# FERTILISER PRICING 2023

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THE FERTILISER PROFESSIONALS

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What a year it has been in fertiliser! We have seen the biggest spike in fertiliser pricing since the 2008 GFC along with extreme volatility on the world markets with products such as Urea moving up and down (sometimes $100 per week), it has certainly kept us on the edge of our seats all year purchasing/securing enough product at competitive prices to ensure we have our customers' requirements available. Throw in the La Nina that we are still feeling the effects from, we are experiencing a year like no other. This will certainly give us some new challenges as we prepare for the upcoming Summer/Autumn Spreading season. We are forecasting a shortened spreading season, grain harvest will go well into January meaning our trucks will be tied up carting grain, paddocks still wet, grass will be long all leading to less time to apply fertiliser.

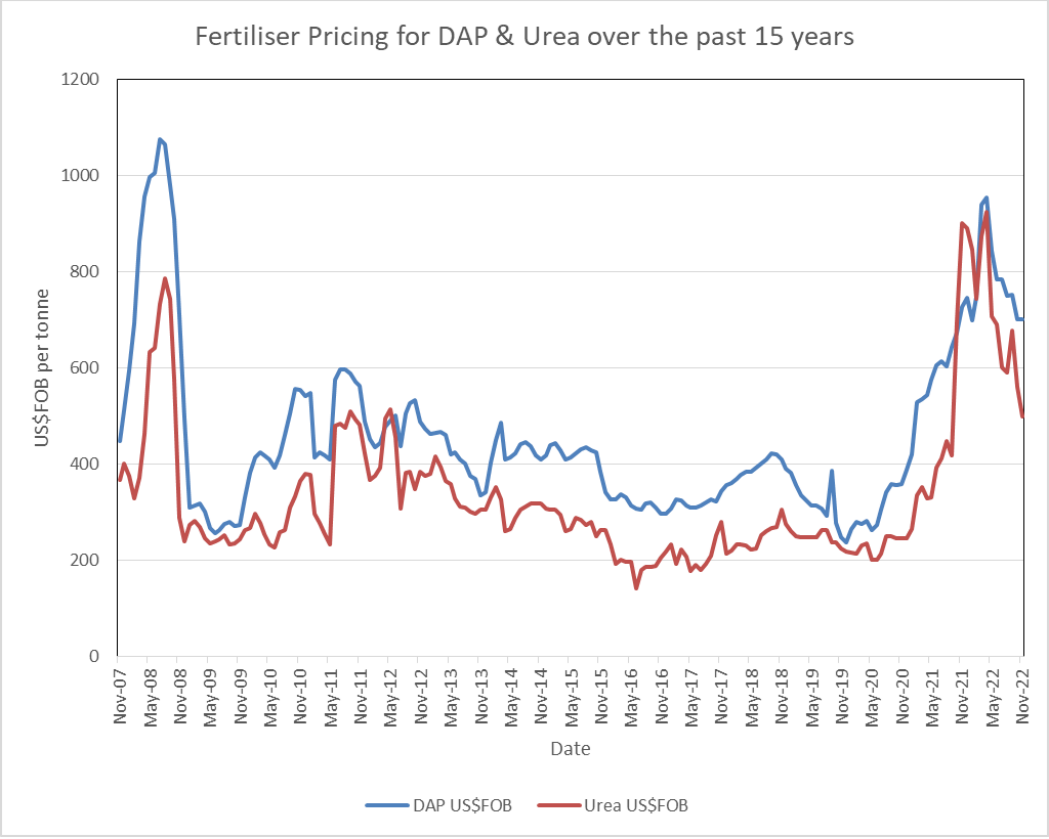
Over the past month world fertiliser prices have been the least volatile we have seen all year. They have been on a slow decline, historically this time of year demand around the world is at its lowest and prices tend to ease. Below is a graph of DAP and Urea pricing over the past 15 years, this gives you a great visual of what we have experienced especially over the last few years.

What does the pricing have in store for us in 2023 Summer/Autumn season.

