

PASTURE ACUMEN

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Pasture Acumen inaugural edition

Welcome to the inaugural Pasture Acumen newsletter☺. It will initially be produced five times per year – February, April, June, August and October.

Similar to the Agronomic Acumen's "Agronomy Newsletter" that concentrates on the best agronomy for crops, this newsletter will concentrate on the best agronomy for pastures.

It will always be an independent view as it is in the cropping "Agronomy Newsletter". A spade will always be called a spade☺. There will never be any advertising and if I mention a product is useless or is worth using, it will be because my experience has led me to that conclusion.

If you have any suggestions for this newsletter, I will always be very keen to hear from you. Please speak up because usually your suggestions or concerns will be what many other readers are also thinking.

If you would like to subscribe to this newsletter, please fill in the enclosed form, or call our office, or go to our website and fill in the subscription form.

Can we make \$1,000/ha profit?

TS Eliot has an excellent quote that I use in my thinking about agriculture. The quote is: "Only those who risk going too far can possibly find how far one can go."

On one hand we must never farm to perfection. We are not in a perfect world and things will always go wrong

or be tough on us ever since Adam was a wimp of a man standing next to Eve ("The Silence of Adam" is a good book to read☺).

However, we should never farm for the worst season either. Most do though☺. We also readily blame the weather or other things on our profitability. Any "benchmarking" report shows rainfall or rainfall distribution is *not* the main

Just because no one had achieved 4t/ha did not mean it was not possible. It just meant everyone was farming poorly. It is the same with pastures and livestock.

Before I continue, I need to make the following comment. We farm for profit, not potential. But, and it is a huge but☺, if you do not have an eye on the potential, you will not be making all of the profit that is waiting for you.

You will not know what is possible and will be thinking that what everyone is doing around you is all that is possible.

If you receive 600mm or more of rainfall, the chances are you are only carrying somewhere between 8 and 15 DSE (Dry Sheep Equivalent) per hectare. This is not much better than the best farmers who receive half that amount of rain, and is about a quarter of what you can achieve, and some people 'are' achieving.

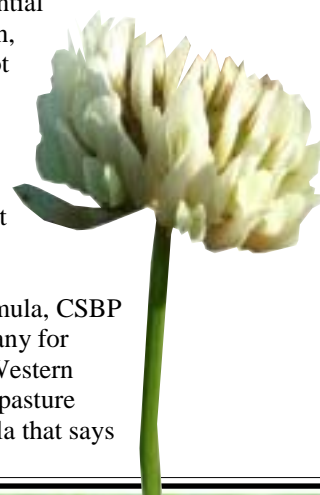
Don't fall into the trap of saying it is not possible.

Instead, ask how is it possible☺?

So what is the potential with pasture production and livestock carrying capacity?

I have seen several formulae used to calculate the potential pasture production, but the point is not to get lost in the detail. Any formula is only a guide to what is possible and is not a definite.

So to use one formula, CSBP (a fertiliser company for those outside of Western Australia) have a pasture production formula that says



Prompts for the coming months

- 1) Soil test the paddocks this summer.
- 2) Apply high quality lime to all paddocks with pH <4.5.
- 3) Spread or spray trace elements during the summer if needed.
- 4) Spray for locusts if needed.
- 5) Send in the subscription form for this newsletter☺.

reason for large differences in profitability between farmers. Your decisions or management skill is the main reason.

I have a newspaper clipping from a response to a press release I made as a cropping researcher back in 1988. My press release was pointing out that 4t/ha wheat crops were easily achievable in the high rainfall areas.

The farmers response was that even in the perfect season, 4t/ha was not possible.

Well, anyone who gets 4t/ha now has no bragging rights. Maybe if you achieve 6t/ha as an average you can, but lots can go wrong and you can still get 4t/ha wheat crops these days.

28kg/ha of dry matter is produced per mm of water. They remove 50mm from the growing season rainfall as being lost to evaporation, and 500kg/ha of pasture as lost by being trodden on, and spoiled by the smelly stuff ☺.

