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AG NOTE

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Introduction

Welcome to the first edition of our newsletter for this year. Summer and autumn has been a busy time for all of us at Western AG meeting with clients to review last season's production results and to develop plans for this season.

delays in spraying and multiple products having to be mixed together.

On the whole it has been very rewarding hearing about some of the fantastic crop yields that were obtained across the board considering it was such a late break followed by a pretty miserable winter. To top it off, we must have experienced one of the windiest springs on record resulting in

That's history now! Like last summer, we have endured a very dry period with little summer weeds growing and the break will be most welcome from now on. Current grain and livestock prices are very encouraging, and it is hard not have a reasonable level of confidence going into this season.

From all of us, we wish you a great year ahead.



Ashley Perkins
0458 822066

Company Developments

We are delighted to be able to announce a number of new developments for Western AG. These include the opening of a new branch at Nhill, the appointment of an agent for the company at Goroke and a number of additional members of staff.

Nhill, Kaniva, Lillimur and surrounding sites. Gary brings to this new venture a high level of expertise and experience in local farming. His attention to detail and commitment to follow up and solve farmer's issues will be of immense benefit to local growers.



Brad McLean
0438 976557

Nhill Branch

The Nhill branch opened for business on Tuesday April 1st from the old Lowan Whole Foods site in the middle of town and is being managed by well-known local Gary Hall.



Gary has spent his whole life in the Nhill area and has worked previously for Lowan Whole Foods. He has been with Graincorp since 2006, in the role of Grain Services Manager, which meant he was responsible for operations at

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Company Developments continued.....

Goroke Agency

Earlier in the year Western AG appointed Shetty's Supplies, a local Goroke business owned by Andrew and Michelle Dodson, as agents for Western AG. Michelle and Andrew are well known in the Goroke area as the local suppliers of fuel and oils. The couple are very active in the community, having previously managed the local hotel. Michelle has a strong interest in horses and Andrew is active in Apex & the local CFA.



Michelle & Andrew Dodson

Both the Nhill and Goroke locations will be stocking the full range of seed, crop protection, fertiliser and animal health and general merchandise items. These developments will help both existing and new clients in the area.

Logistics & Merchandise Support

We are also very pleased to announce that Leigh Bubb and Brian Petrass have joined our team working across the Derrinallum/Willaura and Horsham/Nhill locations respectively.

Leigh is from a farming family in the Glenthompson area and has previously worked on large cropping and grazing property in the Penshurst area for the last five and a half years and as a small engine mechanic for Barry Francis Motorcycles in Hamilton for six years before this. His interests include water skiing and AFL, he currently plays for Glenthompson Dunkeld Rams where he has previously held the position as captain.



Leigh Bubb

Leigh's role will be both in animal health and general merchandise sales as well as logistics. The growth of our business in the Hamilton and surrounding area has required additional support for the Willaura depot and a dedicated on farm delivery service.

Brian Petrass has joined us in a Delivery/Merchandise Sales role, working across the Horsham & Nhill branches and also Stawell and Goroke agencies.

Brian will be managing a set weekly delivery schedule using our Horsham based truck. Brian has spent his whole life in the Kewell area, north of Horsham where he was operating a family farming business. Brian has over 32 years' experience in farming, which included both cropping and livestock operations. He has a strong practical agricultural background and is a member of the Wimmera Machinery Field Days committee.



Brian Petrass

We are very confident that these developments will increase the level and quality of the service we are able to provide to you and are in line with our core business objective which is 'To increase our client's productivity and profitability through the provision of the best technical information possible and the delivery of high quality service.'

Knockdown and Pre Em Herbicides for 2014 (by James Jess)

Glyphosate

There have been a number of changes in the high load glyphosate options for this season. The Nufarm Roundup Attack brand is no longer and has been replaced by Roundup Ultra Max which is being distributed by Sinochem. Nufarm have released Weedmaster ARGO, a 540g/l formulation containing both potassium and isopropylamine salts. The dual salt formulation offers mixing compatibility, plant uptake and translocation and easier flowing advantages over other formulations. Importantly, this product has a one hour spray to sow registration and is backed by Nufarm to work even if showers of rain are received 20 minutes after application.

