

Fertilizer News

Summit R&D program uncovers new information for growers

Summit field research is central to the information our team of 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 our SummitQ services, so that we provide the very best in-field advice.

Field research over the past 12 months has covered many aspects of plant nutrition, including how and where to best place phosphorus at seeding, phosphorus and potassium requirements in cereals after growing hungry crops like canola, NPK interactions and lupin responses to phosphorus.

New lupin varieties with potentially higher returns have boosted confidence in growing this legume in



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rotation with cereals.

Growers are wanting 'leading edge' information on lupin nutrition.

Most of our trials are driven by consultation with farmers and we also work closely with grower groups, consultants and other research organisations.

The expansion of Summit Fertilizers field research program has meant an increase in dedicated resources, backed by the full team of Area Managers and 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.

Summit Fertilizers established 32 trials in 2017, with an overall aim of helping growers optimise nutrient application across a range of soil types and rainfall zones. Summit Field Research Manager, Dr Mark Gherardi, explains some of the findings to farmers at a Borden spring field walk. Growers are encouraged to join Summit on these days to learn the latest in nutrition research and help improve their farm profitability.

SUMMIT 
FIELD RESEARCH

SUMMIT
FERTILIZERS

Summit research on P and K needs after canola

As canola becomes a larger component of crop rotations, many growers are asking the question, "what fertilizer regime do my following wheat crops require?" It's a good question to ask, especially on lighter soil types.

Even though canola yields are typically lower than wheat, nutrient removal in canola grain (per kg of seed) is about double that of wheat. Visible windrow effects in wheat crops grown after canola are clear evidence of how much nutrition this oilseed can take from the soil. Over many years, research has shown the 'windrow effect' is often a case of potassium (K) deficiency occurring off the windrows. Canola also has a high phosphorus (P) requirement with Summit trial work showing wheat after canola had a higher requirement for P than wheat after wheat.

With the shift in crop rotations, growers and advisers are asking us more and more "what rate of K and P should we apply after canola?"

Hence, a trial was set up in 2017 at Goomalling to investigate wheat response to P and K after a high yielding canola crop.

The trial included a combination of phosphorus (0, 5 and 10 kg/ha) and potassium (0, 10 and 20kg/ha) rates, as well as three VIGOUR treatments that supplied equal rates of P, and K up to 15 kg/ha.

Seasonal observations

Below average rainfall in autumn and early winter in 2017 at the Goomalling site subdued early crop growth. Even so, a strong biomass response to P early in the season was observed along with a slight response to K.

From the soil test results shown in Table 1 below, a response to potassium and possibly phosphorus was expected on this loamy sand site.

Figure 1. Response to P

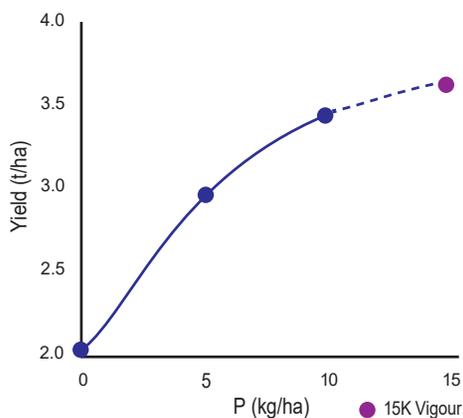


Figure 2. Response to K

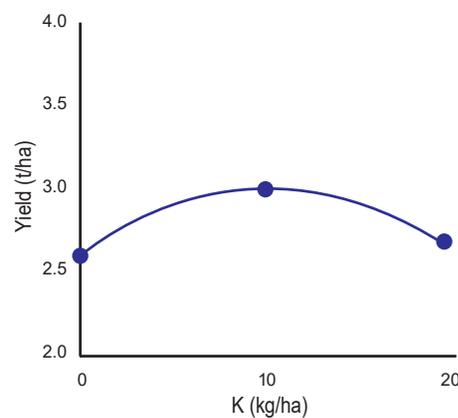
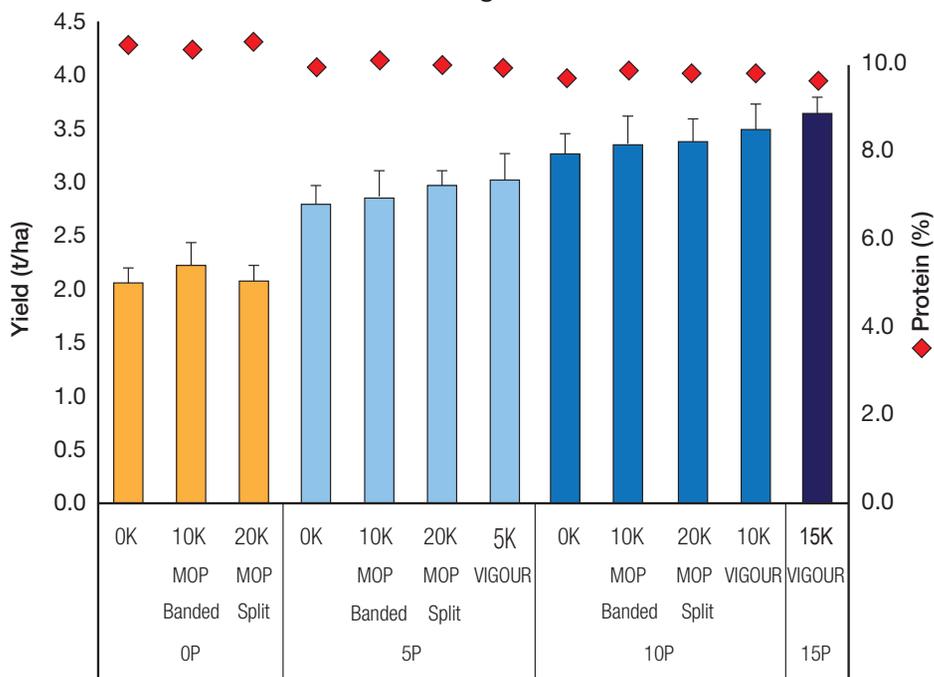


Figure 1 and 2 above show there was a significant yield response to phosphorus, although not to potassium in the 2017 Goomalling trial.