They then assume 1kg/ha/day of dry matter is needed to maintain 1 DSE (Dry Sheep Equivalent based on a 45kg dry ewe or wether).

So a 400mm growing season rainfall gives ~25.5DSE's/ha and 500mm gives ~33DSE's/ha as the potential. This roughly equates to 2-3 cows/ha, but this is only with winter pastures and does not include the more efficient use of perennials like kikuyu – I will cover that in a future newsletter☺.

Those in 600+mm annual rainfall areas with kikuyu should be able to get close to 4 cows + 4 calves per hectare, or 40 ewes + 40 lambs per hectare.

That is potential, which like all Olympic records will one day be beaten.

Using some actual data from my neck of the woods (the Great Southern in Western Australia), two farmers are averaging over five years, >5DSE's per 100mm winter rainfall. So in a 400mm growing season rainfall area, they would be carrying >20DSE's/ha per

year, which is not far off the potential of 25 DSE/ha.

These are actual results, not theoretical potentials, and are a five year average. How are you going? If you are a good average farmer, you are probably in the 1.5-2.0 DSE/100mm rainfall. You have a long way to go to achieve what is possible.

Try not to say “yeah but”☺. Ask, “OK, so how are they doing it and why am I not doing it at the moment?”

I consider it one of the main aims of this newsletter to answer that last question. I hope you enjoy the journey and gain very profitably from it☺. It will be a learning journey together as I do not have all the answers (no one does), but I hope I can pass on all the current best knowledge as we learn it.

So to answer the heading of this section, the answer is yes you can. It of course does depend on rainfall (you can not achieve it in a desert), but as I hope you will learn, what “you” do is the most important factor, not rainfall. When you are doing everything well, then rainfall becomes more important in determining your profit.

In the area of my parents farm, a typical stocking rate is 8-10DSE/ha (700-800mm rainfall). There is one farm

that is around 45 DSE/ha and we are getting close to 50 DSE/ha (am aiming for 60 average).

No doubt there are lots of “yeah buts” about soil types, size of farms, must need a fortune in hay or grain to keep them alive etc...

It is very easy to get the pastures to carry at least 3 cows + 3 calves /ha (or 30 ewes + 30 lambs) in this region. Very easy. It just needs good agronomy.

5 cows + 5 calves per hectare would be hard ☺ but it is theoretically not impossible.

Some quick numbers. Assume you are in a 600mm growing season rainfall area and calve or lamb in late winter (the most efficient use of the Spring flush). The theoretical potential is about 40 DSE/ha. However, I will assume you are an excellent farmer with pastures in top condition but you are only producing 3 calves or 30 lambs/ha each year.

At \$500/head for 300kg calves or \$50 for a lamb, that gives a gross of \$1,500/ha. If costs are very high at \$500/ha, that still leaves a gross margin of about \$1,000/ha. Of course prices can be higher for the sale of the progeny, and costs can be lower, but



Some of our own cows on what I call my little research station☺. It is my parents farm. This was taken on 23rd September 2006 and currently (October) it has 30 mated cows, 6 mated heifers, one bull and 28 calves — on 10 hectares (24 acres). Am aiming to have 40 cows + 40 calves. There is a file on my website with more detail of what I have been trying to achieve on the farm (www.agronomy.com.au and click on “Articles” in the menu on the left hand side then look for Listan farm history).

don't get lost in the detail or yeah buts☺. My point is that it can be done even better than that.

You can do a similar calculation for wool. One superfine wool grower has achieved better gross margins than this and they are only in a 400mm rainfall area. >\$1,000/ha profit is not impossible. Be curious and not dismissive. What you think is impossible is possible.

With the current stock prices, in the high rainfall area where I live (700-800mm/year), it is possible to achieve \$100,000 profit from 150 hectares (~370 acres) with beef cattle, and within a few years, I expect the top producers will only need about 100 hectares to achieve \$100,000 profit. Did I hear a "yeah but☺?"

