VICKERY BROS.
THE FERTILISER PROFESSIONALS
December 2012

FERTILISER PRICING 2013

James Stewart

During the year, we watched as global grain prices skyrocketed due to the severity of the US drought and poor monsoon rains through July & August in India. This had a flow on effect with the supply of urea in Australia. Farmers especially in the Riverina took an unexpectedly large amount of urea trying to maximize their crop yields to take advantage of these high grain prices. Australian import forecasts and forward purchasing were based on depressed grain prices and with suppliers not willing to commit to carrying uncommitted tonnage, demand exceeded supply to such an extent that fertiliser companies during August & September had to reject new orders and waitlist existing ones. Vickery Bros took a position on urea early and were able to supply all our clients with urea when most other dealers could not. There was an 8 week period where we were delivering to our customers urea at $50-$60 per tonne below the market price with guaranteed supply. It's critical that we understand and follow daily the world fertiliser market to make better decisions on behalf of clients on when to buy parcels of product. As a consequence of this, I've no doubt that some of you quietly noted this huge saving. This being said, in the interests of having some DAP/MAP available in the "off season" for some of our clients, we found ourselves carrying a small amount of excess old stock into the cropping market. Along with IPL, Impact and WengFu, we took a below cost hit early to match a market with fertiliser price stability. This was due to an unexpected rise in the AU$($1>$1.07). This meant opportune importers that set ships 2 weeks later than the majors gained a $35T advantage on the currency of which part was able to be passed on. We can monitor the world fertiliser market daily, but we are not currency traders!!

Global fertiliser markets have remained relatively stable over the last few months. Buyers are being cautious and not committing to large tonnages, choosing instead to reduce inventory stocks currently being held. This would normally lead to a sharp fall in prices, but the supply market has countered this by cutting back production to better match the demand. World finished fertiliser stocks are at historical lows. Nobody is now prepared to hold tonnage above committed or forecasted levels; market volatility just makes this too risky. Carryover stocks are now a thing of the past. If there is an unforecasted spike in demand somewhere around the world, then that country will pay well above market rate for the product at the time. This was evident in the USA this year when in April traders paid US$710 for urea to ship up the Mississippi before the river closed whilst urea in the Arab Gulf sold at US$523. This disparity in pricing has never been seen before and is now a precedent.

THE OUTLOOK FOR THE NEXT FEW MONTHS

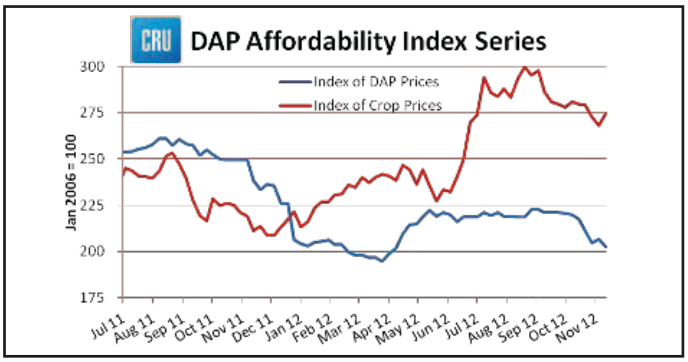
It is expected that global grain prices will remain at high levels which should lead to large acreages being planted by farmers wanting to take advantage of these prices. This will stimulate strong fertiliser demand from the bigger players in the market being the US, India, China and Brazil, however new fertiliser sites coming into production around the world early next year should help to stabilise the market and reduce the pressure on any big price rises.

DAP/MAP

The phosphate market is soft at the moment. DAP has fallen from US$575 in October to some trades being done at US$500 FOB Tampa this week.

This time of year has traditionally seen the lowest DAP prices offered and importers are now locking in forward contracts with formula pricing through December for Australia's upcoming cropping season.

At this stage the expected trading range over the next few months would be US$500 to US$525 per tonne FOB ex Tampa Florida.

