

# VICKERY BROS.

THE FERTILISER PROFESSIONALS

VICKERY BROS AGRONOMY

THE FERTILISER PROFESSIONAL

SUMMER 2018 - 2019



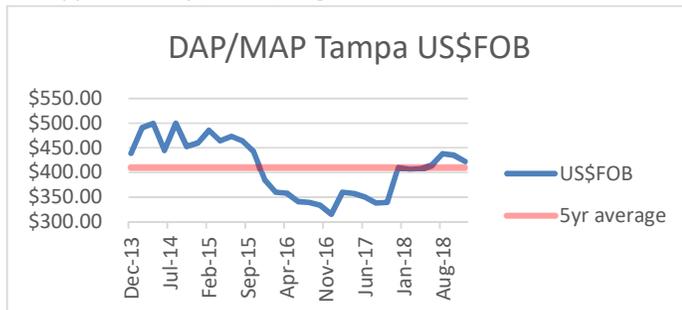
## FERTILISER PRICING

CRAIG TOSETTI

It has been a very busy 2018 and there have been some big changes at Vickery Bros. We have moved into our new offices at 96 Whyte Street and all staff have settled in well. The fleet has expanded with the purchase of 4 new MAN spreaders and 2 new B Doubles that will assist in continuing to provide the great service we pride ourselves on. We continue to employ new local staff and it's great to see the new faces around the office and in the field. We have also welcomed the arrival of Al & Shem from the Philippines; they are qualified Diesel Mechanics who have bolstered our workshop capacity. These changes continue to strengthen our ability to provide high quality service to our existing and new clients as we grow together. It has been a good spring with plenty of hay & silage produced and most of our cropping clients have pleasing yield results. Our Agronomists don't seem to have a quiet period anymore with this time of year full on taking and interpreting soil tests in preparation for another big season ahead.

### DAP/MAP:

World prices rose slowly from April through to September and have since steadied reflecting what is normally a quiet time for the AP markets. As you can see from the graph below, the price has been trending higher for the last 12 months after an unusual 2 years of well below average world pricing. Pricing is sitting around the 5yr average and with the AUD hovering between \$0.71 to \$0.73 at present compared to \$0.78 this time last year we will see APs approximately \$50-70/t higher.

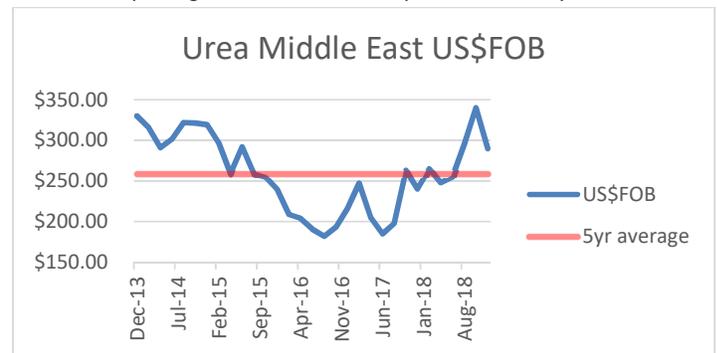


### Superphosphate:

Single super pricing has been tracking the same as the AP's as it usually does. The pricing has come off 2 years of lower than average pricing and this year will be back to where it was 3 years ago. The best prices this season will be seen in January; so don't miss out on securing your pasture topdressing requirements early.

### Urea:

Urea prices skyrocketed throughout the 2018 growing season, it increased by as much as US\$90FOB in a matter of 6 months (see graph below). Even though drought was affecting much of eastern Australia, demand for Urea in the southern half of Victoria was the strongest we have seen. The market has now begun to reverse and has lost over half the gains made in 2018. The expectation is that world Urea pricing will continue to drop into the new year.



Given the strength of commodity prices we are expecting another big Summer/Autumn pasture season. The best prices will be found early so make sure you are in contact with one of our Agronomists who can give you the right advice on your fertiliser requirements.

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# UNDERSTANDING LIME & GYPSUM

LEIGHTON REES

We come across many questions in relation to lime/gypsum:

- Which is best suited to my situation?
- How long will these products last?
- Which lime is the most cost effective?
- Will I get a significant growth response?

To answer some of these questions we first need to look at the soil and its properties. The best way to do this is with a current soil test which will quickly tell us soil type, pH, calcium, sodium, aluminium levels etc. From these results we can get a better understanding of what, if anything, is required to improve your soil.

Soils change considerably from paddock to paddock and it is not uncommon for these soils to change 2-3 times within that same paddock. Not all paddocks are fenced to soil type.

Previous management practices will have a big impact on the outcome of your test results e.g. yield removals, pasture species present and hence your requirements for lime or gypsum.

When we get this information we can then look at what it is we are trying to improve.

Probably the first thing most of us look at is soil pH. The pH of a soil indicates the level of acidity or alkalinity. A pH below 5.5[in water]; is classed as acidic and anything above 8.5 can be called alkaline with 7 being neutral. This is extremely important as pH is responsible for nutrient availability, both good and bad, depending on reading.

Typically, we look at the measurement of pH in water but it is also important to consider pH measured in calcium chloride or (Ca C12), especially when dealing with soils that possibly contain high salt levels. When high levels of salt are present in the soil these two readings become closer together.

