Winter 2018

Fertilizer News

Summit Fuel Gauges... the science behind the system

In-season nitrogen decisions that strike the right balance between crop yield and protein have a dramatic impact on profitability. And each year, more and more farmers are making use of in-crop Fuel Gauges.

Developed exclusively for SummitQ Services, the Fuel Gauge concept is based on the fact that it's often hard to detect nutritional deficiencies in actively growing crops or pastures, if you are not able to compare their growth directly to plants with sufficient nutrient supply.

The best way to make that comparison is to create an area within the paddock that has sufficient nutrients applied at non-limiting (but not excessive) amounts.

Summit Fuel Gauges are nutrient rich strips set up in crop and pasture paddocks. Most often, they consist of non-limiting rates of nitrogen, however they can also be done with potassium or trace elements, or even a combination of nutrients. The strips are usually 2m to 4m wide and about 100m long across the direction of paddock workings.

A GreenSeeker® is then used to measure differences in colour and growth of the crop or pasture during the season.

GreenSeeker NDVI readings (which stands for normalised difference vegetative index) are objective measurements, far superior in accuracy than could ever be achieved visually. These are taken by Summit Area Managers. Fuel Gauge sites can also be soil and plant tested to add to the information.

The main nutrition focus at this time of year is nitrogen (N), and many N Fuel Gauges have already been strategically located in farmer paddocks across the grain growing belt. They will help growers adjust their planned N applications in response to season conditions.

While placing nutrient rich strips in paddocks and measuring any growth improvements is a useful observation, it doesn't create a fertilizer recommendation. It is still just an observation.

It is the In Season Nitrogen Calculator, developed by Summit and Esperance Farmer David Cox, that is the real 'brains' behind any N recommendations. The in-season calculator does all the number crunching to reveal the ideal nitrogen rate to optimise paddock potential.

Mark Gherardi, Field Research Manager, Summit Fertilizers

NDVI values are taken by the Area Manager and keyed into the calculator, along with paddock planting date. Using simple inputs, the calculator takes into account a number of factors to determine the potential of the crop to achieve a yield increase from an application of nitrogen.

This uniquely developed software predicts crop responses to nitrogen. The model output is simply the rate of nitrogen required to optimise yield. It's a very clever tool and growers can be assured that recommendations come from more than a decade of extensive research under Western Australian conditions.

A farmer inspired innovation

The idea of Summit developing the Fuel Gauge system started back in 2006 when David Cox, and

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Fuel Gauges the science behind the system (cont.)

Esperance Area Manager, Nick Donkin, discussed what David was striving to achieve on his farm.

David was committed to developing the concept, but was at the time relying on overseas information to make sense of the NDVI readings.

Realising the benefits for WA growers, Nick jumped on board. Since those early discussions the program has really gathered momentum with Summit making a substantial, long term R&D investment.

Fuel Gauges backed by science

For more than a decade, countless Fuel Gauges have been put down in farmer paddocks. Knowledge on the system has been progressively built and collated over many years, from wide ranging seasonal conditions and varied geographic locations.

In 2014, Summit started fully randomised, replicated field trials to test the validity of the Fuel Gauge system. Since then, 23 Fuel Gauge validation trials have revealed strikingly consistent results.

- The in-season nitrogen calculator recommended rate produced optimum yield and return in 17 of the 23 trials.
- In three trials, the nitrogen calculator slightly underestimated optimum nitrogen, and in three trials, it slightly over-estimated the optimal nitrogen rates (2 were in oats and 1 in barley)

Broader trends have come from the Fuel Gauges too.

- They have reinforced that without the right balance of all nutrients, there is no sense in over applying N. Setting the crop up with sufficient nutrient supply at seeding is absolutely critical.
- There is no substitute for reasonable up-front nitrogen to encourage early plant growth and crop vigour to optimise yield potential.
- Nitrogen timing is very important. Delaying decisions on nitrogen top-up, with the intention of decreasing the risk of over-application and not gaining returns with a sharp season finish is false economy.
- Yield potential is lost each day a crop grows with a nutrient limitation.
- The lower the up-front supply of nitrogen, the more significant the nutrition limitation can be and, the resultant loss in yield potential requires more top-up nitrogen to gain back yield.

Summit's involvement in developing Fuel Gauges started back in 2006 when Esperance farmer, David Cox, and Esperance Area Manager, Nick Donkin, discussed what David was striving to achieve on his farm. Since then Summit has made a substantial R&D investment into the system.

