Early winter 2023

Fertilizer News

Work on UAN storage hits key milestones

Summit's multimillion dollar investment in liquid fertilizer storage at the Kwinana depot is progressing well. The depot upgrade will expand our ability to store and supply liquid UAN (Urea Ammonium Nitrate) by adding a further 50,000 tonnes of capacity.

Summit Fertilizers Executive Manager of Engineering, Phil Hargreaves, reports key milestones to-date have been:

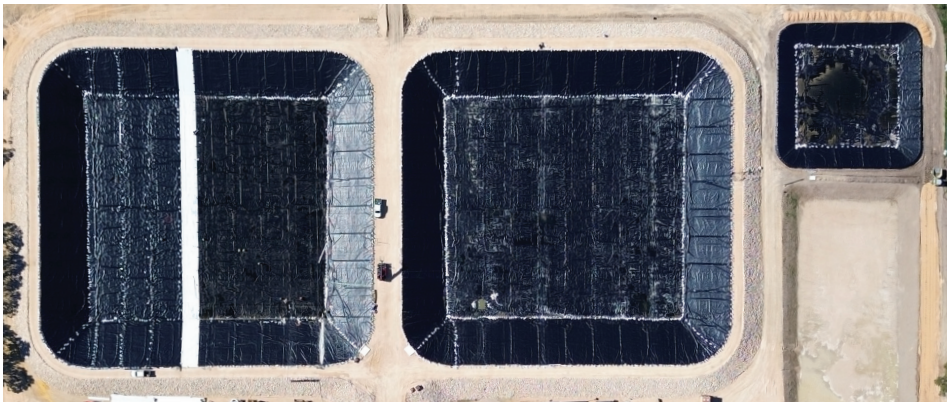
- Civil works completed in March, after some particularly challenging weather conditions.
- By the end of May, the primary and secondary bottom HDPE linings from Fabtech had been installed, along with a state-of-the-art leak detection and management system.

"Work on the top covers is underway and pipe installation by Brilly to connect this storage with the Kwinana depot infrastructure is progressing well," Phil said.

"Electrical work has commenced and pumps and instrumentations should all be installed by late June.

"So the news for growers is good and despite some challenges the project is right on-track. We anticipate works commissioning will start in August, where hydrostatic testing and a range of other system checks will need to be completed," he said.

Construction is running to schedule with expanded UAN storage to be operational for next season. Milestone Services Managing Director/Project Manager Lee Benger (right), Summit Fertilizers Executive Manager of Engineering, Phil Hargreaves (centre) and Mark Looney of Milestone Services, inspect the groundwork that will interconnect the new storage facility with existing depot tanks and truck despatch.



Storage liners are now in place (above) and work is progressing on the top covers (left).

For more information talk to your local Summit Area Manager

SUMMIT FERTILIZERS

Maintaining the critical N and S balance

In the coming weeks growers will be making important decisions on matching nitrogen (N) inputs to the seasons yield potential. In-season N applications are often the single biggest management tool growers have to impact on their end-of-season bottom line.

N is taken up by crops and pastures in the largest quantities of any nutrient. It is an essential component of many plant compounds such as amino acids and proteins, and also has an essential role in the production of chlorophyll and therefore ultimately on photosynthesis.

For cereal crops, N is required prior to tillering because this is when tiller numbers and florets/grains per head are determined. Peak demand for N is during stem elongation, so adequate N needs to be in the system by then.

N is a mobile nutrient both in the plant and in the soil. Because of its mobility, it can generally be well managed during the season to match seasonal conditions.

As with N, sulphur (S) is relatively mobile in the soil. However, it is different in that it is not as readily mobilised within the plant. The plant does not have the ability to store S and re-translocate it as required. This means S needs to be available for uptake all the way through the season.

Sulphur is essential in the synthesis of amino acids, on protein production and a wide range of other metabolic processes. For livestock producers, S is also involved in the production of amino acids in ruminant animals. Increased S levels have been associated with higher lamb survival, increased wool production, increased weight gain and stronger wool.

There is a strong correlation between S and N requirements that need to be considered when planning N applications.

Numerous studies have shown that S applied at the same time as N increases nitrogen use efficiency and achieves better value from the spend on N. Not all crops require the same amount of sulphur though.

Cereals typically have a nitrogen to sulphur (NS) ratio of 15:1, but can run into S deficiency if the NS ratio exceeds 18:1. Canola has an NS ratio of 7:1 but if the NS ratio is above 13:1, then S deficiency can occur.