Low pH soils can cause unwanted nutrients to become more plant available. At low pH nutrients such as aluminium can become more soluble and therefore uptake by the plant is greater. Aluminium is generally toxic to the plant's roots. The level of susceptibility will depend on the plant variety. In neutral and alkaline soils the availability of aluminium is very low but as pH in water gets to around 5.5 or lower, aluminium becomes more soluble and hence more plant available.

To increase soil pH we look at applications of good quality lime. When I say good quality, I mean a fine lime with a high calcium carbonate percentage and a high effective neutralising value. Quality of lime varies considerably depending on where it was sourced. Current independent tests are readily available. Keep in mind, gypsum will not have a positive effect on raising soil ph.

When sourcing lime, obviously freight can be a reasonable cost and we need to consider whether or not extra freight costs can be made up with the use of more effective limes. This will depend on your location and the location of the pit. You may be better off using a lime of a slightly lesser quality that will take slightly longer to break down but this may mean your freight costs are much lower.

How much lime will depend on many things including soil type, aluminium/calcium percentage and the level of change in pH that you are trying to achieve.

The buffering index of the soil will play a big part in how responsive your soil will be to applications of lime as will the CEC (cation exchange capacity)

*November - January*  
**LIME DEAL**



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UNTIL APRIL 2019**



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The chart to the right gives a guide as to the amount of lime required to raise your pH based on your soil test results. *Source; AgFacts NSW DPI, Soil acidity and liming*

The changes stated are based on using a high-quality lime. If using a lime of a lesser quality then higher rates of lime will be required.

Over-liming of soil can create highly alkaline soils and we can run into issues such as decreased availability of certain trace elements such as copper, zinc, and magnesium. Again, soil testing will ensure we apply the correct rates.

Irrigation water can also have an impact on pH as high levels of calcium can be applied during irrigation. pH can be increased dramatically through regular watering, giving its own liming effect.

Growth responses associated with applications of lime can be dramatic. A correct pH, calcium, and aluminium level will ensure that the plant is growing in a favourable environment. This can lead to better growth, plant persistence, correct functioning of nitrogen producing legumes, positive yield responses, healthier plants at less risk of disease and insect pressure.

Not all responses to lime or gypsum will be dramatic but we need to take into account that we are trying to maintain an ideal growing environment for the plant which means being proactive rather than waiting until we have had a significant production loss before we address the problem.

**Where does gypsum fit in all of this? (calcium sulphate)**

When looking at whether or not gypsum is required the first thing that comes to mind is soil structure. Without good soil structure, a plant will struggle, finding it hard to access moisture and nutrients. Seedling establishment will be reduced due to the compacted layers of soil from excess sodium in the profile.

Applications of gypsum have the ability to reduce the levels of sodium in the soil profile. Gypsum will readily dissolve much quicker than lime. The calcium from the gypsum displaces the sodium particles and these particles are then flushed through the soil profile with either rain or irrigation water. This has a positive effect on reducing your sodium percentage. The reduction of sodium will then improve the soil structure.

Not only will gypsum improve soil structure but it will also apply good levels of sulphur which should be taken into account when looking at the cost effectiveness of gypsum. Rates of gypsum typically start at 2.5 tonne per hectare depending on the sodium percentage you are dealing with. For sodic alkaline soils apply 5 tonne; as gypsum is less effective at high ph. For highly sodic alkaline soils there may be a requirement for up to 10 tonne per hectare under irrigation.

**Table 11. Limestone required (fine and NV > 95) to lift the pH of the top 10 cm of soil to 5.2.**  
Colour codes group limestone rates to the nearest 0.5 t/ha

Soil test ECEC (meq/100 g)	Lime required (t/ha) to lift the pH of the top 10 cm:			
	from 4.0 to 5.2	from 4.3 to 5.2	from 4.7 to 5.2	from 5.2 to 5.5
1	1.6	0.8*	0.3*	0.2*
2	2.4	1.2	0.5*	0.4*
3	3.5	1.7	0.7	0.5*
4	3.9	2.1	0.9	0.6
5	4.7	2.5	1.1	0.7
6	5.5	3.0	1.2	0.8
7	6.3	3.3	1.4	1.0
8	7.1	3.8	1.6	1.1
9	7.9	4.2	1.8	1.2
10	8.7	4.6	1.9	1.3
15	12.5	6.7	2.8	1.9

\*It is recognised that low rates of lime are impractical to apply, but over-liming can cause nutrient imbalances, particularly in these light soils.

**KEY: Limestone rates per hectare**

0.5 t/ha	1.0 t/ha	1.5 t/ha	2.0 t/ha	2.5 t/ha	3 to 4 t/ha	Split applications advised
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Lime is not a substitute for gypsum just because it contains calcium, and should only be used at low pH. Lime is ineffective at high pH as it becomes insoluble. However, the two products can be combined if you have an acid / sodic soil.

We need to be careful when applying any soil conditioners. When applied in the wrong situation they can have an adverse effect. Always soil test first.

- For instance gypsum can increase the salt content of the water therefore areas with already high salt levels may be worsened from applications of gypsum. Allow adequate time for these salts to be leached through the system before planting a crop.
- The improvement in soil structure can mean that nutrient leaching is increased, especially mobile nutrients such as nitrogen; but the benefits of improved soil structure would far outweigh potential losses.
- Liming can initially offset the availability of copper. Therefore you need to be certain that there is sufficient soil copper before liming.
- Excess liming can reduce the availability of other trace elements such as zinc, magnesium, and copper.

It also has the potential to increase molybdenum availability.