Western AG also has Weedmaster DST (470g/l) from Nufarm and high quality 450g/l, 680g/kg and 800g/kg dry product from Suppliers at very competitive prices.

Paraquat

With glyphosate resistance becoming more and more common, it is very important to be on the lookout for ryegrass surviving glyphosate applications. Paraquat can be effectively used, as an alternative to glyphosate, but requires two applications 5-7 days apart. Rates in each application need to be equal, ranging from 1.2-1.5L/ha depending on weed size. The addition of a spike such as Estercide is often required to broaden activity to include broadleaf weeds. It is important to keep in mind that a single application of Paraquat after an application of glyphosate achieves little in reducing glyphosate resistance.

Main adjuvant options.

Adjuvants have been covered at length in previous editions of our newsletters. However, please find following some very important reminders.

Ammonium sulphate

The addition of ammonium sulphate to the spray mix is inexpensive and has a number of benefits:

- Reduces the effect of hard water on sensitive products such as glyphosate. In some situations, the level of water hardness can be too high to be corrected and alternative sources may be required.
- Improves the penetration and the translocation of herbicides when plants are under stress. Spraying stressed weeds under cooler conditions or when a shower of rain has been received to freshen them up is very important.
- Helps to improve the physical compatibility of multiple herbicides in a mix. Acidifies the water slightly which usually favours pesticides stability in solution.

Knockdown and Pre Em Herbicides for 2014 continued.....

VC 700/LI 700

There are a number of product brands now available. One high quality option from Victorian Chemicals is VC 700. It has both a surfactant, plant penetrating and spray drift reducing properties. It also reduces the pH of the spray solution. This type of surfactant is widely used with summer spraying with glyphosate but also has a fit when using insecticides and foliar fertilisers.

Main Knockdown Spike Options:

Estercide Xtra 680

Widely used with glyphosate, Estercide Xtra 680's main fit is to help clean up any broadleaf weeds, typically large thistles, which have made it through the summer months or have germinated on opening rains. The plant back when used pre sowing of canola is 14 days for rates up to 510ml/ha and this is provided 12mm of rain has been received.



Lontrel Advanced – 600g/L Clorpyralid

Widely used with glyphosate to increase the control of large thistles and capeweed. A good option pre planting of canola due to its short plant back. It cannot be used pre planting of legume crops.

Kamba 500 – 500g/L Dicamba

Hogweed can be a real issue when looking to plant canola, oats or barley. Glyphosate and Kamba has a good fit here. There is a 7 day plant back for cereals and a 10 day plant back for canola. If you are looking for a shorter plant back period, higher rates of glyphosate combined with VC 700 also an option.

Associate – 600g/kg Metsulfuron

Associate is a cheap mixing partner that is often used with glyphosate for the control of hogweed, sorrel, whip thistle, and loosestrife prior to sowing wheat.

Do NOT use Associate if you are planning to sow canola (other than Clearfield varieties), oats, or pulse crops into a paddock, as the plant back is 9 months or greater. Do NOT use if you are planning to sow barley within 6 weeks of application due to plant back restrictions.

Hammer -400g/L Carfentrazone

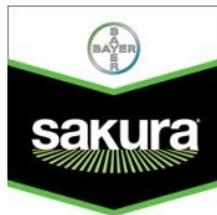
Hammer is a contact herbicide that can be used as a quick brown out tool, for the control of marshmallow that has germinated over the summer months or small radish that has germinated on the opening rains. Keep in mind, Hammer is a very quick acting herbicide and as a result may affect the performance of glyphosate on harder to kill weeds such as phalaris or bent grass. This contact herbicide should be reserved for smaller weeds just prior to sowing. It is very well suited to canola knockdown because of nil plant back limitations.

Pre Emergents Options:

Below are a number of tips on getting the best out of pre-emergent herbicides;

Sakura

Sakura has been widely utilised for the past two seasons and most growers have experience significant advancements in ryegrass control. Confidence is building with the herbicide and it is anticipated its use will grow again this year.



