

11.5 TO DEVELOP A PHOSPHORUS RESPONSE CURVE FOR PEAS & THE EFFECT OF STARTER NITROGEN - GNARWARRE (HIFERT)

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Location: "South Roxby" Gnarwarre

Aims:

- To develop a phosphorus response curve for Peas (cv. Kaspera) in the high rainfall zone of South West Victoria.
- Investigate responses to zinc and starter nitrogen in last sown legume crops.

- To investigate if MAP is a cost effective phosphorus fertiliser for legumes and its impact on plant growth.

Trial Design:

A fully randomised complete block design, 3 replicates 13 treatments.

Planting Date: 4th August 2003

GSR (April – November): 344 mm

Crop rotation history:

2001 (wheat), 2002 (canola)

Table 97: Last Soil Test Results

Test	Org. C %	P ¹³ Mg/kg	K mg/kg	S mg/kg	pH H ₂ O	pH CaCl ₂	Cu DTPA mg/kg	Zn DTPA mg/kg
Result	3.0	34	525	14.8	5.6	5.0	0.8	1.0

¹³ P test is Colwell.
Phosphate buffering index

Table 98: Treatment Details

Treatment	Sowing	N	P	S	Zn
1	T.S.P	0	25	1.9	0
2	SSP	0	25	32.0	0
3	MAP	11	25	1.7	0
4	T.S.P 0.79/S95 0.21	0	25	31.8	0
5	MAPS impreg	12	25	9.3	0
6	MAP Zn 2.5	11	25	1.7	3.0
7	MAP Zn 5.0%	12	25	1.8	6.3
8	Super M/MAP 5.0%Zn	12	25	9.5	3.2
9	Super M/S95/MAPZn5.0	12	25	32.0	3.2
10	NIL (+ 12 N and 15 S)	12	0	14.9	0
11	Super M (+ 5 N & 6 S)	12	15	14.9	0
12	Super M	12	25	14.9	0
13	Super M (+15 P as TSP)	12	40	14.9	0

Results:

Table 99: Tissue Tests of Youngest Open Leaves Taken 06/11/03

Treatment	Product	N %	P %	K %	S %	Cu ppm	Zn ppm	Mn ppm	B ppm
2	SSP	9.18	1.32	5.41	0.59	13.2	64.5	34.8	24.3
3	MAP	8.97	1.32	5.56	0.56	12.7	63.5	36.1	24.3
7	MAP Zn 5.0%	8.74	1.26	5.43	0.54	12.3	67.1	34.7	24.8
12	Super M	8.82	1.25	5.47	0.55	11.8	59.5	41.2	24.1

Table 100: Yield of Kasper Peas

Treatment	Product	Tonnes/ha
3	MAP	3.07
11	Super M (+ 5 N & 6 S)	2.84
13	Super M (+15 P as TSP)	2.81
2	SSP	2.77
10	NIL (+ 12 N and 15 S)	2.69
6	MAP Zn 2.5	2.67
7	MAP Zn 5.0%	2.62
1	T.S.P	2.61
9	Super M/S95/MAPZn5.0	2.60
12	Super M	2.60
4	T.S.P 0.79/S95 0.21	2.59
8	Super M/MAP 5.0%Zn	2.52
5	MAPS impreg	2.30
LSD		0.48
CV		10.8 %

Trial Summary

The apparent better performance of MAP T3 is noted but when looking at the other MAP based products they don't follow the same trend. There was no significant response to applied phosphorus, sulphur or zinc. The CV of the trial is quite high, meaning that a 0.48 Tonnes/ha yield response was needed for anything to be significant. There was no negative effect of applying starter nitrogen in this trial, however there was no positive effect. At current pricing the MAP based products are a very cost effective source of phosphorus and sulphur regardless of the starter nitrogen. Tissue tests indicated all nutrients were adequate see Table 99.

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