Summary

In summary, following substantial validation trials, Summit is very confident in the In-season Nitrogen Calculator's recommendations for wheat. Because of the large plantings of this crop across the State it has been a research focus.

Summit is moderately confident in the In-season Nitrogen Calculator's recommendations for barley and oats.

These cereals, due to their different responses to nitrogen and weaker relationship than wheat between leaf area and biomass and grain production, need ongoing research.

The fact that these outcomes are produced from such simple inputs and the calculator output is very easy to understand, is a real benefit to growers.

Looking beyond NDVI assessments and model calculations, there are many other observational benefits of having N-rich strips in your paddocks.

We are adding to our understanding of these all the time with additions of other nutrients including potassium and trace elements.

Growers should contact their local Summit Area Manager for more information.

Fuel Gauge farmer stories

There are a number of ways to gauge nitrogen levels in crops. Growers can take plant samples, post them to a laboratory for analysis and when the results come back, they can be compared with published results and local standards. Growers can utilise models based on complex interactions between soil physical and chemical properties, soil moisture measurement, rainfall patterns and developing crop morphology. Or, growers can let the crop show its capability of responding to nitrogen, on-the-spot and at any time. Quick comparison testing with Summit Fuel Gauges is working wonders for growers across WA. Tim Critch from Tenindewa and Terry Clune from Wongan Hills are amongst the many growers that will have more Fuel Gauges installed this year. Below are their thoughts on how these useful predictive tools are fitting into their decision making.

Tim and Daniel Critch with Shane Turner (centre)

Tim and Jen, Daniel and Penny along with their parents Tony and Judy Critch, farm at Tenindewa.

Summit Area Manager, Shane Turner, has put Fuel Gauges on their property for the past five years. Shane started with N Fuel Gauges which Tim says have reinforced to them just how important early nitrogen is.

“Sometimes it hard to catch up with the N if you haven’t been able to apply enough early enough,” he said.

"The seasons develop quickly up here, so we don’t get a lot of opportunity to apply urea before rains. Ideally, N would go on at three to four leaf. We band some down the tube and apply some post-emergent and if it’s a good season we might top up some later on with a fungicide.

“Fuel Gauges stimulate an in-season discussion point and often, they also provide something to be learnt for the following season.

“Sometimes we see no response, sometimes we don’t see a huge response - which indicates what we are doing is adequate and sometimes the response is more visual.

“Shane has also started doing potassium Fuel Gauges and we are seeing responses to K, particularly on our sandplain. Sometimes we don’t get such a big response to nitrogen unless the potassium is there as well. That’s the sort of information that is really valuable to keep in mind for the following season."

Terry and Melanie Clune farm at Wongan Hills. They have been multiple cropping for close to 20 years and this season have planted wheat, canola and lupins.

Terry says they have been Summit clients for about 15 years. Ballidu based Summit Area Manager, Dave Armstrong, started installing nitrogen Fuel Gauges in Terry’s crops four years ago. At the time, Terry was sowing some nitrogen with the crop and then assessing seasonal conditions and topping up N as required.

He explains, “Going back a few years I was mostly putting about 50kg/ha of urea down the tube at seeding along with MAPSZC and seed. Dave put down his Fuel Gauges and the first thing I noticed was that compared to the Fuel Gauge strips, our crops would start to run out of N.

“I think the Fuel Gauges are very good, because the moment the crop shows any signs of not keeping up with the strip, you know you should do something about it.

“From the strips and from what I saw some other growers doing, I got the feeling that if the soil gets a bigger spread of nitrogen early, the crops just seem to perform better.

“That prompted us to make the decision to put more N up front, where we could. Logistically it was difficult to be able to get the post-emergent N timing just right for the whole crop. Some paddocks would get it on time. Others would have to wait until the next front would come through, or the one after that. We just couldn’t get it all on at the best time, whereas when it’s already in the ground it just all seems to work.

“This year, on one farm I spread nitrogen out front and also put 50kg/ha of urea down the tube. On the other farm there is no fertilizer shed so we just do it out of the truck and I’ll do that post.

David Armstrong and Terry Clune

“Fuel Gauges have encouraged us to spread more N in front of the crop sowing, where we can. That relieves the pressure on the air seeder tank and it also gives us more time after sowing to do other things.”

Terry said he has been able to simplify his fertilizer program. This year on the home farm he spread 50kg/ha of urea before sowing the red soils and 60 kg/ha on the sandplain country which also received between 50 and 80kg/ha of potash. Fifty kg/ha of urea was put down the air seeder tube and MAPZSC was sown with the seed.