Some key points to remember;

- Sakura is only registered in wheat.
- Sakura will always work better where there is no cultivation prior to sowing. Cultivation buries weed seeds well below the chemical band and can be the main causes to why Sakura, which is taken up through the roots, may perform poorly.

- Incorporated by sowing (IBS) within 3 days of spraying is recommended application for Sakura. Soaking rain (15+ mm) within 10 days of application is required to get the best results.
- Remember plant back limitations: Oats, Lucerne, Medic, Annual ryegrass - 21 months and 550mm minimum interim rainfall.
- Sakura does have limitations. It IS NOT a silver bullet. If paddocks have extremely high ryegrass levels, consider what can be done to reduce numbers before relying on a pre-em to get you through a season.

Avadex /Triallate

Avadex plays a key role in supporting both Trifluralin and Sakura in achieving high levels of weed control. Commonly used as a wild oat pre-emergent, Avadex is a fantastic addition to improve the control of ryegrass & brome grass as well. Avadex is shoot uptake unlike Trifluralin and Sakura which are predominantly root uptake.

Trifluralin

Trifluralin is a very important pre-em for the control of annual ryegrass in barley and canola. It's been widely used in wheat, canola and barley as the key ryegrass pre-em for many years. With Sakura now on the market, it has given growers the flexibility to rotate the chemistry used on the wheat phase and help delay the onset of resistance to Trifluralin.

Trifluralin has a lot less flexibility than Sakura. It requires to be incorporated within 12-24 hours of application. As it also binds to stubble, stubble reduction practices such as bailing straw, inter row sowing, windrow burning or whole paddock burning are often required.

Disclaimer

The information contained in this AG Note is to be used as a guide only and specific information needs to be sought from the authors regarding individual situations. Western AG Supplies takes all care in compiling this information. However Western AG Supplies accepts no liability for any loss or damage suffered by any person who relies on this information.

2014 Canola & Cereal Options (by Matt Witney, Tim Hofmaier & Ashley Perkins)

Decisions on what variety to grow have been largely made now for this season. This article is an overview of the better options that are being recommended by our agronomy team.

Canola Options:

Last season we saw one of the best canola years on record because of the good winter rains and the very cool finish across the region. Canola yields were excellent with most varieties averaging between 2t/ha in the Wimmera, to 3t/ha South of Horsham and in the Western District. Due to the soft finish canola oils were generally high with most varieties averaging 45% to 49%.

Blackleg levels in crops were generally low across the region. However, the heavy canopies and mild spring conditions did result in higher levels of *Alternaria* and in the high rainfall zone noticeably higher than average levels of *Sclerotinia*. If pods were infected with *Alternaria* it may be worth purchasing new seed as this disease is transferred on seed. *Sclerotinia* infection levels are dependent on conditions at flowering and it is expected that this disease will continue to be of less significance for us.



Triazine Tolerant (TT) options:

Thumper is a mid to late maturity, widely grown variety which has performed well from Cressy to Hamilton. Grower experience has been that it stands up to water logging well and has very good stem strength. Unfortunately, stocks are sold out this year.

Crusher is a mid-maturity variety which has produced excellent yields in the Bannockburn, Cressy and Skipton areas. Crusher is not a 'showy' variety but it pods well and surprises most farmers with its yield. Blackleg risk in this variety is high, Jockey seed dressing and Flutriafol treated fertiliser needs to be used.

Possible replacements for these varieties are **Wahoo** which is mid maturity and **Gem** which is an early mid. Gem has very good early vigour and has performed well from the Southern Wimmera to the Western District.

Hyola 555TT is a mid-maturity hybrid that has performed well in the Western District. The extra vigour is an advantage especially competing with establishment pests such as slugs. It is expected to be replaced by **Hyola 559TT**.

Stingray is an early maturing variety that has been successfully grown across low, medium and high rainfall areas. It's very poor early vigour can be a problem especially if ryegrass is an issue in the paddock. Its early maturity has resulted in increased levels of blackleg and *Alternaria* late season pod infection in high rainfall areas, for those reasons it is not recommended. Well suited to direct heading. Often looks terrible but always preforms.

