 'pay-back' from soil am

Until recently, research assessing the impact of different nutrition regimes on soils following amelioration has been hard to find. So it's pleasing to see that Summit nutrition trials, in collaboration with Warakirri Cropping is yielding some impressive results.

At 'Mawarra', a Warakirri Cropping property approximately 30 kilometres east of Merredin (near South Burracoppin), wheat, barley and canola are grown. Average annual rainfall at 'Mawarra' is around 300mm, with most falling during the crop growing season (April – October).

In early 2016, Warakirri Cropping limed some of their compacted acidic yellow sands and deep ripped part of the area, after which they planted canola over the whole lot.

2017 wheat trial

The site was an ideal one for Summit Fertilizers to establish a factorial nitrogen (N) and phosphorus (P) trial after lime application, with or without deep ripping. The 2017 trial included some relatively high nutrient rates to really test the new productive capacity of the paddock sown to Calingiri wheat.

As anticipated, an increase in wheat yield was seen in the second growing season after soil amelioration due to improved soil conditions. Perhaps more significantly, the increased wheat yield potential from undertaking the soil amelioration operations was leveraged by application of P and N (Figures 4A and 4B below).

After a successful 2017 trial that highlighted new production possibilities, Warakirri Cropping limed and deep ripped more land for the 2018 season. Summit's field trial work continued within the constraints of a growing season that offered just over 200 mm of rainfall.

Two more ameliorated soil sites were selected and one sown to canola, the other to wheat.

2018 canola trial

Canola sown in 2018 after liming and ripping at 'Mawarra' saw yield push up from 0.93 t/ha to 1.82 t/ha by increasing P to 18 kg/ha and N to 90 kg/ha.

Taking into account grain quality and oil content, profitability was increased considerably by higher P application on the ameliorated soil. A nitrogen optimum of 60 kg/ha was revealed for that site (Figure 5).

2018 wheat trial

A sandy area near the canola site showed soil test potassium (K) levels to be low (25 mg/kg). Past farm practice included low K addition because the acidity and compaction was limiting

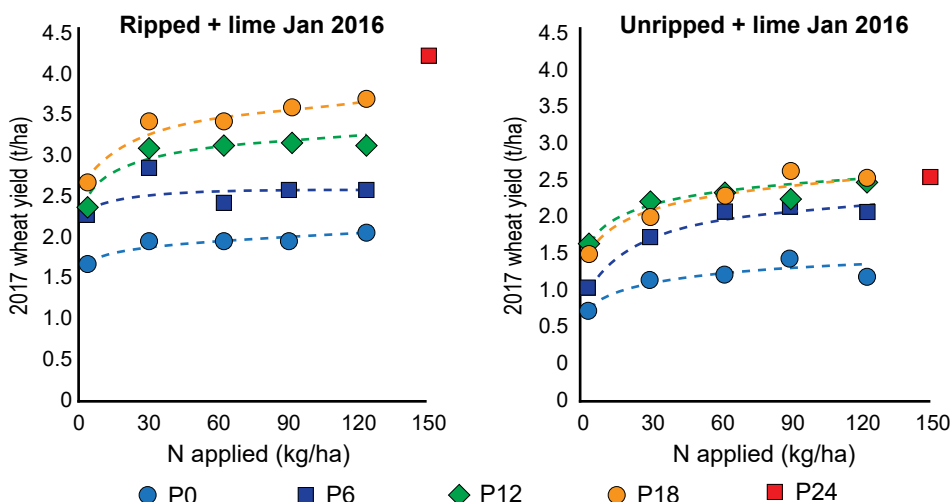


Figure 4A and 4B above. Increased Calingiri wheat yield potential from soil constraint amelioration was realised by increased nutrient application in a Decile 2-3 rainfall year at Burracoppin, 2017. Note both the high-end potential with high inputs and the low efficiency of N without adequate P.