The pre-sowing application of either potash and urea on the sandplain, or straight urea on the heavier soil went on within 24 hours of sowing.

“If it’s a good year, I’ll probably go back with 40L/ha of UAN at flag leaf emergence,” he said.

Summit Superphosphate

How useful will soil mineralisation be in filling the nitrogen gap?

Summer rainfall will have led to some mineralisation of nitrogen (N) in the soil. Mineralisation is the conversion of soil organic matter by microbes into plant available forms of N. Initially this is in the ammonium form which is subsequently converted to nitrate. Most fertilizers applied in ammonium form are also converted by the same processes to nitrate.

So a large component of both soil and fertilizer N supply relies on biological processes to make it available to plants.

How much N is available from mineralisation?

The level of mineralisation is dependent on soil organic carbon (OC) levels. Higher soil OC potentially provides more mineralised nitrogen. The composition of the organic matter in the soil will also influence the rate at which it is decomposed, as will soil type, temperature and soil moisture.

As carbon to nitrogen ratios fall below 25:1 - as with legume residues, decomposition rates increase and release of surplus N is more likely.

High cereal or oilseed stubble loads can actually result in lower soil N availability to plants. That's because N in the residues is used by microorganisms to break down the stubble. Soil N and/or added fertilizer N may hence be unavailable for a period of time in this scenario.

Very acidic soils < pH 4.0 are likely to be much slower (months or years) to mineralise organic matter.

While mineralisation can slow down to almost a stop and speed up very quickly, it is a continuous process. Factors that slow mineralisation are low moisture availability, cooler temperatures and low surface area contact with soil.

What does it mean for you?

Nitrogen demand for early crop growth often exceeds N supplied from the soil because mineralisation is slow when temperatures are low and occurs more rapidly when soils warm up in spring. This early-season N gap between demand and supply is usually filled by applying starter fertilizer N.

Last summer many regions received rainfall when temperatures were also high, so if adequate soil organic matter was present and the soil remained wet, N was mineralised during a time when there were no growing plants (other than weeds) to utilise it.

If summer weeds were controlled, this mineralised N would have been available to the emerging crop, providing it wasn't leached down the profile by a season breaking opening rain.

In years without summer rain, mineralisation normally occurs in autumn, although it happens more often in spring when moisture is available and soil temperatures are higher. This nitrogen is normally responsible for finishing the crop and has a big impact on grain weight and protein content.

In paddocks with low levels of soil organic carbon, for example due to continuous cropping, there may not be additional nitrogen to come from mineralisation in spring. Paddocks in that situation may need additional N later in the season.

The best strategy for growers is to concentrate on increasing N use efficiency by determining background soil N, determining optimum N application rates and timings of fertilizer to try and make as much use as possible of soil N supply.

Summit Fuel Gauges and plant analysis can play an important role in determining if nitrogen is available to your crop.

Plant analysis will also show whether any other nutrients like sulphur, potassium, zinc or copper are in limited supply and could therefore hold back the crop and decrease yield potential.

Summit plays vital role in a large nutrition investment

Summit Fertilizers is collaborating with GRDC and WA research agencies including DPIRD, University of WA, Murdoch University and CSIRO in a number of exciting new projects. The focus is on:

- Gaining a better understanding of soil nutrient supply, leading to more efficient fertilizer use to meet crop requirements for grain production.
- Distribution of nutrients when soils are ameliorated.
- Developing new in-field soil sampling methods.

Farming systems have changed substantially. It is therefore timely to ensure our understanding of nutrition from earlier research is still applicable.

The biggest of the three soil and nutrition projects, worth a total of $9.7 million across five years, is aimed at improving WA grower profitability through more efficient nutrient use by investigating soil N, P and K supply.

Summit has sown five phosphorus rate trials on a range of soil types. This has been done in collaboration with Craig Scanlan, DPIRD. Summit has also sown a potassium trial in conjunction with Richard Bell from Murdoch University.

The second of the three investments is worth a total of $3.5 million and aims to improve our understanding of how ameliorating soil constraints changes the availability of nutrients in the soil, the duration of the effects and the implications for fertilizer requirements.

Summit has also committed to collaborate in a review of ways to collect soil samples to boost the accuracy of determining what soil nutrients are available to plants to help WA growers make better, more cost effective fertilizer decisions.

Summit trials will also be used by Phil Ward at CSIRO as part of the investigation into improving soil sampling methods.