Figure 3. Harvest yield and protein for potassium strategies at increasing K rates



Harvest results

The early trend in plant growth continued through to harvest and a P response up to 15 kg/ha was measured, although the K response had diminished by harvest to be insignificant.

The highest yield and returns came from using 125 kg/ha of VIGOUR supplying 15P and 15K. VIGOUR contains all the plant nutrients in every granule and this feature may have led to more efficient plant uptake of nutrients compared to a combination

Table 1. Soil test results for 2017 Goomalling site

Depth	NO ₃ ⁻	NH ₄ ⁺	OC	P	PBI	K	S	Cu	Zn	pH _(Ca)	Al
0-10cm	9.3	1.5	0.79	18	19	25	16	0.50	0.8	5.53	0.1
10-20cm	3.6	1.1	0.54	28	34	41	12	0.55	0.4	4.65	0.7
20-30cm	2.5	<1	0.28	27	49	52	22	0.73	0.34	4.32	2.2

of MAPSZC and MOP in a drier start.

From this trial, it appears that canola crops may impact on phosphorus availability to subsequent cereal crops, more than potassium availability. Therefore, adequate phosphorus fertilizer needs to be applied at seeding.

Summit trial work over many years has shown that 3 to 4 kg P/ha per tonne of yield needs to be used to maximize yields and returns.

On soils with low or marginal potassium levels it is important to apply maintenance levels of K fertilizer to ensure the crop has adequate to reach its potential, and also to ensure soil K reserves are not depleted.



VIGOUR is Summit's fully granulated compound fertilizer with NPK in every granule.

Key messages from this trial

- Even though VIGOUR - supplying 15 kg/ha P and 15 kg/ha K was the highest cost treatment in this trial, it delivered the best gross margin when fertilizer costs were deducted because of the high 3.64 t/ha yield (Table 2).
- The next highest gross margin came from VIGOUR delivering 10 kg/ha P and 10 kg/ha K (Table 2).
- Higher yield did not adversely impact on grain weight or screenings. All treatments in this trial made ANW1 grade.
- Having all the plant nutrients in every granule may have led to more efficient plant uptake of nutrients compared to a combination of MAPSZC and MOP.
- VIGOUR is a very effective fertilizer that boosts crop potassium levels and encourages strong early growth.



Made exclusively for Summit Fertilizers, VIGOUR is a high quality easy handling seeding fertilizer. VIGOUR is MAP and MOP based. With nitrogen, phosphorus, potassium, sulphur and trace elements compounded into every granule, VIGOUR consistently delivers outstanding results in the field.

Summit VIGOUR

- Well balanced NPK fertilizer range.
- 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.

For more details about the VIGOUR range of products, growers should talk with their Summit Area Manager.

Table 2. Fertilizer cost, yield, quality and gross margin net of total fertilizer input costs for the 2017 Goomalling P and K trial.

Treatment				Fert. cost (\$/ha)	Mean yield (t/ha)	Protein (%)	Grain Weight (kg/ha)	Screenings (%)	Grade	Grain value (\$/ha)	Gross Margin	
P rate kg/ha	Potassium (K)											
Rate kg/ha	Source	Application method										
0	0			\$29	2.06	10.45	82.45	1.05	ANW1	\$697	\$668	
0	10	MOP	Banded		\$40	2.23	10.35	82.04	0.95	ANW1	\$753	\$713
0	20	MOP	Split 50:50 IBS and banded		\$52	2.09	10.50	82.88	0.89	ANW1	\$708	\$656
5	0			\$44	2.80	9.93	82.37	0.65	ANW1	\$945	\$901	
5	10	MOP	Banded		\$56	2.86	10.10	81.89	0.97	ANW1	\$965	\$910
5	20	MOP	Split 50:50 IBS and banded		\$67	2.96	9.98	82.10	0.89	ANW1	\$1,002	\$935
5	5	VIGOUR	Banded		\$52	3.03	9.95	82.64	0.71	ANW1	\$1,025	\$972
10	0			\$60	3.27	9.70	82.59	0.75	ANW1	\$1,106	\$1,046	
10	10	MOP	Banded		\$71	3.36	9.90	82.26	0.64	ANW1	\$1,134	\$1,063
10	20	MOP	Split 50:50 IBS and banded		\$83	3.37	9.85	82.71	0.74	ANW1	\$1,140	\$1,057
10	10	VIGOUR	Banded		\$75	3.49	9.80	82.74	0.68	ANW1	\$1,181	\$1,106
15	15	VIGOUR	Banded		\$99	3.64	9.68	82.69	0.72	ANW1	\$1,230	\$1,130

Thanks to the Haywood family for providing the trial site and to Living Farm for harvest and grain quality analysis.

Lupin response to phosphorus

Improved lupin varieties with potentially higher returns have boosted confidence in growing this legume in rotation with cereals. Lupins are often grown on sandy soils. These soils are typically low in nutrients, or have often been ameliorated to manage non-wetting conditions or hard to kill weeds.

With this background in mind, it's time to reassess lupin fertilizer applications.

In theory, harvesting two tonnes per hectare of lupin grain removes from the paddock the equivalent of 85kg of superphosphate (8kg of phosphorus, P) and 40kg of MOP (18kg potassium, K) per hectare, as well as other nutrients. However, industry experience suggests higher rates of phosphorus are required to maximise lupin yield.