David Hull joined Summit Fertilizers in 2022 as Area Manager for Narrogin and surrounding shires. In his first year David was keen to get amongst clients and familiarise himself with the Summit range of fertilizers. As part of that process, he installed a lot of crop Fuel Gauges with MAXamFLO. By season end the inter-relationship between N and S for his area was clear, with many Fuel Gauges showing highly visible growth responses like the one above.

Canola has roughly twice the S requirement of cereals, which is why growers should have a plan in place to address those needs.

How much total S is required will be determined by potential yield and the use-efficiency of the nutrients.

In cereals at high use efficiency, roughly 30 kg of N and 2 kg of S is required to grow each tonne of grain.

When budgeting for canola, about 55 kg N and about 8 kg of S is needed to produce a tonne of seed.

Growers need to keep in mind however that there will always be some losses in any system, and that a deficiency of S will limit the response to any applied N.

Plant testing during early-mid winter is an accurate way to measure these ratios and should give enough time to manage N and S before the season finishes.

The Summit Fertilizers N, NS and NKS range

Product	Nutrient content (%)			t/m^3
	N	K	S	
Amsul	21.0		24.0	0.95
MAXam	21.0		24.0	1.01
MAXamFLO	22.0		6.2	1.26
NitroPlus	33.5		12.0	0.85
Sulphate of Ammonia	21.0		24.0	1.07
UreaPlus	37.3		8.4	0.82
UreaS	41.6		4.2	0.79
NKS21	28.8	12.5	5.7	0.88
NKS32	25.6	16.5	5.3	0.91
NKS Spring	22.0	14.0	10.7	0.94
UAN	32.0			1.32
Urea	46.0			0.75

Early N is the money-maker!

For growers fortunate enough to produce big crops yet again last year, the focus in the coming weeks should clearly be on nitrogen (N) management. A series of above average harvests has resulted in many cases of a negative nutrient balance, which means soil reserves have diminished.

The table (below right) gives a guide to nutrients removed by each tonne of seed or grain. In many cases the crop demand for nutrients is higher than given in the table, because nutrient use efficiency (NUE) is rarely ever 100 percent.

Soil nitrogen (nitrate and ammonium) is usually low in summer and 2022/23 testing confirmed this yet again.

High grain/hay exports, more vigorous and higher yielding crop varieties and tighter non-legume rotations are leading to a drop in soil organic carbon levels and lower residual N from rotations.

This means your nitrogen budget must consider the lack of N coming from our soils in any given season.

The key message is do not defer nitrogen applications!

Many Summit trials over the years have shown the more nitrogen you put on earlier, the better it is for yield and profit. Plant testing and Summit Fuel Gauges provide excellent in-season N management decisions, but they really should be for monitoring purposes or late season top-ups.

Early N is the money-maker.

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Approximate crop nutrient removal

	N	P	K	S	Ca	Mg	Cu	Zn	Mn
	kg/t						g/t		
Wheat	23	3.0	4.0	1.4	0.3	0.9	5	29	40
Barley	20	2.9	4.4	1.1	0.3	1.1	3	15	11
Oats	16	3.0	4.0	1.5	0.5	1.0	3	17	40
Canola	40	6.5	9.2	9.8	4.1	4.0	4	40	40
Lupins	51	3.8	8.8	3.1	1.7	1.7	5	30	60

MAXamFLO an ideal balance if you need N and S

Much of the liquid N fertilizer used by WA graingrowers is UAN, however MAXamFLO from Summit Fertilizers offers a great alternative, especially on canola paddocks.

MAXamFLO contains 6.2% w/w sulphur (7.8% w/v) along with 22% w/w nitrogen (27.7% w/v).

That makes it an excellent choice for those situations where sulphur and nitrogen are both required.

MAXamFLO can replace UAN to supply N and S in pre or post-emergent applications, or can be used as a liquid alternative to UreaPlus or sulphate of ammonia.

As a liquid fertiliser, MAXamFLO can offer handling and storage advantages over sulphur-rich granular products such as UreaPlus and sulphate of ammonia.

MAXamFLO is exceptionally well balanced and priced, and has traditionally provided N at an equivalent on-farm cost per unit to UAN or other liquid nitrogen fertilizers.

This has also meant the sulphur component in MAXamFLO has been provided for no additional cost when it has been used.

The return of DAPSZC and MAPSZC welcomed

Bryce Hathway of Kalannie said they cart their fertilizer from the Summit Kwinana depot. "Being out here, using a concentrated seeding fertilizer like DAPSZC just makes sense with less transport costs and handling," he said. Saritha Marais of Summit called in on Bryce at seeding in mid-May.