·MAP/DAP pricing looks stable with no concerns on availability
·Urea is falling with lack of demand around major world markets (India the only exception) so we are expecting further price erosion in the coming months but it has been extremely volatile and can be hard to read.
·MOP pricing is expected to come off as new shipments arrive in Australia in Jan/Feb.
·Overall fertiliser prices will be lower than what we had through Feb- May 2022
·The Aussie $ has rebounded to sit around $0.68 after it dipped to $0.62 in October. With the higher fertiliser prices, every cent difference can have a + or - $10-20 per tonne change in the local price.

With the expectation of a shorter spreading season, we recommend you contact one of our Agronomists to talk about your fertiliser requirements for early 2023 to beat the rush and any delays in application.

With 2022 coming to an end, we are looking forward to providing the same great service to our customers we pride ourselves on in 2023.



# ECONOMIC BENEFITS OF RAISING PHOSPHOROUS FERTILITY

Franzi Riegger

I was asked to write an article about "What are the economic benefits of raising Phosphorus fertility?"

It is a tricky one to tackle as it makes me sound like a sales agronomist who works for a fertilizer distribution company. Now you may be thinking: "Well, that's what you are?! Will this be be another sales pitch from the fertilizer sales agronomist to hopefully increase the revenue of the business that she is working for?"

Not quite. My values, interests, and long-term vision, and the one of our agronomy team, are different to that. We might be on the "dark side" of this regenerative farming discussion; but for us too soil health and sustainability are top priority.

Because; to sustain a growing population – this population needs food. Agriculture will take care of it, and to reach sustainability in an agricultural business; we must work on:

-Healthy Soil
-Economic viability
-Greenhouse gas balance
-Animal welfare

To keep feeding our population we need an economically viable farming business. A farming business can only sustain itself if the farm land that the farming business sits on is also run sustainably; and to state that soil health is important for a farming business is stating the obvious. It is one of the main drivers to drive farm productivity, and you need productivity to be financially viable.

According to our "Agronomy community" Australia has 0.04% of the world's farmers; and we are working with 0.4% of the world's rainfall.

Still, we run some of the world's most productive pastures and by 2050 we will be responsible to feed an additional 2 billion people, by using even less water.[1] We therefore need to be more efficient at converting rain into the products we sell, so as to feed the population well into the future.

For most Australian farmers (maybe not applicable for this spring 2022), rainfall often is one of the main limiting factors to yields. Here in South West Vic & SE SA we are part of a "lucky" minority of Aussie farmers; farming in an area where a season is almost always guaranteed, and water most of the time is not a limiting factor to the productivity of our farming business. What in fact is determining the success of a business is not the weather but how well you can use the weather to your advantage and the decisions being made by the person that runs the show. Most likely YOU, who is reading this article.

So, if the amount of rain we receive cannot be controlled, we need to take control of the leavers we can pull to improve on other driving forces.

These controllable driving forces are:

-Pasture species, variety selection
-Soil Health & Fertility
-Grazing management
-Weed control
-Pest control
-Correct timing of all operational aspects on the farm

While a good number of farmers are doing many of these seven points above very well, there is still a lot of potential in the area to optimise. All seven points are such big topics, and impossible to cover in a single article as they can all be so different from farm to farm, season to season, and business to business.

However, on the topic of soil health & fertility, some numbers I can share are of the limiting factors we, as southern hemisphere's largest vertically integrated fertiliser distributor, have come across.