Bonito is fractionally later than Stingray but has much better vigour. Like Wahoo it does incur an EPR of \$5 per tonne. Bonito is potentially high yielding, well suited to all areas and exhibits excellent short to medium height which is ideal for direct heading. This variety has done exceptionally well in Wimmera NVT's and is a probably the pick of the TT's in that area.

Clearfield (CL) options:

The two better performing Clearfield varieties are **45Y86CL** from Pioneer and **Hyola 575CL** from Pacific Seeds. Hyola 575CL is probably the pick of the CL varieties in the Wimmera and has a good fit if there is a risk of herbicide residues. 45Y86CL is being replaced by the slightly longer season **45Y88CL** and Hyola 575CL is being replaced by the slightly longer season **Hyola 577CL**.

Roundup Ready Options:

Growing Roundup Ready varieties has proven to be an effective way to achieve increased rye grass control. The level of clethodim resistance is increasing in rye grass populations which will further favour the use of Roundup Ready. The varieties available are very high yielding and consistently top variety trials.

The Roundup Ready herbicide system suits early and/or dry sowing, crops can be simply sown and then glyphosate safely applied early post emergence after weeds have germinated.

43Y23RR hybrid from Pioneer has been a good performer around the Bannockburn district and is Pioneers earliest maturity variety. **45Y22RR** is a mid-maturity variety and is best suited to higher rainfall areas. Sown early this variety has the potential to yield in excess of 3t/ha with very high oil.

Conventional (CON) options:

Due to the presence of wild radish, there is only a small percentage of canola sown to these varieties.

Garnet has been one of the most consistent performers in the Southern Wimmera and Western District for many years. It is not overly tall, and of mid-maturity. There is concern over blackleg pressure with this variety.

Diamond is a new early-mid hybrid that is showing promise. Diamond topped the Streatham mid conventional NVT Trials in 2013. Unfortunately, no seed is available this season.

Cereal Options for the High Rainfall Zone.

Milling Wheat options:

Derrimut appears to perform well in all seasons. Last year, it was reported to have had yields up to 7t/ha. Derrimut is early to mid-maturity and is AH quality in Victoria. It is susceptible to stripe rust.

Bolac is a mid to late high maturity milling wheat. Unfortunately, this variety has the potential to incur high screenings at harvest if conditions are unfavourable and needs to be sown early. Bolac is classified as AH quality. Generally ok for rust.



2014 Canola & Cereal Options continued.....

Phantom is a mid to late maturing AH variety that was grown for the first time last year. Phantom is a Yipti/Sentinel cross, aiming to put some top end yield on Yipti, whilst providing the disease package of Sentinel. It should be slightly higher yielding than Derrimut and Bolac.

Forrest is a late maturing APW variety that has been sown now for a few years now but has performed inconsistently. Forrest did appear to be more affected by Septoria last year. If it doesn't perform well this season, it will probably be replaced by varieties such as Trojan.



Trojan is a new variety which has done really well in trials last year. For growers wanting to replace Kellalac, and possibly Forrest, this will be a great option. Trojan is APW classification in Victoria and is a mid-long season wheat. Trojan does offer a good disease package with MR-MS to stem, MR to stripe & leaf rusts, MR-S to YLS and MR-MS to Septoria tritici.

Feed Wheat options:

Beaufort is proven high yielding feed wheat which is a great option for a mid-May onwards planting. Beaufort is not a winter wheat, so it cannot be planted early like Revenue, and early planting will increase Septoria and frost risk. Beaufort is S-VS to stem rust, so late fungicide treatment may be required.

Revenue, not much needs to be said about this variety as it is widely recognised, if sown early, as a consistent high yielder across all the Western District. Revenue is resistant to all the three rusts making it a very popular choice for disease management.

Manning is a new long season white grained feed wheat suited to early sowing, similar to Revenue. Manning is not as robust as Revenue for rust resistance but

is still pretty good. Manning's main disease advantage is that it is BYDV resistant. Like most of the newer varieties on the market, Manning does incur an EPR of \$3.50/tonne payable on all grain delivered.