It has been a welcome return for many Summit clients with DAPSZC, MAPSZC and other premium, fully compounded sowing fertilizers back in the program this season.

When the new supplies were unloaded they looked to be exactly what growers have come to expect from our premium seeding range i.e. low dust, consistent size granules that store and handle well and stand up to the rigours of seeding.

Lab analysis showed 2023 MAPSZC for example, had greater than 90% of granules within the 2 to 4 mm size range, with an average hardness of 4.5 kg.

But of course the value and quality of any fertilizer should always be judged based on direct experience with it, in other words on its on-farm performance.

Feedback on the 2023 Summit premium range has been overwhelmingly positive and this season we visited Kalannie farmer Bryce Hathway, and Wes Hall of Newdegate, for their feedback on DAPSZC and MAPSZC.

Bryce Hathway farms northeast of Kalannie with his father Graeme and brother-in-law Todd. Typically they sow about 13,500 ha each year, of which about 1,000 ha is sown to fodder crops like vetch.

Canola, lupins, wheat and barley are all in the rotation to varying degrees, depending on the season and soil types, which range from sandy loam to red clay.

Vetch is important sheep feed for their 5,000 strong flock and also an ideal opportunity to clean-up weedy paddocks. GM canola is another option to clean out ryegrass.

"Normally, we have a fairly regular rotation out here where we grow wheat for 2 to 3 years, before it goes into a pasture phase, or canola or lupins," Bryce said.

"The start to this season has been very different to the previous two. Last year was the best we've ever had. Canola averaged 2.5 t/ha over the farm, lupins were close to 3 tonnes and barley was just over 3 t/ha. It was a crazy year for yields which were about double the long-term average.

"Over the past 2 years we've really pulled a lot of nutrition out of the soil and we wanted to get back in control this year. We had to face up to a fertilizer budget where prices were still up, but you can't afford to let soil fertility drop-off too far, otherwise it's hard to get it back.

"All our crops are sown on variable rate from prescription maps. Wheat seeding rates ranged from 40 to 60 kg/ha, depending on the zone. DAPSZC ranged from 30 to 45 kg/ha depending on the soil type and potential, and liquid UAN at seeding ranged from 40 to 60 L/ha.

"The reasons for choosing DAPSZC were mainly because of it's high P content, trace elements and handling. We like having the zinc and copper compounded into the granule with the other nutrients.

"We've used DAPSZC for a lot of years. It's proven to be a very good product. After trying DAP for a year, the experience and soil tests showed that wasn't the best approach for us.

"Out here we really need the trace elements," Bryce said.

Soil and tissue testing revealed a need for Altora Ag Newdegate Farm Manager, Wes Hall, to pay special attention to sulphur nutrition this season. Wes said the change in seeding fertilizer strategy to MAPSZC (4% S, 21% P, 12% N, Cu and Zn) and MAXamFLO a NS liquid, combined more sulphur with easy to handle products. Summit Area Manager, Brett Coxon (left), discusses the change with Wes at seeding in late May.

Altora Ag took ownership in February this year of the Newdegate property Wes Hall has been managing. For Wes it has been a seamless transition. Along with his team, he has sown 8,600 ha to canola, faba beans, lupins, barley and wheat, on soil types that range from sand over clay to gravel over ironstone. Its a farm dominated by lighter soil types. 600 ha has been chemical fallowed.

Crop rotation really depends on what best suits the soil type. Some is canola/wheat, some is lupin, canola wheat and barley.

Wes explains this is very much a test year for faba beans, to try and get extra nitrogen into some of the heavier country where lupins struggle.

He said it has been one of the most relaxed seeding programs he can remember. A 90 mm rain event in March kick started sowing with another 10 mm falling as the canola went in.

"We have never sown crops in March before," he said.

"But we had subsoil moisture so we thought we should make the most of the situation and put the canola in.

"At this stage it has paid off with some big robust canola plants and hopefully some top-up rain will keep them going.

"Aside from that, it's been a real patchy start to the season with the last of the crops in the ground before the end of May. The seeders only worked one weekend throughout the entire program and staff have had the luxury this year of getting back into the community and playing sport on the weekends.

"This year is the first time I've used MAPSZC for at least 10 years, which was a decision made by Altora Ag.

"We went with MAPSZC because of great handling and the zinc and copper. We've realised we needed to address trace element nutrition.