A trial was set-up in 2017 on the Mingenew Irwin Group main site to investigate optimal rates of P and K for lupins. The sandy soil had low P levels (10ppm) and low K levels (17ppm).

This trial included a combination of phosphorus rates of 0, 10, 20 and 30 kg/ha and potassium rates of 0, 10, 25 and 40kg/ha.

Because manganese deficiency has been shown to affect lupin yield and quality on sandy soils, Summit MAP Mn fertilizer was applied at seeding. MAP Mn contains four per cent manganese.

In-season biomass assessment (Figures 4 and 5) displayed a strong growth response to applied P. No sign of P toxicity was seen at any time throughout the growing season, even at the highest P rate of 30 kg/ha.

Even though a maximum of 20 kg K/ha was banded with the seed, with the remainder of the MOP spread before seeding, there was a negative growth response to applied K. The decrease in plant growth and subsequent lower yield at higher rates of K can be attributed to the sensitivity of lupins to the salt effect of MOP (potassium chloride) in drying soils.

Phosphorus application resulted in a significant increase in lupin yield. There was a 12 per cent increase when 10P was compared to 0P, and a 21 per cent increase from either 20P

Figure 4. Mingenew P biomass response

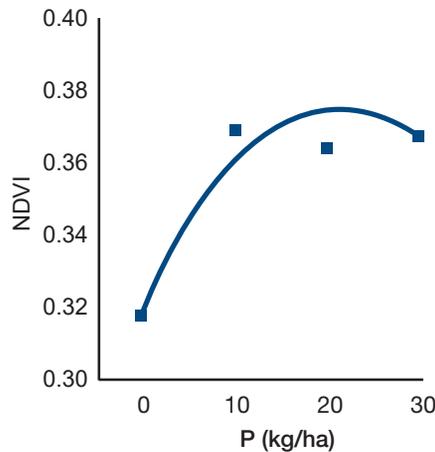
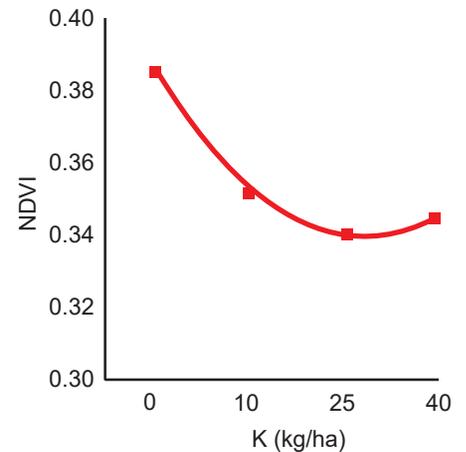


Figure 5. Mingenew K biomass response



Figures 4 and 5 show in-season biomass assessment (as NDVI treatment means).

Figure 6. Lupin yield response to P at different K rates

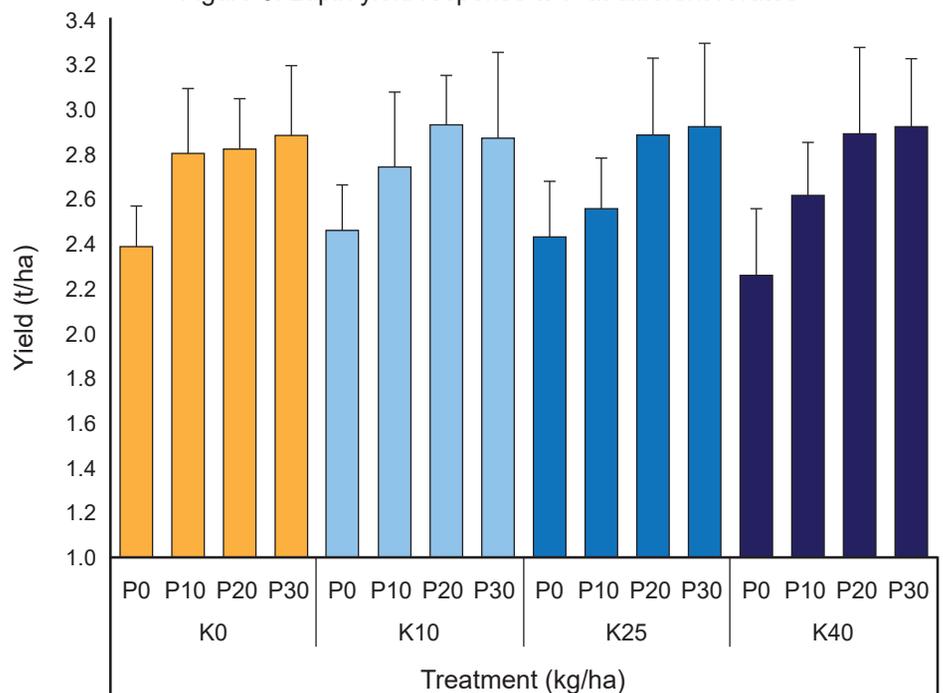


Figure 6 shows Mingenew lupin yield displayed as treatment averages, grouped by K and sorted by P.

or 30P (Figure 6).

There was no yield response to potassium in this trial even though plant biomass was considerably less at higher K rates earlier in the season.

Based on fertilizer costs alone, the greatest return was \$799/ha, with an additional \$81/ha made from applying 20P. The optimum rate for applying fertilizer to lupins under these conditions was 20 kg P/ha with 10 kg/ha or less of K.

Key trial messages

This Mingenew trial demonstrated the benefits of applying higher rates of phosphorus to lupins.

Using nutrient removal as a guide for setting fertilizer rates on sandy soils will result in lower yields and returns.

Even though this trial didn't show yield responses to potassium, it is important to apply K on soils with lower K levels to maintain production levels.

