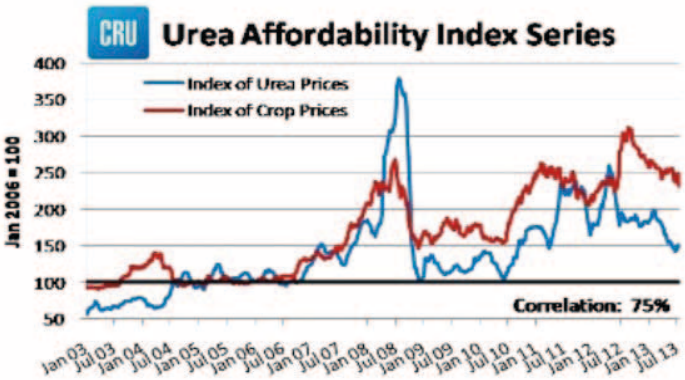
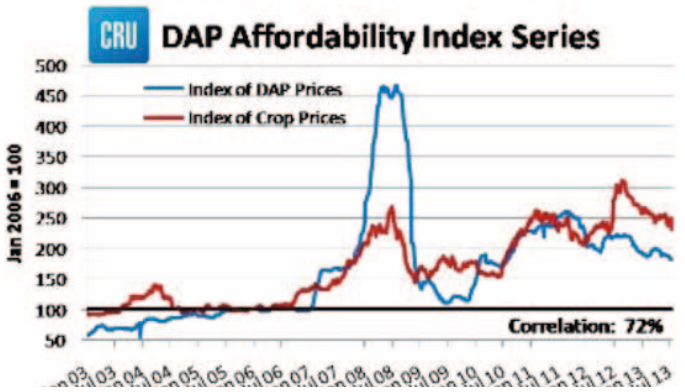
NUTRIENT AFFORDABILITY

Craig Tosetti

With the world prices of fertiliser (urea, DAP) close to production costs and reasonable grain prices still expected (even though they are lower than what was achieved last year), nitrogen, phosphorus and potassium products are the most affordable they have been in a decade. Below are 2 graphs, the first graph is urea affordability and the second graph is DAP affordability. You can see that over the past year the gap between the crop price (red line) and the fertiliser price (blue line) has been steadily in favour of applying affordable fertiliser to crops. Analysis indicates that, if holding fertiliser prices constant at current levels, crop prices would have to drop by approximately 20% before the index narrows or inverts, when it indicates fertilisers are less affordable on farm.





Source: CRU International

This nutrient affordability also applies to Beef/Sheep & Dairy farmers. This year it will be much cheaper to grow your own feed than buy in hay or grain. If you look at the dairy industry last year, milk prices were low and urea prices were approximately 16% higher than they are at present. This year milk prices are on the rise and urea prices are cheaper so growing grass has become more affordable. There are a lot of empty haysheds in our area after a long dry summer so it is imperative you take advantage of the favourable weather conditions and fertiliser affordability this spring to build your feed reserves for the coming summer.

FERTILISER PRICING

The weakening Australian dollar over the last 3 months would normally lead to an increase in local fertiliser prices but this increase has been offset by the soft world fertiliser market. This has resulted in a reasonably stable local fertiliser market with minimal price variations. Urea is the only exception; the price has risen slowly over the last month on the back of another shortage of urea in southern Australia. There was unprecedented demand for urea in July that suppliers did not forecast (Vickery Bros also had a 200% increase in urea sales for July compared to our 5 year average). This quickly reduced inventory levels, coupled with the 5 to 6 week shipping timeframe to get new stock into the country, creating the shortage. It consequently left some suppliers unable to write new orders and waitlist existing tonnes until the next boats arrive. Therefore a shortage in supply will lead to a price increase. Suppliers are not prepared to hold excess stock above committed and forecasted levels since the GFC; market volatility just makes this too risky. Carryover stocks are now a thing of the past and we can expect to see these shortages (as has happened with urea the last 2 years) on a more regular basis.

Contents:

HAY AND SILAGE PRODUCTION

Sophie Leonard

The recent long dry summer highlighted the value for adequate on farm reserves of quality fodder. As spring approaches farmers should be making assessments and decisions regarding the quantity and quality of conserved fodder to be harvested in spring 2013.

PESTS AND WEEDS

Watch for insects such as red-legged earth mite, lucerne flea, aphids and blue oat mite and spray with an appropriate pesticide before the population increases dramatically (see separate article on Timerite). Locked up legume dominant paddocks are at most risk of pest invasion.