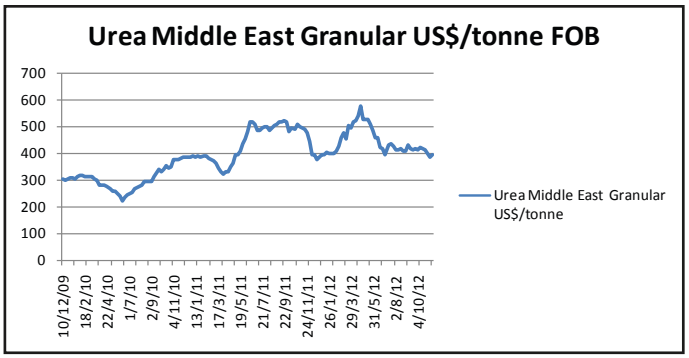


Explanation: the Affordability Index series compares an index of crop prices, weighted based on volumes traded through major price points for the four main agricultural commodities (wheat, corn, rice and soybeans), with a similar trade-weighted index of DAP prices. When the fertilizer index falls relative to the crop index, this means that nutrients are increasingly affordable to farmers, as a share of the return they will receive for their production. As the spread narrows or even inverts, this suggests that fertilizers become less affordable on farm.

Contents:

UREA

Since the shortage in Australia this past spring, world prices have been falling slowly. It is believed that the market may be oversupplied and along with lower gas prices has led the price drift. The advent of an export tax being put on by Egypt may however stop the slide.

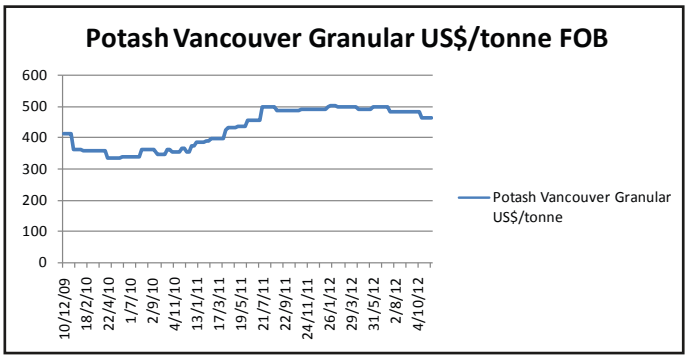


At this stage the expected trading range over the next few months would be US$400 to US$430 per tonne FOB ex The Middle East, although very little tonnage is imported into Australia at this time of year.

MOP

There has been a global reduction in production, due to what is now deemed high inventory levels. It is expected that world demand will increase once the bigger users come into the market (US, India, Brazil & China) mid next year. However all potash into Australia is delivered by the Canadian cartel, Campotex. Pricing is set only twice a year (June/December) and it is thought that we will see a significant reduction (7-9%) for the next six months. The only downside is how much old price stock is still sitting in fertiliser sheds.

Potash use in South West Victoria has declined dramatically since the GFC, and whilst our soils have traditionally had low levels of K, we are now starting to see some very alarming potash deficiencies in a range of soils across our region. Hopefully a price reduction will turn this around.



At this stage the expected trading range over the next few months would be US$420 to US$450 per tonne FOB ex Vancouver, Canada.

DOMESTIC PRICING

The Australian dollar has remained strong all year, reducing the impact of any volatile world pricing. Given the global market conditions discussed above we would suggest the following as budget retail pricing for the coming season. These prices include the addition of sea freight (US$45-65), wharf, port, unloading and stevedoring charges, the importers' handling and storage costs, inload-outload and screen, interest, finance and a margin.

DAP/MAP	$650 to $700
Urea	$530 to $570
MOP	$590 to $640

FAREWELL ROBBO

After 19 years of exceptional service with Vickery Bros, Geoff Robertson has moved to Melbourne to pursue a new role within the fertiliser industry. Geoff started working with Vickery Bros in 1993 as a sales agronomist where he developed many strong relationships with farming clients throughout the Western District. During Geoff's time with the company the business has grown dramatically and in 2005 Geoff was appointed as the General Manager. We wish Geoff all the best as Product and Innovative Manager at Koch Fertilisers and thank him for his efforts over the past 19 years.