Table 3. Impact of 2017 fertilizer application and January 2016 soil amelioration on yield and returns from wheat at South Burracoppin.

Fertilizer impact on unripped country	Yield or margin impact
Adding P with no N increased returns over no fertilizer	\$34 - \$184/ha
Adding P+N increased returns over no fertilizer	Up to \$434/ha
Max yield	2.74 t/ha
Fertilizer impact on deep ripped country	Yield or margin impact
Adding P with no N increased returns over no fertilizer	\$150 - \$230/ha
Adding P + N increased returns over no fertilizer	Up to \$643/ha
Max yield	4.18 t/ha
Combining deep ripping plus fertilizer impact	Yield or margin impact
Without fertilizer, ripping increased return over unripped	Additional \$183/ha
Adding P without N increased ripped return over unripped	Additional \$186 - \$282/ha
Adding P + N increased ripped return over unripped	Up to additional \$505/ha

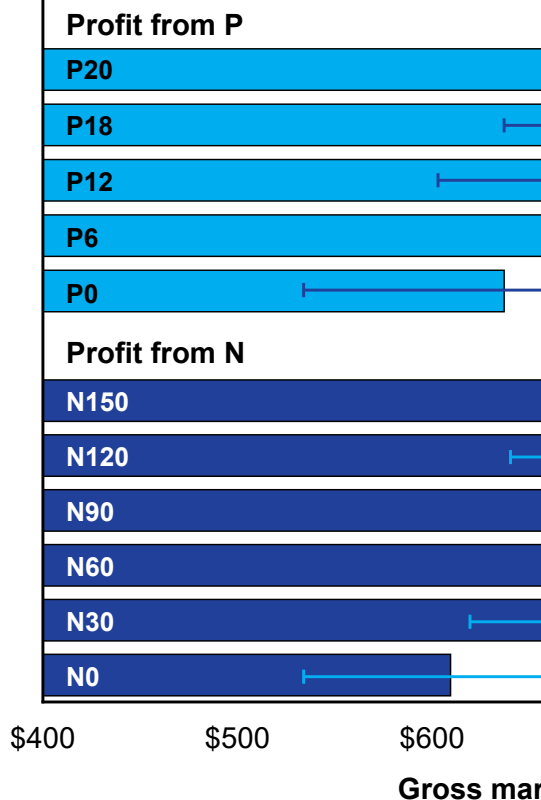


Figure 5. Gross margin potential of canola production on 'Mawarra' in 2018. Bars are means with maximum and

Amelioration programs

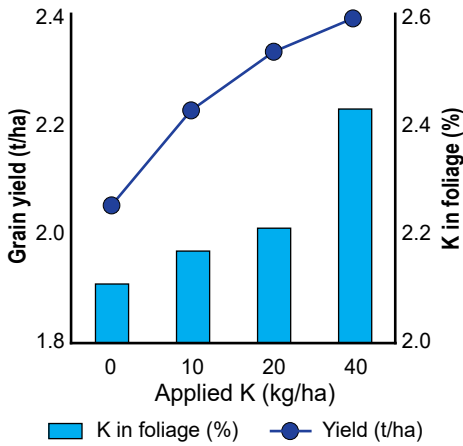


Figure 6. Influence of seeding K application after soil amelioration on wheat plant uptake and grain yield.

productivity and K demand.

Following liming, ripping and ploughing operations, a factorial P x K trial was established on wheat.

Increased rates of both of these nutrients banded below the seed resulted in higher shoot concentrations and healthier, more vigorous growth.

By harvest, K had a larger influence on yield than P, improving yield by up to 400 kg/ha (Figure 6) compared to 250 kg/ha from P.