Summit 2018 field research update

Despite the late, dry start to the 2017 growing season, last years Summit trial program turned out to be a huge success. Coming into 2018, Summit Fertilizers has established 28 trials across Western Australia, with a particularly big program in the northern and eastern Wheatbelt.

The overall goal is to further develop our understanding of crop and nutrient interaction to improve the advice our Area Managers provide to growers when making their fertilizer decisions. Additionally, trial results are used to improve Summit's soil test recommendations, as well as present growers with area specific findings to improve yields and returns.

Many Summit trials are done in collaboration with other key research organisations such as GRDC, DPIRD, UWA, Murdoch University and CSIRO. Equally importantly they are conducted with local grower groups.

Phosphorus (P) is a key focus this year. We are continuing the work with P placement strategies on high Phosphorus Buffering Index (PBI) soil at Corrigin. In partnership with GRDC Summit has sown a number of phosphorus rate trials strategically located across the State.

GRDC is seeking to improve grower profitability through fertilizer inputs. Summit has taken part in the GRDC's phosphorus and potassium research component.

Previous trials have shown the added benefit from potassium fertilizer and the improvement in early plant vigour and nitrogen uptake from adequate phosphorus at sowing.

The Summit Fertilizers Field Research team has established 28 trials across the Wheatbelt this year with a particularly big program in the north and east.

Once again, we are investigating the interaction between nitrogen (N), phosphorus and potassium in eastern Wheatbelt soils, whilst expanding these trials to other areas in the State.

The Summit Nitrogen Calculator has been proven as a reliable and useful tool for farmers when making in-season N decisions. For a third consecutive year, the N-calc has been incorporated into the nitrogen timing canola trial.

This year at the Morowa Ag School the N-calc has been part of a trial assessing the accuracy of nitrogen recommendations for reaching protein targets in wheat, barley and oat varieties.

Growers and advisors should contact their local Summit Area Manager for the opportunity to visit trials in their area throughout the season, or for more details. Trials conducted in collaboration with grower groups can we viewed at the spring field days.

Plant analysis

Plant analysis is another guide to whether some nutrients are limiting growth.

It is a much better technique than soil testing for assessing trace element deficiencies such as copper, zinc, manganese, iron, boron and molybdenum and lesser macro nutrients of sulphur, calcium and magnesium.

Key benefits of Summit Fertilizers plant analysis are:

- independent laboratory
- rapid turnaround times
- wide range of nutrients measured

For more information on Summit plant analysis, or to discuss fertilizer needs, growers should talk with their local Summit Area Manager.

SUMMIT
FIELD RESEARCH

Better connect... SummitConnect

SummitConnect enables Summit customers to keep in touch with all their fertilizer transactions.

With SummitConnect, information is available 24/7 via the Summit Fertilizers website. Customers can download a range of activities and transactions including:

- Statements
- Invoices
- Orders on hand
- Despatches
- Weighbridge dockets for individual loads

With SummitConnect, up-to-date information is available anytime from anywhere. Customers can even give access to their accountant or consultant, saving the need to transfer documents. Getting connected is easy. Customers simply email us at:

summitconnect@summitfertz.com.au

You will be provided with a unique login. Alternatively, you can contact the Kwinana office on 1800 198 224 or (08) 9439 8999.

Your Summit Area Manager is also available to assist with how best to make SummitConnect a bigger part of your everyday business.

Deferred terms added to the Summit credit offer

Early last year we introduced our Fastpay Terms – four day Collect & Pay option and our Pay25 Terms – the Summit version of a 30 day account. Both are accessed through a direct debit payment system.

These additional payment options have been very well received. We have hundreds of valued Summit customers with active credit accounts, stating how the new options have added value and flexibility to their business. Feedback has been very positive with comments such as:

"Once they are set up, they are all done, no need to revisit paperwork again! Cash flow planning with due dates is so much easier. No need to worry about pesky 'overs and unders' to account for. Friendly and efficient accounts team to answer all queries."

In the current season, Summit has introduced deferred terms credit to suit both dairy and cattle graziers, along with grain producers, timing fertilizer payment to match their receipt of funds for produce.

Again, this initiative has been favourably received by customers. Comments have been complimentary with regards to the turnaround time and the straightforward application process.

Cheri Bowater, Summit Credit Manager

Our aim is always to keep things as simple as possible, but with enough flexibility to ensure ease of doing business with Summit. As such, all of your Summit orders, transactions, invoices and statements can be viewed on SummitConnect at all times. Our friendly accounts team are always happy to take your call and answer any queries (08) 9439 8999.