Don't forget autumn pasture nutrition

Overlooking pastures when it comes to nutrition will come at a cost to production. In situations that are responsive, lack of the right fertilizer will cause a reduction in quality and quantity of feed on offer. For example, if plants are low in phosphorus, livestock may not consume them – even if the quantity looks adequate. This can be expensive in terms of poor weight gain and feeding out conserved feed – especially costly if you need to purchase it. Another effect will be to reduce the seed set of the target species, leading to a decline in plant density in following years.

For pastures there are three main nutrients you need to consider.

Phosphorus

Phosphorus (P) is the driver of early growth, including the root system. Where there is not enough P the plant will be stunted and not able to access other nutrients and water from the soil. Nodulation in legumes is also reduced.

Potassium

WA's sandy soils are often low in potassium (K). This vital nutrient is essential for regulating the movement of water and nutrients through the plant and for controlling the loss of moisture through the leaves – important in drier periods during the growing season. K is also important for the formation of pollen and therefore seed set.

Marginally low levels of K will lead to reduced plant density over time.

Sulphur

Sulphur (S) is important for combining with amino acids (nitrogen) to form proteins in the plant. It is absolutely critical for wool production in sheep.

Test your soils

A soil test will assist in determining the need and the rate of these nutrients.

Another nutrient that should be used tactically to assist pasture production is nitrogen (N). In most cases N can be used strategically where pastures are dominated by grass. Trials have shown that higher rates over small areas is better than low rates over large areas. Nitrogen produces high quality pastures very rapidly. You can have an “autumn flush” when pastures are normally at their lowest productivity. Apply N when the grass is about 1 to 2 leaf stage.

Trace Elements

- Copper and zinc: Autumn is an ideal time to top up your soils with Cu and Zn if you haven't made an application for some time. Deficiencies of minor nutrients can be just as damaging as the major ones.
- Molybdenum: A lack of molybdenum (Mo) will reduce

nodulation in clover and affect the efficiency of nutrients like copper in both plant and animal. Care should be taken not to oversupply Mo.

This trace element becomes more available as pH increases, so if the soil has been recently limed, a plant test to determine Mo supply would be beneficial.

Extensive high quality pasture range

Summit offers farmers the widest range of pasture fertilizers in Western Australia. Even so, our extensive range is not the whole story. Quality products makes life easier and ends up returning you more dollars. Uneven spreading caused by poor quality fertilizer results in irregular production and wasted fertilizer.

Summit has the best quality superphosphate in WA.

Summit SuperPhosphate has even granule distribution, so as well as great handling you can achieve a more even spread across your paddocks.

Another great handling product is Summit **SuperPasture**. A well granulated even fertilizer, SuperPasture is more concentrated than Superphosphate, offering growers savings in freight, handling and spreading. SuperPasture has both quick acting and sustained release sulphur forms for extended sulphur supply to plants. It's ideal for wetter winters and areas of paddocks that are hard to access when wet.

Complementing the range, **Summit Pasture** combines higher levels of phosphorus and a sulphur top up, potentially delivering even more freight and handling savings.

All these products can be purchased containing potash or trace elements including selenium.

Talk with your local Summit Area Manager about Summit's extensive range of fertilizers for pastures.

Table 3. Summit Fertilizers has a pasture product for all occasions

Product	Typical analysis (%)				Bulk Density t/m ³
	N	P	S	Ca	
SuperPasture		13.7	10.5	17.0	1.11
Pasture		18.2	10.0	14.0	1.04
SuperPhosphate		9.1	11.0	20.0	1.15
Pasture Boost		17.1	14.8	13.2	1.04
Supreme	5.2	13.7	13.5	10.5	1.04

The pasture range contains sustained release sulphur, which makes it ideal for light soils and high rainfall areas. SuperPasture and Supreme contain fast acting as well as sustained release sulphur and starter nitrogen (in Supreme).

- Fully granulated products
- Even spread pattern
- Ideal for lupins and pulse crops as well
- Pasture and SuperPasture can be used at lower rates than Superphosphate
- Sustained release sulphur

P drilled with the seed comes out on top

Access to phosphorus (P) is vital for early plant growth and vigour. Phosphorus is immobile in most soils, so placing P near the germinating seed improves the chance of the roots intercepting and taking it up, promoting early growth and crop establishment.

A Summit trial was established at Corrigin in 2017 to examine how and where to best place P at sowing. The treatments included

- P drilled with the seed,
- P banded below the seed, and
- P split, with 75 per cent banded below the seed and 25 per cent drilled with the seed.

As background to the trial, it came about when Corrigin farmer Gavin Hooper and Summit Area Manager, Steve Cooke, were discussing the suitability of banding phosphorus in Gavin's high fixing soils.

One possibility was that P banded further down into moisture would enable improved availability throughout

the season. Another possibility was that drilling P with the seed may result in earlier uptake and reduced risk of P adsorption. Higher pH in Gavin's topsoil would also improve P uptake.

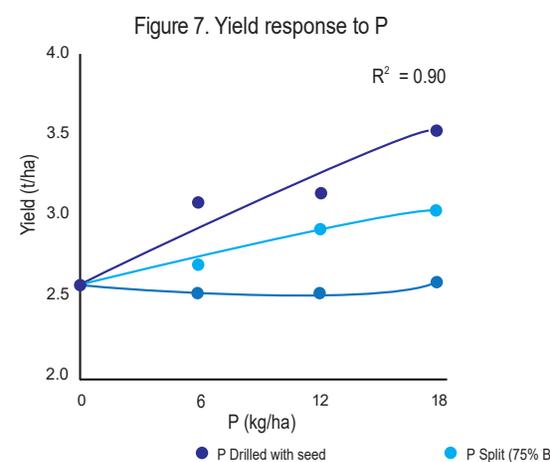
The Corrigin trial site was characterised by high phosphorus buffering index (PBI) and alkaline soil (pH 7.74-7.95) (Table 4).

