

Fertilizer News

The strength of local field research



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Merredin based Kobus Marais (pictured above right) with APAL Managing Director, Ryan Walker (left) and Phil Gray of Nokaning Farms, is one of the many Summit Area Managers to hold successful field days this spring.

The 2019 Summit field research program extends across the length and breadth of the state's agricultural regions, with 35 replicated plot trials sown this year.

Growers are wanting 'leading edge' information and most of our trials are driven by consultation with farmers. We also work closely with grower groups, consultants and other research organisations such as our

state-of-the-art soil and plant analysis service provider, Australian Precision Ag Laboratory (APAL).

The expansion of Summit Fertilizers' field research program has meant an increase in dedicated resources, backed by a full team of 17 regionally based Area Managers, along with the experience and expertise of a qualified agronomy team. Summit believes farmers need to be informed by a robust, quality research program that focuses on the issues relevant to their operation.

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The strength of local field research (continued)

Nokaning Farms

The starting point for Kobus' Field Trial Walk in mid-August was a nitrogen (N), phosphorus (P) and potassium (K) trial on canola at Nokaning Farms, just north of Merredin.

Nokaning Farms had an ideal soil amelioration site that had been sown in mid April to 2.7 kg/ha of Bonito canola. Sowing fertilizers were 60 kg/ha of MAXamStar and 30 L/ha of Summit UAN.

Recent site history included 2t/ha lime sand in 2017, 2t/ha lime sand and 1t/ha of gypsum in July 2018 before the weeds were sprayed out. A one way plough was run over the paddock to bury weeds and incorporate the lime and gypsum. Oats were spread and the soil ripped a day later with an Agroplow on 50cm spacings to a depth of 45cm. The oats and weeds were sprayed out in October.

The aim of this trial is to assess the economical optimum nutrition package for soils where the constraints of acidity, sub-soil acidity and compaction have been addressed.

P and K treatments were banded across the workings into dry soil before seeding. This trial will help improve the advice given to local farmers relative to P and K soil tests when making fertilizer decisions.

Growers that have spent substantial money to make land more productive, can't let nutrition then become a limiting factor when it can be so readily addressed.



Merredin based Summit Area Manager, Kobus Marais, addresses growers at Nokaning Farms.

Strategically choosing optimal fertilizer rates matched to the enhanced site potential, can lead to:

- Substantial improvement in profitability.
- More efficient utilisation of applied nutrients.
- Higher yield and grain quality
- Considerable decrease in payback time for expensive amelioration operations.

Until recently, research assessing the impact of different nutrition regimes on soils following amelioration has been hard to find.

It's pleasing to see the development of Summit nutrition trials in collaboration with businesses like Nokaning Farms.

Hines Hill

The final site before refreshments at Korbekka Golf Club was on Paddy Hooper's property on Hines Hill Road.

This trial on a sandy duplex soil was established to assess the response of wheat to P fertilizer.

The trial is one of a series conducted in conjunction with GRDC looking at increasing profit from N, P and K fertilizer inputs into the evolving cropping sequence in the Western Region.

In mid August this trial was showing responses to applied P, so it will depend on how the season finishes as to final yield results. The six P treatments range from nil to 40 kg/ha, each replicated four times on Scepter wheat.



Summit Field Research Manager, Dr Mark Gherardi (left pic) gives details on the Hines Hill P trial. APAL Managing Director, Ryan Walker and Dr Sean Mason from Agronomy Solutions (above) took the opportunity at this site to explain more about DGT as a support method for phosphorus testing.

2019 Esperance field tour

This year's annual field tour was in the Esperance region and provided a fantastic opportunity for Summit's 17 Area Managers to keep up-to-date with the latest in WA crop nutrition research, trial design and practices. The 2019 tour took in 7 field trials, and covered over 370km.

Esperance Downs

The first stop was at the DPIRD Esperance Downs Research Station in Gibson, where we joined Dr Craig Scanlan and Dr Raj Malik to learn about the ongoing trials at the site.

These included;

- Long term effects of soil management, crop sequence and phosphorus (P) fertilizer on soil P availability.
- Long term effects of crop sequence and K fertilizer management on soil K supply.
- Achieving higher yield potential after soil amelioration.

Vigorous discussion of soil sampling and interpretation followed, sheltered from the wind and rain in the shearing shed.