Growers should contact Cheri Bowater, Summit Fertilizers Credit Manager, on (08) 9439 8903 to discuss the various credit options available.

N.B. Terms and conditions apply, subject to Summit approval.

Visit us at the field days!

Summit Fertilizers has a long history of supporting the Mingenew, Dowerin and Newdegate field days. It's a direct reflection of our commitment to the rural community that regardless of the season, we'll be with you all the way.

Growers will be able to meet with Summit staff from all departments and receive information on all the latest from Summit, including our 2018/19 market offer.

This year's field days

- Mingenew: August 15 and 16.
- Dowerin: August 29 and 30.
- Newdegate: September 5 and 6.

MAPSZC®

Key attributes of quality fertilizers

Summit's premium cropping compounds including, MAPSZC, VIGOUR and DAPSZC all have many attributes that make for outstanding handling products. High quality fertilizers minimise hold ups in farm operations. That's particularly important where the timing of the operation is critical. Delays at seeding can put yield losses into the tens of thousands of dollars and dwarf any cost advantage of using a lessor quality fertilizer.

For a fertilizer to flow and be poured, augured or conveyed it needs to be granulated. Granulation size for good flow characteristics is in the 2 to 4mm range. The tighter the range in granule size the better. Fertilizers with a wide spread in granule size are at risk of segregation during handling, which can mean altered application rates in equipment, decreased blend accuracy or 'hanging up' in bins.

Granule shape is important too! Fertilizer granules should be as close to spherical as possible. This ensures good flow ability and greater resistance to abrasion and fine particle generation. Hardness of granules determines how well they stand up to handling. Some softer granule fertilizers are only suitable for topdressing as the product can degrade into finer and dusty particles if repeatedly handled, as in a seeding operation, particularly where a product is augured.

A fertilizer's ability to absorb moisture at various temperatures and relative humidities is termed it's hygroscopicity. Phosphate fertilizers are generally less hygroscopic than nitrogen fertilizers with MAP based fertilizers absorbing less moisture than DAP based fertilizers.

The hygroscopicity of a fertilizer is affected by its granule size. A fertilizer with a high proportion of fine granules or dust will absorb significantly more moisture than a well granulated product.

The relative humidity in the air at which a fertilizer begins to absorb moisture is termed the Critical Relative Humidity (CRH). The CRH of blends is almost always lower than for individual components that make up a blend.

Compound formulation refers to the combining of two or more nutrients in an even mix or slurry, before granulation, so that each granule contains the same nutrients in the same proportion. In WA, compounding trace elements into fertilizers is a particularly important feature as it allows even distribution of trace elements in the drill row and this ensures full availability to the plants.

Brayden moves into Area Manager role

Summit Fertilizers is pleased to announce the appointment of Brayden Noble to the position of Area Manager.

Brayden grew up on a family farm near Watheroo before attending Aquinas College and then went on to complete a degree in Agriculture at the University of Western Australia.

He came to Summit in early 2015 and has been working within the Field Research team, developing trials to support the company's fertilizer recommendations. It's been an ideal background to his new appointment.

Brayden takes over the area previously serviced by Mike Tagliaferri. Mike is leaving us after 10 years of loyal service and we wish him well in his future endeavours.

Growers can contact Brayden on 0417 490 047, or BNoble@summitfertz.com.au

Brayden's area covers the central wheat belt shires of Northam, Cunderdin, Goomalling, Dowerin, Wyalkatchem, Tammin, Trayning, York and Toodyay.

Rigorous testing for product integrity

When Summit takes in product we test to ensure the fertilizer is fit for its intended use.

We have a laboratory at the Kwinana depot that enables testing for quality parameters. Testing is carried out on representative samples of fertilizer during receival into our sheds. The product sample is placed in a humidity chamber for up to 48 hours under conditions of 20C and 80% humidity. It is weighed at 24 and 48 hours to determine the amount of moisture it has absorbed.

Once removed from the chamber the granule is tested for integrity and dried to ensure it is still hard.

This information can be used to advise customers on how to best care for the product while in storage at farm i.e. liming and tarping products during wet and humid weather conditions

We test for hardness to ensure the granules are not susceptible to breaking down during handling, either ship to shed, shed to customer's trucks, farm storage to seeding equipment and finally seeding equipment to ground.

Summit also conducts screening tests to measure the amount of fines (<2.0mm size) and independent laboratories are used for nutrient analysis.