A high PBI would indicate a tendency for the soil to bind plant-available P. On the other hand, the alkaline soil's higher pH would indicate an increase in P availability.

It made for an interesting combination, well worthy of further investigation.

Seasonal observations

Gavin's farm experienced a dry start to the growing season however, a soft finish assisted in providing reasonable yields. Crop biomass measured with a GreenSeeker® on August 17 indicated a strong response to applied P. Phosphorus drilled with the seed



induced a greater biomass response, compared to P banded below the seed.

Harvest results

Crop biomass trends in August continued through to harvest. Highest yield and gross margin was achieved with 18kg P/ha drilled with the seed (Figures 7 and 8 and Table 5).

Table 4. Soil test results for Corrigin site

Depth	NO ₃ ⁻	NH ₄ ⁺	OC	P	PBI	K	S	Cu	Zn	pH _(CaCl₂)	Al
0-10cm	21.2	1.4	1.09	31	163	1094	14.8	0.73	1.22	7.74	1.2
10-20cm	5.3	1.4	0.84	13	204	961	14.3	0.92	0.27	7.86	0.1
20-30cm	3.4	2.4	0.69	8	200	900	16	1.17	0.16	7.95	0.1

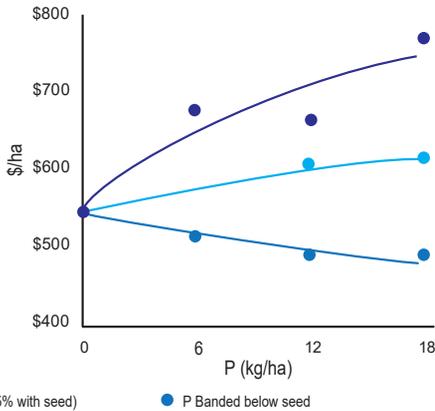
Table 5. Corrigin trial detail, harvest yield, quality and gross margin net of fertilizer costs.

Fertilizer and placement		Nutrients (kg/ha)			Fertilizer cost (\$/ha)	Mean yield (t/ha)	Protein (%)	Weight (kg/ha)	S
Drilled	Banded	P	N	S					
Nil	Nil	0	71	0	\$91	2.54	11.4	63.2	
MAPSZC @ 30kg/ha		6	71	2	\$109	3.14	11.2	61.5	
	MAPSZC @ 30kg/ha	6	71	2	\$109	2.47	10.8	62.9	
MAPSZC @ 7kg/ha (25%)	MAPSZC @ 23kg/ha (75%)	6	71	2	\$109	2.68	11.1	63.6	
MAPSZC @ 30kg/ha, TSP 30kg/ha)		12	71	2	\$131	3.17	10.2	60.8	
	MAPSZC @ 30kg/ha, TSP 30kg/ha)	12	71	2	\$131	2.46	10.9	62.7	
MAPSZC @ 7kg/ha TSP @ 8kg/ha (25%)	23 MAPSZC, 22 TSP (75%)	12	71	2	\$131	2.93	10.7	72.5	
MAPSZC @ 30kg/ha, TSP @ 60 kg/ha		18	71	2	\$153	3.68	10.3	79.3	
	MAPSZC @ 30kg/ha, TSP @ 60 kg/ha	18	71	2	\$153	2.55	11.2	69.7	
MAPSZC @ 7kg/ha), TSP @ 15kg/ha (25%)	MAPSZC @ 23kg/ha, TSP @ 45kg/ha (75%)	18	71	2	\$153	3.06	11.0	74.0	

*Nitrogen was applied pre-sowing pre-emergent (60L/ha of UAN) and eight weeks after emergence (100L/ha UAN). Summit would like to thank Gavin Hooper for providing the trial.

o at Corrigin

Figure 8. Gross margin response to P



(75% Banded, 25% with seed)

● P Banded below seed

Key trial messages

A yield response of more than 1t/ha was measured from 0 to 18P drilled with the seed. Under these high P binding soil conditions, fertilizer drilled with the seed provided an available amount of P close to the germinating seedling for efficient uptake. No significant response to phosphorus banded below the seed was measured in this trial, suggesting that much of the applied P was tied up before plants were able to intercept and take up the nutrient.



Mark Stephens joined the Summit team as Area Manager based in Lake Grace in November 2017. He has a long history in agriculture in WA with his most recent positions being Branch Manager with Elders in Katanning and Salesperson with Kukerin Rural Services. Mark also owned and successfully managed Nyabing Rural Services for 12 years. He is well regarded by farmers in the area he will now cover as Area Manager.

Outside of work Mark enjoys spending time in his 'Mancave', restoring old cars and working on his small farm, along with spending time with his family and enjoying his grandson.

Mark covers the shires of:

- Kent
- Lake Grace
- Dumbleyung
- Wagin

Growers can contact him on:

0427 766 517; or,
mstephens@summitfertz.com.au

Superior handling Summit 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 better than maintenance levels of copper and zinc compounded into every granule, MAPSZC handles conditions other fertilizers can't.

The combining of sulphur, copper and zinc during manufacture gives far superior distribution in the soil compared to other formulations and is the most agronomically effective method of providing trace elements via solid fertilizers.

MAPSZC is suited to all crops, in particular wheat, barley and canola. It contains nitrogen (11.6%), very high phosphorus (20%) and sulphur (5.5%).

High P levels mean seeding rates can be kept to easily manageable quantities, whilst 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 to take full advantage of Summit's early collection discounts.

