

VICKERY BROS.

THE FERTILISER PROFESSIONALS

June 2012



AGROTAIN COATED UREA: REDUCING NITROGEN LOSS

Harry Armstrong

WHAT IS AGROTAIN AND WHY DO WE USE IT?

Agrotain is a coating applied to urea that reduces nitrogen (N) losses from volatilisation.

WHAT IS VOLATILISATION?

Volatilisation occurs when urea is converted to ammonia gas, a process which takes place in the first 48 hours after application. So conditions during that first 48 hours are critical in terms of the amount of N lost to the atmosphere.

HOW MUCH IS LOST?

Losses of N between 14 to 30% are not uncommon during the dryer months. These losses are less through winter as rainfall events and soil moisture levels increase. However there are still losses in this period, particularly if canopy cover is less than optimal and wind speeds are high.

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WHAT DOES IT COST?

Agrotain coated urea currently costs \$55/ton more than straight urea. At today's urea price that equates to around 10%. Therefore if the potential loss to volatilisation is greater than 10% you are well in front. Agrotain does not alter the N % of urea (46%).

WHEN SHOULD I USE AGROTAIN?

Spring, Summer and Autumn is the simple answer. But in reality it ought to be used at any time of year when conditions prevail that could make urea application risky in terms of volatilisation. September, October & November are all months where we see periods of warm dry weather that make us nervous about applying and potentially losing N. Agrotain coating onto urea at this time of year will reduce these risks. Autumn and early winter can also give us cause for concern when applying urea to crops and pastures as rainfall can be intermittent. Research from overseas also indicates Agrotain coated urea can enhance N uptake at soil temperatures of minus 5 degrees.

SUMMARY:

Managing risk is an important part of what we do in agriculture and coating urea with Agrotain to reduce losses is very cost effective insurance.

PLANNING FOR THE END OF THE FINANCIAL YEAR?

Vickery Bros. "Forward Purchase Plan" allows you to prepay for fertiliser before the end of the financial year and to receive a discount off your purchase at the time of despatch.

Full payment including GST to be made by the 29th June 2012.

Product to be despatched by May 31st 2013.

Payment can be made by

- cheque
- credit card
- electronic funds transfer.

Discount off our competitive ruling price at the time of despatch.

For further details or to make a forward purchase payment please contact: - Sue Vickery 03 55752777



MONITORING NITROGEN LEVELS FOR BEST RESULTS

James Stewart

It's important to use hindsight and the lessons from the past to gain valuable information on improving your management and agronomy practices for the future.

Last harvest the majority of my cropping clients ended up with low protein in all cereals.

Based on research work conducted by Incitec Pivot and Southern Farming Systems, milling wheat varieties can forfeit up to 30% of potential yield if critical protein levels are not met!!

Summer 2010/11 was extremely wet causing a lot of soil nitrogen mineralisation. By the time sowing came around a significant amount of mineralised nitrogen had already been used due to volunteer canola, cereals and weeds or lost due to volatilisation.

NITROGEN LOSES:

Volatilisation can be high in warm conditions. This happens particularly when urea is top dressed with no follow-up rainfall to wash in the urea granules. Volatilisation can also occur on neutral to alkaline soils and will also happen to naturally occurring nitrogen. Agrotain coated urea is used to combat nitrogen losses through volatilisation.

Denitrification is the conversion of nitrate-N to gaseous N, and so is a loss of N which would have been available to plants. Denitrification is likely in soils that are warm and waterlogged with a high soil carbon.

Leaching is the loss of N in water. When water runs below the root-zone or laterally it transports nitrate nitrogen from the soil profile. This happens in wet years.

You'd all agree it would be more than likely that all of the above happened in summer 2010/11. Making our soils low in nitrogen as we headed into the 2011 growing season.

THIS SEASON

Now let's look at the summer just gone, completely the opposite, hot and dry with very little summer rain. Meaning very little mineralisation.