Craig Tosetti as previously planned has taken over from Geoff as General Manager while David Vickery has replaced Craig as the Spreader Manager. Both Craig and David have settled into their new roles and look forward to the many challenges that lie ahead.

ALUMINIUM TOXICITY

Sophie Leonard

As most of you are aware, the cost of sowing down a new pasture is around $300/ha. With autumn pasture sowing approaching it is important to reduce the risks of an expensive failure.

Many soils in the South West have excessively high aluminium levels. Aluminium is not essential for plant growth and can be toxic to most pasture species. The solubility of aluminium is low, but as soil pH decreases below 5.5 in calcium chloride it becomes increasingly soluble (available for plant uptake). Aluminium is not a plant nutrient and is responsible for much of the negative effect of soil acidity.

When aluminium becomes available to the plant it reacts with the root cell walls. This restricts cell wall expansion and root growth, restraining uptake of nutrients and water. Only a small amount of the aluminium is translocated to the plant shoots so it mostly remains in the roots. The most common result is the development of thick, stubby and distorted roots that may appear dead or brown with little branching and lateral growth. This leaves the plant very vulnerable to moisture stress. Another common symptom is calcium deficiency on the young root tips. Aluminium can block the sites where calcium is normally taken up.

Problems with phosphorus fixation can also occur when the aluminium binds with the phosphorus becoming aluminium phosphate. This causes the available P to now become unavailable for plant uptake. Phosphorus uptake can be interrupted by the stunted roots as the hairs and finer roots are reduced interfering with the plants ability to explore the soil and extract nutrients.

Different plants have different sensitivity to exchangeable aluminium as shown in the table below.

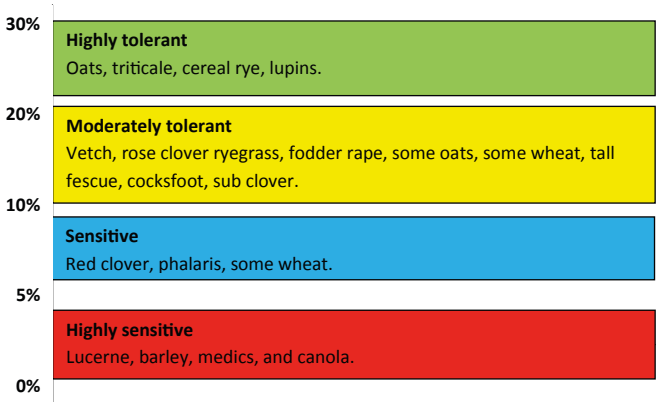


Figure 1. Plant sensitivity to exchangeable aluminium.

Applying lime to lift soil pH Ca above 5.5 will remove aluminium from the soils' solution. Agricultural lime is a natural soil conditioner made up of ground calcium and magnesium carbonate. Other than reducing toxic levels of aluminium, lime also temporarily increases availability of molybdenum and improves clover nodulation.

HOW MUCH LIME

The formula to calculate how much lime should be applied to lift the pH is:

Change in pH needed

Soil type factor = Lime applied per ha.

Clay Soils 0.3

Clay Loams 0.4

Sandy clay loams 0.5

Sandy soils 0.6

If a soil test shows that the organic matter is above 2 per cent, a further 0.2 – 0.4t/ha should be applied. Heavy clays and sands fall outside the range of this formula. If the lime is to be incorporated more than 10cm the rate needs to be increased.

Example: lime required to raise the Ph of a clay loam from 4.5 to 5.2:

Change in pH needed: 5.2 – 4.5 = 0.7

Lime needed: 0.7

0.4 = **1.75t/ha.**

LIME QUALITY

When liming the other important thing to consider is lime quality. The most important quality factor is the effective neutralizing value (ENV). The ENV is the ability of the lime to neutralize the soil acidity. This calculation takes in account the chemical analysis and fineness of the material. The higher the ENV, the greater ability to raise soil pH.

Liming minerals that contain more that 8 percent magnesium and more that 16 percent calcium are called dolomite.

If lime is required as part of this year's pasture renovation program, then now is the time to arrange delivery and spreading. Lime can be delivered and spread now and payment deferred to April 2013.