The frequency of applications of lime or gypsum will be influenced by many factors. Consider re testing soils 5 years after any ameliorant applications. Any high removal areas such as hay paddocks or areas that regularly get water logged or pugged should be checked first.

**Vickery Bros. is offering a deal on lime, so now is the time to consider your paddocks' requirements for autumn.....**



# TISSUE AND GRAIN TESTING

ANOTHER TOOL TO HELP US BUDGET FOR OUR NEXT AUTUMN FERTILISER APPLICATION

FRANZI RIEGGER

While soil testing has been well underway this spring, we also have other tools available to help the decision making for keeping your soil fertility at its optimum to ensure future farm performance.

It is as easy as collecting 400 grams of grain straight off the header or the same weight of hay/silage. Through the Nutrient Advantage laboratory at Werribee, we will be able to find out exactly how much nitrogen, phosphorus, potassium, sulphur, zinc and copper is in the grain, hay or silage. With this information we can work out how much nutrient has come off your paddocks with the last crop. We can then supply you with the right amount of nutrients, to balance out what you have removed.

While there are a few nutrient removal tables available that are a good guide, values can still vary widely with different crop types, soils and the variability of the growing seasons. Therefore, testing your own produce is a great way to get away from averages and guesswork and to analyse your very own nutrient removal.

Here is an example of three tissue tests taken last year of three different hay crops, all on the same farm. In the white background are test results of nutrient concentrations within the tissue:

Paddock Name	Total Hay removed in t/ha Dry Matter Content: 90%	Total DM removed in t/ha	Nutrient removed in g/ha						
			Nitrogen	Phosphorus	Potassium	Sulfur	Copper	Zinc	Moly
			%	%	%	%	mg/kg	mg/kg	mg/kg
Paddock 1	4.3	3.87	1.2	0.22	1.7	0.18	2.4	13	0.45
total Nutrient removed in kg/ha:			46	9	66	7	9	50	2
Paddock 2	4.7	4.23	1.7	0.2	1.3	0.2	2.2	13.0	0.4
total Nutrient removed in kg/ha:			72	8	55	8	9	55	2
Paddock 3	2.5	2.25	1.0	0.1	1.0	0.1	2.2	15.0	0.5
total Nutrient removed in kg/ha:			22	3	22	3	5	34	1

The hay out of paddock number one has 1.2% of nitrogen in the plant tissue, meaning that 1t of dry matter carries 12kg of nitrogen. The farmer has baled 7 bales per hectare at 615kg each, which means that he has cut 4.3t of hay per hectare. The hay contains 10% moisture, which leaves us with 3.87t of dry matter removed per hectare. 12kgN/t multiplied by 3.87t equals 46kgN. This means we have taken 46kg/ha of nitrogen out of the soil. Which is equivalent to 100kg of urea. The 0.22% of phosphorus converts to 9kg/ha of phosphorus, equivalent to 100kg/ha of single super. The potassium removed in hay is the biggest one to consider, with 1.7% of potassium in the tissue, the farmer has taken 66kg/ha of potassium off this paddock, translating to 132kg/ha of muriate of potash. Not to forget the 7kg/ha of sulphur and the trace elements.

Conserving fodder is an inevitable part of our grazing systems in the area. It will however only be sustainable if the nutrient that is being removed is getting replaced, too.

Where soil test data is available for the same areas, the decision making for this year's autumn application can be made even more accurate;

- Where nutrient levels present in the soil are higher than optimum, some mining can be done and not all or even no nutrient needs to be replaced.
- On areas where soil is already deficient in certain nutrients, it will be necessary to apply what has been removed plus a capital application of the pasture yield limiting nutrients.
- Paddocks with optimal nutrient levels will only require a nutrient replacement application, as determined in the tissue or grain sample.

It is also important to consider the total net worth of the nutrients removed and it is not to be underestimated, especially when thinking about selling your fodder. The cost to replace all nutrient taken out with the hay crop in paddock number one is \$210/ha, divided by the 7 bales a hectare gives a nutrient replacement cost of \$30 per bale.



## INTRODUCING

Laura Forward

The Vickery Bros Agronomy team has welcomed a new member, Laura Forward. Laura has recently completed her Certificate 3 and 4 in Agriculture as well as her Diploma of Agronomy at Longerenong Agricultural College. Originally from coastal South Australia, she moved to Victoria at the age of 9 and completed her schooling in Maryborough living on a small property. After finishing school, Laura went to university to study a Bachelor of Biomedical Science and go into scientific research. Laura realised this wasn't what she enjoyed doing and made the change to study Agronomy. She now lives in Strathkellar with her partner Will, where they have a small cattle property. In her spare time Laura enjoys horse riding, camping and other outdoor adventures.

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



# CARRYING CAPACITY ON IMPROVED PASTURES

ROGER GEE

While looking at several current soil tests and reviewing production numbers of a smaller lamb enterprise, the conversation turned to carrying capacity and the economics of improving pastures.

Carrying capacity and potential carrying capacity SR (stocking rate), is often referenced by the French-Schultz equation; Carrying Capacity [DSE] = (Annual rainfall – 250) x (modified co-efficient 0.7 range 1.3 depending upon Olsen P level) / 25 = DSEs.

A refinement to this equation, because rainfall is not steady over every month, uses growing season length to calculate DSE carrying capacity (Saul & Kearney 2002).