So how much soil nitrogen are we starting off with at sowing and how much urea will we require when we need to top-dress our crops?

A tool that has been around for some time and gets overlooked is a deep soil N test.

Deep soil N testing (sampled to 60cm depth) indicates at the time of the test the amount of N available to the crop. It is the sum of N that has broken down (called mineralised N) from the plant litter remaining from the last 2-3 seasons.

To allow comparison of results between different paddocks, and also to allow you to compare the differences in N availability between years, I recommend that you do a deep-N test in June-July (where practical). In our region where we can get very wet in July sampling is impractical, then soil sampling should be done around sowing time.

Like 0-10cm soil tests, deep N's should be a representative area of the paddock, that is keep the main soil type and avoid headlands, stock camps, trees and old fence lines. If soil types are markedly different and you can tailor N applications, sample soil types separately.

Matching plant demand with fertiliser N supply is important for a number of environmental and economic reasons. Nitrogen is lost through the reasons that I discussed earlier. By ensuring that the plant N use matches the fertiliser N, you are minimising the chances of applying excessive N, which in turn reduces your risk of losses in greenhouse gas emissions and on-farm costs. Nitrous oxide, which can be emitted from N fertiliser applied to soils, is a potent greenhouse gas, having a global warming potential 310 times that of carbon dioxide.

Using monitoring tools such as deep soil N testing and N budgeting will ensure that fertiliser applied to crops will provide maximum production benefits with minimal environmental impact.

Have you rung me to organise your deep N testing program and budget??



PHALARIS STAGGERS

Sophie Leonard

Several clients within the region have livestock showing symptoms of phalaris staggers. Affected animals are difficult to handle and there is permanent productivity loss as most do not recover and there is no effective treatment. So it is important that as producers you are able to identify symptoms and understand prevention.

Phalaris staggers can sometimes occur when livestock grazing phalaris dominant pastures which have low cobalt availability. It can take 2 to 10 weeks of grazing before cases are seen. This is unlike phalaris sudden death syndrome, which occurs between 1 – 2 days after introduction to the new paddock.

Clinical signs include tremors of the head and neck, later an uncoordinated gait but usually able to keep walking and stock may sit down whilst still able to graze. Signs in cattle are similar and as well effected cattle have difficulty using their tongue and swallowing giving rise to frantic but inefficient attempts to graze, and eating with lots of tongue flashing.

Phalaris staggers can be confirmed by a vitamin B12 blood test or liver biopsy cobalt test. Plant tissue tests are ineffective as ingested soil is the main source of cobalt and soil tests have no reliable correlation between recorded levels and animal deficiency.

Underlying parent rock is the main determinate of soil cobalt levels and ingested soil is the main source of sheep dietary cobalt. Basalt soil has high levels of cobalt thus is low risk for staggers. The exception is “red basalt” due to its high manganese content. Granite soils are usually ok; Sandstone soils are intermediate risk and limestone soils are high risk. As well as calcareous coastal soils and infertile acid soils are also high risk. Also high pH (alkaline soils) can reduce cobalt availability so over liming should be avoided.

Paddock history is another indicator of the potential for phalaris staggers. If your livestock have never had phalaris staggers then there is enough cobalt in your soil for your livestock to produce their own vitamin B12. Cobalt is used by micro-organisms in the rumen of ruminant animals to synthesize vitamin B 12. Vitamin B12 injection is NOT a protection for staggers.



Prevention options include two cobalt bullets containing cobalt oxide that will protect stock for 2-3 years. A granular fertiliser containing cobalt applied at maintenance at 100gm per Ha or capital 350gms per ha. Also an annual spray application can be applied two weeks after the autumn break when an adequate leaf area has been achieved for a product cost of around \$6/ha. This will give up to 12 months protection, providing nil rain within 3 days of applications. Stock can be introduced immediately after spraying is completed. Cobalt is an essential micronutrient for ruminant animal's but not for plants, except that rhizobial bacteria responses for fixing atmospheric nitrogen in nodules on the roots of legumes require cobalt. Because of this symbiotic relationship, responses to applications of cobalt have been recorded in legume pastures.