CAVENDISH PHOSPHORUS TRIAL

Harry Armstrong

A trial comparing phosphorus products has just concluded at Cavendish in South West Victoria. The trial was run over 5 years from 2007 to 2011. IPL [Incitec Pivot] funded the trial, but out sourced the measurement and analysis to Andrew Speirs from Mike Stephen & Associates.

Its objectives were to :

- Assess the effectiveness of key pasture products offered to the market:
- Support commercialisation of IPL's Biophos [prolong]
- Investigate the effectiveness of MAP sulphur products as a pasture fertiliser

The trial site was soil tested at the beginning of the trial in 2007. The results are as follows:

Olson P: Average of 8mg/kg

Colwell K: From 96mg/kg to 133mg/kg

Sulphur: From 6.6mg/kg to 7.9mg/kg

pH Ca Cl2: From 4.7 to 4.8

The soil test typifies a slightly run down pasture, which would reflect much of the district pastures. Botanical composition was also typical of the region, ie, a reasonable amount of Victorian Perennial Rye, some Fog Grass, Sub Clover and Onion Grass.

100kg of MOP (muriate of potash) was applied across the trial area annually to eliminate any variability in K levels across the site.

Molybdenum was applied to the whole site apart from some single super plots. This was done to eliminate any molybdenum variation across the site. There was no significant difference between the Single Super plots that received molybdenum and those that didn't.

Products included in the trial were:

HIFERT: Gold Phos 10, Gold Phos 20, Super M,

IPL : Map S, Single Super, Single Super + Moly, Biophos + Elemental Sulphur (also known as Prolong), Duchess Rock Phosphate + Elemental Sulphur and a Control (nil).

15kg of P was applied to each treatment annually.

Each treatment was replicated 5 times, so a total of 45 plots.

SUMMARY OF RESULTS

Duchess Rock Phosphate and Biophos-Prolong [Duchess Rock Phosphate composted with liquid fish nutrients, carbon sources and fungi] , both performed poorly. They failed to produce any significant increase in dry matter (DM) production compared to the control (nil) treatments. IPL have since discontinued production of their Biophos-Prolong although "muckometry experts" are still buying cheap rock phosphate from the Duchess mine and marketing it as "soft rock" in magical potion blends. It should be noted that the Duchess phosphate rock product used in this trial has a very low "reactivity" and any soil scientist would tell you that if you didn't react it with sulphuric acid, it would take 20 years to break down.

Cavendish Area. Paddock cut for silage which yielded 7t/Ha dry matter

National trials carried out in the late 1980's showed that true imported "reactive" rock phosphate, of the quality used in our Pasture Extender range, is an effective alternative to water soluble P products in much of our acid soil and high rainfall environment.

All other treatments produced significant increases in DM production when compared to the control plots. **The average increase in DM produced by the water soluble products was 20% for each year over 5 years.** So over 5 years an extra 1 year's growth was produced by the water soluble P products compared to no fertiliser applied or the citrate soluble Duchess rock phosphate products. Much of this increase was achieved over winter which is our limiting growth point for stocking rate. The clover content in these plots was also measurably and visually much higher, which would result in improvements in animal growth rates. The results seen here are not surprising and match previous data from similar trials conducted in the area over many years.

WHAT DOES IT COST?

At today's prices, applying 15kg/P/ha (which is 170kg/ha of Single Super) would cost around $61/ha carted and spread. So for $61/ha you can achieve an increase of 20% in DM grown per ha. 20% extra DM would allow an extra 3 DSE/ha to be carried. Or to put it another way, more than one extra XB ewe could be run per ha. Alternatively keep the same stocking rate and expect an increase in condition score of between a half and a full condition score for the sheep running on that same pasture. 20% extra DM produced could also reduce supplementary feed required.

CONCLUSIONS

As previously stated, the results from this trial are not at all surprising. We have seen similar outcomes many times but still we see producers willing to pay for products that have been well marketed but have not been validated with any proper trial work or comparisons. When offered alternative fertiliser products, the first thing to ask for should be evidence of the effectiveness of that product when compared to whatever is currently being used. Testimonials, pretty photos and graphs and the like are not evidence. Replicated and statistically validated trial data preferably from trials conducted in your area should be able to be produced. If not, ignore whoever is pushing them and do something productive.