Optimal sowing dates for wheat have been identified by Dr James Hunt from CSIRO to maximise grain yield and these are earlier than what most people expect. For Forrest, Revenue and Manning it is April 15th. Bolac Beaufort, Phantom and Trojan it is April 25th. Derrimut is May 5th.

The level of infection of Septoria tritici in wheat has increased in the high rainfall zone in recent years affecting all varieties. This disease has the potential to reduce yields by over 20% in high infection situations and the pressure is greater if crops are sown early. This situation has become more challenging with the recent discovery that Septoria is becoming less sensitive to commonly used triazole fungicides. This will require the use of full rates and to alternate active ingredients within the triazole group.

Barley options:

The variety options available for malting are limited by what is being received in the area which is essentially Gairdner and Westminster.

Westminster has really replaced a lot of the Gairdner area sown now. Classified as a mid to late maturity, Westminster appears to be reasonably resistant to scald however this can change with the emergence of virulent strains. This variety has good yield potential with great results achieved last season. The belief that it doesn't lose heads as easily as Gardiner was proven incorrect last harvest with significant losses in some areas where wind hammered crops.



Oxford is a high yielding feed barley that would out yield Westminster by about 10%. This is an option for growers who have become frustrated with low premiums for malt barley. Oxford is MS-S to scald, S to SFNB and MS to BYDV and needs to be protected with fungicides.

Oat Options:

Echidna is still the main oat variety grown for the milling market. Last year results for milling oats were exceptional with most crops making the quality grade. Echidna does not have the best disease resistances and usually requires a propiconazole treatment from GS 33. It is susceptible to stem & leaf rust and MS to red leather leaf and BYDV.

Wombat is a new mid-season maturity milling oat and a possible replacement for both Mitika and Echidna. Wombat has disease resistance advantages over both varieties particularly being MR to BYDV.

Forrester is a relatively new long season hay oat variety. Forrester is S to stem rust and BYDV but is MR to red leather leaf which is a great advantage.

Cereal Options for the Wimmera/ Mallee.

Cereal cropping in the Wimmera and Mallee was a mixed bag in 2013, with a bumper harvest for many, and poorer results for others due to frost and reduced sub soil moisture levels.

Yellow Leaf Spot (YLS) was prevalent in susceptible varieties due to a lack of stubble breakdown (resulting from the dry summer) and high winter rainfall.

Wheat Options:

The standout AH wheat variety last year was **Mace**. This variety, which has a medium plant height, has yielded in the top 4 in Horsham, Kaniva, Brim and Minyip trials. Mace is MS to black tip, MR-MS to cereal cyst nematode (CCN), MR to leaf rust, MR to stem rust, MR-MS to yellow leaf Spot and S-VS to stripe rust. A strategic fungicide program is essential if Mace is grown.

2014 Canola & Cereal Options continued.....

Other AH varieties that have yielded well in 2013 have been **Wallup, Scout, Derrimut, Gladius** and **Axe**. Scout has the disadvantage in that it is susceptible to black tip and has suffered in the South and South West Wimmera, with cold showery weather at grain fill leading to downgrading.

APW Varieties that have performed well in 2013 are **Cobra, Trojan, Corack, Wyalkatchem** and **Phantom**.

Trojan, also discussed in the High Rainfall Zone section, performed well in Kaniva, Brim, Minyip and Hopetoun trials last year. It has the advantage of being boron tolerant.

Corack has been one of the top two highest yielding varieties in Brim, Hopetoun and Kaniva trials and within the top three in Horsham and Minyip trials. Corack is an early to mid maturity variety derived from Wyalkatchem and due to its disease resistance is one of the better options for wheat on wheat rotations.

Barley options:

Compass is a new barley variety undergoing evaluation for malting. Compass was the highest yielding variety in Kaniva, Minyip, Hopetoun and Rainbow trials. It was also the 2nd highest yielding in the Horsham NVT. Compass is MS to scald, MS-S to SFNB, MR to NFNB, MR to powdery mildew, and resistant to CCN.