Low legume pastures are a risk as legumes have four times the level of cobalt as grasses; hence the timing of phalaris staggers as clover contents is normally lower in the autumn and spring.

Controlling a good pasture composition of around 70% phalaris and 30% legume should also help prevent staggers and also provide a ideal diet of protein and carbohydrates. Controlled grazing to prevent clovers being smothered over spring should be managed if possible by not exceeding 2200kg/DM/Ha. Also approaching autumn, targets should be no trash and enough bare ground to achieve effective clover germination as well as a good soil nutrient base that will ensure optimized clover growth.

Reference:

RIST Rural Industries Skills Training (2010). Managing Sheep Health. Rendell, D. & Assoc.

CRICKET BAITING:

This autumn there has been significant damage done to new sown and existing pastures by crickets. We have applied insecticide treated grain to over 3,500ha, a dramatic increase on past years.

To achieve the best control, pastures should be treated in January and February when there is little green feed available for the crickets, this also reduces egg laying and potential cricket numbers for the following season.

Control of crickets in March protects pasture from damage, but has little effect on reducing the population in subsequent years.



GRASS TETANY:

Leighton Rees

Last season a number of clients experienced problems associated with grass tetany, with several farms losing a significant number of cattle.

However there are some simple and easy farm practices that can be put into place to help reduce instances of grass tetany.

- Be aware of the time of year and the conditions that grass tetany normally occurs. Instances of grass tetany can vary from year to year but generally occur in late autumn/ winter when conditions are cool to cold and rainy periods are frequent.
- Check pasture composition and look at paddocks that have had previous history of grass tetany. Grass tetany is more likely to occur in grass dominant pastures so introducing a higher percentage of clover will help reduce the risk. Where possible avoid grazing areas where cattle losses have occurred. Rotate stock when cooler conditions look

like occurring to low risk areas of your property. Utilise higher risk areas of your property earlier on in the season before the risk of grass tetany is about.

- Implement a regular soil testing program to determine your soils potential for having an effect on instances of grass tetany. Avoid low magnesium levels and high application rates of potassium. Use split applications where necessary. Reduce any acidity issues because of the relationship that acidic soils have on instances of grass tetany.
- Look at keeping older, fatter cattle or lactating animals off areas of your property which you think may have a higher risk of grass tetany. Generally older, fatter cattle will be the first affected. This is due to their inability to mobilize magnesium from the body because of their age.
- The use of good quality hay before and during the high risk periods will also lessen the risk. As a guide feed out hay approximately 10 to 14 days before cattle are put on lush new pastures.

- There are many supplements available on the market today which can be used in conjunction with best farming practices to keep grass tetany to a minimum. Some of these solutions are more palatable than others and most contain



magnesium as the main source of nutrient. This can be a cheap form of insurance.

- As a last resort flow packs should be kept handy in your vehicles for those animals that are showing advanced signs of grass tetany. Care must be taken when administering these solutions. If symptoms are this advanced it may however be too late.
- Lastly where possible avoid moving, mustering or yarding animals when the potential for grass tetany is high as this will only increase problems and bring on the effects. The more stress caused to the animal during this period the worse of you will be. In conclusion there are many things that a farmer can do to reduce cases of grass tetany. You may not get rid of the problem totally but the prevention of a few cattle deaths can be a huge saving in current markets.