Over the last 12 months the Vickery Bros team have taken 2000 soil & tissue samples on your farms. 1776 of them are 0-10cm topsoil samples for Cropping, Dairy, Piggery, Beef, Sheep & Wool producers. The variation in Phosphorus fertility within those 1776 samples is demonstrated in this diagram:

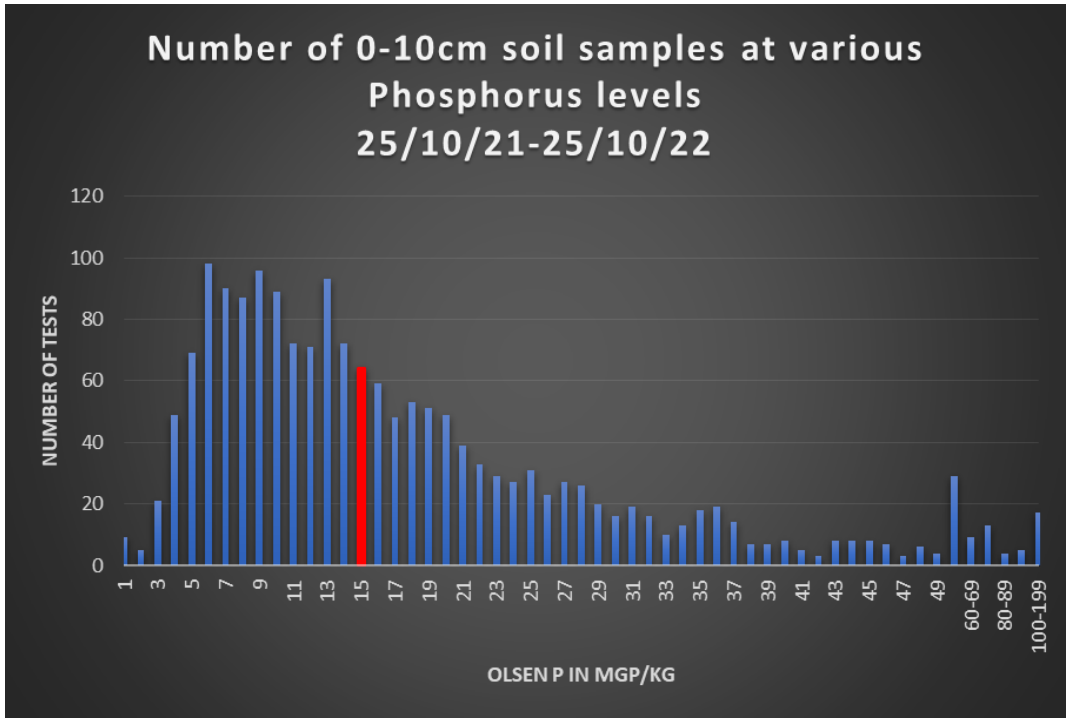



Figure 1 Number of 0-10cm soil samples at various soil phosphorus concentration.

Figure 1 (above), marked in red is the critical Olsen P soil test value at 95% of maximum pasture production. The relationship between percentage of maximum pasture yield and the Olsen P concentration of topsoil has been derived from experiments collated nationally by Gourley et al. (2007:2019)

53% of all the 1776 tests taken, are below the critical value of soil Phosphorus concentration for 95% maximum pasture production.

Two factors are influencing the availability of Phosphorus in the soil; the first one is simply how much phosphorus physically is in the soil. The second one is the pH of the soil. Best phosphorus availability is at a pH (CaCl2) 5.5-6.5. As demonstrated in figure 2 (below).