Shepwok Downs

The Summit Field Research team have been working alongside Jordan Whiting at his Shepwok Downs farm to establish a long term P trial. The aim here is to investigate P (ranging from 0 to 24 kg/ha) through a wheat-canola-wheat-barley-canola rotation on a site with moderate gravel content in surface layers and some water repellence. The trial will run until at least 2023.

Hill Plains

The next stop on the tour was at Tom Brown's farm at Mount Ney. Tom discussed his nitrogen management and his goals to attain maximum yield potential. The team then inspected a N x P +/- K trial on Scepter wheat. Despite a shortage of rain at the start of the season (growing season rainfall to the end of July of just over 100mm, compared to an average of 169mm) initial NDVI readings at the site show strong responses to N and P and the necessity of P for good N efficiency. As expected with the high clay subsoils, K (rates were 0 K or 25 K) showed little



The Summit team at the Esperance Downs Research Station (above)



effect. Full results will be available at the end of the season.

Warakirri Lobethal

At Warakirri Lobethal, we caught up with Farm Manager Con Murphy and Assistant Manager Laura Bennet to learn about the challenges and initiatives being undertaken on one of the largest corporate farms in the state, at approximately 13,600 hectares.

Here we viewed two more

N x P +/- K trials, one on Scepter wheat and on Invigour canola. Early season rainfall here was slightly higher and closer to the long term average, but again initial NDVI readings showed no response to K and a limited response to P above 8kg/ha.

We look forward to sharing the results from these trials, when data becomes available and would like to thank all growers and researchers involved for contributing towards an insightful field tour.

Summit adds value

With five major fertilizer brands to choose from, why choose Summit?

Quality products are a major reason farmers choose Summit.

Summit has a wide product range including MAPSZC and DAPSZC – these are the highest quality MAP or DAP products with sulphur and trace elements and are produced in Australia from Australian raw materials.

High quality fertilizers ensure a trouble free seeding and mean crops can be seeded in a timely manner, adding to yield and profitability.

All our trace element cropping fertilizers (Vigour, Gusto, MAP & Zinc, MAP Copper Zinc, DAP Copper Zinc, MAP & Mn) are full compounds, not coated, ensuring agronomic efficiency and high product quality.

Our Superphosphate is also well granulated and the highest quality in WA. Fast and efficient collections are also high on the list when farmers choose a fertilizer supplier. Carriers and farmers alike enjoy the fast loading and the convenient opening times at Summit. Summit knows collection efficiency is very important during time-critical operations such as seeding and our depots can be open 24 hours per day seven days per week when needed.

Easy to do business with, a major

consideration in supplier choice.

Most of Summit's business is done directly between customer and Summit, eliminating potential inefficiencies and improving communication.

A full range of payment options is available as well as the recently introduced Summit credit. This includes our popular Fast Pay (pay four days after collection), Pay 25 (pay 25th of the month following the month of collection) and Delayed Harvest Terms (pay 25th January, after harvest). All credit options are subject to first obtaining Summit credit approval.

Easily accessible information about orders and transactions is available 24/7 on SummitConnect via the Summit Fertilizers website. Here you can view, print or save your fertilizer orders, statements, tax invoices, collections and collection summaries.

Objective assessment of fertilizer requirements is also high on the list when choosing a fertilizer supplier. This is delivered to Summit customers on-farm using Summit Technical Services and includes soil and plant sampling, sample analysis and Fuel Gauges, all backed by extensive, local Field Research. Together with local Area Manager experience these services provide practical nutrient



Summit Executive Manager - Marketing and Sales, Frank Ripper

recommendations to boost the returns you make from your fertilizer investment.

To see how Summit can add value to your business take a look at our Fertilizer Supply Offer for 2019-20 by contacting your local Summit Area Manager. As an added benefit, customers nominating their fertilizer by 31 October 2019 receive Summit's Productivity Package to the value of \$2.00/tonne of fertilizer purchased for the season.

AFL tipping winner



It's been another brilliant footy tipping competition, with plenty of surprises along the way. Throughout the season we've enjoyed hosting individual round winners at Optus Stadium.

This year's competition went right down to the wire and was won by a single point by Luke Percy (pictured above with Summit Marketing Manager and Promotions Manager Ben Cook), with a total score of 136 correct tips and a margin of just 610. Luke's prize includes tickets to the WAFL grand final, two nights accommodation and a \$250 gift voucher.

Make sure to sign up to our 2020 competition next year for your chance to win!