REACTIVE PHOSPHATE ROCK

Harry Armstrong

The use of any source of nutrient in our farming systems must be based on the economic value we are able to achieve. The cheapest isn't always the best and vice versa, the most expensive product doesn't always guarantee success. Our soils are generally deficient in Phosphorus (P) and the application of P in combination with good grazing management is a key driver of farm profitability. P, unlike Nitrogen (N), can't be synthesised by plants and hence needs to be applied regularly to maintain this productivity.

PHOSPHORUS SOLUBILITY

P is present in various forms, with the solubility of the respective forms the best indicator of performance. The P in superphosphate is highly water soluble and is an excellent source of P that will work under a range of soil types and environments. Superphosphate is phosphate rock treated with sulphuric acid to improve the solubility of the P. As the cost of water soluble fertiliser increases, the use of phosphate rock, in particular a true reactive phosphate rock (RPR) becomes an economic proposition.

Raw phosphate rocks vary greatly in their level of solubility and soil reactivity [refer my Cavendish P trial article]. There is however RPRs that can perform agronomically as well as water soluble sources over time. The best indicator of the effectiveness of a reactive phosphate rock is the amount of total P that is solubilized in a 2% formic acid test.

FACTORS EFFECTING RESPONSE TO RPR

Reactivity increases with finer particle size, the interactions of soil conditions and the type of crop also play an important part in the usefulness of RPR.

Research carried out in Australia highlights that soil pH has the greatest influence on the agronomic effectiveness of RPR. As the soil pH increases above pH (water) of 6 the agronomic value of RPR diminishes. Rainfall above 600mm also improved the response to top dressed RPR.

The greater the P fixing capacity of the soil, generally the more effective RPR is, however short season crops may require some form of water soluble P initially as there is a lag in availability compared with a long season or perennial crop.

Individual crop species vary in their response to the application of RPR. The root systems of Canola for example exude organic acids which aid the solubility of P in RPR.

IMPACT OF LIMING SOILS:

Most of our soils require the application of lime to raise pH and to reduce the impact of aluminium toxicity. As discussed, responses to RPR are less effective on higher pH soils. Liming should therefore be carried out to achieve a soil pH (water) between 5.5 and 6, this range minimises the impact on plant production of aluminium in the soil and allows for the benefits of RPR. Historically our soils have been limed at rates of 2.5 tonne per ha every 10 to 15 years. As farm production increases and hence product removal from farms increases, Liming may need to occur more regularly but at lower rates. This prevents soil pH falling back too far, maintaining that productive band between 5.5 and 6.

While P is a driver of plant production, other elements such as potassium and sulphur may need to be included with the application of RPR to ensure good plant responses.

In summary reactive phosphate rock provides an economic source of P. Select only the RPR that has the highest level of solubility in a 2% formic acid test. For optimum responses soil pH in water should be less than 6 and rainfall above 600mm. RPR can be top dressed on its own, where sulphur levels are adequate, or incorporated with gypsum and or superphosphate to provide plant available S and P.

We have formulated several blends to suit our local soil conditions.

Organic super supplies P via a reactive phosphate rock in conjunction with gypsum as a source of plant available sulphur.

Pasture Extender 10/10 is suited to lighter sandy loams and leaching soils, having a combination of slow release RPR, water soluble P as superphosphate, plant available calcium sulphate sulphur and slow release elemental sulphur. Agronomically this is an excellent product having a 1 to 1 P>S ratio with 2 forms of P and 2 forms of S

Pasture Extender 10/7 is suited to heavier type soils having a combination of RPR and superphosphate to supply slow release and water soluble P with plant available calcium sulphate sulphur .

These products provide economic alternatives to single super and can be further combined with potassium and trace element for effective plant responses.