Weeds may reduce the quality of crops and are competitive for valuable nutrients and moisture. If cape weed or other weeds have invaded large areas of the paddock, spray with the appropriate herbicide or graze heavily as early as possible as there can be some set back on clover depending on chemical used.

NUTRIENTS

Quality hay and silage production requires good soil fertility. Optimal nutrient levels should be around pH (water) 5.8 to 7, phosphorus Olsen 15, sulphur 8 to 10, potassium 120-220 depending on soil type. These levels should be monitored through regular soil and tissue testing to track any limitations. To best achieve these optimal levels, a capital fertiliser application may be required and followed by maintenance applications. The application rates will vary depending on soil type,phosphorus buffering index and cation exchange capacity which can be found on a standard soil test result. Always use an appropriate ASPAC and NATA accredited soil testing laboratory.

Applying maintenance fertiliser requires an understanding of nutrient removal. The table below shows the amount of nutrient removed per ton of hay removed.

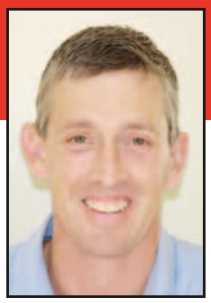
Nutrient	Pasture Hay	Pasture Silage
Nitrogen	18	26
Phosphorus	1.8	2.8
Potassium	15	26
Sulphur	1.6	2.3
Calcium	5	5.9

Pasture composition is also important, high grass composition will respond better to nitrogen (N) whereas a clover dominant pasture is more potassium (K) responsive, depending on existing nutrient levels in the soil as discussed.

Vickery Bros local knowledge and experience in soil testing different soils and pasture composition allows us to tailor a blend to your individual paddock's needs through our specialist blending facilities. This can allow the best opportunity to achieve maximum productivity for your hay yield.

TIMING

If you want bulk feed to fill the hay shed then cutting time should be when the pasture is 10% to 20% in head. Leaving any longer, which is often what happens, only decreases quality and produces hay that will only keep stock alive with little potential for improving production. Cutting too late will reduce the amount of regrowth and increase summer weed invasion on the bare ground remaining.



NITROGEN TIMING

James Stewart

At this exact time as I sit down to write my newsletter article, the crops I've walked over in the last two weeks are wet if not waterlogged even on raised beds! The question I keep getting asked is should we send the plane over our crop to put some Nitrogen out? In most cases at this point in time I am saying NO and I'll explain why.

For plants to take up Nitrogen they need oxygen around the roots. Soil structure is critical for oxygen and in waterlogged soils; there is no structure or oxygen. In these conditions nitrogen losses occur in several ways:

Denitrification occurs when oxygen levels are depleted and nitrate becomes the primary oxygen source for microorganisms. When bacteria break apart nitrate molecules (NO3-) to gain oxygen (O2), the nitrate is reduced to nitrous oxide (N2O), and in turn, nitrogen gas (N2). Since nitrogen gas has low water solubility, it escapes into the atmosphere as gas bubbles.

Another important aspect of denitrification is the requirement for carbon. The presence of sufficient organic matter is needed to drive the denitrification process. As you are probably well aware our soils are high in organic carbon, therefore the denitrification process will be enhanced within our cropping system. Temperature affects the growth rate of denitrifying organisms, with greater growth rates found at higher temperatures. The denitrification process can occur between 5 and 30 degrees celsius.

We do have a product that is available called Entec which helps significantly reduce the denitrification process. Entec stabilises

nitrogen in the ammonium form. It does this by acting like a sleeping pill on the nitrifying bacteria when they attempt to use the ammonium from the nitrogen fertiliser (Urea).

Leaching is the loss of nitrogen in water. When water runs below the root-zone or laterally it transports nitrate nitrogen from the soil profile therefore losing a proportion of the nitrogen.

So it would be a fair assessment to say that Denitrification and Leaching would be occurring now in our current conditions!

While I was researching for this newsletter article I came across a paper written on the crop science website where a trial was done by the Department of Agriculture in Western Australia.

This research trial looked at nitrogen management for wheat in high rainfall cropping areas of southern Western Australia.

Small trial plots were sown in Cranbrook which has a growing season rainfall of 464mm (2003 rainfall from Apr-Oct). The trial site was selected due to its known waterlogging history.