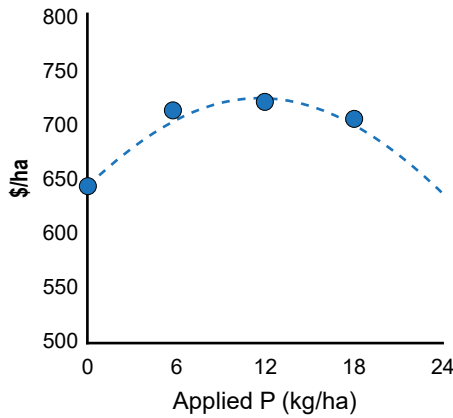
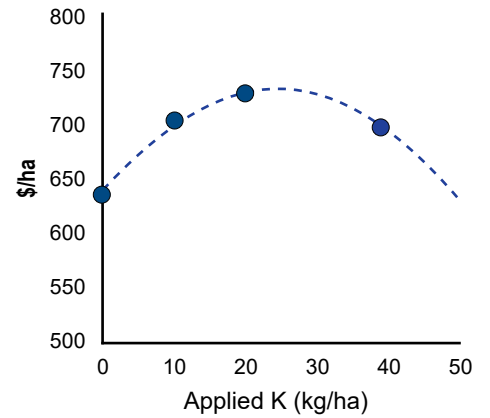


Figure 7. Higher demand for nutrients by wheat on sites with improved yield potential means optimal P and K rates may be higher than before amelioration, indicated here by gross margins

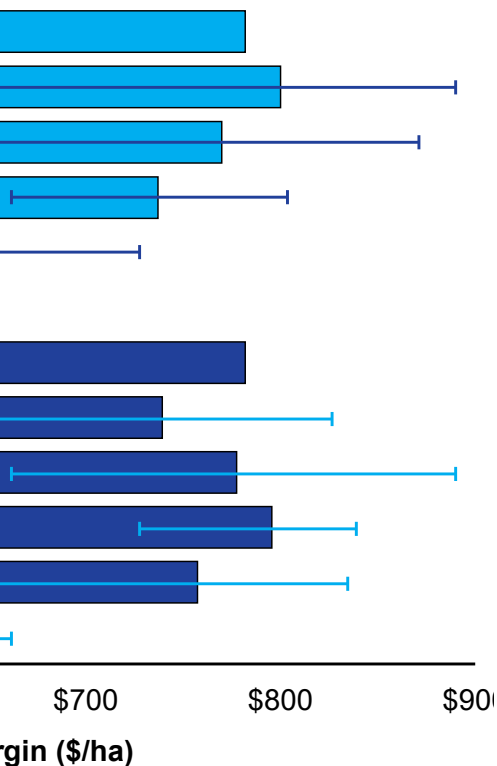
Profit maximised by applying higher P (12 kg/ha) and K (25 kg/ha) rates than the fertilizer regime before soil amelioration (Figure 7) demonstrates how a rethink of nutrient applications is required after operations that cause major improvements to soil conditions.

This work demonstrates how important it is to approach production goals that consider nutrition in combination with soil amelioration to provide the best agronomic outcome.



Soil amelioration to address chemical and physical constraints to production can range from non-intrusive spreading of amendments on the surface to major mechanical disruption of the soil profile by all manner of machinery.

By far the largest amount of amelioration work in WA agriculture goes into lime application to address soil acidification, but mechanical operations that encourage rapid distribution of lime to the sub-soil and/or to remove soil compaction layers, address water repellence and generally improve soil conditions for root growth can also be worthwhile.



Profit margin (\$/ha) vs Applied N and P rates at ameliorated soil by increasing N and P rates at minimum ranges shown.

Key trial messages

If you have spent substantial money to make land more productive, don't let nutrition then become a limiting factor when it is so easily addressed.

By strategically choosing optimal fertilizer rates matched to the improved site potential, significant increases in production can lead to:

- substantial improvement in profitability
- improved efficiency of utilisation of applied nutrients
- higher yield and grain quality
- considerable decrease in payback time for expensive amelioration operations (Table 3).

For more information on Summit trial work, growers should contact their local Summit Area Manager.