Welcome to Mark Ladny

Summit Fertilizers is delighted to announce the appointment of Mark Ladny to the role of Area Manager for the Albany West, Denmark, Plantagenet, Cranbrook, Tambellup and Broomehill areas. Mark joined the Summit team in June 2019 and replaces Peter Warren, who has recently retired.

Mark began his career in agriculture in 1994. Initially, he completed a certificate in agricultural management and with a strong desire to improve his knowledge, completed a degree in Agricultural Business through Curtin University.

He has enjoyed a range of agricultural positions over the last 20 years, ranging from agronomy to senior management roles. Growers



Mark Ladny
Summit Area Manager, Albany
0498 223 421
mladny@summitfertz.com.au

will find Mark gains a great deal of job satisfaction working with them to improve pasture production and crop yields.

The benefits of using top quality fertilizer

At Summit Fertilizers, we have a strong focus on fertilizer quality - from procurement of raw material and finished fertilizer through handling and storage, to make sure products perform as expected on-farm.

At this time of year growers are weighing up their options for next season. Sometimes fertilizer quality is not given the importance it should in the decision making process.

It isn't until the impact of poor handling product is felt first hand that growers are left lamenting a decision based just on price.

One of the major penalties of poor quality can be down-time during seeding. Not only is this a source of frustration, the cost can be much more than an hourly labour rate as the following example shows.

In this example we assume a seeding program of 4,000 ha and seeding around the clock for a total of 20 hours/day actual seeding. We also assume poor fertilizer quality delays seeding by three hours each day through the time taken checking and clearing hoses, distributors and metering systems and repairing any breakages.

Yield loss for each day of delay in seeding is assumed to be 25 kg/ha/day. Results to the calculation appear in the table (right).

Table 1. Assumptions

Seeding program (ha)	4,000
Seeding rate (ha/24 hr day)	240
Seeding rate (ha/hr)	12
Time for blockages (hr/24 hr day)	3
Yield loss (kg/ha/day)	25

It is important to remember there are other impacts of poor quality fertilizer such as:

- Blockages, rows missing where single shooting or, rows seeded but not fertilized if double shooting
- Build up, affecting rate of application
- Additional labour costs
- Additional wear and tear on machinery.

Table 2 below shows the figures generated from calculations using assumptions from Table 1. A total of:

- 147 tonnes of grain, or \$44,100 worth of income (if wheat is valued at \$300/t)

would be lost due to three hours/day downtime over the course of a 20 day seeding program.

Table 2. Yield and net farm return for high and low quality fertilizer

Day	High quality fertilizer, program sown without down-time			Poor quality fertilizer, program sown with down-time			Total grain difference (t)	Value of difference (\$)*
	hectares sown	Yield (kg/ha)	Total grain (t)	hectares sown per day	Yield (kg/ha)	Total grain (t)		
1	240	3000	720	204	3000	612		
2	240	2975	714	204	2975	607		
3	240	2950	708	204	2950	602		
4	240	2925	702	204	2925	597		
5	240	2900	696	204	2900	592		
6	240	2875	690	204	2875	587		
7	240	2850	684	204	2850	581		
8	240	2825	678	204	2825	576		
9	240	2800	672	204	2800	571		
10	240	2775	666	204	2775	566		
11	240	2750	660	204	2750	561		
12	240	2725	654	204	2725	556		
13	240	2700	648	204	2700	551		
14	240	2675	642	204	2675	546		
15	240	2650	636	204	2650	541		
16	240	2625	630	204	2625	536		
17	160	2600	416	204	2600	530		
18				204	2575	525		
19				204	2550	520		
20				124	2525	313		
Total	4,000		11,216	4,000		11,069	147	\$44,100

* Assume APW wheat @ \$300/tonne on-farm

Quality differences between products can arise from several sources:

Granule hardness

Hardness varies with raw material and manufacturing process. Softer granules break down into smaller particles during handling. This can lead to segregation and changes in the rate of application. Granules can also abrade and generate dust, which may cause build-up or blockages.

Granule size

Very small granules pack harder while large differences in granule size can cause segregation and variation in application rate.

Granule coating

Coatings aid handling by reducing moisture absorption, increasing flowability by making the granules smoother and toughening the granule surface to reduce dust generation. However, the quality of coatings can vary significantly.

Evolving farming systems call for a fresh look at manganese nutrition

Back in 2014, manganese (Mn) toxicity was detected for the first time in a Western Australian canola crop. In that particular situation, soil acidification (or lowering of soil pH) had increased plant available Mn in the soil. That process caused higher levels than normal to be absorbed by the canola plants leading to toxicity symptoms.