Screenings (%)	Grain grade	Grain value (\$/ha)	Gross margin (\$/ha)
5.2	BFED1	\$638	\$547
5.3	BFED1	\$787	\$678
7.1	BFED1	\$620	\$511
5.9	BFED1	\$674	\$565
6.8	BFED1	\$795	\$664
6.4	BFED1	\$616	\$485
5.0	BFED1	\$735	\$604
4.9	BFED1	\$925	\$771
5.3	BFED1	\$640	\$487
5.1	BFED1	\$769	\$616

the trial site and Kalyx for harvest and grain quality analysis.

Welcome Tracey

Tracey Bridges has joined the Summit Fertilizers team as Customer Service Officer based in the Albany Depot.

She grew up on a farm in Botswana and moved to Australia 10 years ago. In March last year Tracey moved down to Albany and in February took on the role of CSO.

Growers can contact her on:

- Phone: 08 6819 6300
- Mobile: 0428 415 400
- albany@summitfertz.com.au



Grower trials highlight the importance of vigour

Article by Andrew Wallace
Summit Fertilizers Area Manager based in Albany. Andrew covers the shires of Albany (east), Gnowangerup and Jerramungup.

MAPSZC is being used across the Jerramungup/Gnowangerup shires for crop establishment as a premium compound fertilizer delivering nitrogen, phosphorus, sulphur, copper and zinc in every granule.

The inclusion of VIGOUR, a balanced NPK compound fertilizer with trace elements, into the Summit product range has been taken up enthusiastically by farmers in my region.

VIGOUR is a great option when a requirement for potassium has been identified. Previously, growers would have blended potassium in with their seeding fertilizer or top-dressed it out separately.



Growers can contact Andrew Wallace on Mobile: 0427 083 820, or awallace@summitfertz.com.au

As a stand alone compound seeding fertilizer, VIGOUR offers excellent handling qualities and exceptional crop establishment.

With the assistance of local farmers we set out in 2017 to measure the effectiveness of VIGOUR in a variety of soil types. Trials were set-up at Mialeup Downs, at Highdenup and at Woolaganup.

The Mialeup Downs site on Wayne Davis' property was on sandplain. VIGOUR was compared to his farm practice of a DAPSZC/MOP blend. Wayne was impressed by the layout and management of the trial. Despite the fact that his site was impacted late in the season by frost, early crop establishment with VIGOUR was very impressive.

Wayne's comment was that he'll be switching to VIGOUR.

The Highdenup trial was on Gary Bungey's property where he has used VIGOUR for some time. The soil type was loam over clay, and the trial reinforced his view that VIGOUR is his best choice for return on investment.

The Amelup trial site on Craig Hitsert's property (Woolaganup) was conducted on red river loam. This trial compared VIGOUR with Craig's farm practice of MAPSZC/MOP.

Trial results suggested VIGOUR may have increased yield, even when his soil had a high background level of potassium (see Figure 11)

Craig said it was interesting to see how his fertilizer program and rates

compared with the products and rates used by the Summit trial team.

Even though his soil P level was good, applying moderate to high amounts of P at seeding stimulated early crop growth. His trial showed a very positive growth and yield response to P.

These local trials were just a part of the larger overall trial program Summit conducted in 2017. Done at the local level they help us to optimise nutrient applications for growers and of course we want to share that information.

Our trials culminated in a spring field walk that stimulated plenty of topical discussion and assisted growers with product choice for the upcoming season. We encourage growers to join us on these days to get a real feel for the depth and quality of work we do.

Stay connected!

SummitConnect is the convenient online option for farmers to:

- check orders
- download tax invoices
- see despatches for the season
- update customer details
- view and print statements

Now it's even quicker and easier to keep on top of your fertilizer business.

Manganese in profile

While manganese deficiency usually has little effect on vegetative growth of lupins, it can substantially reduce grain yield and quality (split seed), especially on sandy soils.

Look in the crop for lower yielding plants that stay green for longer and have straggly growth.

Affected plants are more common in deep sandy parts of the paddock.

Manganese is very immobile in plants and needs to be taken up from the soil as the grain fills and matures.

Deficiency is frequently worse on late sown crops. Heavy liming and subsequent higher pH may cause temporary manganese deficiency.

Starter fertilizers with a manganese hit

Table 6. Typical analysis for Summit Mn products

Product	Typical analysis (%)							Bulk density t/m ³
	N	P	K	S	Cu	Zn	Mn	
MAPMn	10.4	21.5		1.9			4.0	1.00
MAPSZC Mn	11	20.7		5.0	0.1	0.2	2.0	1.02
VIGOUR Mn	10.1	14.4	9.0	4.2	0.08	0.15	1.0	1.02

Manganese is a nutrient gaining more attention from growers and agronomists, mainly due to liming programs that raise soil pH, which can in turn reduce the availability of this important trace element. To supply manganese in a quality fertilizer, Summit introduced a full compound MAPMn product last season. This product contains four percent manganese.

MAPMn can be used to provide manganese to crops as a standalone fertilizer, or in combinations with our premium products like MAPSZC or VIGOUR.

N and P, with or without K in wheat

Summit's 2017 Amelup trial at Craig Hitsert's property (Woolaganup) aimed to evaluate wheat response to nitrogen (N), phosphorus (P) and potassium (K).

Prior to sowing, the area received more than 100mm of rain in the middle of February. Conditions were much drier than normal from April through June, with wetter conditions from July continuing through the remainder of the growing season. By the end of the season the cumulative rainfall fell just 35mm short of a normal season.

In-season biomass assessments in July and August showed a strong growth response to P and N and minimal benefit from applying K. This was particularly interesting because generally, a response to applied P wouldn't be expected on soil with levels exceeding 25mg/kg (Colwell P). Usually, a response to K is unlikely at Colwell K levels above 50mg/kg. In this trial, the soil K concentration was 250mg/kg (Table 7.), hence the lack of a notable biomass response was not unexpected. The P response however does highlight the variability in soil test results when making fertilizer decisions.

