

## SOIL RECOMMENDATION REPORT

ROLAND LYONS  
WOMERA'  
EUCHAREENA  
NSW 2866

**Service Provider:** The Rural Centre Pty Ltd  
**Advisor/Contact:** Keith Garlick  
**Phone:** 0428 698335  
**Purchase Order:** 2374

**Grower Name:** ROLAND LYONS      **Paddock Name:** HOUSE PDK      **Sample Name:**  
**Sample Number:** 130426545      **Sample Depth (cm):** 0      To 10      **Sampling Date:** 23/06/2022  
**Enterprise:** Beef/Sheep      **Activity:** Pasture - Existing      **Stocking Rate (dse/ha):** 10  
**Annual Rainfall (mm):** 700      **Irrigation:**

Product Recommendation	Rate (kg/ha) unless stated	Application Method	Timing
Lime (t/ha)	3.0	Spread and if practical withhold stock from grazing until after rain	Apply when practical

**Recommendation by:** Keith Garlick

**Version:** 2

**Final Version Created Date:** 12/07/2022

Elements per Hectare	N kg	P kg	K kg	S kg	Ca kg	Mg kg	Cu kg	Zn kg	Mo kg	Co kg	B kg	Fe kg	Mn kg	Si kg
Lime (t/ha)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Nutrient Applied</b>	-	-	-	-	-	-	-	-	-	-	-	-	-	-

**Legend**    N : Nitrogen    P : Phosphorus    K : Potassium    S : Sulphur    Ca : Calcium    Mg : Magnesium    Cu : Copper  
Zn : Zinc    Mo : Molybdenum    Co : Cobalt    B : Boron    Fe : Iron    Mn : Manganese    Si : Silicon

### Advisor Comments

Fiona,

When looking at a soil test we look at the main analytes of pH, Aluminium, Phosphorus, Sulphur and to a lesser extent Nitrogen. Potassium can also be a concern especially where pasture is continually cut for hay or silage. We then look at which analyte is most limiting or possibly causing or has potential to be a concern from both a pasture production and quality perspective.

In this paddock the pH is drifting to the low side (4.7 CaCl<sub>2</sub>) and the Aluminium level is at 1.2%. Lime is used to correct the pH, with usually around 3.0 tonnes / hectare to raise the pH by one unit. A pH of 5.5 – 6.0 (CaCl<sub>2</sub>) is around the optimum for most pasture and crop production. A low pH is connected to the availability of essential nutrients like phosphorus and sulphur and the damaging effects of raised aluminum levels.

Suggested target levels of soil Phosphorus for differing soils can be estimated using the Phosphorous Buffering Index. The Phosphorus Buffering Index (PBI) is a measure of the Phosphorus (P) holding capacity of the soil. PBI of 110 is considered to have a Low P- holding capacity, therefore desirable target levels of soil P are relatively low (i.e. 34-44 Colwell P). Molybdenum deficiency is most likely to occur where soil pH(CaCl<sub>2</sub>) is below 5.5 and Mo has not been applied for some time. Mo should be applied at rates of 25-75 g Mo/ha once every 3 to 5 years.

The phosphorus level is above the optimum in this paddock and sulphur levels are slightly below.

As a general rule of thumb just to maintain soil P levels is 1 kg P/DSE/ha/year. e.g. 125 kg/ha of Single Super applies 11 kg/ha of phosphorus and 14 kg/ha of Sulphur, which would be sufficient P for 11 DSE/ha (4.5 dry sheep /ac ). If higher stocking rates are to be run or aims at increasing capital / residual P soil levels, then higher single super rates will be required. In order to gain an economic return to the use of extra fertiliser, your stocking rate will need to be at a level sufficient to utilise the extra feed produced. A suitable stocking rate is also important in maintaining improved pasture species, as excessive, under-utilised pasture growth will become unpalatable, can crowd out clover species and allow the dominance of less favourable grasses.

### Advisor Comments

Most of the other elements are in the optimum range.

