

Pasture Topdressing Pays off in Following Crop

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Purpose: This trial was established 2006 to (1) demonstrate responses to Super Phos, potash and lime in pasture and the benefits to the following crop, and (2) to demonstrate the benefits of pasture manipulation and Intake in Furrow to the following crop.

Location: Dandaragan

Soil Type: Red brown loam

Soil Results:

	pH	Salt	OC	N(Nit)	N (Amm)	P	Fe	K	S	Ex Ca
0-10cm	4.7	0.067	1.53	19	2	14	565	110	2.9	1.19

	Ex Mg	Ex K	Ex Na	Ex Al	ECE C	Cu	Zn	Al	PRI
0-10cm	0.48	0.1	0.19	0.12	2.1	0.28	0.44	1.6	4.1

Rotation: Long term pasture

BACKGROUND SUMMARY

The benefits of Super Phos applications to sub clover based pastures are well known, but economic analyses based on one year returns discriminate against the value of inputs that have multi year benefits such as fertiliser (and lime!).

TRIAL DESIGN

Plots size: 30m x 2.5m.

Replicas: 3

2009 Crop: Wheat (Wyalkatchem wheat)

Seeding rate: 60 kg/ha

Treatment history:

Pasture was topdressed annually with 100, 200, and 300 kg/ha Super Phos, 100 Super Phos + 50 MoP, and 2 t/ha Lime (except for one treatment) – all of these treatments were manipulated in the pasture phase (Simazine in 2006; Raptor in 2007). Two other treatments with 100 kg/ha Super Phos were manipulated.

2009 Treatment:

Double Phos and was topped up with 140 L/ha Flexi-N (split into two post seeding applications). No in furrow fungicides were applied aside from one of the two unmanipulated pasture treatments which received 400 ml/ha Intake in Furrow.

RESULTS

There were no pasture responses in the first year of the trial, but there were responses to up to 300 kg/ha Super Phos measured in years 2 and 3. The pasture did not respond to potash or lime.

Results from 2009 are presented below:

Trt	Treatment					28-Jul		Harvest		
	Lime	Intake	2006 to 2008 (kg/ha)	P	K	N upk (mg/plt)	P upk (mg/plt)	Yield (t/ha)	Protein (%)	
1	-	-	Nil	0	0	14.6	1.04	3.06	11.2	
2	+	-	Nil	0	0	13.4	1.06	3.01	11.4	
3	+	-	100 Super	9	0	16.5	1.33	3.78	11.1	
4	+	-	200 Super	18	0	14.7	1.30	3.89	10.8	
5	+	-	300 Super	27	0	19.0	1.82	3.67	11.0	
6	+	-	100 Super (unmanip)	9	0	14.7	1.24	3.43	11.1	
7	+	+	100 Super (unmanip)	9	0	14.7	1.12	3.50	11.3	
8	+	-	200 Super +50 MoP	18	25	17.0	1.45	3.84	11.2	
						Prob	0.026	<0.001	0.001	0.77
						Lsd	3.10	0.31	0.404	ns

DISCUSSION

- Plant tests at the end of July showed that crop N and P uptake were significantly increased where 300 kg/ha Super Phos had been previously applied.
- Super Phos applied to pasture increased crop yield from 3.0 t/ha to 3.9 t/ha but responses to more than 100 kg/ha Super Phos were not significant. There were no significant responses to potash, lime, manipulation or to Intake in Furrow.
- Grain proteins were about 11 %, hectare litre weights 78 kg/hl and screenings 2 % (data not presented).
- 100 kg/ha Super Phos increased protein yield by 77 kg/ha (or grain N recovery by about 14 kg N/ha).
- This is the equivalent to about 40kg fertiliser N/ha (assuming a nitrogen use efficiency of 35%).
- The value of the crop response to pasture topdressing alone was big enough to more than offset the cost of 100 kg/ha Super Phos applied over the previous three years.

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