"The decision has been fantastic! It's been the least dusty product we have used for at least the last five years, and in that respect it's been good for our staff who load machines.

"We have also found the granule size is very uniform, and that has made life much easier for handling and for getting accurate calibration.

"The high phosphorus concentration in MAPSZC is another advantage. It seems to be a good balance, with sulphur and trace elements all together in the granules."

Wes said to grow the crops the Newdegate farm is capable of supporting, 70 kg/ha of MAPSZC went down under the seed along with MAXamFLO to boost sulphur and nitrogen.

"MAXamFLO was the sowing liquid of choice this year, because our sulphur levels have been low," he said.

"That was another part of our decision-making in using MAPSZC.

"Soil and tissue tests have shown we have reasonably low levels of sulphur. We've tried to combat that this year by getting sulphur on up-front in the MAPSZC seeding granules and with the liquid.

"Then we'll either come back with urea, or depending on leaf tests, we may come back with MAXamFLO if the sulphur is still low. The majority of the property would get a top-up of urea though," he said.

Summit's field trial program is well underway

This year is proving to be another busy and challenging one for the Summit Field Research team, with many topical issues for growers under investigation.

An ongoing area of interest is how to improve nitrogen utilisation. Nitrogen can be lost to the environment in various ways, and new management options are emerging that have the potential to reduce those losses even further.

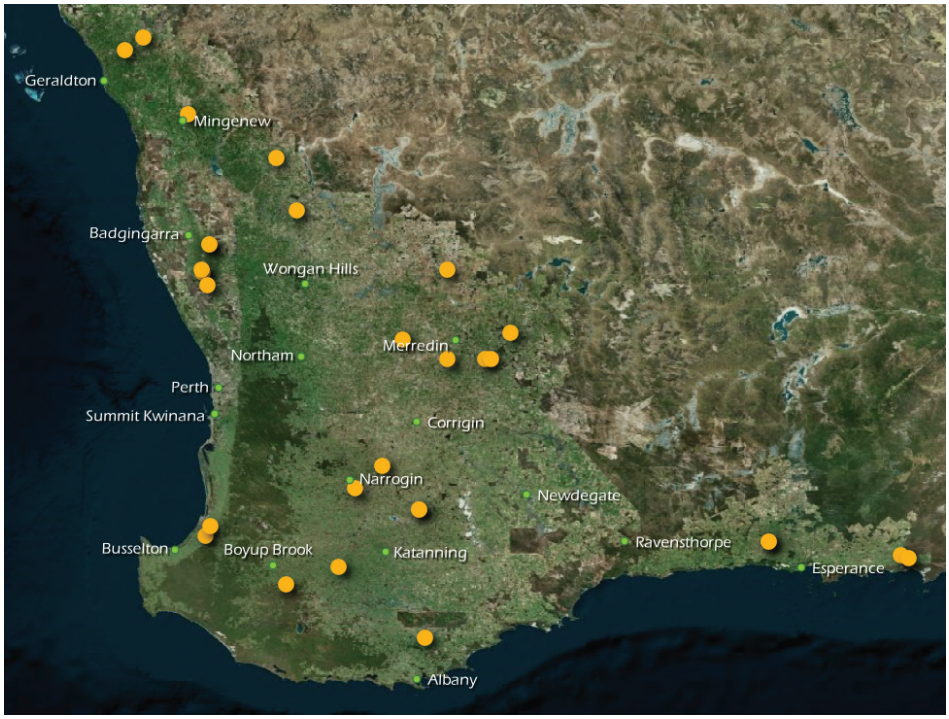
In 2023 Summit is investigating the value of urease inhibitors. These are essentially chemical coatings that would be applied to urea in our depots. Once applied, they have the potential to reduce the process of ammonia volatilisation (loss of N through gaseous form).

The Field Research team is also working with University of Western Australia PhD student Ron Harrison, to establish pasture legume field trials in the West Midlands. There will also be pasture trials in the southwest.

We are teaming up with CropX to look at the role of soil moisture sensors for data collection and improved in-season fertilizer decision making.

Summit has also commenced long-term sulphur trials to better understand soil sulphur supply and availability to crops and also leeching.

Field walks usually start in August, so growers should stay in contact with their Area Manager.



New appointments

We would like to welcome Isaac Gilchrist to the Field Research team and also thank Jack Pages Oliver for all of his hard work with Summit over the past few years.

Isaac started in March with an induction program and then went straight into the role of Field Research Officer. Studying Agribusiness at Curtin University Isaac brings a range of skills within broadacre farming, viticulture, timber production and customer service.