To explain this calculation, farm A has an annual rainfall of 650mm, and Olsen P's of less than 10, in large paddocks (>20ha).

$$DSEs = 650 - 250 \times 0.7 / 25 = 11.2$$

Further review of this farm reveals an older low-quality pasture, with little or no legume content, it has a haphazard fertiliser program rarely covering maintenance, and the farm is predominately set grazing. Due to pasture limitations, in real terms, over time this farm is going backwards.

Farm B has similar annual rainfall, but with Olsen P's around 20, and paddocks of 20ha and under.

$$DSEs = 650 - 250 \times 1.3 / 25 = 20.8$$

This farm has a full budgeted fertiliser program, to support an appropriate mix of higher producing pasture grasses & legumes. It follows rotationally grazing practices to obtain higher utilisation, and manages pasture production.

With an assumed gross margin of \$45/DSE, then the second farm is \$432/ha/year (gross margin) ahead of his neighbour.

Let us say the first farmer decided to improve his carrying capacity to capture the missing potential. There are several calculations we can run to estimate the value, and how worthwhile this could be.

As a general rule maintenance phosphorus is correlated to carrying capacity, at a mid-range figure of 0.9kg P/DSE/year, depending upon soil type. Using the numbers from above, and several assumptions we can calculate as follows.

The Waratah Phosphorus Trial (3 years) which has been included in the VB Newsletters, demonstrated that in 50ha paddocks where 36 units P had been applied the lambs achieved higher growth rates, which exceeded predictions, however stocking rates would need to be higher, and lambing a little later to fully maximise profit/ha.

As soil fertility increases, high fertility species like capeweed will need to be managed until such time as preferred species like clover and phalaris become dominate. Increased growth rates in these higher fertility pastures are driven by significant amounts of nitrogen being fixed by clovers. Low fertility species like onion grass were reduced by the higher fertility/grazing combination.

Given the higher growth rates of both pasture and lambs, it was feasible to lamb later and still finish lambs in a tight Spring on this property.

As another reference, the Long-Term Phosphorus Trial at Hamilton has proven that if you were to adopt higher than maintenance fertiliser rates, over time your pastures will improve, and production increase.

Further supporting the theory that well-planned and soundly managed pastures improve farm income, and farm asset values.

## References:

- <sup>1</sup> French, R.J. (1987). Proc. 4th Aust. Agron. Conf. 140-149.
- <sup>1</sup> Saul, G.R. and Kearney, G.A. (2002). Potential carrying capacity of grazed paddocks in southern Australia.
- <sup>1</sup> Heritageseeds – Economics and Enterprise Analysis, training manual 3.2

From the table below, we can see an internal rate of return at 29.5%, and at 6% a Net present value of \$2,254/ha.

	1	2	3	4	5	6	7	8	9	10	Totals (10years)
Carrying Capacity (DSE/Ha)											
Improved pastures	8	17	21	21	21	21	21	21	21	21	21
Unimproved pastures	11	11	11	11	11	10	10	10	10	10	10
Unimproved pastures costs (maint, P application)			\$46			\$41			\$41		
Improved pasture Costs (\$/Ha)											
Establishment cost + Seed / Ha	\$325										
Capital fertiliser & Lime / Ha	\$575										
Maintenance P for improved pastures	\$33	\$70	\$87	\$87	\$87	\$87	\$87	\$87	\$87	\$87	
Total pasture costs	\$933	\$70	\$87	\$87	\$87	\$87	\$87	\$87	\$87	\$87	
Gross margin (\$/Ha)											
Improved pastures	-\$573	\$695	\$858	\$858	\$858	\$858	\$858	\$858	\$858	\$858	\$6,986
Unimproved pastures	\$495	\$495	\$449	\$495	\$495	\$409	\$450	\$450	\$409	\$450	\$4,597
Benefits of improved pastures	-\$1,068	\$200	\$409	\$363	\$363	\$449	\$408	\$408	\$449	\$408	\$2,389
Cumulative cash flow vs unimproved	-\$1,068	-\$869	-\$460	-\$97	\$266	\$716	\$1,124	\$1,532	\$1,981	\$2,389	
Opportunity cost	6%										
Net present value	\$2,254										
Internal rate of return (IRR)	29.5%										



Pasture seed has been in high demand over the last few seasons and supply has been inconsistent to say the least. This year will be no different with some species having little to zero carry over and with supply completely dependent on this year's harvest. Forage type cereals, Phalaris, Cocksfoot and Sub Clover in particular will again be under pressure and will be in tight supply.

**Sub Clover** – Expecting a good harvest but strong demand means price is expected to be slightly up on last year. Little carry over means it is all dependent on this season's harvest.

**Phalaris** – Expecting a good harvest but little carry over and strong demand means price expected to slightly rise. Will get tight towards end of season.

**Cocksfoot** - Little carry over, dependent on this season's harvest. Popular varieties will run short.

**Fescue** – Good supply with price steady.

Perennial Ryegrass – Good Supply with price steady

**Cereals** – Extremely short. Price well up with tight supply. Preferred varieties will sell out quickly.

**Annual Clovers** – Price up on last year but still great value.

**Annual/Short Term Ryegrass** – High demand has put prices up, NSW market may add more pressure.

**IN SHORT:** Cereals, Annual Ryegrass, Phalaris, Cocksfoot and Subs are expected to be short and it will pay to be organised early this season. Talk to your local Vickery Bros. or McDonald Rural Agronomist today about organising your seed requirements for autumn to avoid disappointment.