The trial consisted of four treatment groups and a control. The treatments were as follows;

- 160kg/ha N applied all at seeding
- 49kg/ha N applied at seeding and 97kg/ha N applied at first node
- 49kg/ha N applied at seeding and 97kg/ha N applied after waterlogging
- 49kg/ha N applied at seeding, 49kg/ha N at first node and 49kg/ha N applied after waterlogging

The results of the trials can be seen in table 1 below.

With waterlogging occurring 50% of the years of cropping in high rainfall zones, results from the trial conducted show that it could be a major, potential contributor to substantial losses of nitrogen and profits. For maximum crop returns, farmers are urged to determine the waterlogging probability of their cropping land before applying nitrogen requirements.

Table 1. N timing on tillers/m2, seed wt (mg), dry matter (t/ha), screenings (%), protein (%) and grain yield (t/ha) on Calingiri wheat at Cranbrook, 2003. 33% N = 49kg N/ha, 66% N = 97kg N/ha

No.	Treatment	Tillers/ m2	Seed wt (mg)	Dry matter (t/ha)	Scrns (%)	Protein (%)	Grain yield (t/ha)
1	Nil	239	37	4.5	2.7	9.1	2.2
2	All N at seeding (160 kg N/ha)	228	36	4	2.3	9.1	2.2
3	33% N at seeding, rest at 1st node	272	38	5.3	2.7	9.1	2.7
4	33% N at seeding, rest after waterlogging	344	34	7.5	4.7 (*5.5)	9.3 (*10.4)	3.5 (*3.8)
5	33% N at seeding, 1st node and after waterlogging	426	35	8.9	4.3 (*5.8)	9.5 (*10.7)	3.5 (*4.0)
	Lsd (p<0.05)	34	3	1.0	2.1	0.8	0.6

(*) additional 49 kg N/ha applied to back half of treatment on 25 September 2003.

The point to take out of Table 1 is the difference between plot 3 to plots 4 and 5. Big ranges in Yield, Protein, Dry Matter and Screenings. Worth the wait I'd say.

In summary of this research paper from the crop science website, it was found that according to soil and weather conditions, timing of nitrogen applications can increase crop yields by up to 60%. This increase was achieved when 33% of the nitrogen was applied at seeding and then the remaining nitrogen (67%) was applied after waterlogging. At the moment most of us have waterlogged soils and from looking at the results of this trial, I would recommend that we wait until the waterlogging has subsided and the risk of denitrification and leaching has decreased before applying the nitrogen that is required to achieve the best results.

If you have any queries with your crop suffering waterlogging or the denitrification process, please do not hesitate to give me a call.

KEEPING LEGUMES IN MIXED PASTURES WITH POTASSIUM:

Harry Armstrong

Mixed legume and grass pastures continue to form the basis of intensive grazing industries in our region, with the legume component providing the double benefit of improved feed quality and a free source of nitrogen to the pasture.

Grasses have higher potassium (K) concentration and are better at getting K than legumes:

When grown alone both grasses and legumes can contain high concentrations of K in the herbage, however when grown together grasses (particularly perennial grasses) are much more efficient at accumulating K.

Surveys of mixed pastures, which have separated the grasses and legume components for tissue analysis, have shown that grasses generally contain a higher K concentration than do legumes.

Several factors combine to result in the superior accumulation of K by grasses. The deeper and denser root system of grasses is more effective at competing for soil K resources. It has also been suggested that the root system of legumes tends to absorb calcium and magnesium in preference to potassium, whereas the reverse occurs with grasses.

This higher concentration of K in grasses compared to legumes helps to explain why we see higher incidence of Grass Tetany issues in grass dominated pastures than we do in clover dominant swards.

GRASSES NEED LESS SOIL K TO PRODUCE WELL:

Because of their inherent efficiency in extracting it, grasses require lower soil K content for optimum production. For example, in Western Australia a series of field experiments showed that clover growth in mixed pastures responded to K fertiliser when soil test values were less than 80-100mg/kg in the top 40cm. Grass growth, however was only responsive where soil test values were less than 20-25mg/kg in the top 40cm. (Standard soil testing in Australian pastures are taken from the top 10cm). It is understandable that as a K deficiency develops, legumes are the first to display deficiency symptoms. Seed production of clover is also reduced when K is deficient and eventually the legume component of the pasture will decline if K is not applied.