Summit VIGOUR

- Well balanced NPK fertilizer.
- All major nutrients compounded into each granule.
- Easy to handle and suitable for any cropping situation that requires potash.
- Top up levels of trace elements compounded into every granule.
- Superior crop safety.
- Suitable for fungicide coating.

Timing nitrogen can influence canola flowering without impinging yield

Nitrogen (N) fertilizers influence both vegetative growth and oil production in canola. With growing popularity of liquid N forms such as Summit UAN, or N liquids that also include sulphur - such as MAXamFLO many growers are asking, how do these applications impact on canola flowering?

Growers are requesting more information on rates and timing to maximise grain production, control flowering to avoid the threat of frost and maintain quality.

Summit Fertilizers has conducted trials near Mingenew in 2016, Wickepin in 2017, and Meckering in 2018, looking at the effects of nitrogen rate and application timing on length of canola flowering, yield and seed quality.

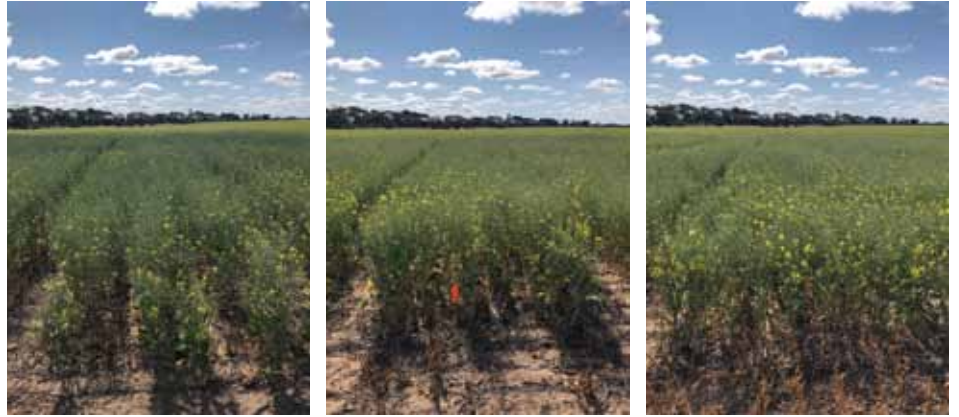


Figure 9. Persistence of flowers in response to nitrogen 40 kg/ha applied as MAXamFLO at first sign of flowering (left), 20% flowering (centre) and 100% flowering (right).

After seeding with 30 kg N/ha, N top-ups of 20 and 40 kg N/ha were applied as MAXamFLO at three timings:

1. first sign of flowering;
2. 20% flowering; and
3. 14 days after 20% flowering i.e. close to 100% flowering.

Aerial cameras and sensors captured plant growth and flowering information (Figure 8).

Canola plants receiving early nitrogen applications were observed to pod quickly and subsequently stop flowering. In contrast, applying higher rates of nitrogen and later in the growing season saw canola hold

flowers longer and at higher density than the early applications (Figure 9).

Canola plant growth and harvest yield increased with the quantity of N applied. Yield and gross margins were optimised by applying 70 kg N/ha (Figure 10).

However, perhaps the most notable result was that none of the trials showed a yield or seed quality difference between application timings of N applied at different flowering stages, despite the altered flowering windows.