## A New Sub Clover Varieties

With several new Sub Clover Varieties coming to market in the last few years and more to come, McDonald Rural Services has set up 2 demonstration sites in Coleraine and Balmoral area to evaluate performance and persistence of new genetics coming through over time.

Firstly, to set the scene there are 3 Sub species of sub clover. Sub species of Sub Clover and their attributes are.

1. Subterranean sub clover, Common Names: Blacks, Black Seeded Subs. Varieties: Rosabrook, Leura, Narrikup, Bindoon, Mt Barker
  - Prefers well-drained sandy loams to clay loams of moderate acidity (pH<sub>CaCl</sub> 4.5-6.5)
  - Some new varieties have been bred for Red Legged Earthmite tolerance as a seedling.
2. Yanninicum sub clover, Common names: Yannies, Yellow, Cream or White seeded subs. Varieties: Rouse, Yanco, Trikkala, Riverina, Gosse, Monti, Napier
  - Very tolerant of waterlogging prone soils.
  - Prefers sandy loams to clays of moderate acidity (pH<sub>CaCl</sub> 4.5-6.5).
3. Brachycalycinum sub clover, Common names: Braches, Brachies. Varieties: Mintaro, Antas
  - Prefers well-drained, cracking and self-mulching or stony loams and clays. Slightly acidic to alkaline (pH<sub>CaCl</sub> 6.0-8.5)
  - Poor seed burial trait compared to the other two sub-species which actively bury burrs/seed.



Vickery Bros, Southern Soils and McDonald Rural Team members on their visit to Heritage Seeds trial and development farm at Howlong in October.

Seed Force has released 2 new Yannicums Sub Clover varieties in the last two years that look to have a great fit for our region. In the current MLA run pasture network trial in Casterton Yannicum type Subs made up 5 of the top 7 Sub Clover varieties for total dry matter production over 3 years. Due to their ability to handle water logging conditions they are a mainstay in pasture seed mixes for the southern pasture zone.

SF Rouse was released in 2017 and is a mid-late flowering sub with good disease resistance and hard seed levels. SF Rouse suits country that's growing season usually extends into mid-late November.

SF Yanco was released in 2018 and is a mid-flowering sub with good disease resistance and excellent hard seed levels. SF Yanco suits country that's growing season usually extends into early November.

Both SF Rouse and SF Yanco were planted into the demonstration sites this year and performed extremely well.

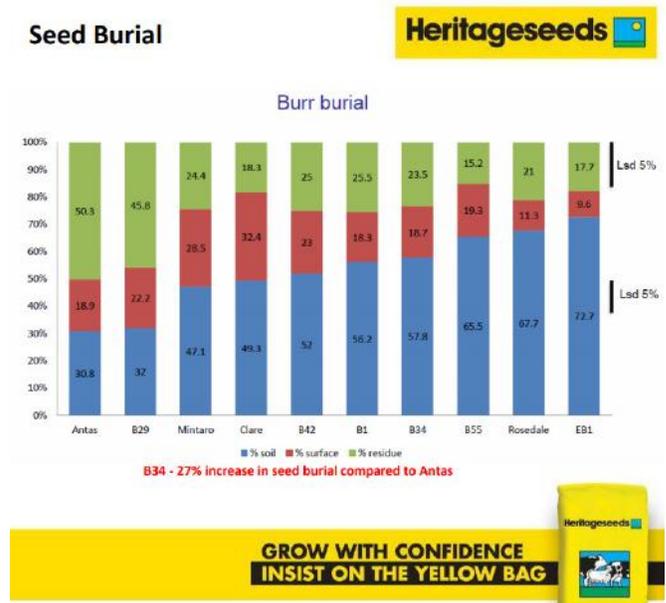
The table below shows 3 Sub groups and where the varieties fit in regards to flowering date and hard seed levels.

Sub Variety	Sub Type	Days to flower	Hard seed percentage
Leura	Sub	151	12
Rosabrook	Sub	143	29
Narrikup	Sub	136	22
Bindoon	Sub	108	24
Napier	Yann	140	42
<b>SF Rouse</b>	<b>Yann</b>	<b>131</b>	<b>24</b>
Gosse	Yann	128	16
Riverina	Yann	122	24
<b>Yanco</b>	<b>Yann</b>	<b>121</b>	<b>45</b>
Trikkala	Yann	117	14
Antas	Brac	134	30
<b>"B34"</b>	<b>Brac</b>	<b>128</b>	<b>51</b>
Mintaro	Brac	114	37

Heritage seeds have been working on a new Brachycalycinum sub clover with greater emphasis placed on seed burial/persistence. Brachycalycinum sub clovers or commonly known as Bachy's, include varieties like Antas, Mintaro and Claire. Although typically Brachy's aren't as tolerant of highly acidic soils as Yannicums or subterranean subs, dry matter production can be very high and this group of subs need to be considered when choosing a pasture mix. Some troubles with varieties in this group are with seed burial that has affected persistence.

Antas has set the benchmark for Sub Clover dry matter production in the region, but persistence has been a problem. As the table below shows seed burial of Heritage Seeds new sub breeder line "B34" shows 27% better seed burial and 21% more hard seed levels to help with persistence, while still giving similar dry matter production. This exciting new variety is aiming to be released in 2020. B34 will be added into McDonald Rural Services' evaluation sites this autumn.