CASE STUDY: STEVEN & TANIA LUCKIN MOUNT CLAY DAIRIES

Bill Feely

Steven and Tania Luckin currently run a dairying enterprise 3 kms south east of Heywood where they are milking

550 Friesen cows through a 50 bale rotary. Prior to that they farmed at Naringal (east of Warrnambool) rainfall 800mm where they milked 250 cows. They then moved onto a larger scale dairy in South Australia at Naracoorte, rainfall 400mm with irrigation where they milked 1200 cows

The attraction to the new farm was that it offered so much in regards to close proximity to Heywood and Portland and the amenities they provide such as schools and service facilities. Furthermore the farm layout and infrastructure is very sound. The farm layout is spread between the Fitzroy River and the Mt. Clay ridge, within these boundaries are 4 definite soil types. Soil types range from sandy, sandy loam, clay loam through to heavy river flats. Paddocks have been split into 6 ha of which there are 48. The farm has well formed and maintained tracks that are constantly

updated. Pastures are gradually being planted back to perennials a fact that Steven regards as paramount to grass production.

Last year Steve and Tania milked 500 cows and will milk 560 cows by next autumn. They have 3 labor units to help across the farm, whether it's in the dairy or on the farm. They chose a split calving system so that they could have their lowest stocking rate over July and August. It's during these months that the problem of pugging is likely to be at its worst, or has been the case over the last 2 years. February is the other calving month when they are completely dry and they are reliant on home-grown or brought in fodder.

SOIL FERTILITY

Steven and Tania have been particularly focused on keeping abreast of the fertility across the farm and found soil and tissue testing to be one of the most important decision makers on the farm.

Farm fertility is sound with Olsen P levels at 30 ppm plus. Sulfur levels are high all above 13 ppm even on

the lighter soils. The only real concern is the Potassium (K) levels as they are low 90-150 ppm except on the heavy flats where they are 300 ppm plus, however this is only a small section of the farm. Soil pH across the farm is above 5pH (CaCl).

With the farm having 4 different soil types, the need for different nutrient programs is essential. Soil tests have showed that the P levels over the farm ranged from 30- 45 Olsen. With this in mind and with the knowledge of what nutrients were most deficient, tailor made recommendations on the appropriate soil types have been implemented. K levels especially on the lighter soils are low and these areas have been addressed accordingly. Maintenance K levels on these soils are between 90-120 kg/ha per annum, Steven has been diligent in running with these rates and higher if the paddocks have been cut for silage. In 2011 silage paddocks received 140 kg/ha of K for the year. Phosphorus (P) levels being high over the farm have enabled Steven and Tania to mine some of this over the last 2 years. This spring soil tests will be taken to monitor P levels so as to ensure P levels will not be comprised. Sulfur levels generally are good with marginal to moderate levels occurring on the lighter soils. Nitrogen (N) is applied monthly in keeping with paddock rotations, working on the rule of thumb of 1 kg of N/ha/day of the actual rotation. Agrotain coated Urea has been utilized this autumn given the variable rainfall. N is only applied during the growing season with a total of 200-220 kg/ha /annum used. Each soil type or management area is addressed separately according to its most limiting factors. They have found this works well with pasture consumption up by 12% on the previous year. Steven and Tania believe that money spent on soil testing has enabled them to fine tune fertilizer requirements, saving money on some nutrients has meant spending it on areas where it is needed.

GRAZING MANAGEMENT

The farm has been subdivided into 6 ha paddocks, which has made pasture management easier. Last year grass produced was around 15 t of dry matter per ha and utilized was around 11.5 t of dry matter per ha. Pre grazing is always monitored around 2 ½ - 3 leaf stage

religiously and Steven is particularly pedantic about this. Post grazing residuals are around the 1300-1400 kg/ha dry matter. Sacrifice paddocks are used during the summer and winter months and then summer cropped or re-sown as part of the pasture renovation. Once every paddock has been through this process a permanent feed pad will be built.

PASTURE RENOVATION

Steven and Tania have undertaken a major pasture renovation program over the last 3 years to get away from relying too much on annuals and now have 90 % of the farm in perennial pastures.

Two different renovation strategies have been used to date. On older pastures or damaged ie pugged paddocks a full cultivation including summer crops, spray, disking and drilling has been adopted. All the work is done by Millard Ag contractors.