We also replicated a Fuel Gauge and the associated N recommendation within the trial. Summit's in-season

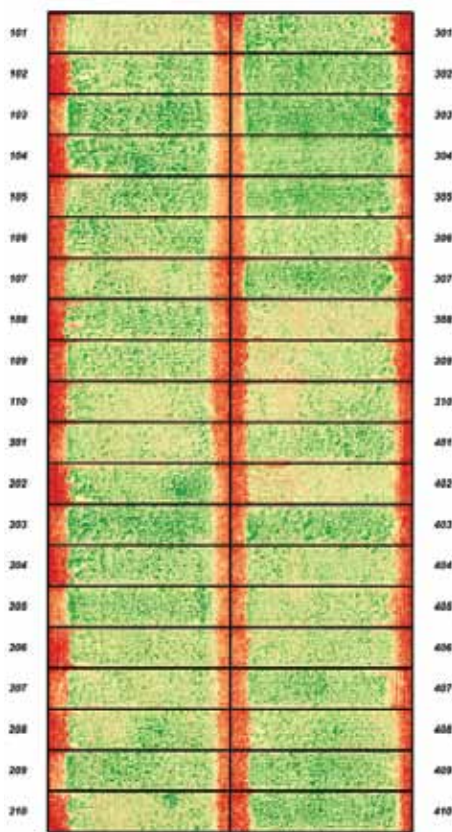


Figure 8. Canola NDVI near Meckering, 4 September 2018, showing evidence of growth differences due to different rates and timing of N applications

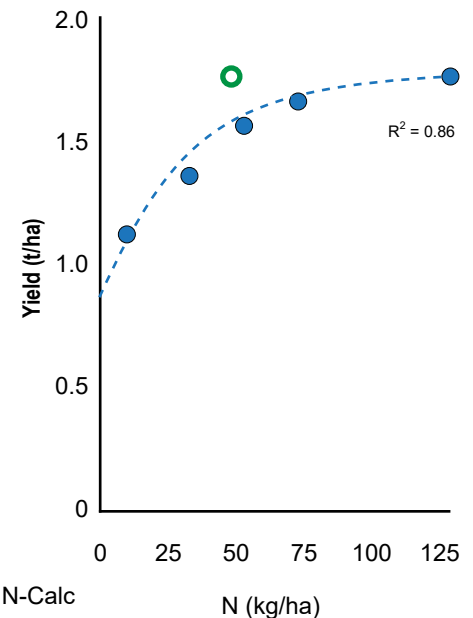
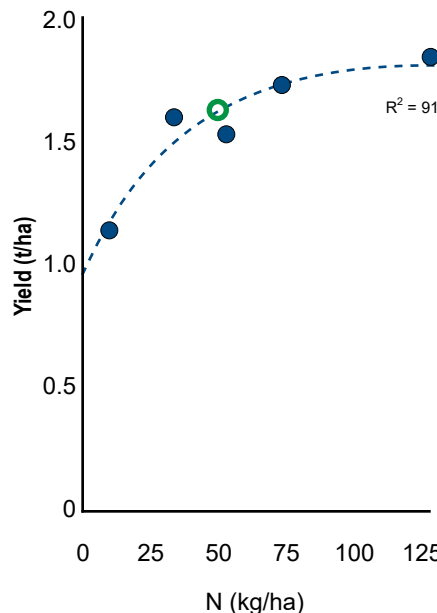


Figure 10. Canola yield in response to nitrogen at Wickepin 2017 (L) and Meckering 2018 (R).

nitrogen calculator (N-Calc) proved to be a useful tool for making N decisions. Its recommendation of 15 kg/ha top-up N or 54 L/ha MAXamFLO at Meckering maximised yield and economic return, replicating the previous season at Wickepin.

It is of interest to note, the N-Calc recommendation was applied on 3rd of August 2018, well before the first flowering application timing. For further discussion about these trial results or Fuel Gauges, growers should contact their local Summit Area Manager.

Key trial messages

- Sufficient quantities of nitrogen need to be applied at sowing to ensure potential yield is not limited by nitrogen deficiency.
- Then, in-season top-up nitrogen application can be delayed into late flowering without any appreciable yield penalty.
- Farmers who have a Summit Fuel Gauge in their canola crop can use the recommendations with confidence.

Summit launches new SMS and email service

Summit Fertilizers recently launched a new SMS and email service for customers. Part of the company's broader service package, this exciting e-commerce initiative is designed to ensure growers are more regularly updated on the status of their loading appointment and fertilizer collection.

