

Grasslands Fertiliser Demonstration 2015/2016

Background

The productivity of pastures is influenced by a number of factors including soil fertility. However different pasture species have different nutrient requirements with native pastures generally considered to require less nutrition than introduced species. The aim of this demonstration is to investigate the response of native pastures to superphosphate at various rates and whether it is an option to speed up the recovery of the pastures eg increase dry matter growth and improve ground cover after a fire.

Soil test were completed at 20 properties in the bushfire affected area and the two tests below are from the properties where the two fertiliser demonstrations were set up.

	Keynes's	Treloar's
Nutrient		
pH (1:5 CaCl₂)	6	5.6
Phosphorus (Colwell) mg/kg	4	6
Sulphur mg/kg	2.2	2.8
Copper (DTPA) mg/kg	0.52	0.24
Zinc (DTPA) mg/kg	0.92	0.5

Method

Two sites were selected to set up a replicated single super fertiliser demonstration. One located on Keynes property and the other on Treloar's

The demonstration had three different applications of Single Super replicated 3 times (50kg, 100kg and 150kg per ha). The Control had no single super applied.

Plot size - 10 meters x 2 meters with a 2 meter buffer between plots

The Single super was spread on the 7th May 2015 and 24th March 2016

Map – Kg of Single Super applied per hectare

100	50	Control	150
Control	150	100	50
50	100	150	Control



Direction of plots
Hill Top – Keynes's site
East – Treloar's site

Results

On the 27th of September half of each treatment was mowed and the dry matter collected and weighed. A sample was taken from each treatment and dried in a microwave to establish the average dry matter percentage of each site.

Due to the nature of the country some factors that could distort the figures include

- The amount of rock in the plot (no grass grows where the rock is).
- The pasture did not grow after the mowing in 2015 so there was low ground cover over the 2015/16 summer.

Visual Assessment

- In the fertiliser treatments the plant size of haresfoot clover, clover, geranium, cape weed and wild oats had increased compared to the control.
- No decline in native grass growth and density

Treloar's Site



Table 1. Dry Matter for each Treatment kg/ha (Red 2016 / Black 2015)

100 <i>910</i> 860	50 <i>1190</i> 1170	Control <i>1260</i> 980	150 <i>1330</i> 970
Control <i>1610</i> 1340	150 <i>1730</i> 1440	100 <i>1890</i> 1080	50 <i>1640</i> 1250
50 1160 1420	100 1660 1160	150 1870 1530	Control 1660 1080

Table 2. Average Dry Matter per ha for each of Treloar's treatment

Control – 1510 kg DM/ha
 50kg – 1330 kg DM/ha
 100kg – 1480 kg DM/ha
 150kg – 1640 kg DM/ha

Table 3. Cost of extra dry matter grown

Treatment	Kg P /ha	Extra Dry Matter grown above control kg/ha	Cost of fertiliser Including spreading /ha	Cost of extra DM grown Cents / kg DM
50kg /ha	4.4		\$18.50	
100kg /ha	8.8		\$37	
150kg /ha	13.2	130	\$55.50	43

Keynes's Site



Table 4. Dry Matter for each Treatment kg/ha (Red 2016 / Black 2015)

100 <i>1520</i> 1650	50 <i>1390</i> 1890	Control <i>1040</i> 1660	150 <i>1870</i> 2150
Control <i>1120</i> 1900	150 <i>1910</i> 2100	100 <i>1860</i> 1860	50 <i>1610</i> 1780
50 <i>1030</i> 1620	100 <i>1320</i> 1610	150 <i>1500</i> 1640	Control <i>1010</i> 1620

Table 5. Average Dry Matter per ha for each of Keynes's treatments

Control – 1060 kg DM/ha
 50kg – 1340 kg DM/ha
 100kg – 1570 kg DM/ha
 150kg – 1760 kg DM/ha

Table 6. Cost of extra dry matter grown

Treatment	Kg P /ha	Extra Dry Matter grown above control kg/ha	Cost of fertiliser Including spreading /ha	Cost of extra DM grown Cents / kg DM
50kg /ha	4.4	280	\$18.50	6.6
100kg /ha	8.8	510	\$37	7.25
150kg /ha	13.2	700	\$55.50	7.9

Summary

The dry matter results show a good response of spreading single super on the Keynes site but the Treloar site was variable due to soil depth and rocks making it difficult to accurately assess. There was no visual decline in the native grass density after 2 applications of single fertilisers but visually the legumes (predominantly haresfoot clover), geranium, capeweed and wild oats responded. This is good quality feed and would help improve livestock production from the paddock. There also needs to be a consideration made for the added benefit for pasture growth in the future as not all of the phosphorus and sulphur would be removed by livestock in the first year but recycled in the paddock for future use.