PASTURE GROWTH RESPONSES TO K DEPEND ON THE ABILITY OF LEGUMES TO REGENERATE:

In most cases growth responses in mixed pastures are due almost exclusively to an increase in growth of the legume component. If seasonal conditions or a poor seed bank prevents the germination or establishment of clover seedlings, responses to K fertiliser will be lower than expected.

ADEQUATE K + LEGUMES = BETTER FEED QUALITY:

Plants have a much higher requirement for K than do grazing animals; in fact up to 90% of the K ingested by cattle is excreted in dung and urine. So a pasture K deficiency will not result in K deficiency in grazing animals. However, correcting a K deficiency can improve the feed quality characteristics of the pasture. Improving the legume content of a mixed pasture will result in an increase in the protein content of the herbage, and has been shown to increase the digestibility of sub clover. Some studies have also noted an improvement in the palatability, even of poorer grass species, where a K deficiency has been corrected.

DECIDING IF A PASTURE WILL BENEFIT FROM K FERTILISER:

Soil and tissue testing (see other articles) are readily available tools for determining if a pasture will respond to K applications, but remember the tests are only as good as the sample that was taken. Because of the wide variability in K content of pastures mostly due to nutrient transfer by stock, a permanent transect sampling strategy may be more appropriate than taking random samples. This will allow the comparison of test results taken over several years. Where severe deficiency occurs, pasture appearance and individual plant symptoms will become apparent. Legume plants will be sparse and will display scorching or spotting on the margins of older leaves. Small patches of healthy plants may be associated with recent urine or dung deposits. However by the time these symptoms appear, large losses in pasture productivity will already have occurred. So keep an eye on the legumes in your pasture, they may be trying to tell you something.

TRIAL OUTCOMES THIS WINTER - NITROGEN AND SULPHUR ON DAIRY PASTURES

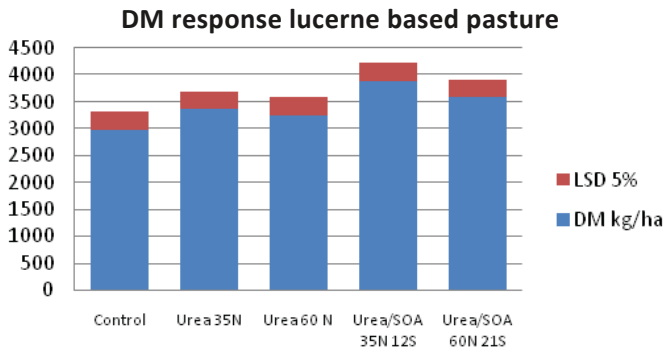
Bruce Lewis

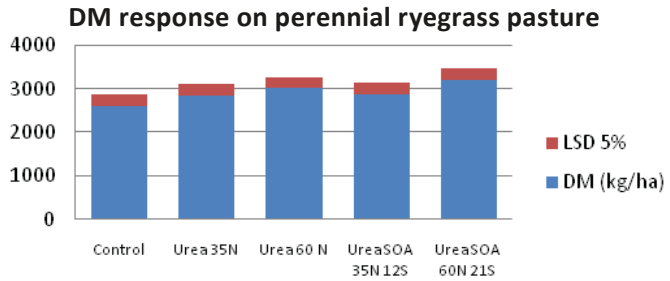
This winter Vickery Bros have been busy monitoring a number of fertiliser plot trials conducted in the region. In the dairying areas of South West Vic a number of nitrogen trials were conducted.The aim was to see what nitrogen responses were achievable (kg of dry matter produced per Kg of nitrogen applied). Some trials compared straight nitrogen (urea) to blends of urea and sulphate of ammonia and in some instances straight sulphate of ammonia. The objective here was to see if the nitrogen response could be improved with the addition of sulphur utilising sulphate of ammonia to improve the nitrogen response.

When costing the effectiveness of using nitrogen to grow additional pasture feed a response rate of 10kg of extra dry matter grown per kg of applied nitrogen is often used. This makes it easy to compare the cost options of either growing more feed with nitrogen vs buying in extra feed with hay or grain. In trials this year responses to straight nitrogen(urea) were around 8 – 10 kg DM/Kg N (July/August). This has made growing extra feed with nitrogen a sound option as with applied urea around $600 a tonne it equates to $1.30 per kg of N. The extra grown feed then costs out at $130 a tonne for a 10:1 response. ($162/tonne for an 8: 1 response)

Where sulphate of ammonia has been applied with urea as a blend the response per kg of nitrogen has been slightly higher during this winter. Where sulphate of ammonia and urea were applied together this winter responses of DM per kg of applied N ranged from 10 to 20. So we should be able to budget on 8-10 for winter responses for straight N and 10 -15 for urea / sulphate of ammonia blends. The nitrogen sulphur interaction response has measured higher on lucerne based pasture than perennial ryegrass on one farm.