Latrobe is another new variety that is under malt evaluation. It is a Hindmarsh alternative which has excellent yields in the low to medium rainfall environments with better brewing characteristics than

Hindmarsh. Latrobe is a semi dwarf variety with good straw strength, test weights and sprouting tolerance. Latrobe is resistant to scald, susceptible to SFNB, MR to NFNB, MR to powdery mildew, MS-S to Leaf rust, MS to BYDV, and resistant to CCN.

Scope CL is a tall early to mid-maturing variety with moderate to high yield potential (released in 2010). Scope is yielding well in the average NVT barley trials in the Wimmera, and because of the Clearfield chemistry package, is favoured when brome grass is an issue. Scope is MR to NFNB, MR to powdery mildew, MS-S to scald, and MS to SFNB.

At this stage Compass and Latrobe are both under malt accreditation and are good varieties to consider bulking up for 2015. They also are looking positive due to the long term yield increases over other varieties.

Feeding Livestock over the Autumn period (by Aaron Starick)

As autumn approaches and with limited Summer rainfall, supplement feeding becomes extremely important in maintaining stock nutrition levels. It is critical that livestock have sufficient bone stores of calcium particularly as we head into lambing or calving. Lime (calcium carbonate) should be fed at 1% of the ration whenever feeding cereal grain, or in a grazing situation.

The simplest method of paddock fed supplementation is to provide lime in cut off drench drums placed around the paddock. Salt and magnesium can also be added to this mix to ensure both are being supplied in sufficient quantities.

Western AG also stock a wide range of feed blocks from Farm Balance. The popular Ewe and Lamb block is specially formulated with trace elements and minerals for lactating ewes to assist in milk production and to promote higher growth rates in lambs.

The Dry Feed block with 30% protein is an ideal choice for sheep and cattle that are on dry feed. It has major trace

elements and minerals for the utilization of dry and poor feed quality which helps maintain good body condition and helps in the aid of tender wool in sheep.

Farm Balance supply a whole range of different blocks including Bloat block for cattle, Sulphur blocks, Magnesium & Molasses block (for Grass tetany prevention), Moo Chew dairy blocks specifically for dairy cattle, plus many more.

Lienert Dry Feed lick is a granular base concentrate which is also quite popular instead of a lick block. It has a variety of minerals, trace elements, vitamins, and protein that livestock require daily. Hoof and Health is another product offered by Lienert which has a particular emphasis on hoof integrity and health. It contains different vitamins and minerals with the addition of zinc and biotin which are both shown to play important roles in hoof quality.

Anipro provide a liquid supplement, which is molasses based, and it is formulated to balance the dietary



nutrients for sheep that are grazing on pasture, forage crops, hay as well as sheep that are in feedlots. Anipro is a fully serviced program which includes a trained specialist to help with identifying the best system to suit your animal's requirements. If you would like any info regarding the Anipro Program, please give Aaron a call at the Derrinallum office.

If you would like any more information on feed supplements, or would like to speak to a specialist in this area, please contact one of our offices. We are able to arrange for a company representative to call or visit to determine the best program to suit your animals and your farming enterprise.

Slug Watch Out (by Phil Hawker)

The rainfall received late last month has been enough to stimulate slug activity which has been observed in the Bannockburn and Cressy areas. Activity has been noted on volunteer cereals in stubbles in particular. The recent rain received will encourage further activity.



The first slug species to be active is likely to be the Grey Field Slug. This species is responsible for the majority of damage in winter crops and is a prolific breeder. Each pair of slugs can produce 1000 eggs which hatch in 3 weeks that will potentially coincide with emerging crops and pastures.

It makes sense that, if slugs are detected in paddocks in high numbers, particularly those being sown to sensitive crop such as canola, a pre baiting treatment is undertaken.



A treatment of less expensive bran based bait, such as Meta, is effective in reducing numbers. This product is not water proof and the application is best timed when dry conditions are forecast. Other high quality waterproof options are available.

Getting to know you.....

This is a new section in our newsletter where we provide extra information on one or two staff members in each edition to help clients get to know us better.