Table Below: Showing "B34" Seed burial well ahead of Antas



## Depots

Coleraine	(03) 5575 2777	Mt Gambier	0408 646 220
Heywood	(03) 5527 1777	Edenhope	0429 198 534
Casterton	(03) 5575 2777	Frances	0418 330 267
Hamilton 0417 752 777			



### What is selenium and why is it necessary?

Selenium is a trace element which is essential for animal nutrition; deficiencies can cause serious problems ranging between muscle dysfunctions to death. However, it should not be confused with other diseases that can have similar symptoms. Selenium is important in maintaining growth in young stock, fertility in ewes and acts as an antioxidant which aids in the prevention of various other animal diseases.

*For wool producers it is particularly important as it is crucial for wool growth; up to 20% of a sheep's total selenium levels are found within the wool. Production responses in terms of wool growth have been in the order of 5 to 10 per cent with selenium supplementation, with the effect carrying on for 2-3 seasons.*

### What are the signs of a selenium deficiency?

The most obvious clinical signs of a deficiency are found in young stock ie: calves and particularly lambs, with 10% of the flock or herd being affected. Some of the symptoms most commonly seen in young stock are a reluctance to move, an arched back, scouring, and generally poor production both in growth and wool.

Care should be taken to determine the actual cause of the clinical signs, as an overdose of selenium can be toxic; an oral dose of 10 – 15 mg is known to kill lambs, as well as a 5 mg of selenium as an injection. Stressed animals will be more susceptible with the toxicity ranging from.

### How do I know if my stock need selenium?

Soils and pastures can be tested for selenium deficiencies but to get a more accurate assessment you should talk to your local veterinarian and determine whether your area is affected. For an accurate assessment blood tests or liver samples can be taken from the animals at slaughter, at the same time copper and cobalt levels can be checked as well.



Diseases that are associated with selenium deficiencies are:

Diseases	Age Affected	Clinical Signs	Comments
Congenital White Muscle	New born Lambs	Sudden death, lameness, reluctance to move	On heavily supered, clover disease dominant pastures in lush seasons.
Delayed White Muscles Disease (WMD)	1 to 3 months	Lameness. Reluctance to move, "paralysis"	On heavily supered, clover dominant pastures in lush seasons.
Weaner ill-thrift	Weaners	Poor Growth and wool production	Not necessarily associated with WMD
Scouring	Young Animals	Scouring	Occurs on selenium responsive ill-thrift properties.
Infertility	Ewes	Dry ewes due to embryonic mortality	Occurs only on WMD properties

Typically pastures that have shown to be deficient in selenium tend to be found in areas that have acidic basalt/granite soils, a rainfall over 450mm, are clover dominant and are known as having a heavy or long-term fertiliser history, particularly with Sulphur fortified superphosphate or gypsum products. All, or a combination, of which can be found in the Western District of Victoria.

Animals access selenium through pasture plants even though this particular trace element isn't required for plant development. Although selenium levels can change throughout the year and tend to be at their lowest when the plant is actively growing through spring or when there has been a good autumn break followed by a clover dominant spring. Therefore, if taking tests from pastures for selenium, a single sample may not provide a reliable diagnosis.

### Prevention and Control of Selenium Deficiencies

There are a variety of different products on the market to correct selenium deficiencies and once an accurate diagnosis is made you need to make an assessment based on what is the best solution for your enterprise. Once pasture is treated with a selenium fertiliser, all stock are protected straight from birth. This isn't the case with drenching, vaccinating or administering bullets. Drenching and vaccinating offer short term protection for a few weeks at best. Selenium bullets can be administered to lambs at 8 weeks and older and offer protection for 3 years. Another bullet must be administered at the same time to act as a grinder. This need not be a Selenium bullet. Selenium fertiliser treatments don't require any extra stock handling and will also reduce animal stress compared with the oral and injectable treatments which only offer short term protection.

Vickery Bros have available selenium additives for your fertiliser which can be blended for your specific requirements that will give you protection from selenium deficiencies for up to 2 years which is the quickest, most reliable and economic form of application.

At current prices, adding sufficient selenium to your annual fertiliser application to supply animal requirements for 2 years costs around \$10/ha. If you are turning off 8 lambs/ha this equates to 62.5 cents/lamb. 10 lambs/ha turned off would be 50 cents/lamb.



# THE IMPORTANCE OF P-K-S

REBECCA STEWART

Who doesn't like to save money?

A fertiliser bill is one of the biggest unavoidable accounts a farm has each year so why not spend your money wisely?

Looking at the projected costs of fertiliser for the 2019 season, it is clear to see that the early bird will catch the worm. Like most years, early applications of fertiliser have great incentives behind them not only in terms of costs but also the timing of nutrient application. There have been numerous research trials conducted over the years proving that there are no pasture yield differences between summer or autumn applications of phosphorus fertiliser. Logistically looking at the workload that presents itself later in the season, waiting times for fertiliser applications escalate.

We talk about it every year; the importance of phosphorous (P), potassium (K) and sulphur (S) must not be overlooked. Once a soil test has been conducted to see what rates of nutrient are required, it is easy to organise a budget of what will be removed from stock/crops. Conducting a soil test will not only assist you financially in knowing what is required of the paddock but also the improvement of pasture growth by putting out what the plants need.

Most of the paddocks I have been soil testing have been coming back with a mixed bag of results in terms of P levels. A lot of the pastures that we have been trying to improve and pouring extra fertiliser on over the last few years have had some good results. There are also plenty of tests coming back showing that there is some improvement needed. A lot of these paddocks that we are testing with a low P level are predicted to be at lower levels due to the need for pasture improvement. Phosphorus application generally occurs during summer and autumn to ensure there is enough available P in the soil for the peak growth period of the plants. If the P application is left too late after the break it can result in reduced production as the P is not available at the beginning of this peak growth period.