Why is this so?





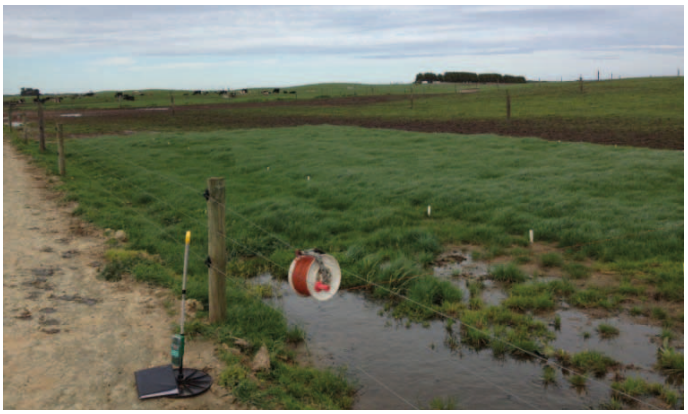
Sulphur is essential in the formation of amino acids methionine (21% S) and cysteine (27% S) which are required for the synthesis of proteins, chlorophyll and nutritive quality of forages. Amino acids are the building blocks for proteins in the plant.Because of central role of S and N in the synthesis of proteins, the supplies of these nutrients in plants are highly inter-related.

Previous studies with nitrogen and sulphur have found there was an accumulation of one nutrient in the plant when the other nutrient was limited and that accumulated nutrient was used in protein synthesis when the treatment were reversed. Another study has found that a shortage in the S supply to the crops lowers the utilization of the available soil nitrogen, thereby increasing nitrate leaching. Another study found that a large dose of gypsum reduced the yield of hay when N status in soil was unsatisfactory.

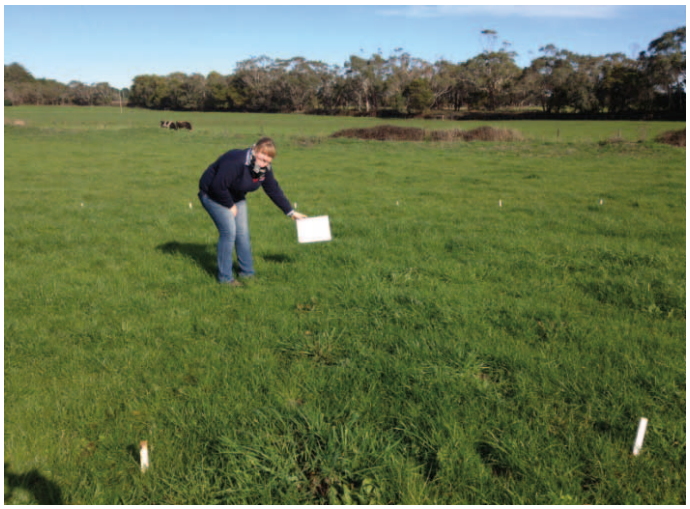
Likewise, large dose of N can create S deficiency.

Tissue analysis at 2 weeks after application of nitrogen fertiliser showed that perennial ryegrass nitrate levels went from 180 in control to 1100 for urea and 1700 for urea/SOA blend (SOA is slightly quicker). Plant Sulphur levels in ryegrass plant tissue were .37% for nil nitrogen fertiliser, 0.35% for urea (60N), giving a dilution effect and .41%for the urea/SOA blend.

Tissue analysis of perennial ryegrass 4 weeks after nitrogen fertiliser applications showed nitrate levels dropping back to near the nil fertiliser plots. Nil fert 180, urea 310, SOA 69, urea/SOA blend 150. In this demonstration trial, products were applied at the same rate so the SOA applied much less N.



In cold wet soils where nitrate plant levels are artificially boosted there may not be enough readily available sulphur to get into the plant quick enough to optimise the response. This appears to be happening when soils test with adequate levels. The Blair KCl40 soil sulphur test does measure some organic sulphur as would be expected to release with mineralisation in a normal season. This test may be over estimating sulphur levels for immediate release for the July period when soil temperatures are low and mineralisation minimal. It does appear that an N/S interaction is occurring looking at dry matter responses and tissue results in the July/August winter period.