Steps needed to increase profitability

Cutting costs is not the way if your pastures are starving. Sowing the latest and greatest ryegrass or clover will not make much difference (see "Feed the weeds first" article in this newsletter). You do not need lots of hay or grain either.

Excuses (yeah buts) and poor agronomy are usually the reasons why you are not making as much profit as you can make with livestock. However, we start from today.

Firstly, you need to work out what your current stocking rate is and compare that to the potential.

Start by working out what DSE/ha you have been averaging per 100mm of growing season rainfall. Attached to this newsletter should be an article on DSE ratings to help you, or you can download one from the following website (click the link if you are reading this newsletter in its pdf format).

www.agronomy.com.au/download/DSE_ratings.pdf

Consider the rough potentials based on growing season rainfall: 200mm – 10DSE/ha, 300mm – ~17.5DSE/ha, 400mm – 25.5DSE/ha, 500mm – 33DSE/ha, 600mm – 40.5DSE/ha and 700mm – 48.5DSE/ha.

Wherever you are with your stocking rates, the chances are you are limiting your own profitability because your vision is clouded of what is possible. You are probably thinking if it was possible, then why hasn't someone already done it in your area☺?

The answer is usually that everyone around you is farming way below what is possible☺.

As with crop agronomy, there are two planks or foundations in pasture nutrition that must be fixed before you can get the pastures really pumping.

The first foundation is soil pH. In my region, acidic soils are common. Most of the soils in the high rainfall area near me are very acidic☺ - as in 3.4-4.0 in Calcium chloride. That is poisonous and toxic to most pasture plants,

especially the ones we want to grow vigorously – clovers and ryegrass.

It is pointless to add significant amounts of fertiliser until you fix up the soil pH when it is that low. When the pH is raised to around 5.5, then the roots can explore more soil and gather up more nutrients so that you do not need to add as much fertiliser.

It must be your priority to fix the soil pH if it is below 4.5. Miss out on something else but get lime added ASAP to your pastures.

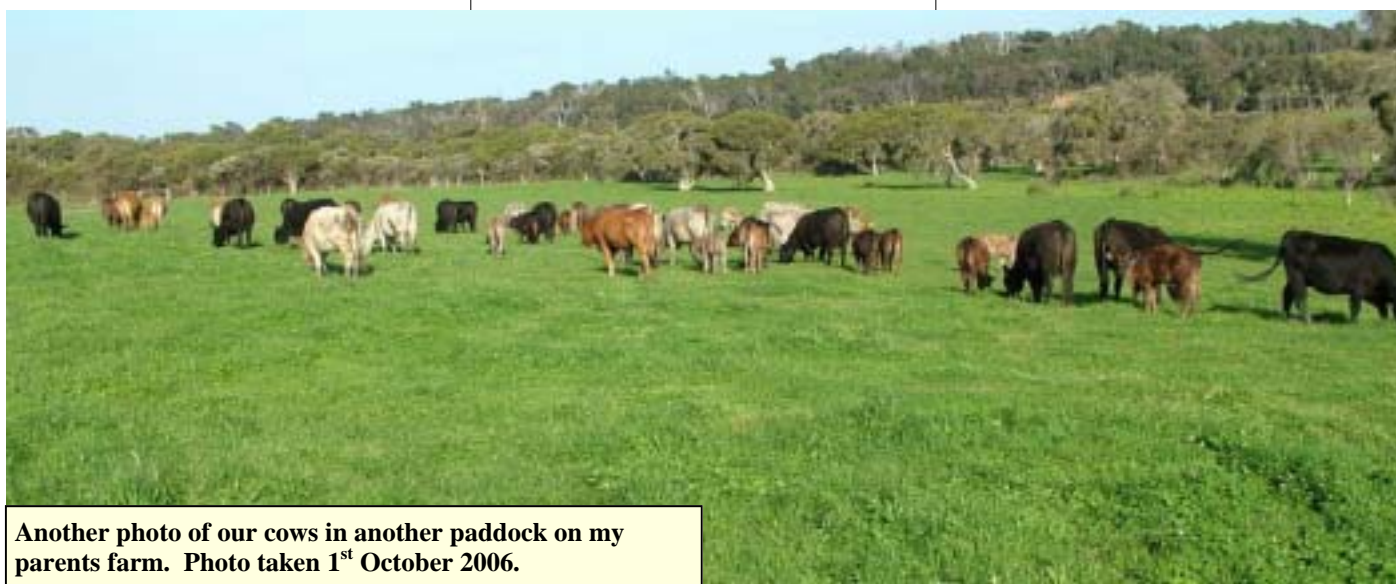
The second plank or foundation is to make sure trace elements are not deficient, and not even marginal. Once done, then you will get a bigger bang for your buck with other fertiliser applications.