An SMS will be sent to clients and nominated carriers whenever a new loading appointment is made confirming the appointment time and day, fertilizer type, quantities and pick-up depot.

SMS alerts will also be sent when an appointment has been changed or cancelled, and importantly as soon as the order is despatched.

Upon despatch, a loading and weight docket and tax invoice will be emailed to both the customer and carrier. For customers carting their own fertilizer the docket and tax invoice will be emailed only to them.

Summit Executive Manager - Marketing and Sales, Frank Ripper said, "In this day and age it's very



important to keep customers updated right throughout the ordering and delivery process. The quickest, most efficient way for us to do that is by direct updates through SMS and email notification.

"It will give our customers and carriers greater peace of mind and enable better organisation of their day to day affairs."

Summit UAN and MAXamFLO chemical mixing compatibilities and more

In 2015 Summit conducted extensive laboratory testing of the physical mixing compatibility of our liquid fertilizers – Summit UAN and MAXamFLO, with many commonly used herbicides, fungicides and insecticides.

The result was an easy to read booklet containing compatibility charts for cereals and canola. All that valuable information has since been included in the Summit APP, available for Apple and Android users.

Using drop down menus in the Summit APP, it's easy to check if the chemical of choice is physically compatible with Summit UAN or MAXamFLO, or if you should add some extra water to enhance the mixture.

More recently, Summit has updated our website with that information. Using the same format as the Summit Nitrogen Calculator

APP for phones and tablets, the website utilises drop down headings for ease of search functionality.

There's a lot of accompanying information on the website that growers will find useful.

To guide you through, go to the Summit website:

www.summitfertz.com.au

go to the liquid fertilizer section under the cropping fertilizers tab and you'll see the following tabs:

- liquid nitrogen products
- usage and compatibilities 2018
- notes (on many things including mixing)
- keys to formulations
- keys to compatibilities
- decontaminating boomsprays, and
- corrosion

These notes aim to give growers a more complete understanding of the requirements for mixing Summit liquid fertilizers with common farm chemicals.



The screenshot shows a web interface with a navigation menu on the left and a main content area. The main content area includes a 'Compatibility' section with a color-coded legend: red for 'Incompatible. Difficultly separating when under ideal conditions. Do not mix', yellow for 'Needs limited and adequate agitation, 20% water recommended', green for 'Mixes well - gentle agitation is adequate and moderate agitation, 20% water recommended', and blue for 'Mixes well but requires extra water - use 40% water. Needs constant and adequate agitation'. Below this is a table titled 'Suggested Compatibility of Summit Fertilizers Used in Rotation with some Agricultural Chemicals' with columns for Treatment, Method, Form, MAXam FLO, UAN, and Comments. The table lists various treatments like Glyphosate, Paraquat, and various herbicides, with corresponding compatibility notes.

New staff appointments and changes



David Armstrong
Marketing and Sales Analyst

After more than 14 years as an Area Manager with Summit Fertilizers, David Armstrong has moved into a head office marketing and sales role.

Reporting directly to the Executive Manager of Marketing and Sales, David's new job description is Marketing and Sales Analyst.

His key activities will be to provide timely and efficient business, data and systems analysis to support the operation of the marketing and sales department. Inventory, market and sales analysis, sales administration, product quality, IT and communications and sales support will all be key areas of focus in the new role.

As David embarks on the new role, he would like to thank the many farmers in the Dalwallinu, Wongan-Ballidu and Koorda shires for making his Area Manager job so enjoyable.



Saritha Marais
Field Research Officer

Summit Fertilizers is pleased to announce the appointment of Saritha Marais to the position of Field Research Officer.

Saritha joined the Field Research Team in January. She graduated with a degree from Murdoch University in 2016, majoring in Conservation and Wildlife Biology.