SIGNIFICANCE OF POTASSIUM (K)

Bill Feely

Potassium (K) is one of the three major nutrients required for plant growth. Soil K deficiency limits pasture production over a considerable area of the better rainfall areas of Victoria including the South West. In all farming enterprises within the South West of Victoria, K is an integral nutrient. In many instances it has been put aside in preference for phosphorus. With phosphorus levels slowly being built up, the opportunity to focus on K has never been better. Light textured soils are obviously prone to a K deficiency, however over the past few years I have noticed that soils with initially good K levels are being depleted. Due to the extreme wet winters we have encountered over the past years, the potential for K to leach is considerable; and two factors to take into consideration are the use of the much slower releasing sulphate of potash and/ or split applications throughout the growing season to better match the plants' requirements.

The agronomic importance of K is vital in regards to yield as it is essential for plant growth and development. Deficiency often results in a reduction in growth and yield before leaf symptoms are evident, (hidden hunger). With regards to disease and insect resistance, K promotes the development of thicker cell walls. K deficient plants may be more susceptible to attack by disease and insects. In mixed pastures, grasses are able to out-compete legumes in taking up K due to their finer root system. In soils where K is low, this may result in loss of legumes from the pasture.

The area of most concern in relation to K is the nutrient removal aspect. In cereals, 3-5 kg of K are contained in each tonne of grain removed. In Canola and Lupins, 8-10 kg of K is removed per tonne. Factor these removal amounts in, on reasonable cereal tonnages on low to marginal K levels and the K levels in these soils will soon diminish. However it is in silage and hay crops, in which most of the above ground parts of the crop are harvested, that the greatest amount of K is removed. Between 20-30 kg of potassium K is removed per tonne in hay and silage. Producers in many instances fail to address these removal rates during the following autumn and as a consequence the pastures begin to deteriorate.

When applying K it is worth considering two factors: what form to use and when to apply. The most common form of potassium chloride is muriate of potash or MOP (50% K). It is the most economical of the potassium fertilisers and therefore the most widely used. The only negative with MOP is that it is a salt, however it is assumed that leaching readily removes chloride applied in fertiliser, as chloride is not readily held by the soil (Follett et al 1981). This can be seen especially in districts where rainfall is above 700 mm/yr. Ironically, in coastal areas we sometimes forget how much chloride is picked up from rain, sea spray and saline drift. I wonder sometimes if we do read too much into certain factors that are deemed bad for our soils.

In saline soils where poor quality irrigation water is used, MOP may be considered detrimental due to the chloride component. Sulphate of potash (SOP) is the alternative K source and more expensive than MOP. SOP has a much lower salt index (<2.5% Chloride) than MOP (47% Chloride), has a x4 slower release rate than MOP thus less prone to leaching. SOP analysis is 42% K and 17 % S and is also a good fit for situations that require extra sulphur.

Often one application of K per annum will suffice, particularly where K is applied at low rates. At higher rates, it is customary to split-apply K, to avoid luxury uptake and improve utilization. Unlike most other nutrients, K can be taken up in quantities far exceeding that necessary for plant growth, without becoming toxic (virtually "pisses" it against the wall). K is split-applied on dairying, lucerne paddocks and on very light soils that are prone to severe leaching. In some situations especially where it can become exceedingly wet, the approach is to apply small amounts of K during the winter with N. In this situation some producers are applying SOP with their N and then applying MOP in the spring. I think that this approach is a plausible way to handle potential potash leaching. With regards to pasture composition, ie ryegrass and sub clover; care should be taken not to apply too much at one time as grasses will take up the potash more readily than the sub clover as it has a more developed root system. In these situations higher application rates of potash in the spring should be considered as the sub clover root system is more developed. This doesn't apply where there is white clover with the ryegrass as it has a developed root system due to it being a perennial. In certain areas, especially those areas prone to extended periods of waterlogging, the application of K fertilisers in late spring / early summer is better agronomically as the pastures are growing actively.

Encouraging signs have emerged this year with 2 trials on farms using SOP. In each case the soil type was different; one a sandy loam and the other a heavy clay flat. The clover content on the lighter soil was good but a soil test indicated a K deficiency. MOP and SOP were applied side by side giving the same amount of K. The effect of the SOP over the MOP was dramatic over the course of the season. The other instance involved a heavy clay flat prone to lying water. The clover content was minimal however by the end of spring clover content had increased dramatically. Given these results the underlying factor appears to be the slow release; as the clover grows through the season there is a continued supply of K nutrient .