TIMERITE FOR RED LEGGED EARTH MITE (RLEM) CONTROL:

Harry Armstrong

A commonly held view is that unless Red legged earthmite (RLEM) are in extreme numbers then you don't do anything about them. This view is valid when heavy infestations of RLEM are damaging a crop or pasture. However taking a long term view on RLEM control and reducing RLEM for the following year is worthwhile. And to achieve this using Timerite – a predicted spring spraying date to achieve control of RLEM the following autumn is critical.

Three generations of mites are produced each year from April through to November. The third generation dies leaving behind eggs inside the female's body (the RLEM population is female biased – there are more females than males). The carcass acts like an egg case protecting the eggs from the hot, dry conditions of summer. These egg filled carcasses blow around like grains of dirt in the summer and spread mite eggs across significant areas.

The eggs lie dormant over summer and when the temperature is right and there is enough moisture in the soil they hatch out and the cycle begins again, so as new pastures and crops are emerging so are millions of hungry sap sucking insects.

To achieve long term RLEM control requires breaking the breeding cycle. Timerite's efficacy is based on breaking this breeding cycle. Spraying on the prescribed day aims to destroy all of the last generation of adults before they produce their over summering eggs. Spraying on a date before the Timerite spray date will wipe out nearly all the adults but if there are eggs present they will survive, hatch and breed causing ongoing problems.

The time at which these mites produce over summering eggs and die is triggered by specific climatic conditions. These conditions are unique and there is one day that's the optimum for any property - 1 kilometre away and it might be a day later so timing of spraying is critical.

The economic impact of RLEM is significant. RLEM numbers on affected paddocks and/or farms frequently exceed more than 12,000 per square metre - the equivalent of running one additional sheep per hectare. On a 2000 hectare property that can mean a mite infestation can consume the same as 2000 sheep. In addition RLEM have the biggest impact in autumn when pastures are re-establishing after summer dormancy or when newly sown crop or pasture seedlings are establishing potentially causing pasture or crop failure or reduce production into the future.

To determine your spray date you will need to access the Timerite website www.timerite.com.au You will first need to determine the longitude and latitude co-ordinates of your property. You can source this information from either Google Earth or lookup "latitude longitude finder" on your web browser, choose a site (world atlas seems to work) and enter the property address. Your latitude longitude co-ordinates will be given. Enter these into the Timerite website, fill in your details and your spray date will be given instantly.

This date will not change from year to year so remember to write in your dairy every year your RLEM Timerite spray day.

SOIL AND TISSUE TESTING

Rebecca Stewart

You wouldn't buy a house without doing a building inspection and you wouldn't buy a car without checking if it's mechanically sound. So why wouldn't you monitor the health of your soil?

Soil and tissue testing on your farm provides a meaningful guide to the levels of nutrients that are present throughout the soil and/or plants. It is an essential risk management tool and part of a good monitoring program, enabling you to make informed decisions about limiting nutrients within the soil. Soil testing will also show soil structure problems through cation balance. This information will assist in planning a cost-effective fertiliser program, crop rotation and paddock stocking levels.

Spring is the ideal time to conduct testing in pastures as it gives time for forward planning purposes, this includes assessing legume content of pastures for future improvement. Pasture improvement can involve improving nutrition or changes in grazing management, chemical manipulation (spray topping) or even a full pasture renovation.

A soil test provides an indication of macro nutrient status within the soil, plus the soil pH. It also supplies an indication of soil structure and the potential limits to plant growth such as aluminium percentage which can determine whether a liming program would be effective. By conducting a soil test you can match the plant requirements with nutrient inputs which may save you valuable money in the long run.

Tissue testing is the most accurate method for determining and monitoring trace element levels in our pastures and crops. Although deficiency symptoms may not be visible, a tissue test will detect whether the plant is deficient. For example, a molybdenum deficient pasture will present as smaller clover leaves than normal. This may be hard to pick up after a tough season. By the time plants show symptoms of deficiency, a great deal of production may have already have been lost. Prevention is far better than a cure, both for your hip pocket and your sanity.