Grass Tetany risk is calculated from the ratio of Potassium / Magnesium + Calcium. Potassium can be antagonistic toward plant uptake of Magnesium therefore elevated levels can be associated with magnesium deficiencies (grass tetany) in cattle, particularly in cows in early lactation. Levels above 0.1 are considered very high risk (dangerous). Elevated plant available potassium levels can cause an excess of potassium in the diet interfering with the absorption of magnesium. This is more common on short green grass dominant pastures or cereal crops, often occurring with temperature variations during cooler months or with post drought conditions.

**In my opinion,**

**A liming program should be considered especially if the paddock is going to be cropped or pasture improved at some stage to prevent the pH falling further. An application rate at this stage of 3.0 tonnes /ha would be required. If possible, incorporate to a depth of 10cm to achieve the optimum result.**

**Continue to monitor soil phosphorus (P) and sulphur (S) levels with future soil tests.**

To clarify any of the results or recommendations made on this soil test please contact Keith Garlick on (02) 6362 1899

## SOIL ANALYSIS REPORT

**Grower Name:** ROLAND LYONS      **Paddock Name:** HOUSE PDK      **Sample Name:**  
**Sample Number:** 130426545      **Test code:** E12      **Sampling Date:** 23/06/2022

Analyte	Unit	Value	Optimum	Low	Adequate	High
<u>SOIL</u>						
Soil Colour		Red				
Soil Texture		Clay				
Organic Carbon (W&B)	%	3.2	2.3 - 5.3	<div></div>		
<u>ACIDITY</u>						
pH (1:5 Water)		5.7	6.0 - 7.0	Moderately acidic		
pH (1:5 CaCl2)		4.7	5.2 - 6.0	May vary depending on plant species		
Aluminium (KCl)	cmol(+)/kg	0.1				
Aluminium % of Cations	%	1.2	<= 15	There are no problems with Aluminium toxicity		
<u>SALINITY</u>						
Electrical Conductivity (1:5 water)	dS/m	0.09	< 0.4	Not saline.		
Electrical Conductivity (Sat. Ext.)	dS/m	0.6	< 1.5	Suitable for pasture growth		
Chloride	mg/kg	<10	< 300	Low and harmless to plant growth.		
Sodium (Amm-acet.)	cmol(+)/kg	0.03	< 0.7	Low risk of being harmful to plant growth		
<u>STRUCTURE</u>						
Calcium % of Cations	%	57.0	60 - 85	Marginal for soil structure, check sodicity		
Magnesium % of Cations	%	15.0	< 25	Stable soil structure likely, check sodicity		
Sodium % of Cations (ESP)	%	0.30	< 6.0	Non sodic soil, stable soil structure likely		
Potassium % of Cations	%	26.00				
Calcium/Magnesium Ratio		3.7	> 2.0	Stable soil structure likely, check sodicity		
<u>ELEMENTS</u>						
Nitrate Nitrogen	mg/kg	23.0	>10	<div></div>		
Ammonium Nitrogen	mg/kg	3.3				
Phosphorus (Colwell)	mg/kg	58	34 - 44	<div></div>		
Sulphur (KCl40)	mg/kg	6	9 - 12	<div></div>		
Calcium (Amm-acet.)	cmol(+)/kg	5.6	3 - 5	<div></div>		
Magnesium (Amm-acet.)	cmol(+)/kg	1.5	1 - 2	<div></div>		
Potassium (Amm-acet.)	cmol(+)/kg	2.60	0.39 - 0.56			

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Analyte	Unit	Value	Optimum	Low	Adequate	High
<b>ADDITIONAL</b>						
Phosphorus Buffer Index		110		Moderately low phosphorus fixation capacity		
Phosphorus Environmental Risk Index		0.53		Low risk of P loss to the environment		
Cation Exch. Cap. (CEC)	cmol(+)/kg	9.8				
Grass Tetany Risk Index		0.37	<0.06	Could be of concern		

The results in this report pertain only to the sample submitted. Analyses performed on soil dried at 40°C and ground to 2mm or less, excluding moisture tests, or as otherwise indicated. Analyses performed on plant dried at 70°C and ground to 1mm or less, excluding moisture tests, or as otherwise indicated. Water analyses performed on an 'as received' basis. Analytical results reported by the laboratory as 'less than' the level of reporting, will be deemed by NA Pro as being equivalent to the level of reporting for both calculation and interpretive purposes. This document shall not be reproduced except in full.

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