Pastures that are K deficient will have a drastic impact on production. Given the significant yields taken from dairying, sheep, beef, cropping and horticulture, replacement of nutrients is essential. To avoid ongoing K deficiency, care should be taken to first monitor the K levels and address these deficiencies by using an appropriate fertiliser choice, timing and frequency of application.

RECOGNISING COPPER DEFICIENCIES

Leighton Rees

Copper is an essential trace element in most farm nutrient programs but is sometimes forgotten about until problems or deficiencies become noticeable. Generally you will not notice symptoms of copper deficiency until they are severe.

Livestock have a higher requirement for copper than plants do therefore animals will show signs of deficiencies long before pasture or plants will.

Lighter soil types that contain low organic matter are more likely to be associated with low levels of copper.

Soils high in organic matter such as peat soils may have high copper levels but the availability of this element may be low due to how tightly the organic matter holds on to the copper.

Animal health issues occur when pasture consumed is low in copper. Other nutrients can also influence the availability of copper in your soils due to the antagonistic relationship between them. For this reason copper is normally applied when moly is being used as molybdenum application can decrease availability of copper in pastures.

Excess liming and high levels of other trace elements such as iron and aluminium can induce a copper deficiency .

High nitrogen applications can lead to a reduction of copper being transported into the growing tips of the plant.

Signs of deficiencies can be:

Cattle
Loss of coat colour
Coat becomes rough
Loss of hair pigmentation around the eyes
Decreased milk production
Loss of fertility
Scouring
Sudden death may occur in adults

Sheep
Steeliness or loss of crimp in wool
Anaemia, scouring, infertility
Bones breaking in lambs
Swayback in young lambs indicates deficiency during pregnancy

Serious live weight and hence production losses can be experienced well before any of the above symptoms become apparent.

Copper has many functions within a plant which include physical strength of plant stems and shoots, movement of water throughout the plant, and pollen formation.

Plants containing good amounts of copper are less likely to have fungal attack also.

Tissue testing in early spring is the only accurate way of determining the copper status of pastures.

Soil tests won't provide a true indication of copper as it is very immobile in the soil. Regular tissue testing along with a well managed fertiliser program will reduce any problems that may be associated with copper deficiency.

Supplementation of animals with copper may be necessary in cases of severe deficiency.

Super Cu products are available which will give good coverage of copper over your property. Generally it is applied in conjunction with an autumn fertiliser application.

When it comes to applying copper it can be applied every 4-5 years at 1kg/ha applied nutrient or smaller applications can be made yearly where necessary at 200-300gm/ha.

NEW AGRONOMIST, REBECCA STEWART

Vickery Bros. have welcomed a new member to the agronomy team. Fresh out of studying a double degree at LongerenongAgriculturalCollege, where she achieved a Diploma of Agronomy and an Advanced Diploma of Agriculture, Rebecca has relocated from Warracknabeal down to Coleraine . She has been part of the farming industry all her life, living and working on an intensive cropping and sheep enterprise. Her family have a long association with Vickery Bros. In her spare time she enjoys playing acoustic guitar and working with sheep dogs.

As a new member of the agronomy team at Vickery Bros, Rebecca looks forward to meeting clients and servicing all their fertiliser needs.

Contact the professional team at Vickery Bros.

For healthy soils.

Agronomy Team

Bill Feely	0409 427 963	James Stewart	0427 752 773
Leighton Rees	0437 752 707	Harry Armstrong	0417 052 095
Sophie Leonard	0409 868 132	Rebecca Stewart	0427 337 253

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

- ☐ Establish farm nutrient plan
- ☐ Ensure your fertiliser dumpsite is graded
- ☐ Nitrogen for summer crops
- ☐ Falling potassium levels need to be addressed

If undeliverable return to:
Vickery Bros. Pty. Ltd.
105 Whyte Street
Coleraine VIC 3315

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