To reduce variation and therefore improve the accuracy of the results, soil samples should consist of at least 20 to 30 cores taken from a representative area of the paddock. If you wish to monitor the paddock from year to year it's best to sample the same area of the paddock at the same time of year as previous tests were conducted. For example, if a test was taken in a transent line across a paddock during the spring, the new test should also be conducted in the spring working across the same area of the paddock in a transent line. Soil tests should be conducted at least 3 months after fertiliser application.

A soil or tissue test will usually cost between $100 - $140per test. Factor these costs into your fertiliser budget, the same way you would factor in your accountant's fees or financial planner's fees to your farm's budget. A small outlay in the beginning could reap substantial rewards in the long run.

Soil samples should only be sent to laboratories that have an accreditation with either the Australian Soil and Plant Analysis Council (ASPAC) or the National Association of Testing Authorities (NATA). To ensure the most accurate results are obtained from soil and tissue testing, Vickery Bros will only use laboratories that are accredited with both ASPAC and NATA.

As now is the perfect time for conducting soil and tissue testing, why not give one of our experienced agronomists a call to discuss the testing and fertiliser needs for your property?

FORAGE BRASSICAS – QUALITY FOR LIVESTOCK PRODUCTION

Leighton Rees

The time is fast approaching where we need to think about creating extra high quality feed through the warmer periods of the year. As spring moves into summer, feed quality of pastures starts to diminish and if stock need to be finished, a summer crop provides a green bridge of high quality feed.

Forage brassicas can provide quick and abundant feed, with high digestibility, energy, and protein. The crude protein content of brassica leaves ranges from 15 - 25 percent and that of turnips and swede bulbs from 9-16 percent. The metabolisable energy content ranges from 11-14MJ ME/kg DM. Forage brassicas can produce excellent livestock weight gains, for example 150-250 g/hd/day for lambs and 0.8-1.2 kg/hd /day for growing cattle are common.

Brassica crops provide a relatively cheap and high quality source of feed, providing rainfall and soil moisture is adequate. Brassica crops are also an extremely useful tool when used in conjunction with pasture renovation. The ability to control weeds and prevent them setting seed before sowing down a permanent pasture is a valuable tool in the renovation program. The resulting new pastures are generally superior following a summer crop for this reason.

Brassica crops can also reduce the incidence of soil-borne plant diseases. Brassica crops contain naturally occurring chemicals called glucosinolates. These chemicals break down in the soil to produce compounds that inhibit the growth of disease producing organisms such as the take-all fungus in wheat.

Spraying out the old pasture should be done as early as possible to lock in any available soil moisture. Brassica seeds are very small, so a fine but firm seedbed is desirable. Avoid excessive ploughing as this can often cause a crust to develop on the surface of some soils, which can be detrimental to seedling establishment. Direct drilling is sometimes used and is less costly but results can be variable. Successful establishment depends on good seedbed preparation, weed and pest control.

Planning early is crucial and is an ideal time to test the soil as nutrient issues can be identified and corrected as you move through a summer crop program. Low soil pH or high levels of aluminium can also be identified and corrected by topdressing lime. If the paddock is being cultivated a quicker response to the top dressed lime will be obtained if it is worked into the soil. Soil samples should be done early to ensure results are back before you begin. Plan your nutrient requirements based on your soil test results.

Phosphorus is the most important nutrient for establishing brassica summer crops. If soil tests show a need for improved phosphorus nutrition, it's a good time to include some capital P for build up. Phosphorus is critical for early root growth. This will get the plant up and out of the ground quickly and give good early vigour. Summer crops

should be sown with approximately 250kg/ha of straight Super or 100kg/ha of DAP/ MAP equivalent. Sulphur can be added with phosphorus by selecting the phosphorus product type if the soil test results dictate.

Starter nitrogen is applied with MAP and DAP fertiliser. Unless the paddock history is of poor pasture with minimal clover content a cultivated soil will release enough nitrogen with mineralisation to optimise potential yield for most brassica crops. Paddocks with poor clover history or high yield potential due to summer rain may benefit with an application of urea at around the 3-4 week mark. Care must be taken when grazing the crop after a nitrogen application due to the increased risk of nitrate poisoning.

Although not common, potassium deficiency can occur. Potassium deficiency can be corrected by adding a potash fertiliser. A soil test will determine if K is a limiting nutrient.