Originally from Merredin, Saritha says she is enjoying her time with Summit, bringing herself up to speed interpreting data from trials and compiling reports with the relevant information.

An exciting season with an extensive Summit trial program lays ahead. Saritha is looking forward to getting out into the field and assisting in the development of research trials that support the company's research recommendations.



Tracey Hobbs
Area Manager based in Kellerberrin
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Tracey Hobbs has joined the Summit sales team as Area Manager based in Kellerberrin. Her area covers the shires of Kellerberrin, Mt Marshall, Tammin, Trayning and Wyalkatchem.

Tracey grew up on the family farm at Bonnie Rock and career roles have included positions in natural resource management, field research and extension in sustainable agriculture, as well as grain quality and grain accumulation.

Tracey has completed a range of tertiary agricultural studies that equip her well in her current role of providing fertilizer and crop nutrition advice to growers in the area.

Her knowledge of local practises and skills in farm business make her a valuable resource for our operations.

Ben Cook has recently joined the Summit team and will be taking on the role of Marketing and Promotions Manager. Ben previously worked for an international biotechnology company, where he gained extensive business-to-business marketing experience.

He has a degree in Biology from the University of Nottingham (U.K) and completed a number of relevant modules such as plant science, plant pathology and managing pests and pollution.

Having recently arrived in Western Australia from the U.K, with his family, Ben is looking forward to the challenges of getting to know Summit Fertilizers and the broader Western Australian agriculture sector.

Ben Cook
Marketing and Promotions Manager



Large collaborative trials already yielding results

Summit Fertilizers is making a significant contribution to a suite of WA research projects that commenced in 2018. The research aims to identify many different aspects of how soil and crop nutrition best fit modern farming systems to drive efficiency and profit.

Involving extensive collaboration between government, universities and grains industry stakeholders, three major projects have been initiated by the Grains Research and Development Corporation (GRDC).

Summit is one of only two private industry partners joining the GRDC,

Department of Primary Industries and Regional Development (DPIRD), University of Western Australia (UWA), CSIRO, Murdoch University and University of Adelaide as co-investors in the projects.

Work to validate and re-calibrate the relationships between soil test phosphorus values, soil supply to crops and the relationship with fertilizer requirements started in 2018.

After a dry autumn, many regions experienced consistently moist soil profiles and regular rain events through the 2018 growing season.

The wheat response to phosphorus application was not as high as anticipated, although the importance of phosphorus fertilizer was still unmistakable (Figure 11).

After high yields in many areas of the state, results for trials in 2019 and beyond will be awaited with keen interest. This work will continue through to 2021 and should help shape the future of crop nutrition advice.

Fertilizer storage

Regardless of seeding fertilizer used, it's good practise to spread a thin layer of hydrated lime on the floor of the fertilizer shed. This helps stop the fertilizer drawing up moisture through the concrete.

After the shed is filled, growers can spread more hydrated lime lightly over the fertilizer and ideally, cover it with a tarp or plastic. This helps keep air and moisture out and is especially important if the shed doorway faces prevailing winds. All fertilizer should be covered whenever it is practical to do so.

When sowing in humid conditions and first thing in the morning (especially in dewy situations) it is good practise to throw a handful of hydrated lime into the fan of the seeder. This will be blown throughout the seeding rig and dry everything out before you start.

Leaving seeder tynes on the ground overnight can cause problems because it will suck moisture up to condense in the boots. When loading fertilizer into the seeder, sprinkling a little hydrated lime onto fertilizer going up the auger will coat the granules and prevent moisture absorption.

When the fertilizer bin is full, add another 1-2kg of lime to the top. This little extra amount will flow through the system and keep things dry. Over-use of hydrated lime should also be avoided, because it can create its own problems.