The greatest return of \$1138/ha came when VIGOUR (a fully compounded Summit NPK fertilizer) was applied at N120, P24 and K25.

The lowest gross margin was \$700/ha from K25, P0 and N0.

On average, an additional \$106/ha could be made by selecting the right P rate and \$312/ha from choosing the most appropriate rate of N.

Figure 9. Amelup yield response to N, 2017

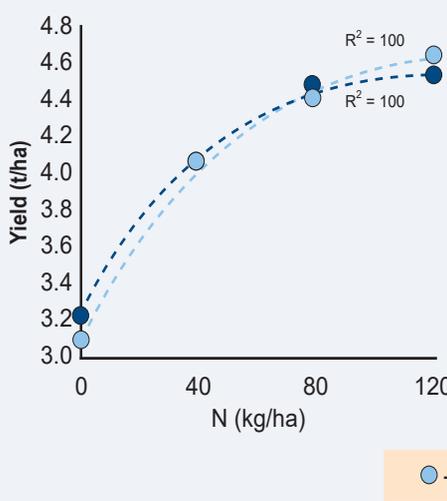


Figure 10. Amelup yield response to P, 2017

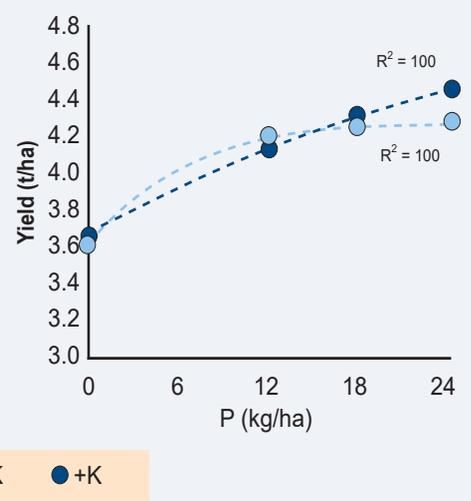
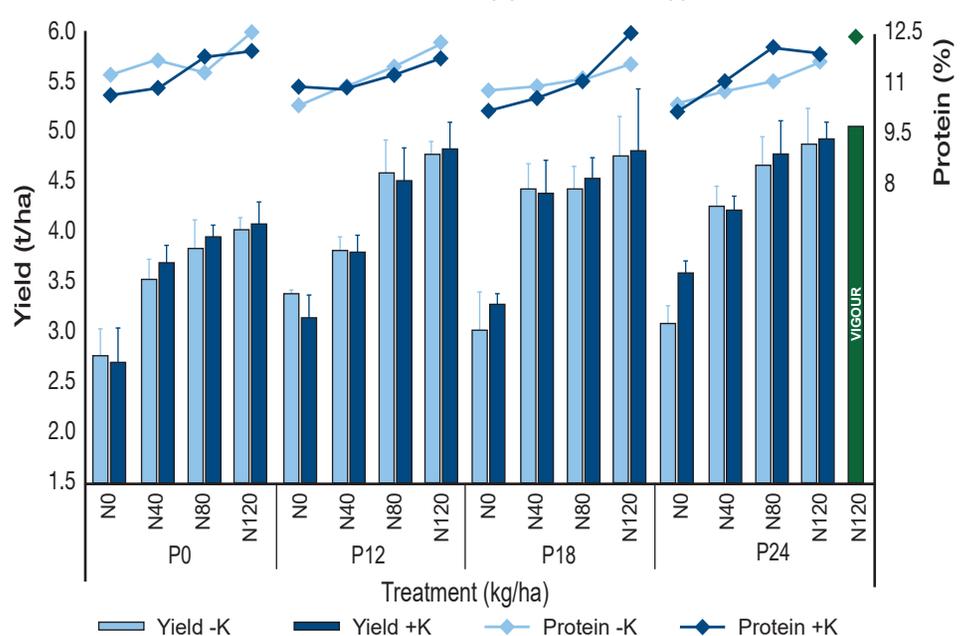


Figure 11. Amelup 2017 trial, wheat yield and protein response to N at different P rates, with (+) and without (-) K



Key trial messages

- In-season biomass assessment showed a strong crop growth response to applied N and P.
- Mace wheat had a significantly positive yield response to N and P fertilizer application.
- The highest yield was 5.07 t/ha and a yield increase of up to 48 per cent was achieved by applying N.
- The greatest profit of \$1138/ha and an extra \$312/ha was achieved by selecting the right N rate.
- This trial highlighted the benefit of using Summit VIGOUR - a fully compounded NPK fertilizer - compared to a blend.

Table 7. Amelup (Woolaganup) soil test results

Depth	NO ³⁻	NH ⁴⁺	OC	P	PBI	K	S	Cu	Zn	pH(Ca)	Al
0-10cm	64	7	2.11	32	27	250	16	0.48	1.52	5.1	1.29

Summit would like to thank Craig Hitsert for providing the trial site and Kalyx for completing the harvest and grain quality analysis.

Riding the roller coaster of 2017

Like many of WA's farming families, Kelvin and Lara Kent of Bodallin rode the roller coaster of the weather during the 2017 growing season.

Kelvin says it was one of the most emotionally taxing growing seasons they've ever had to endure. They dry seeded close to 7,500 ha to cereals and canola. Without any significant rainfall events, by the end of July they thought for the first time in the history of the farm they would have to buy in seed to continue.

Thankfully, late rains and warmer than normal soil conditions combined to kick start a crop that grew quickly. An average year was a welcomed outcome to what started out as an extremely stressful one.