Vickery Bros have the ability to broadcast seed and fertiliser at the same time, providing a quick and cost effective option on cultivated paddocks. Seed is blended with the selected fertiliser and top dressed at reduced width to give even coverage. Very good results have been achieved in the past provided that paddocks are rolled at completion and before, if necessary, to achieve high seed, soil and moisture contact.

When it comes to sowing rates Turnips should be sown at 0.5-1kg/ha depending on the size of the bulb. Rape at 2-3 kg/ha and if sowing Millet at 5-10kg/ha will give good plant numbers and coverage.

When choosing a variety, try and pick a crop that gives you plenty of feed when you can utilise it the most. There are many varieties to choose from but some of these may not be suited to your particular operation. Think about whether or not you need a long season plant or just something that will fill in the gap as part of a renovation phase.

APPLYING COPPER TO CEREAL CROPS WITH FUNGICIDE

Bruce Lewis

Copper is a trace element which can have a significant effect on crop yields in situations where it becomes limiting. Wheat plants low in copper appear to be wilting during vegetative growth even when moisture is adequate. Rat tail heads can be seen at maturity due to infertile heads.

Seventy percent of the copper in plants is found in the chlorophyll. Plants well supplied with copper have stronger cell walls, higher polymers and proteins are formed and are consequently more resistant to fungal attacks. Copper is also involved with enzyme processes in which certain organic substances are digested to produce proteins. Copper is involved in pollen formation and flowering. (Wheat plants low in copper appear to be wilting during vegetative growth even when moisture is adequate. Rat tail heads can be seen at maturity due to infertile heads.)

As copper responses can be obtained in cereals right up until head emergence (GS50) copper can be added to the tank mix when applying fungicides. High nitrogen applications can also trigger copper deficiencies so, in marginal copper situations, an application of urea can reduce yields by causing acute copper deficiency. In these instances, copper should be rectified before applying nitrogen.

Contributing factors to copper deficiency:

- Light textured soils with low organic matter
- Wheat is more sensitive than barley which is more sensitive than oats
- Wet water logged soils
- Root pruning from group A and group B herbicide damage
- Applications of fertiliser nitrogen in marginal copper situations
- No till cropping reduces mixing of soil applied copper
- Tissue testing the youngest emerged leaf blade (YEB) will give an accurate indication of your crop trace element status. Testing your cereal crop during early tillering will give the opportunity to correct nutrient deficiencies with foliar sprays before any significant yield loss occurs.
- Soil testing is not as straight forward as critical levels in soil for copper will vary with soil texture and organic matter levels.
- This year cropping paddocks are very wet. Due to water logging, plant root growth will be slowed or stopped. This poor root exploration of the soil will make it more difficult for plants to take up enough copper to supply the upper parts of the plant.

Vickery Bros have three different copper foliar products. Coppersol (6.7% copper) is a copper sulphate based product and is the cheapest but least compatible with other products and more likely to cause leaf burn in warm weather. Activist Red copper is a high analysis copper oxide(50% copper) with good compatibility and minimal phytotoxity. Smartrace Copper (5% copper) is in a Chelate form, is low analysis and has good compatibility with other products.

This year with wet conditions and higher than average spring rainfall forecast, both nitrogen and fungicide applications will be important to obtain maximum yields in many situations. It's worth a call to your agronomist to tissue test to check copper status if you match the above criteria.

Copper deficient wheat plant showing rat tail effect

Contact the professional team at Vickery Bros.

For healthy soils.

Agronomy Team

James Stewart	0427 752 773	Sophie Leonard	0409 868 132
Harry Armstrong	0417 052 095	Rebecca Stewart	0427 337 253
Leighton Rees	0437 752 707	Bruce Lewis	0422 632 730

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

SEASONAL REMINDERS

- ☐ Nitrogen for Spring growth
  - o Optimise growth while conditions are right.
- ☐ Hay and silage fertiliser
  - o Don't let low nitrogen and potassium levels limit production and sustainability of hay and silage paddocks.
- ☐ Lime for summer crop paddocks
  - o Set the paddock up for resowing.
- ☐ Topdress summer crop seed and fertiliser
  - o Saves time and cost of sowing
- ☐ Lime for lucerne paddocks
  - o High soil aluminium levels limit lucerne persistence.
- ☐ Soil test
  - o Check major nutrient levels for next seasons fertiliser plan
- ☐ Tissue test
  - o Monitor trace element levels for good stock and pasture performance

If undeliverable return to:
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105 Whyte Street
Coleraine VIC 3315

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