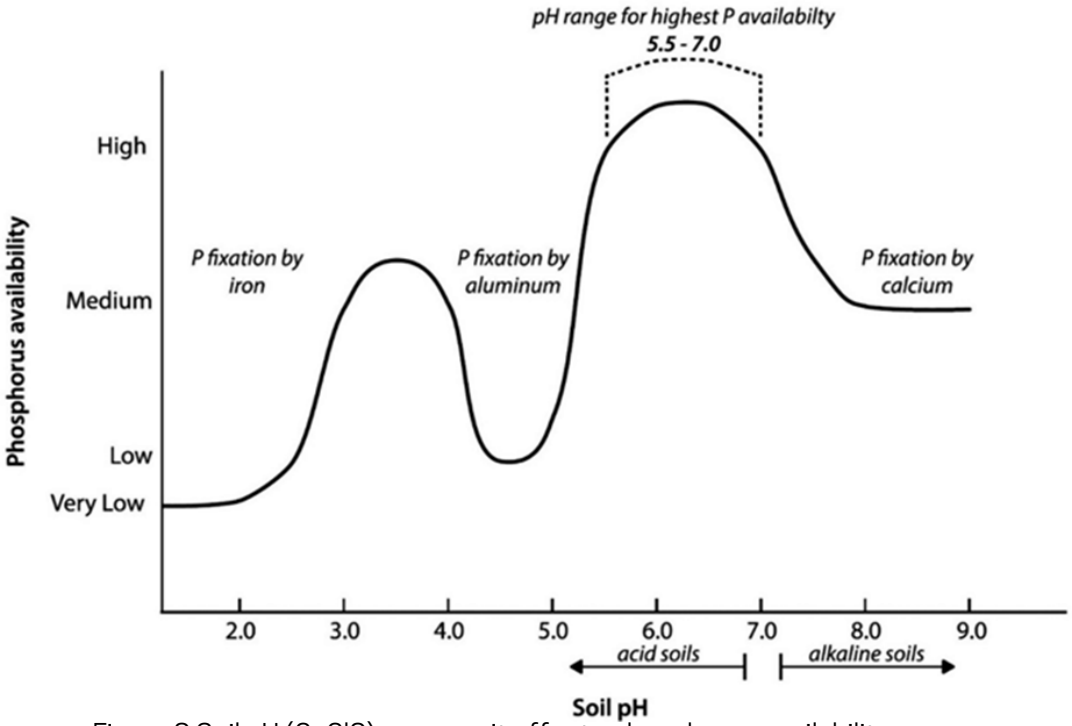



Figure 2 Soil pH (CaCl2) range as it affects phosphorus availability. (Source Ramlnez Avila et al 2011)

Out of the 1776 0-10cm soil samples 1706 have had soil pH analysed.

Here are the results:

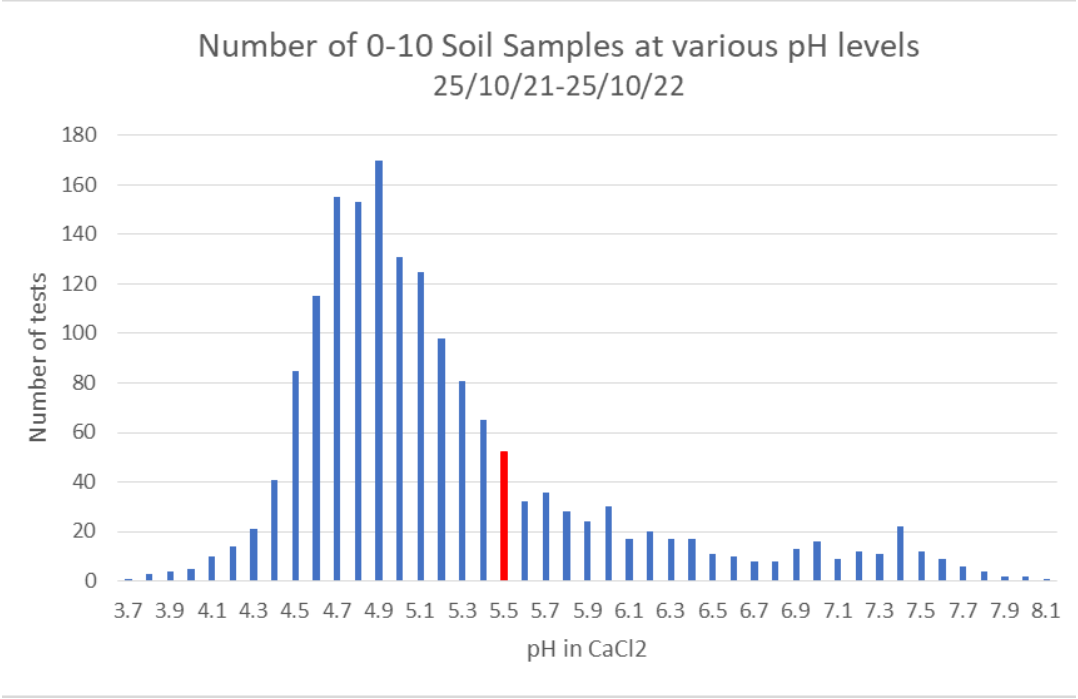



Figure 3: Number of 0-10cm soil samples at various pH (CaCl2) levels.