Kelvin and Lara have mostly sandplain country. They have no set crop rotation, run some sheep and say since they have become Summit clients they have never looked back.

"Kobus Marais was on the ground and very active in this area. We were very keen on the work he does locally, and when we did change to Summit we found it was just so much easier," Kevin said.

"We've found if Summit can work through a problem, they will."

Kelvin said local Summit trial work and in-paddock Fuel Gauges have revealed a lot of important information for their enterprise.

"These tools are great because you know the paddock history. Last year a trial here looked at various rates of nitrogen and phosphorus in wheat, with and without potash.

"We got good results out of it to improve our decisions on N, P and K. There was a 600kg/ha yield benefit from using K in the trial, so I think the next step will be to look at a MAPSZC potash blend and see what return we get from it.

Kelvin said Kobus does his soil tests and the results have become an integral part of his farm planning.

"I like soil tests because they give you an idea of where you have come from and where you are going. We have quite acid sandplain soils and soil testing allows us to see how the P bank is going and whether to add more



Summit Fertilizers Area Manager, Kobus Marais, and Bodallin farmer Kelvin Kent in the Kent's 2017 trial paddock. The trial uncovered that Kelvin's sandplain soils may be running low on potassium with a 600 kg/ha yield boost last year.

or less. P is very important. It's the foundation for building your crop and you never skimp on P if you can afford it.

"Even though P levels in our soil have been maintained and are above average, the recent trial reinforced the decision to keep it at 8kg P/ha.

"There is a temptation to think, the P soil bank is there, so why not cut back and spend more on other things. That's okay if you're only planning to be here for another five years, but I believe in the longer term."

Kelvin has become a convert to Summit MAPSZC as his main source of P for seeding. MAPSZC is suited to all his cereal crops and canola. It contains nitrogen (11.6%), very high phosphorus (20%) and sulphur (5.5%).

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

"Lower freight cost was the first win we had with MAPSZC," he said. "It's a lot less to freight and store. Because it's about twice as concentrated as what we were using before, we've been able to cut the total fertilizer rate back, but kept the P rate the same.

"It's virtually halved freight costs

saving \$35/t, which is substantial. You can go longer on each bin at seeding, there's less on-farm carting and storage, so it all adds up.

"MAPSZC is easy to handle. We used to get quite a bit of build-up in the seeder heads and we haven't had any of those problems since we've moved over to MAPSZC."

Kelvin said he did have some initial concerns about using such a concentrated fertilizer with regards to granular spacial distribution in the rows.

"I had the mind-set that you had to have a lot of granules in the row for the roots to pick up the P. But Kobus reassured me that you don't need to have as many granules as are supplied with low concentration products.

"Fuel Gauges have shown us that we've needed nitrogen most of the time. Kobus comes out with his GreenSeeker. It's visual, it's in real time it's accurate and it tells us how much to put on.

"If we get no result from the Fuel Gauge, its telling us we are on the money and doing the right thing, which is still valuable information to have."

Kelvin said ordering with Summit has been easy. Payment and picking up fertilizer have also been good.

K and lime combine on Wodjil

SummitQ represents the technical services offered by Summit Fertilizers and is designed to boost on-farm productivity. Combined with our local Area Manager knowledge and experience, SummitQ Services help deliver practical and profitable fertilizer recommendations to our customers.

Under the SummitQ brand comes a comprehensive range of high quality technical services including: an extensive field research program; Snapshot (Summit's soil and plant analysis service offering a snapshot of the farm's nutrient status); and the benefits of continuous, in-season nutrient monitoring through the SummitQ Fuel Gauge package.

Will Harvey, his father Bruce and brother Miles have become Summit clients in the past five years and Will says they are seeing clear benefits of the SummitQ package.

They farm 12,000 ha at Mt Hampton and on average crop 7,000 ha each year - mainly to wheat, but also to barley and oats.

"Out here, we try to keep it as simple as possible without the bells and whistles. Part of farming where we are, is keeping costs under control and fertilizer is obviously one of our major costs. Even so, we know we do need to spend money," Will said.

"We have some gravelly-loam, acidic Wodjil country we've been cropping for a long time and never really had much success. After Kobus (Marais) tested the soils four years ago, we applied lime at 2t/ha. We did notice some improvement, and follow-up soil tests showed a real problem with lack of potash.

"Under Kobus' recommendation, last year we added another 2t/ha of lime along with potash and the result was phenomenal. The paddock (370ha) produced twice the yield it's ever produced in the past. The lime was disced in, 50kg/ha of MOP spread out on top before wheat was sown with MAPZSC through a DBS bar.

"Kobus has shown us that we can make that soil type productive. It was our best yielding crop on the whole farm. We used to dread cropping Wodjil paddocks because we never made much money out of them.



Bodallin farmer Will Harvey, and Summit Fertilizers Area Manager, Kobus Marais, go through Will's 2018 fertilizer program. Will intends to use a blend of MAPSZC this year.



Last years result was so good, it encouraged us to buy a neighbouring block of similar land. So, we've increased the amount of that type of land that we have, because we can see that it can be productive.

"Moisture is our main constraint out here and the lighter soil types have an advantage in that after 10mm of rain you can get a crop out of the ground. On our heavier soils, that amount of rain wouldn't wet the crop up enough to get it to germinate.

"If you can get the crop to germinate at seeding time you're a long way to growing a profitable crop. We've proven to ourselves that this type of land can produce."

Will said their fertilizer program this year will be a Summit blend of MAPSZC and MOP. They have targeted a yield of 1.5 t/ha, but if they get the rain at the right time and add nitrogen, some of their soil types could produce twice that.

"We don't aim for 3 t/ha crops out here, but we're happy to take it if it comes our way," Will said.

Summit soil testing

Summit soil testing can provide a guide as 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 soil testing.

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