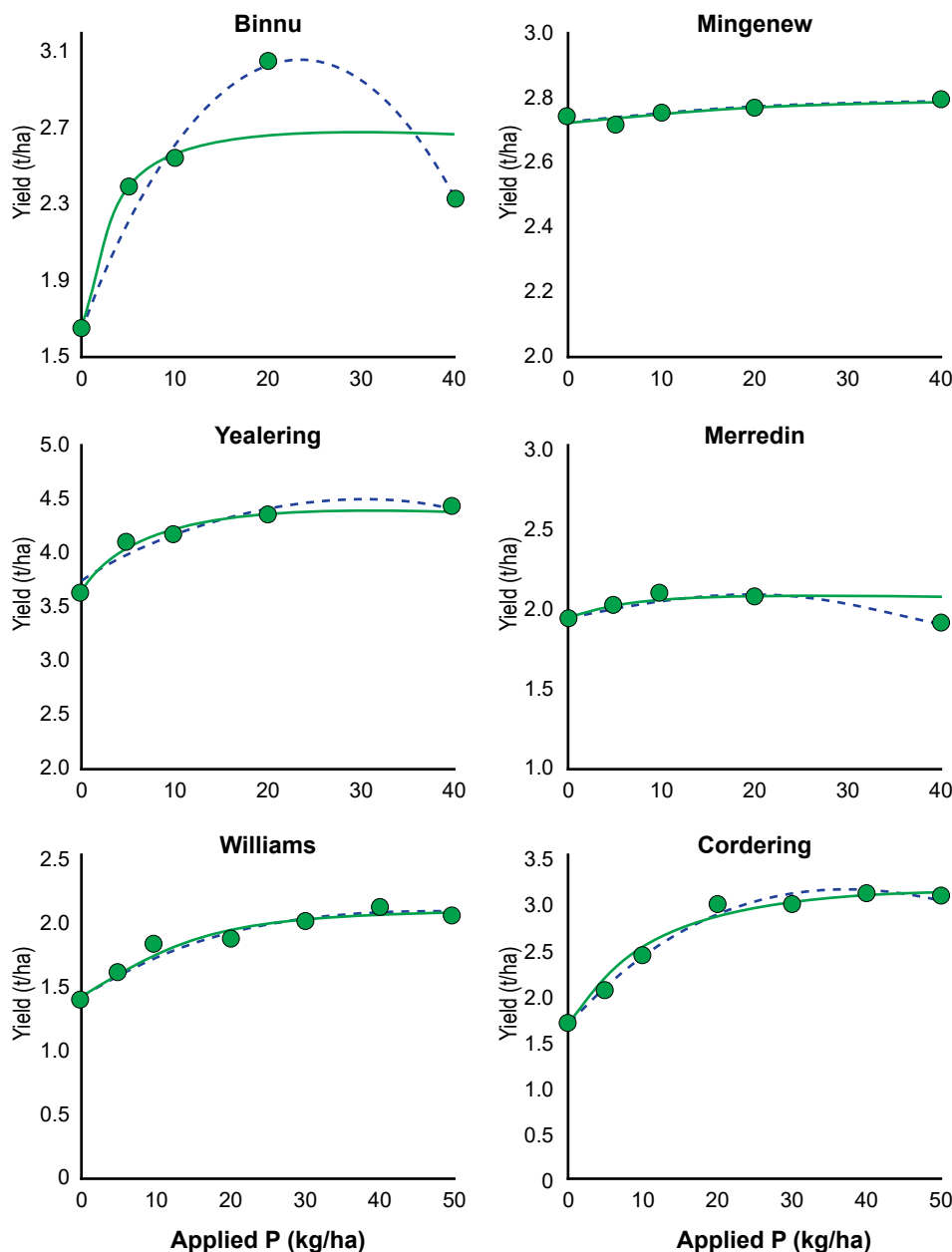


Figure 11. Phosphorus yield response curves for wheat in 2018 from standardised P treatment trials as part of the large GRDC co-investment Profit from NPK project.

Your local Summit Fertilizers Area Manager



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