The other strategy is to direct drill 15% of the farm each year to paddocks that require topping up. Paddocks requiring topping up are assessed with the general rule of thumb being if a hand span is between each ryegrass plant then it needs drilling at 12-15 kg/ha. Perennial Ryegrass varieties used include Banquet (+20 tetraploid long rotational ryegrass), Helix (+6 diploid) and Ultra (+19 diploid). The diploids are sown at 20 kg/ha and the tetraploids at 25 kg/ha .Ultra has survived well over what has been a very tough summer through careful management. By leaving a 2.5-3 leaf residual from January has enabled it to respond well to the autumn rains. Helix was sown into the lighter soils on north facing slopes and also appears to be doing well



Steve Luckin in quantum Max P pasture

after such a tough season. Being earlier heading than the other two it is well suited to land type that is likely to finish earlier. Banquet is still a firm favorite on the heavier later ground and has proven to be consistent year in year out. The use of early and late varieties is important as each variety is sown into soil type that suits its growth stage, again not dissimilar to how they approach their fertilizer. Fescue was planted for the first time last year on some of the river flat paddocks with notion of trying to provide summer feed. Quantum Max P was the variety sown as it is summer active and has the results have been encouraging with more plantings planned for this spring. Steven is also adamant that newly sown pastures are allowed to go to seed in the first year so as to ensure dormancy

completion and daughter tiller establishment. Drainage works have been carried out this summer as part of the renovation program to reduce surface water. This was causing waterlogging and potential nutrient loss in some paddocks especially those bordering the river. The drains have been deepened so to accommodate a greater water flow and hopefully take excess water off the paddocks. These paddocks are now under renovation which includes the application of gypsum as per soil test recommendations to help offset any potential salinity problems. These paddocks are being re grassed with Tall Fescue and if the drainage is a success in keeping water off, then perennial ryegrass could well be an option for permanent pasture.



GROWING WINTER FEED

James Stewart

This season many pastures are well below “ideal” winter levels for optimum animal production of 1200 to 1500 kg dry matter per ha. With hay sheds rapidly emptying, the application of nitrogen and gibberellic acid are being utilised to fill the gap.

Mark Wootton of Jigsaw Farms aims to lamb down FX ewes on the 1st of July with a minimum of 1500 kg of dry matter. “With predictions of a potential El Nino event coming, I wanted to take the opportunity to build our available winter feed”. Pasture assessments during mid May put the lambing paddocks at 800 kg of dry matter, and estimated daily growth rates of 15 kg of dry matter per ha per day.

Paddocks were stocked with 9 FX ewes per ha, so animal requirements amounted to 2kg of dry matter per head so 18 kg of dry matter per ha per day. As pasture growth was only keeping up with animal demand the decision was made to use a combination of applied Nitrogen and Gibberellic acid.

Soil Phosphorus levels across Jigsaw Farms are all above an Olsen P of 15ppm and most paddocks have been limed, the expected response to applied N would be

approximately 15 kg of dry matter per kg of N applied.

Urea and Agrotain coated Urea was applied at 60 to 80 kg/ha, depending on the potential for rain in the week following the application and the amount of feed available in the individual paddock.

Giberellic acid was applied a week later at 20g per ha for ryegrass pastures and 10g per ha on the phalaris pastures.



Phalaris sub clover pasture treated with Urea and Gibberellic acid. Vinny Madden, “Illara” farm manager, estimates pasture availability to be 2500kg DM/ha

Pasture assessment 5 weeks after the application has feed available at 2000 to 2500 kg of dry matter, ready for the lambing ewes.

Contact the professional team at Vickery Bros.

For healthy soils.

Agronomy Team

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Depots

Coleraine 03 5575 2777	Heywood 03 5527 1777	Edenhope 03 5585 1975
Mount Gambier 0408 646 220	Frances 0418 330 267	Casterton 03 5575 2777

- Soil test hay and silage paddocks
- Weed control on hay paddocks
- Nitrogen for winter growth
- Forward purchase of fertiliser

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