

Fertiliser Applications: Do They Pay?

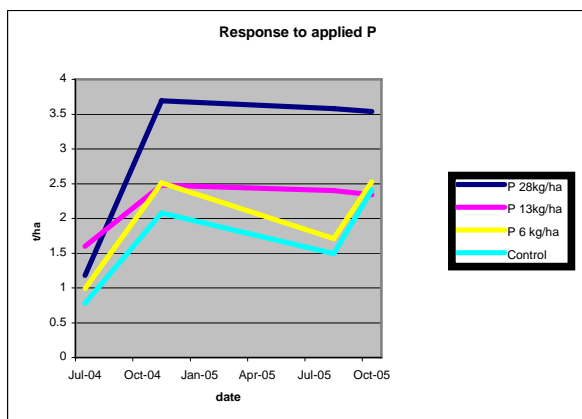
Background

We all know (or should!) that good soil nutrition results in more productive crops and pastures. In the 1990s, PIRSA trial work on Kangaroo Island ironstone soils demonstrated that the optimum levels for soil phosphorus (P) is 35-45 ppm. In order to increase soil P levels you need to add more P than maintenance dressings.

What was done

A trial was established at R. & R. Benney's in 2004 looking at P application rates and its effects on pasture growth and soil P levels.

Results



Pasture cuts in 2004 showed that application of P increased production compared to the control.

In 2005, similar results occurred with the fertilised plots out-producing the control. Maximum difference between plots occurred in August when the highest rate of P (28 kg P/ha) produced a massive 2.1t/ha of dry feed more than the control.

Overall in 2004 an extra 2.29t/ha of dry feed was produced with the addition of fertiliser and this increased to 6.93t in 2005.

Soil P levels (ppm)

	control	13 kgP/ha	28 kgP/ha
2004	17	17	17
2005	17	17	21

In addition, the application of extra fertiliser (28kgP/ha) not only increased pasture production but also raised soil phosphorus (P) levels from 17 to 21 ppm. Lower application rates of fertiliser had no impact on soil P levels.

This confirms earlier research by PIRSA in the 1990s that showed that to increase soil P levels an additional 4 units of P (over and above maintenance dressings) would increase soil P by 1 unit.

For the Island's ironstone soils:

- ☐ maintenance application rates are 1.3 kg P per DSE
- ☐ the Benney property runs 8 DSE/ha
- ☐ thus the maintenance rate of P is 10.4kgP/ha (ie $8 \times 1.3 = 10.4$).

So if we take the application rate (28 kg P) less the maintenance application of 10.4, we have 17.6 units of P left to increase soil P levels. (ie $28 - 10.4 = 17.6$)

Divide this figure by 4 (ie $17.6 / 4 = 4.4$) and theoretically we should have increased the soil P level by 4.4 units.

The original soil P level was 17ppm plus 4.4 = 21.4. Tested soil P level after fertiliser application was 21 (hey isn't it nice when theory and practice correlate!).

With recent interest in the difference between applications of single or high analysis fertilisers, the trial will be changed in 2006 to compare different forms of phosphorus fertilisers. The 2006 trial will compare single, goldphos and triple all applied at the same rate of phosphorus (15 kg/ha) as well as the same dollar value ie if you spent the same amount of money on all products – including freight.

Funders/Sponsors

National Landcare Program, Island Rural Supplies, R. & R. Benney.

Take Home Message

- Application of P fertilisers increased pasture growth and dry matter production (t/ha)
- Application of P above maintenance levels will increase soil P levels

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