Michaela Alexander (Agronomist) Derrinallum

After growing up around Ballarat, Michaela graduated from the Charles Sturt University in Wagga Wagga with a Degree in Science (Agronomy). She then became an Extension Officer in the Sugarcane industry in north Queensland, primarily involved in keeping Cane growers up to date with the latest industry developments coming to hand.



Prior to commencing with Western AG, Michaela was employed with Graincorp in Horsham as a trainee agronomist. During this time, she also got the opportunity to work in general merchandise, as well as a short stint in grain marketing over the harvest period.

Her first season in Derrinallum saw one of the wettest years on record which left her wondering if she wanted to continue working in the Western District! But four years on, and thanks to great clients and co-workers, she stayed.

In her spare time she rides her horse 'Cinnamon', and more recently become a member of the Smythesdale Adult Riders Club. During winter, she tries to head to the snow fields for a couple of days skiing with her father who works as a ski patroller. Michaela also hopes to return to the netball courts for the Lismore - Derrinallum Demons this coming season.

Mark Hoffmann (Branch Manager) Horsham

Mark (better known as Hoffy) grew up in the Horsham area and spent the first part of his career as a dairy farmer.

He joined Heinrich Merchandise approximately 15 years ago and within months was promoted to the role of Merchandise Manager. This company eventually merged with GrainCorp to become Heinrich Ag Plus and finally GrainCorp Merchandise with Mark working in a management role through this change. At one point he was in charge of a network of stores that included, Ouyen, Nhill, Warracknabeal and Charlton.

Mark joined Western AG in April 2010 as Branch Manager, Horsham. Since then our Horsham business has grown considerably and a new branch at Nhill and Agents at Stawell and Goroke have been opened, this has all happened under Mark's guidance.



Mark has an excellent understanding of farming operations in the Wimmera/ Mallee and a broad knowledge of farming inputs. He has a reputation of being able to pull off the 'impossible' for clients in situations when we have had limitations on product supply or delivery delays. He is totally focussed on providing a highly professional and responsive service which he excels at.

In his spare time, Mark's interests include football, tennis and the outdoors. He is a passionate Pies supporter, but we won't hold that against him!

Getting Nitrogen into the Crop - efficiently and effectively

(Guest Article - Rob Norton Regional Director Australia and New Zealand, International Plant Nutrition Institute)

Presented at GRDC Ballarat Advisor Update Feb 06, 2014, and the SANTFA Annual Conference, February 21, 2014.

Take home messages:

- Early N is generally used more efficiently, but the source, rate, timing and placement all affect the efficiency with which the crop can access N.
- When comparing N sources, rate, timing and placement all interact so that efficiency options vary and no single source is a “silver bullet” to all situations.
- There would need to be compelling circumstances to justify moving away from top-dressed urea, provided as the season unfolds.

Introduction

Because nitrogen use on grain crops has now become a tactical issue in response to seasonal conditions, it is always a topic of conversation. Some worry that they skimped and missed yield while others may think that what they applied either did not work or gave only a small response. Others worry that there were big losses in what they applied so wasted a lot of the N applied.

In developing an N management strategy, these tactical issues need to be considered but within the general approach of a soundly based and regularly reviewed N budget. Making and reviewing yield estimates is critical, as the yield potential will be a function of the N demand in our rain fed environments. The budget should include N supplied from the soil as profile N plus in-crop mineralisation, as well as the efficiency with which the nutrient gets to the product – termed nitrogen use efficiency (NUE).

What do efficiency and effective use mean? Using metrics can be useful in looking at broad-scale efficiency, but at a crop level, grain protein can be an estimate of the degree of N limitation a crop has undergone. Proving grain size is good, wheat grain protein concentration generally has a strong inverse relationship with grain yield but with increasing N supply yield and protein converge. This relationship has a large genetic component so some varieties express higher levels than others, and the response is also affected by rainfall/water supply particularly after anthesis.

If the upper limit to grain protein for a variety is known, then grain protein can help us understand the degree of N limitation during the season. The yield and protein relationship that is generally held is as N supply increases, yield initially increases to a maximum, but protein is slower to resolve and so if grain protein is low with a higher yield, it suggests that N was limited.