It's very unlikely Mn toxicity will become a major problem for WA growers, but does highlight the importance of understanding soil pH and its impact on Mn availability.

More recently, the widespread adoption of liming has lifted surface pH of many soils to levels where fixation of Mn can become significant. This is where, under more alkaline conditions, Mn is quickly oxidized and/or adsorbs strongly to the soil, hence is less available for root uptake.

It's another example of how our evolving farming systems require ongoing nutrition research.

Reports of Mn deficiency, confirmed by Summit plant tissue tests, are becoming more frequent and Summit is investigating the issue with Mn trials.

A 2019 trial near Tincurrin is an excellent example, providing an ideal opportunity to revisit the principles of Mn nutrition. Soil tests (see Table 3 below) at the site indicate generally low levels of Mn.

In this trial, Summit Fertilizers is aiming to examine Mn availability:

- at a range of rates;
- as different chemical forms;
- in MAP-based granules or blended with MAP; and,
- also by liquid foliar application.

The trial was sown to Scepter wheat, which is a variety with little history of trace element investigation.



From the 1960's through to the 1980's, manganese (Mn) deficiency in sandy soils was commonly identified. Deficiency was corrected by applying Mn. In some situations, a single dose was all that was needed to support strong crop growth and good yields for decades to come. It seemed to be a 'set-and-forget' strategy. Manganese applied once, or very occasionally was all that was needed. The widespread adoption of liming has lifted surface pH of many soils to levels where fixation of Mn could become significant, so more research is needed. The picture above shows soil sampling and dry sowing of a Summit Fertilizers Tincurrin Mn trial, (28 May, 2019)

It involves significant plant tissue sampling to help understand the supply and uptake of the various Mn treatments. This study is just one of a number of Summit Field Research trials providing data on the effectiveness and impact of different trace element fertilizer strategies.

It will also guide future approaches to Summit product manufacture for agronomically efficient sources of Mn. Products like DAPSZC® and MAPSZC® contain 0.1% Mn while a product like MAPMn contains up to 4% Mn.

Growers should contact their local Summit Fertilizers Area manager for more information on Mn nutrition.

A focus on manganese

Manganese is important to plants because it is the primary vehicle for electron transfer in photosynthesis. It is essential for nitrogen metabolism and for producing the building blocks for some proteins and other important compounds in plants.

It can also decrease susceptibility of plants to some diseases such as take-all in wheat.

Increased pH resulting from lime applications can exacerbate Mn deficiency and slowly acidifying soil profiles can increase availability.

Table 3. Summit soil analysis from the 2019 Tincurrin Mn trial site.

Depth	pH	EC	PBI	P Col	K Col	S	OC %	NO3	NH4	Cu	Zn	Mn
0-10	5.1	0.06	10	14	51	5	0.8	7	4	0.3	1.1	2.1
10-20	4.7	0.04	14	13	47	4	0.5	4	4	0.2	0.5	0.8
20-30	4.6	0.03	24	20	35	5	0.4	3	3	0.2	0.4	0.9

Meeting the higher demand for nutrients

As cropping rotations become more intensive, we have seen changes in nutrient demand. The demand is coming from increased nutrient removal due to higher yields and a depletion of soil reserves, and in some cases as a result of soil amelioration to fix under performance issues.

Tighter rotations that do not include legume crops or pastures will progressively reduce the organic carbon levels in the soil, which in turn will reduce the amount of mineralized nitrogen (N) in the system.

This has led to growers increasing the amount of N applied as urea or UAN to cereal, or canola crops to try and maximize yield. It appears this additional N without the input from soil organic matter is not enough to maintain grain protein levels, especially as growers try to limit risk and do not apply late N to boost protein in the spring. If crop rotations stay the same more N will need to be applied in fertilizers to maintain grain quality.

The majority of soils in Western Australia have a reasonable history of phosphorus (P) application, however in recent times many growers have been taking off more P in the grain than they are applying as fertilizer. On average a wheat crop will remove 3.5kg P/t of grain, and canola will remove up to 6.5kg P/t grain.

Therefore a 3t wheat crop or a 1.5t canola crop is removing 10kg of P which needs to be applied to maintain an equilibrium. In high production years, like 2018, the removal was higher.

