PGG seeds

PASTURES and FERTILISERS

Pasture species require adequate fertility to establish and remain productive. Soils in Australia are very old and fragile in most areas. Australia is an environment where many internationally recognized practices cannot be applied, making local information invaluable. Consult with your local fertiliser agronomists and government agricultural extension staff about your soil type and sustainable farming. This section summarises commonly asked questions about fertiliser use on new and existing pastures.

Successful pasture establishment

Ideally, fertility issues will have been corrected before sowing. For successful pasture establishment, the placement of fertiliser in the drill rows will enhance establishment and early seedling growth. This will determine the type of fertiliser to use. N fertiliser is best broadcast 2-4 weeks after emergence, at a low rate (25-50 kgN/ha).

Maintaining a productive pasture

When target fertility levels are reached, future fertiliser use should aim to maintain these levels. Regular soil testing will build up a picture of trends over time to assist in achieving optimum fertiliser rates.

A guide to soil test values for pastures

Soil type	PHOSPHORUS LEVELS				
	Nutrient status	Olsen P** mg/kg (ppm)	Bray -1P*** mg/kg (ppm)	Colwell P** mg/kg (ppm)	Sulphur MCP mg/kg (ppm)
Sandy loams	Low Medium High	0-10 10-15 >15*	0-8 8-15 >15*	0-15 15-35 >35*	0-8 8-20 >20*
Loams	Low Medium High	0-18 18-25 >25*	0-10 10-18 >18*	0-20 20-60 >60*	0-8 8-20 >20*
Clay loams	Low Medium High	0-25 25-35 >35*	0-10 10-20 >20*	0-25 25-90 >90*	0-8 8-20 >20*
Heavy clay soil	Low Medium High	0-30 30-40 >40*	0-10 10-20 >20*	0-30 30-110 >110*	0-8 8-20 >20*

** Adequate soil test value – the level at which phosphorus is adequate for healthy growth. ** Tasmania –7.5cm samples*
**** 10cm sample. Add 30% for a 7.5cm sample* *Adapted from Agingsights- How to graze high profit pastures.*

PGG seeds

Using Nitrogen effectively

Nitrogen applications can be a strategic tool for filling feed deficits on farms with an existing high fertility status. The response to N can be maximised by...

- ***Timing applications to meet a feed shortage – winter/summer or maximizing spring growth rates for feed conservation, ryegrass pastures will respond at temperatures as low as 3-4°C, with a more reliable response coming at higher temperatures (a 20+ kgDM/kgN response rate at 16°C+ temperatures).***
- ***Rates - grazed pasture (20-40kgN/ha), silage and hay (30-60 kgN/ha)***
- ***Apply to pastures with some regrowth e.g. 1600-1800 kgDM/ha (50mm) or better***
- ***Allow pastures 4-6 weeks to utilize applied N before grazing and 5-6 weeks before cutting hay and silage***
- ***Annual short-term and perennial ryegrasses respond the most efficiently to N in that order, with older less vigorous pasture or other species less responsive.***

Increasing P levels

Increasing soil phosphate status is one simple way of increasing pasture productivity and persistence, especially if aiming to maximise the potential of new grass genetics. A soil phosphorus level of 30mg/kg (Colwell P test) will maintain good pasture production. When raising soil P levels it is more effective to apply a high rate of P over 1-2 years, than to apply the same amount over several years. Single applications over 100 kgP/ha are not recommended.

Liming

Periodic lime applications are good practice to maintain an optimum pH for pasture growth. Ideally, soil pH should be above 5. Liming rates depend on several factors, particularly soil type. For example, 2.5T/ha is commonly used on many soils to raise pH from 0.5-1.0 pH unit. Higher rates are needed for soils with high CEC values (>4). It generally takes 12-18 months for lime to have its maximum effect on pH. Lime also...

- ***Increases availability of P and Mo in acid soils***
- ***Stimulates microbial activity and N availability***
- ***Decreases aluminium and manganese toxicity***
- ***Helps stabilise soil structure***
- ***Decreases availability of some trace elements, e.g. zinc, copper, boron and cobalt.***
- ***Decreases some pathogenic fungi.***

Soil pH

pH values are measured in either calcium chloride (0.01M $CaCl_2$), or water. Values stated in this section are measured in $CaCl_2$. pH values in water are approximately 0.5-0.8 higher than those measured in $CaCl_2$.

References:
The Graziers Guide to Pastures, NSW Agriculture. *Impact Fertilisers: www.impactfert.com.au*