Agronomic manipulation using 4R nutrient stewardship.

The first aspect of ensuring N is used efficiently and effectively is to ensure that other issues such as sodicity, salinity, acidity, other nutrients, pests, weeds or diseases are not the limitation. A simple way to do this is to use an N-rich strip in a paddock. This will serve as a reference for later in the season as well as give some early indications if additional N is giving a response, and even if further N could provide extra benefit.

Given that, there are some indicators that can be considered around effective and efficient N use:

Right Time

The earlier N is applied, the larger the yield increase, while the later the N is supplied, the larger the protein increase. Basically, the N supplied will most affect the tissue that is actively growing at that time. Early N stimulates shoots or tillers, while later N can increase stem growth. Once active stem growth slows, later N can be used in grain filling. The other aspect of timing is timing relative to rainfall. Most growers would try to time application of urea ahead of rainfall so that the losses of N, as volatilized urea are reduced. The amount of N lost from surface applied urea has been a topic of significant research over the past few years, especially with the commercialization of urease inhibitors. Soil texture, wind-speed, crop cover, stubble load, soil organic matter and temperature all affect the rate of volatilization. The detail of how much N is lost due to particular rainfall events probably causes more grief than a Collingwood grand final win, but addressing ammonia losses is only one part of the actual efficiency.

Right rate

While timing and form often get the main interest, getting rate right is as important. The key question here is if the crop is actually N limited, and unless this is the case there will be no response and so a low efficiency. Nitrogen budgets reviewed with yield estimates such as from Yield Prophet® are vital to estimate demand, while supply from deeper in the soil or mineralised N will also be important (but often estimated). The rate can be determined based on having adequate N in the crop by anthesis to match the yield and protein target. A 3.5 t/ha grain yield will probably come from a biomass at anthesis of 7 t/ha and to meet an 11% protein target should have around 120 kg N (do the maths up or down). If the post-anthesis conditions are better than the target, then N will be diluted by the extra growth and grain protein decline. If conditions are worse, then grain protein increases. So, the actual yield response will depend on the N rate meeting the gap between the target demand and expected supply (neither of which we know in advance).

Right place

Having the N isolated from losses due to ammonification, denitrification and leaching mean that – if the crop really needs the N – it can access it with minimal loss. Putting the entire N up-front would suggest a good efficiency, but this is when seasonal conditions are least known and so demand is still being formed, and the decision on rate can only be adjust up – not down.

However, in most situations, the placement for in-crop application will be over the top of the crop. For dry fertilizers, most will end up on the soil and the fate for urea is to become either ammonia which can be lost, or as plant available ammonium or nitrate.

For fluid fertilizers, such as urea or urea/ ammonium nitrate solutions, depending on the application equipment used, some proportion of the material will intercept the crop canopy and some will hit the soil. Once on the soil, the loss processes are the same for dry fertilizers, but the N on the canopy can be taken up through the leaves.

Foliar applied N has been proposed as the most efficient method to present N, and urea is rapidly and effectively taken directly through the leaf surfaces. For highest efficiency, coverage should be good, but crops are susceptible to damage both from urea itself as well as the salt effect of the solution. This urea toxicity will dictate the upper level for effective N uptake, and it is probably around 10-15 kg N/ha depending on crop cover, ambient conditions, and application technology. Streaming nozzles really place fluids on the inter-row rather the canopy, and while reducing canopy damage, they do expose the material to soil surface losses under the canopy.

Right source

Many of the comparisons of N sources (products) confound the source with both the placement and timing effects, but where N for N comparisons at similar timings are made, differences in recovery of applied N and yield responses are small (Gooding et al. 2007).

However, there are quite large differences in cost (Doyle 2013) that need to be balanced against benefits gained.

Way Forward:

1. Try N-rich strips in fields to see where the response could be sitting.
2. Unless springs are good to very good, there will be little benefit from N applied later than booting, and much of this will be as a protein response.

Note: This article has been edited from the original; the complete article is available at <http://anz.ipni.net/article/ANZ-3198>