Western Australian agriculture did not thrive until trace elements were added to superphosphate. Trace elements are so important that a slight deficiency can give more than 20% reduction in plant growth without any visual symptoms.

Trace elements become even more important as you start asking the plants to grow more.

When trace elements are OK, the nutrients to then concentrate on are phosphate (P), potassium (K) and sulphur (S).

However, for most people they are happy to apply these three nutrients each year with a Super:Potash type fertiliser, but have neglected the pH and



Another photo of our cows in another paddock on my parents farm. Photo taken 1st October 2006.

trace elements. This is the wrong priority. You will not get the biggest bang for your P, K and S inputs until you fix up the pH and trace element deficiencies.

As you start pushing the pastures to produce more, only feed your pastures enough to feed the amount of livestock you have on hand.

There is no point, other than pose value perhaps☺, to throw 400kg/ha of Super:Potash fertiliser and 300kg/ha of ammonium sulphate at your pastures if there are not enough stock present to eat the extra pasture growth.

When helping farmers go from 7 DSE/ha to 30 (if the potential is 40-60), I do not suggest they start applying nitrogen until they need the extra feed. They can produce enough feed for most of the season just by attending to the pH, trace elements, phosphate, sulphur and potassium, insect control (if warranted) and rotational grazing.

Nitrogen and sulphur are what I call your “get out of jail” card.

Rotational grazing can double your stocking rates. You are missing out big time if you do not graze your pastures this way. This a big topic that I will not go into here, but it does increase the pasture production and is very easy to do.

Insect control is helpful, but not critical. In areas with dry starts to the season, particularly if it is cold, you will benefit more from insect control early in the season than higher rainfall areas – eg 100ml Talstar (100g/L Bifenthrin) + 150ml Lemat (290g/L omethoate) sprayed just after the break of the season.

I will cover this in more detail in future newsletters because there are side effects (more slugs) and there are timings and other chemicals that can be used to reduce the problem pests while encouraging the good bugs to stay alive.

Perennial pastures are very helpful to carrying capacity and profit, but there are areas where they are of less benefit. These areas are the ones that have nearly all their rainfall in winter and

have very dry summers (5-6 months). In WA, examples of these areas are Darkan, Williams, Wagin etc...

Though they are high rainfall in winter, those areas average less summer rain than Southern Cross (edge of the desert). These areas need to concentrate on conserving excess Spring pasture growth to feed back later, but they can still target the deeper soils to plant to species like kikuyu.

In other areas that receive 40% or more of their rainfall from October to March, you will benefit the most from perennials.

I will discuss perennials and varieties of all types of pastures in future newsletters – what is good, what is over rated etc....

Conclusion:

For most people, it is excuses that are preventing you from maximising your profits. Just because no one else near you has done it, eg carrying 3 cows + 3 calves/ha, does not prove it cannot be done. It just means everyone around you is farming poorly.

To get the most out of your pastures, you need to lay the foundation first, which is make sure the pH and trace element levels are good, and then make sure the P, K and S levels are good and there are no insect problems.

Use nitrogen as your get out of jail card. You will get the most benefit

from it when everything else has been fixed first.

Rotationally graze. Most farmers I begin to help have all the excuses under the sun why rotational grazing will not work. Six months on and they start complaining they do not have enough money to get more stock to eat the excess pastures☺.