Dairy farmer of the year

Summit Fertilizers would like to recognise the outstanding achievement of long-term client Vic Rodwell. In May this year he was announced Lion Dairy and Drinks' 2017 Farmer of the Year.

A former Western Dairy chairman and a board member for almost a decade, Vic was judged the best of the company's 550 milk suppliers around Australia and awarded by Lion as its best milk supplier nationally.

With his wife Denise, he runs Rodwell Farms at Boyanup. Their dairy produces more than six million litres of milk a year off a platform of 400 hectares.

Vic came home to the family farm more than three decades ago at the of age just 15. Back then they were milking 40 cows a day. At its peak now, the dairy has up to 800 cows that have to be intensively managed. The herd has a split calving, with cows calving either from February through April or August/September.

"We're transitioning to 70 per cent autumn calving in line with when Lion wants milk and production off our feed base. So, we're looking to get more out of our grass," Vic said

Summit Fertilizers Bunbury Depot Manager, Ralph Papalia, said the Rodwell's milk is of exceptional quality and produced in a supply curve that really suits Lion Dairy & Drinks' requirements.

"There's so much more to life on a dairy farm than milking cows," Ralph said. "Today's dairy farmers need to have a whole range of skills in order to run profitable and sustainable farm businesses.

"Vic and Denise run an exceptionally progressive dairy and have been a pleasure for Summit to work with. They take great pride in what they do and are totally focused on developing opportunities across a whole range of farming activities.

"They use exciting, world-leading technologies to help run their business and are very worthy recipients of the 2017 Lion Dairy Farmer of the Year award," Ralph said.

High tech pastures

Summit Fertilizers Bunbury Depot Manager, Ralph Papalia (left) and Lion Dairy and Drinks' 2017 Farmer of the Year, Vic Rodwell, in Vic's Boyanup leafy turnip pasture.

A world-class dairy business fittingly describes the Rodwell's enterprise. Irrigated pastures, dryland production and run off blocks along with modern equipment see this property striving to maximise milk production. Leased land, run off blocks and heifer agistment complement the platform in the production of fodder and accommodation of young and dry stock.

Pastures are intensively fertilized on a rotational basis, and Summit soil and plant tissue testing has been incorporated into the management regime. Soil samples are GPS located on transects to monitor trends of nutrient status. Plant analysis happens up to four times a year.

Rotational grazing is employed with fertilizer applications made post grazing. Leaf stage is targeted at 2.5 – 3 ryegrass leaves, with pasture growth rates monitored by District Average Pasture Growth Rate numbers (Pastures from Space data), mean temperatures and continual paddock assessment. Due to the intensive nature of monitoring, management is moving away from standard (N, P, K, S) blends to more specific nutrient products produced by Summit. The fact that data is available on every paddock from soil and plant tests allows this management shift to occur.

Nutrient management zone maps have been created that identify areas of low, medium and high fertility. These maps visually highlight the varying levels of fertility that need to be considered when it comes to nutrient applications.

For 18 months, Vic has been pioneering precision irrigation through the use of Variable Rate Irrigation (VRI). VRI controls the centre pivot to provide Vic with the ultimate in site specific watering.

VRI is an emerging technology and it offers the potential for water control down to the individual sprinkler. In essence, individual sprinklers on the pivot are software controlled and can discharge more or less water depending on site needs.

Assessment of paddock variability in soil type, crop type, topography or even obstacles can all be managed as separate zones within the irrigated paddock. Vic can do things like avoid applying water over roads or waterways, or reduce application rates over low lying areas that already have enough water, to increase productivity and manage variability in the field.

Strategic use of nitrogen on pastures

Moora based Summit Fertilizers Area Manager, Brett Beard, says whether or not it's worth applying nitrogen to pastures this season really comes down to the following considerations:

- pasture species and density;
- soil moisture content and temperature;
- required timing of feed; and,
- the end markets you are trying to reach.

One kg of nitrogen/ha/day is generally considered by many as a 'ball park' standard practice in intensively managed grazing systems. This is where quality grass species (e.g. ryegrass) dominate, pasture density is good, and all other nutrients are in adequate supply. Under these circumstances, grazing 3 to 4 leaf grass takes place regularly so the pasture is fully utilised.

Many broadacre pasture scenarios however are quite different. Unless sown to desirable species, pastures coming out of the cropping phase typically have small numbers of useful grazing species (e.g. ryegrass and clover). It's more likely for capeweed, geranium, volunteer cereals/canola and grasses such as brome and barley grass to dominate after cropping.