Summit Fertilizers welcomes Mark Stephens back to the team. He has taken on the Area Manager role looking after clients in Williams, Boddington and West Arthur.

Mark has a long history in agriculture with past key positions including Branch Manager with Elders in Katanning and Salesperson with Kukerin Rural Services. He also owned Nyabing Rural Services for 12 years.

Mark is well regarded by farmers for his business knowledge.

Outside of work he 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 grandchildren.

Growers can contact Mark on:

0427 788 521: or,
mstephens@summitfertz.com.au

Easy to use fertilizer calculators

MAXamFLO and UAN are sold by weight and used by volume. Hence, converting between tonnes and litres (or vice versa) is often required when budgeting for and using these liquid fertilizers.

Taking this into account, Summit has developed a series of easy-to-use fertilizer calculators that are available on our website.

Our calculators make answering questions, such as these a breeze!

- How many litres are there per tonne of UAN or MAXamFLO?
- How much Urea, UAN or MAXamFLO do I need to apply to meet my target N rate?
- How much liquid fertilizer will I use at a particular application rate and paddock size?

Find the answers at
www.summitfertz.com.au/field-research-agronomy/fertilizer-calculator

Soil pH a vital key to unlocking legume potential

According to Chloe Turner, Summit Area Manager for Kojonup and surrounding shires, her 2022/23 soil test results taken from pasture and cropping paddocks revealed widespread nitrate $(NO_3)^-$ deficiencies. They have also shown low ammonium $(NH_4)^+$ content, which is a trend that extends across the wheatbelt.

Chloe says high yields and wetter winters in her region over the past few years are likely to have contributed to the current low levels of available nitrogen. The lack of summer and early autumn rain events in the lead up to this season have compounded the situation resulting in less nutrient mineralisation.

"The test results are perhaps a little surprising given high organic carbon levels, previous fertilizer history and the general good ratio of legumes in pastures in my area," Chloe said.

"Although we need to be guided by what we know, not what we think the situation should be.

"For this season two different pasture scenarios will require very different nutrition management.

"The first is grass dominant pastures, which according to test results will require added nitrogen to push productivity.

"The second is legume base pastures that will require a background of good soil health and nutrition to thrive.

"In grass dominant situations, early urea or UAN applications will help boost vigour and get those pastures established and set-up to optimise spring growth.

"For productive legume dominant pastures, Summit testing is revealing low soil pH to be a key issue impacting on growth in many soils.

"Understandably, growers tend to focus their lime budget on the cropping enterprise and forget about how important it is for pastures too.

"Legume pastures are a great way of putting organic matter and nitrogen into the soil and setting paddocks up for a long productive cropping phase. Without the right soil conditions though, that potential is lost."

Most pasture rhizobia species are sensitive to low soil pH and populations reduce incrementally with pH below 5.5 $CaCl_2$ (see table below), preventing optimal nodulation and nitrogen fixation.

When the soil pH falls below 5.0 the plants' ability to take up phosphorus, calcium and molybdenum is reduced considerably.

The most important nutrients rhizobia need are sulphur, potassium and molybdenum to fix nitrogen. If any of these are deficient, then the ability to fix nitrogen is greatly reduced.

So sound background nutrition and pH above 5.5 (consistent throughout the soil profile) are key ingredients for successful legume pastures and should be seen as a long-term investment in paddock health.

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pH	Comments
>5.5	Ideal for most rhizobia populations.
<5.5	Rhizobia populations and ability to fix nitrogen reduced, will be especially noticed on acid sensitive pastures e.g. Lucerne.
<5.0	Rhizobia populations will reduce further. The plants ability to take up P is incrementally reduced and will now start running into molybdenum deficiency issues; essential for rhizobia to fix atmospheric N.
<4.8	Soil with aluminium will now start to have toxicity issues, preventing root growth, subsequently preventing roots exploring for nutrients (especially detrimental on high PBI soils). With further reduced rhizobia populations, there is a reduction of infection of root hairs, hence nodulation and nitrogen fixation are reduced.
<4.5	A significant slow down in soil mineralisation processes. Aluminium becomes more toxic if present. Populations further reduced.

Chloe Turner, Summit Area Manager Kojonup, sees great value in the installation of nutrient Fuel Gauges as a way of identifying in-season pasture biomass potential. The above nitrogen Fuel Gauges were set up in grass pasture. For more information, growers in her area can contact Chloe.

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