Many growers are starting to consider nutrient removal as part of the decision on P and this has led to increasing P rates. Summit trials have shown that P is critical in setting up a crop's yield potential. Without sufficient P there will be limited responses to other nutrients like N.

Potassium (K) is an essential plant macro nutrient and is considered second only to N when it comes to the amount needed by plants. Potassium is one nutrient that has seen a three to four fold increase in use in recent years.

Historically used on legume pastures on sandy soils, K is now applied where cropping rotations have

been tight, especially on sandy or sandy loam soils. K is not removed from the paddock at the same levels as N, but it can be redistributed in header rows that are not spread and that can affect availability.

Windrow effects in cropping paddocks are usually due to K or a liming affect from residue. K is now applied in cropping products like Summit Vigour or as muriate of potash in blends or in variable rate applications by many growers to ensure adequate crop supply.

The use of fertilizers like MAPSZC, DAPSZC and Vigour that contain trace elements such as copper (Cu) and zinc (Zn) is increasing based on their ability to provide all nutrients in one granule. Higher crop production will be removing trace elements that are naturally low in our soils.

Growers that rely of MAP or DAP are starting to see production limited from inadequate supply of Cu and Zn. Applying these trace elements annually at maintenance levels to match exports will avoid deficiencies in the crop or having to apply foliar treatments during the season.

There is an increasing focus on manganese (Mn) for cereals and lupins. Soil amelioration, especially liming, impacts on the availability of nutrients. N, K and sulphur availability are less affected directly by soil pH. As soil pH increases nutrients like P, calcium and molybdenum become more available,



*Eddy Pol
Regional Sales Manager, Northern WA
epol@summitfertz.com.au
Mobile: 0429 902 582*

however Mn, Cu and Zn become less available.

Therefore Mn deficiency can be observed on areas of the paddock that have a higher pH, especially under cold wet conditions.

To ensure adequate Mn is available, growers are applying Mn at seeding in starter fertilizers and in many cases following up with a foliar spray during the season. Products like DAPSZC and MAPSZC contain 0.1% Mn while a product like MAPMn contains up to 4% Mn.

Soil and plant testing are tools that allow growers to monitor nutrient availability and make informed fertilizer decisions. The alternative is to utilize nutrient budgeting in the planning process to maintain an equilibrium between nutrient removal and supply. Your local Summit Area Manager can assist in these decisions.

Superior quality MAPSZC

MAPSZC[®] was developed by Summit and continues to be one of WA's most reliable and popular cropping fertilizers, especially where seeding conditions can be difficult due to moisture.

With even sized granules and very good levels of copper (Cu 0.2%), zinc (Zn 0.4%) and manganese (Mn 0.1%) compounded into every granule, MAPSZC handles conditions other fertilizers can't.

The combining of S, Cu, Zn and Mn during manufacture gives far superior distribution in the soil compared to many other products.

MAPSZC is suited to all crops, in particular wheat, barley and canola.

It contains N (11.6%), very high P (19.8%) and S (8.0%).

High P levels mean seeding rates can be kept to easily manageable quantities, whilst the MAPSZC nitrogen level ensures crop safety.

Rates of 70 to 80 kg/ha are commonplace with this concentrated product, which also helps reduce storage and freight costs and minimise refilling at seeding.

MAPSZC also stores very well, so it's suited to early collection.

Your Local Summit Fertilizers Area Manager



GERALDTON
Shane Turner
0429 947 919



COOROW
Juliet McDonald
0429 945 332



WONGAN HILLS
Brenna Gray
0408 711 954



MOORA
Brett Beard
0429 900 607



NORTHAM
Brayden Noble
0417 490 047



KELLERBERRIN
Tracey Hobbs
0447 248 732



MERREDIN
Kobus Marais
0427 766 508



NARROGIN
Brett Coxon
0427 766 506



CORRIGIN
Steve Cooke
0429 934 243



BUNBURY
Ralph Papalia
0427 766 535



WILLIAMS
Jarrad Martin
0427 788 521



KOJONUP
Chloe Turner
0447 469 245



LAKE GRACE
Mark Stephens
0427 766 517



ESPERANCE (WEST)
Tim Donkin
0408 092 355



ESPERANCE (EAST)
Nick Donkin
0428 715 045



ALBANY (WEST)
Mark Ladny
0498 223 421



ALBANY (EAST)
Andrew Wallace
0427 083 820



www.summitfertz.com.au

Summit Fertilizers - 29 Ocean St, Kwinana Beach, WA 6167
ABN 49 058 794 737