It's common for farmers looking at these pastures to doubt how they can make money from them. Quite often fertilizer is the first item to get scratched off the list. A recent trend is that farmers increase fertilizer rates in their crops in an attempt to provide residual nutrition for the following pasture phase. This sounds good in theory, but realistically; the more the crop is fed, the better it yields (assuming good rainfall), so there's probably less residual nutrition for the pasture phase than many people think.

If broadacre growers still have solid legume-dominant pastures, the old practice of 1kg P/DSE (80-100kg/ha Superphosphate) is still quite relevant, because the legume provides background nitrogen. But as already stated, in a high percentage of pasture paddocks, this simply isn't the case.

With a different pasture composition, growers need to think in another way about how they spend their fertilizer dollars. For instance, if the price of 100kg of Super is approximately $35/ha, then that would equate to 70kg urea. Given the species mix of most pasture paddocks, the bang-for-buck is definitely with nitrogen.

We can't forget the other important nutrients though. Knowing how phosphorus (P) works over time, it's important to maintain a constant supply of fresh P than rely on residual P. If the budget is restricted, it's better to apply a smaller amount of P every year rather than one big dose every few years. Growers should continue to apply potassium, sulphur and trace elements when and as required to maintain fertility and ensure the best utilisation of applied N.

Strategically targeted N applications to boost growth in selected pasture paddocks can help in a number of ways. It can, for example, help fill the feed gap in winter. It can delay grazing on better paddocks enabling them to bulk up more higher quality feed or it could enable growers to put that extra paddock of crop in.

Summit Fertilizers conducts Fuel Gauge N strips on pastures and they really highlight the way to use N. The Fuel Gauges have shown there is a big difference in biomass production from a 'feel-good' rate of 12kgN/ha (30L UAN) compared with 30kgN/ha (70kg Urea). The key message is that if you are going to do it, you need to use an adequate N rate.

The quality of the extra feed produced is consistently higher, meaning the paddock is producing more high quality feed that will support more livestock during the winter period.

Of course, producing more grass-based feed is a waste of money if the stock do not eat it. If pasture production does not match stocking rates, expect excess grass growth to:

- compete with legumes in spring to reduce legume biomass and seed set; and,
- hay-off prematurely and produce more grass seeds, making long term manipulation of the grasses in that paddock far tougher.

Pasture and dry matter production is still the cheapest way to feed livestock as per the following realistic scenario.

Spend $42/ha to apply 30kgN (including freight/application) and produce 450kg extra dry matter (DM) (assuming 15kgDM/kgN), or buy 450kg hay (which varies in quality) for $135/ha ($300/t)

So be smart with where you put your N!

Key messages

- Typical grass-dominant (non-legume) pastures can be highly productive with added N, although they need to be managed more intensively.
- Adequate supply of all nutrients and knowledge of soil constraints is a necessity to assess suitability and responsiveness to applied nitrogen.
- The extra feed needs to be utilised to make it worthwhile.
- Reasonable rates of nitrogen should be used, eg. 25-30kgN/ha.

Summit Fertilizers has pasture fertilizers for all occasions

Product	Typical analysis (%)				
	N	P	K	S	Ca
Dairy N	22.1	6.0	10.0	6.6	
Graze Extra	26.2	3.8	8.5	6.2	
Foddermax	30.3		7.5	8.5	
SuperPasture		13.7		10.5	17.0
SuperPhosphate		9.1		10.0	20.0

VIGOUR

Planting crops with VIGOUR

This season the Doyle family of Corrigin changed their seeding fertilizer program to banding VIGOUR with all their crops (except lupins). VIGOUR is a premium Summit Fertilizers fully granulated NPK product that along with sulphur, has top up levels of trace elements compounded into every granule.

Greg Doyle said between 100kg and 110kg/ha of VIGOUR went down at seeding through their new Bourgault 6550 air-seeder cart. That supplied 10 to 11kg of N/ha and 12 to 13.2 kg/ha of P and K. Plenty, according to Summit Area Manager, Steve Cooke, that with background nutrition from the pasture phase could provide a base for 3t/ha cereal crops, or more in a good season.

New equipment and fertilizer went 'hand in hand' as the air-seeder's larger capacity meant more fertilizer could be banded accurately with the crop.

"Quite a few farmers out here are starting to use the quality NPK products to improve potassium and crop nutrition," Greg said.

"Even though we are top-dressing some potassium on our pastures, we are just a bit wary that we need to have a bit in the system for the crop as well.