Do not fall back to excuses. Learn and implement the right management as soon as you can.

Locust control and dung beetles

Nearly all the insecticides you can use to control locusts will kill dung beetles☹. Cypermethrin, Alpha-Cypermethrin and Chlorpyrifos (eg Lorsban) are the cheapest for locust control, but they are also some of the deadliest on dung beetles, and other beetles like Carabids that eat pests like caterpillars and slugs.

There is a better strategy if you have crawling locusts devouring your pastures and gardens. The best insecticide is Regent (200g/L Fipronil). Readers in Victoria will be able to also use Cosmos (500g/L Fipronil) but the rest of Australia can only use Regent.

Regent will kill dung beetles (and just about every hard shelled insect), but because dung beetles mainly stay in the dung pats and locusts move a lot, this



Dung beetles feasting on their version of chocolate!

difference enables a strategic application of Regent to be made that will control the locusts without harming every dung beetle in the paddock.

The Regent label in Australia says to use 6.25ml/ha for locust control if sprayed across every inch of a paddock, but the better way is use 20-30ml/ha in strips.

This gives more residual control (I have seen it control them for more than two months) and if you only spray it in strips, you won't be applying more product than you are allowed to per hectare.

Spray the Regent around the fencelines, road tracks, bare ground and if needed, in strips across pastures (there is a grazing withholding period of 14 days for pasture). So at 30ml/ha, you would need to spray every fifth boom width if spraying across pastures so as not to exceed the label limit.

At 20ml/ha, every 3½ to 4th boom width only should be sprayed. I recommend never spraying Regent across any pasture unless sprayed in strips because it will kill many good bugs if you spray every inch of the paddock.

Regent works best on crawling locusts. If locusts fly in, then you will need to either tolerate the locusts, or spray something like 150ml/ha Cypermethrin (200g/L) across the whole infected area, but this will kill every good bug as well (some states may only be allowed to use alpha-cypermethrin on pastures – check labels or permits before spraying).

Cypermethrin will give an instant kill with very little residual control whereas Regent is slower to work but lasts much longer. Cypermethrin comes in many versions and depending on the label, withholding periods range from 7-28days.

Snippets

1) I find CSBP's soil test the most reliable to interpret, but I place no value in any soil test on trace elements. How much trace element is detected in a soil test has no relationship on what

the plant can access.

The only measurements I take notice of are the pH and aluminium, phosphate and reactive iron (or phosphate retention index for some soil tests) and the potassium levels. The rest has little or no bearing on what I would recommend be done to the paddock.

2) Calcium to magnesium ratio's are codswallop and mean nothing significant to plant production except in the extreme cases. Not one trial has shown it matters for all ratio's in between the extremes!

3) When thinking about adding lime, think of the amount of "useful" lime being added to a paddock and not the tonnes of product per hectare. There is a huge difference.

There is a free lime calculator on my website (www.agronomy.com.au and click on the Lime Calculator link on the left) to use and find out which lime source is the best one for you.

In southern Western Australia, most lime sources are inferior to the lime sands from north of Perth. A lime supplier from hundreds of kilometres away can be cheaper than one source that is 10km away. That is how bad some of the lime quality is in WA.

4) Dr David Stephens and his team from the Ag. Department in Western Australia have weather models that are the only accurate ones you could ever make a decision on.

The current outlook for southern Australia is still hot and dry but things are looking much better from early next year for rainfall.

There is a long way to go and it is not until February that his models become very reliable for what the coming years rainfall might be. I will keep you updated in these newsletters on what his models are predicting.

5) Applying trace elements to pastures is similar to crops. Trace element "blends" do not work. Blends are where each granule is different. For example, a fertiliser blend might contain granules of superphosphate and granules of zinc sulphate. You might as well be adding no zinc.

You either need to use a compound fertiliser (each granule is identical), or you spray a solution of trace elements on the bare ground (not on green leaves as the livestock will eat all of it).