1277 samples are below the critical pH (CaCl2) of 5.5. That is 75% of all paddocks tested consequently with substandard phosphorus availability to the plants. pH does not only influence the availability of Phosphorus; but all other nutrients and chemicals that are soluble in soil water. A pH of above 5.5 is crucial for soil health as it directly affects microbial activity.

The rate of lime needed to get from a pH of 4.7 to a pH of above 5.5 is dependent on the soils Cation Exchange Capacity and can lay between 1.5-5t/ha of good quality lime.

Let's get back to the Phosphorus: Why is it so important?

Phosphorus is needed for growth, maintenance, and repair of all tissues and cells, and to produce the genetic building blocks, DNA and RNA.

Some regions of the world have naturally phosphorus-fertile soils, or are oversupplied with phosphorus, for example in western Europe. However, other regions, including 30% of the world's arable land, have low phosphorus availability and are dependent on capital Phosphorus fertiliser applications to reach high crop and pasture production. Just as over half the paddocks we have tested last year.

Strategic use of phosphorus fertilisers can ensure higher crop yields. High yields minimize the amount of land devoted to food production, maximize the use of scarce rainfall, and help keep food supply stable and relatively cheap. Getting the balance right is important in an increasingly crowded world.

So how will improving pH and Phosphorus levels, along with other good business decisions, not only feed a growing population; but a help sustain your farming business, whilst improving the profitability of your enterprise?

G.R Saul & G.A Kearney from Department of Natural Resources and Environment, Pastoral and Veterinary Institute in Hamilton have found the following:

**Table 2. Carrying capacity (dse/ha) based on length of the growing season (months), Olsen phosphorus (mg/kg) and paddock size predicted from equation 1.**

| Growing season (months) | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|
| | | | | Less than 20 ha paddocks | | | | |
| Olsen phosphorus 10 mg/kg | 11 | 14 | 17 | 20 | 24 | 28 | 31 | 34 |
| Olsen phosphorus 20 mg/kg | 12 | 16 | 19 | 23 | 26 | 29 | 33 | 36 |
| | | | | More than 20 ha paddocks | | | | |
| Olsen phosphorus 10 mg/kg | 8 | 11 | 15 | 18 | 21 | 25 | 28 | 32 |
| Olsen phosphorus 20 mg/kg | 10 | 13 | 16 | 20 | 23 | 27 | 30 | 33 |

Equation 2 shows the relationship between carrying capacity, soil fertility, paddocks size and average annual rainfall. Rainfall alone only explained 48% of the variance in carrying capacity. Again, Olsen P and paddock size were significant factors with Colwell giving similar accuracy. Given the relatively poor precision of this rainfall model, it could have been expected that other factors such as soil type or topography might have explained some additional variance. However, numerous alternative models were tested and no other factors were significant.

Figure 4 Potential carrying capacity of grazed pastures on southern Australia by G.R. Saul and G.A. Kearney 2002,[2]

According to their research, if we are looking at an 8-month growing season on <20ha paddocks we gain carrying capacity of an extra 3DSE/ha/year going from an Olsen P of 10mg/kg to 20kg/kg.

With fertiliser prices this autumn and a capital application of 80kgP needed to raise the Olsen P by 10 (assuming PBI: 200) upfront costs lays between $450-$500/ha, depending on your location and product selection.

A capital application of fertiliser is a long-term investment, and once done, if in subsequent years the yearly maintenance (0.8kgP/DSE) is applied, the higher phosphorus levels will be maintained.