With the year turning out the way it has over the country, we have seen a lot of farmers conserving fodder not only for their own use but for sale in drought affected areas. Potassium and spring boosters have been relied on heavily in good growing areas to extend the season. A lot of the soil potassium levels are still lower than required throughout large parts of the state. With potassium being required in large amounts for water movement and retention, you can definitely now see paddocks with adequate K and paddocks which are deficient. With K giving plants tolerance to cold, drought and disease, it is most definitely a nutrient that everyone needs to be more aware of. The removal of potassium in hay crops is often dramatically underestimated by farmers. With one tonne removing 15-20kg/ha of potassium, one single cut of hay can remove up to 40-80kg/ha of K which is equivalent to 80-160kg/ha of potash fertiliser. **Potash for 2019 will be around \$1.5/kg of K.** If you want to extend the growing season as long as you can, put potassium in the budget for 2019.

Over the last couple of wetter winters and an extended spring, we have noticed the reduction of sulphur from the soil surface. The soil tests that I am receiving are showing still quite lower than recommended levels of S over all soil types. There has been an increase in the use of elemental sulphur (sulphur bentonite) within blends not only to increase the S applications but to use two forms of nutrient (readily available and slow release). The use of elemental sulphur on the lighter textured soils within the region has been of great benefit and I feel usage of this product will continue to increase. We all know how important sulphur is; over any enterprise the use of this nutrient is paramount to production systems. In wool, clover and canola production, sulphur is a key component. Whether you are using single super or a blend with sulphate and elemental sulphur, do not forget the importance of S this season.

**With the custom blending facilities available at Vickery Bros, we can easily accommodate whatever blend is required based on your soil tests. Contact your local Vickery Bros agronomist to assist with your nutrient planning for 2019.**

## Vickery Bros. Agronomy Team

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With ewe joining just around the corner, now is the time to be thinking about what you may be able to do increase your number of lambs to weaning or market.

Many of you would have already heard about some of the important things that help get ewes in lamb. Addressing these issues can be simple, some others not so simple.

We know that condition scores, food on offer and fertile rams play a very important role. But did you know there could be a hidden disease endemic on your property that could be affecting your lambing percentages?

**Campylobacter** could well be that one thing. Campylobacter, a bacterium that causes late term abortions and still births in lambs, is more common than Australian sheep producers think.

### Facts

- Campylobacter is the most common cause of abortions in sheep.
- Campylobacter is a bacterial infection – C. fetus fetus is commonly associated with abortions in sheep. C. jejuni is found in most Australian sheep and is also known to cause lamb abortions.
- Reports from the MLA and other sources show lamb losses from Campylobacter average 9%.
- Maiden ewes are often naive to Campylobacter.
- You may not know you have Campylobacter on your property.
- You may not see fetuses on the ground – just a reduction from scanning to lamb marking.

### Signs

- Abortions and stillborn lambs.
- Weak or unviable lambs.
- Blood stained breaches.
- Poor scanning to marking percentage.
- Large gap between maidens and the main flock.
- Many aborting ewes show no signs of ill-health and recover

### How do I know if my farm is affected by Campylobacter?

Considering blood test results from across the country, there's a high chance Campylobacter is lurking on your property. In recent studies, over 95% of flocks were found to be exposed to C. jejuni. When it comes to C. fetus fetus, the main abortion causing strain was found to be affecting up to two thirds of properties tested. If your property has unexplained losses between scanning and marking, low marking percentages, signs of abortion, blood stained breeches, or dramatically lower marking percentages in maiden ewes – Campylobacter could be the cause.

### Consider using Campyvax, which ewes should you vaccinate? When should I vaccinate?

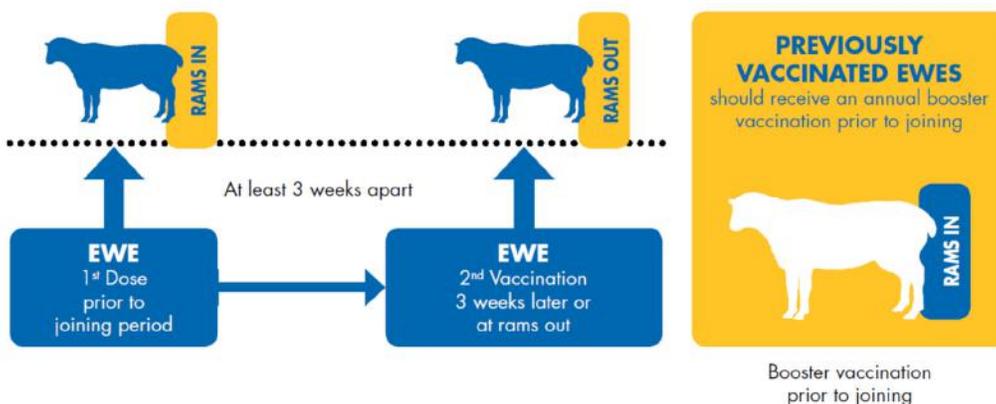
Due to the high prevalence and risk of Campylobacter exposure, it may not be a case of only vaccinating your maidens. The following situations may benefit from vaccinating the whole flock with Campyvax.