It is slightly different for **Selenium** and **Cobalt** that are quite soluble and will move through the soil. A blend of these nutrients will work, but not with copper, zinc, manganese and molybdenum.

Re-sowing pastures (feed the weeds first)

The new clovers and grasses sound excellent if you read each companies spiel. It makes it sound as though you would be the most profitable farmer around if you grew the latest and greatest varieties.

I am amazed that so many people are happy to spray out a paddock to sow to a new whiz bang variety. This is usually the wrong thing to do if you want to make the most profit you can out of your pastures.

Firstly, unless you are close to the potential pasture production and carrying capacity on your farm, you are doing the same thing as shifting the deck chairs on the Titanic.

Any new whiz bang variety will not double your pasture production. There are other management things you should do first.



Lime spreading.



These times are when the break of the season is early and Dr David Stephens© predicts a good rainfall year.

In a year like this where he predicted a wet summer, but a dry winter and Spring, it would not have been the year to resow a pasture for

most areas.

But next year, 2007, if his current predictions remain the same in February, which is for a good rainfall year, then it could be a good year to resow a few paddocks.

I will comment on this more early next year after I hear what Dr Stephens thinks 2007 will be like. I will also then comment on varieties.

Nutrient in the spotlight

This will be a section of the newsletter that puts a nutrient under the spotlight and the first one is molybdenum (Mo). It is the hardest trace element deficiency to detect visually and in plant tissue samples.

Most of Western Australian agriculture could not happen without the use of copper, zinc and molybdenum (moly).

Moly is needed in grasses for the conversion of nitrate nitrogen into proteins, and in legume nodules it performs a vital function in converting nitrogen gas into ammonia.

Signs of mild molybdenum deficiency are clovers are small and look nitrogen deficient (bottom leaves are yellow to white). In those plants, nodules may be slightly pink or green or white. The redder it is, the better. Dig some up and check. Also with mild

molybdenum deficiency, adding nitrogen to a paddock does not respond as quickly or as fully as it should.

Grasses can look nitrogen deficient even though plant tests show they are high in nitrogen because they are unable to convert it into protein.

The main thing to remember with molybdenum is do not over do it. A little is good, but lots is bad. It can induce copper deficiency, which is not good for plants or livestock, especially cattle. You can over do some trace elements without too many consequences, but do not over do molybdenum, selenium or cobalt.

In severe deficiencies, especially on very acidic soils, almost no plants will grow and clovers will be non-existent.

To fix a deficiency, in many cases lime will raise the pH to make enough molybdenum become available in the soil.

If your pH is OK and you are sure there is still a molybdenum deficiency, either spread a fertiliser like 200-300kg/ha Super CuZnMo, or spray ~50g/ha Sodium Molybdate when there is plenty of bare ground. It is very important to make sure copper levels are high when adding molybdenum.

If after adding molybdenum your cattle start having runny poo's, watery eyes, rough coats etc..., immediately spray copper on the pastures (eg 500ml Coptrel + 0.1% wetter) or put out copper licks. Then spread copper fertilisers for a more permanent fix.

You should always have 10-20 times more copper added to a paddock than Molybdenum, unless you know the copper levels are already very high.

Secondly, there is an opportunity cost when you spray the paddock out to sow to a new one. When you spray a paddock out for resowing, immediately there is no production for a few months or more. Even weeds would be of some value to your livestock during this time.

The times I do suggest spraying a paddock out in preparation for resowing is when you want to establish a perennial, like kikuyu, or your current pasture really has nothing useful in it, eg, all reeds, sorrel, silvergrass etc..., or you are ready to make the most out of a better pasture variety.

If your current stocking rates are half of the potential, concentrate on getting the nutrition and utilisation of what you currently have before spending money on a new variety.

For many pastures, there are sufficient clovers and ryegrasses there to work with. In these cases, my advice is to "feed the weeds first".

In the majority of cases, you can double the pasture production and carrying capacity if you would only look after what you already have.

If you really wanted to sow a paddock to a new ryegrass, winter active fescue, clover etc..., then do it when it does not matter.

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