So, what are the gains?

With current fluctuations in prices, I will refrain from doing a full cost/benefit analysis, but I will let you do your own numbers.

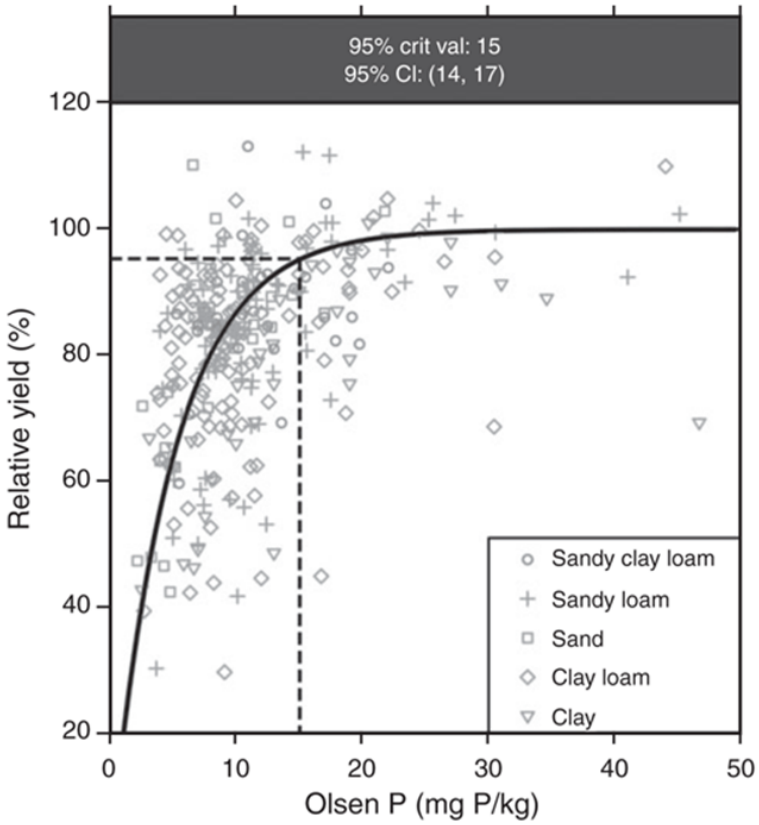
3 DSE/ha is equivalent to:

-Three 50kg wethers, maintained at constant weight per hectare/year
-Two 50kg ewes rearing singles per hectare/year
-One 70kg crossbred ewe rearing twins per hectare/year
-One cow raising a calf over six hectares/year
-One 200kg Steer at maintenance per hectare/year
-One 200kg steer gaining 0.9kg/day over 2 hectares

With current fertilizer and other commodity prices, it may take 2-3 years to repay the initial investment of a capital fertiliser application with the extra capacity gained, but after that the extra production will be extra profit.

What needs to be added here is that previous research by CSIRO shows the critical value of Olsen Phosphorus, with the dotted line representing an Olsen P 15.

**Fig. 2.** The relationship between relative yield (RY %) and Olsen P soil test value from nationally collated experiments, showing the soil texture class for individual field experiments. The critical Olsen P soil test value at 95% RY is indicated by the dashed line and shown in the panel header along with 95% confidence interval (CI).




Going off this chart, on average; raising the Olsen P of 10 to an Olsen P of 15 should take you from a relative yield of 80% to 95%, which is a 15% difference. How would your balance sheet look like, when you do your numbers on running an extra 15% of stock?

The capital requirement to increase the Olsen P from 10 to 15 is only 40kgP/ha. Which, at a current cost of $220-250/ha, is a realistic investment into the sustainability of your farm land and your farming future.

With this said, on behalf of the whole Vickery Bros team, I am wishing you a safe and happy start to the new year 2023.

[1] https://vimeo.com/73842866
[2] https://www.evergraze.com.au/wp-content/uploads/2016/07/potential_productivity_wool_tech-_sheep_breed_50_492_98-.pdf