"I was looking for something that was easy to handle, which VIGOUR is, so we went that way. The new box with bigger capacity allowed for the extra product we needed to put down to keep the phosphorus rates up."

The Doyle's farm consists mostly of lighter soil types which tend to be more responsive to K application. Greg's decision to deep band the K is indeed a strategic one, as banded potassium has been shown to be twice as accessible to the crop as top-dressed potassium. Summit trial work over many years has shown that 3 to 4 kg P/ha per tonne of cereal 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 along with the P to ensure the crop has adequate nutrition to reach its potential, and also to ensure soil K reserves are not depleted.

Sowing the Doyle's crop this year were Greg Doyle (right) his son Ben (centre) and son in law, James (left). Summit Area Manager, Steve Cooke, visited them in mid May as their program was coming to an end. A new Bourgault air-seeder (below) went 'hand in hand' with premium NPK fertilizer - VIGOUR, for a hassle free seeding.

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

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

Easy seeding with MAPSZC

When we visited the property of Mark Hoysted and his father John in mid May, it was indeed a dusty affair. Seeding was close to complete on their farm east of Narrogin and their fingers were crossed for a good break to the season.

The first cold front that swept through the South West Land Division a week later finally brought to an end what had been an exceptionally dry autumn across the region. It was welcome relief indeed with the crop going into dry soil.

Mark's program was seeded with a Morris C2 Contour bar and Seed Hawk air-cart.

This year the Hoysted's have sown oats, canola, barley and are planting lupins again for the first time in quite a few years. They are hoping newer lupin varieties will be better suited to their soil types and open up rotational options. They have no sheep and hay crops are a big part of the program.

This year all their crops were sown with Summit MAPSZC. MAPSZC was developed exclusively by Summit and was designed for all crops as an ideal starter fertilizer. With a very high level of phosphorus, MAPSZC has nitrogen, sulphur and the trace elements copper, zinc and manganese compounded into every granule.

Mark said one of MAPSZC most outstanding attributes is its handling characteristics.

"We were using mainly MAP before we started using MAPSZC," Mark said. "We just decided we needed to apply trace elements too, so we don't run into any problems down the track.

"MAPSZC has excellent handling properties in moist seeding conditions. The high rate of P along with trace elements is ideal for our seeding program, because of the smaller total amount of fertilizer we put on the crop. It's less than half amount of a previous product. That means we only have to handle half as much and it just handles so well. We have an open front fertilizer shed and even when we have a rain and can see moisture at the front of the shed, it doesn't seem to be a problem."

Mark said he had tried coated products and whilst they are cheaper, they don't handle as well as the premium MAPSZC.

Like many WA grain growers, the Hoysted family of Narrogin were dry seeding and had most of their crop in by mid May. John Hoysted (left), Dale Kawitti (centre) and Summit Area Manager Brett Coxon were pictured at seeding (above). John shows Brett the high quality and exceptional handling characteristics of his MAPSZC fertilizer (below right).

"As far back as I can remember, I can't recall anyone having a problem with MAPSZC. We've tried DAP based products down here and moisture issues at seeding caused handling issues.

"I've tried other products. One company said they could make up a blend with two or three different fertilizers blended together that would do the exact same thing. But it's never as good. You don't get all the nutrients in the one granule as you do with MAPSZC.

"We sow MAPSZC and then start spreading urea and potash pretty much as soon as we finish seeding.

"MAPSZC makes life easier!"

MAPSZC® 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 (19.8%) and sulphur (8.0%).

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

Your local Summit Fertilizers Area Manager

GERALDTON
Shane Turner
0429 947 919

COOROW
Juliet McDonald
0429 945 332

BALLIDU
David Armstrong
0447 109 545

MOORA
Brett Beard
0429 900 607

NORTHAM
Brayden Noble
0417 490 047

CORRIGIN
Steve Cooke
0429 934 243

MERREDIN
Kobus Marais
0427 766 508

WILLIAMS
Jarrad Martin
0427 788 521

NARROGIN
Brett Coxon
0427 766 506

BUNBURY
Ralph Papalia
0427 766 535

LAKE GRACE
Mark Stephens
0427 766 517

ESPERANCE (WEST)
Tim Donkin
0408 092 355

ESPERANCE (EAST)
Nick Donkin
0428 715 045

ALBANY
Peter Warren
0498 223 421

ALBANY
Andrew Wallace
0427 083 820

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www.summitfertz.com.au

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