- All studs should vaccinate to protect high value stock.
- Commercial producers may benefit from vaccinating the whole flock due to the importance of high reproductive rates.
- Vaccination is vital in situations where stocking rates are high and abortion storms are more likely, such as intensive rotational grazing or containment feeding.
- Producers who supplement feeding during pregnancy should consider vaccination, due to the high stocking environment and higher than normal faecal contamination.

Campyvax is a 2 mL subcutaneous vaccination that is given high up on the neck behind the ear. Unvaccinated ewes should receive a sensitiser vaccination prior to joining and a booster dose a minimum of three weeks later.

### What is Campyvax?

Campyvax is the only pre-joining vaccine that helps control reproductive losses due to Campylobacter species in Australian sheep. It aids in the control of both strains of Campylobacter – C. fetus fetus and C. jejuni. Campyvax offers sheep producers a vaccination option where Campylobacter is identified or suspected as causing potential production problems.





# CRICKETS; LIFE CYCLE AND CONTROL

REBECCA STEWART

Once again in this upcoming season, the early feed will be vital for all producers. To ensure that your pasture can get a good start, you will need to control the cricket

populations through either baiting or spraying. To ensure that correct control is taken to eradicate the population, the life cycle and behaviour of crickets should be understood.

The Black Field Cricket (*Tellegryllus commodus*) is a large problem in our area during the start of the season when the eggs start to hatch during December. Most of the time they are not controlled until they have caused substantial damage to emerging crops and pastures. Crickets produce one generation throughout the year but the offspring may be at different stages throughout the season as not all eggs hatch at the same time.

During the winter months the eggs are held in a dormant state (diapause) in the soil and start to come out of diapause after there has been a period of high temperature. It takes three days of 30°C to begin the development process of the embryo within the egg and then hatching occurs. It takes about 14 days for the egg to develop into a nymph and hatch. After hatching, the nymphs eat and grow rapidly. Research trials have shown that the small nymphs can cause herbage losses of up to 15mg of Dry Matter (DM) per hectare, per day. Nymphs go through a process of moulting, where they shed their skin 9-10 times throughout this growth stage to later produce wings as an adult.

This moulting process will take between two and four months depending on the conditions. The cricket thrives at temperatures between 26-32°C and the timing of their life cycle will depend on these surrounding temperatures. At the end of the moulting period, when the nymphs are at a reasonable size (late instar in image 1) they consume around 31mg/DM/ha/day. As early adults, the crickets cause the most damage and consume 35mg/DM/ha/day. With a population of simply five crickets per square meter (considered low), research trials have estimated to show crickets cause a pasture loss of 1.8kg/DM/ha/day.

*"This is equivalent to 1.5 ewes/ha/day! With the feed issues that we face this summer I wouldn't have thought that anyone could afford to have that extra feed devoured up by the crickets!"*



Adult crickets commonly live for 2-3 months depending on the surrounding temperatures, in severe cases the crickets can live for up to six months. The female crickets deposit their eggs into damp soil through a tube-like organ when conditions are around 30°C and can lay between 500-1000 eggs under these prime conditions. The eggs of the cricket are small white oval shaped (3mm in length) and go into diapause when soil temperatures are 12.7°C.

As small nymphs and early adults, crickets cause the most herbage loss of 31 and 35mg/DM/ha/day. To control these populations effectively, you must ensure you are choosing the correct method of eradication. The use of a non-residual synthetic pyrethrin insecticide should be considered if there is a green pick for the crickets to uptake the insecticide. In areas where there is no green pick throughout the paddock, baited grain treated with Maldison 500 (or equivalent) should be applied.

Baited grain can be treated and applied on affected pastures through the Vickery Bros. depot. To supply, treat and spread the affected paddocks with the grain, it costs \$24/ha and the grain is applied at 15kg/ha for effective control.

Controlling the cricket problem starts NOW! Be proactive...not reactive

#### References:

- R.H. Blank & M.H. Olson (1981) The damage potential of the black field cricket *Tellegryllus commodus*, New Zealand Journal of Agricultural Research
- T. Walker & S. Masaki (1987) Cricket Life Cycles, Evolutionary Biology Vol. 21, Plenum Publishing Corporation

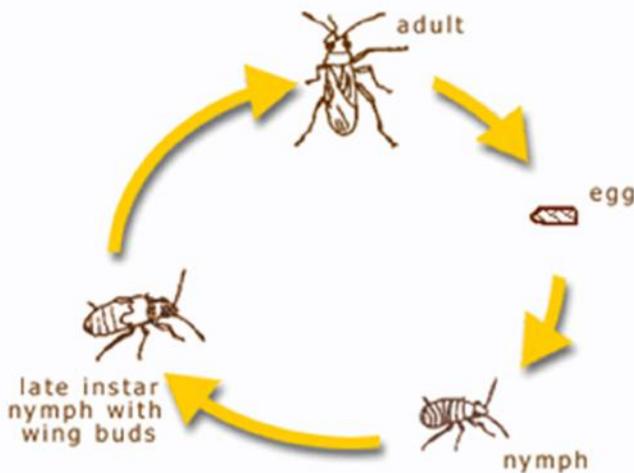


Image 1: Black Field Cricket (*Tellegryllus commodus*) life cycle



Contact the professional team at Vickery Bros.

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## SEASONAL REMINDERS

- Keep an eye out for crickets
- Make sure your dumpsite has been graded
- Make the most of the early bird incentives
- Take advantage of the lime deal to assist cash flow

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

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