

N x P responses in canola

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Purpose: To determine the relative requirements for nitrogen (N) and phosphorous (P) in canola

Location: Badginagarra

Soil Type: Brown red sandy loam

Soil Results:

	Description	pH	EC	OC	N(Nit)	N(Amm)	P	PBI	K	S
0-10	Br orange sandy loam	4.8	0.10	1.1	40	4	14	31	128	5
10-20		4.5	0.05	0.4	15	2	8	17	41	3
40-50		4.2	0.02	0.2	2	1	2	42	46	6
90-100cm		5.1	0.02	0.1	1	1	1	51	59	12

	Ex Ca	Ex Mg	Ex K	Ex Na	Ex Al	ECEC	Ex Al%	Cu	Zn	Al
0-10	2.9	0.31	0.33	0.08	0.07	3.7	2	0.9	1.1	1.1
10-20	1.3	0.13	0.11	0.05	0.18	1.7	11	1.2	0.1	2.9
40-50	0.5	0.07	0.12	0.02	0.25	0.9	28	0.3		6.1
90-100cm	0.6	0.09	0.14	0.02	0.05	0.9	6	0.2		0.5

Rotation: Sub clover based pasture

BACKGROUND

Canola fertiliser requirements depend upon nutrient supply and demand. Nitrogen (N) is a major driver of yield, but adequate phosphorous (P) supply is just as important. Fertiliser profitability is very dependent upon supplying the optimum balance of N and P. Soil tests indicated significant N reserves and NU logic predicted that this site would be very P responsive.

TRIAL DESIGN

Plot size: 2.5m x 20m

Repetitions: 3

Machinery: Conserva Pak seeder

Crop details: Cobbler TT @ 3kg/ha on 10 May

Fertiliser: **N rates:** 0, 40, 60 and 80 kg N/ha- Nitrogen applied as NS41 to supply sulphur (14 June and 19 July).

P rates: 0, 8, 16 and 24P.

RESULTS

Table 1: Canola harvest yields of N x P treatments

Trt	Banded (kg/ha)	Rosette (kg/ha)	Bolting (kg/ha)	N	P	Harvest Yield (t/ha)
1	-	-	-	0	0	2.10
2	136 Double Phos	-	-	0	24	2.63
3	136 Double Phos	114 NS41	-	40	24	2.39
4	136 Double Phos	114 NS41	57 NS41	60	24	2.64
5	136 Double Phos	114 NS41	114 NS41	80	24	2.64
6	-	114 NS41	114 NS41	80	0	2.25
7	60 Big Phos	114 NS41	114 NS41	80	8	2.30
8	120 Big Phos	114 NS41	114 NS41	80	16	2.31
9	120 Big Phos	114 NS41	-	40	16	2.30
					Prob	0.007
					Lsd	0.319

FINANCIAL ANALYSIS

Table 2: Economic analysis of N x P treatments in Canola

Trt	Banded (kg/ha)	Rosette (kg/ha)	Bolting (kg/ha)	N	P	Harvest Yield (t/ha)	Response (t/ha)	Response (\$/ha)	Cost (\$/ha)	Profit (\$/ha)
1	-	-	-	0	0	2.10	-	-	-	-
2	136 Double Phos	-	-	0	24	2.63	0.53	265	102	163
3	136 Double Phos	114 NS41	-	40	24	2.39	0.29	145	176	-31
4	136 Double Phos	114 NS41	57 NS41	60	24	2.64	0.53	265	215	50
5	136 Double Phos	114 NS41	114 NS41	80	24	2.64	0.53	265	249	16
6	-	114 NS41	114 NS41	80	0	2.25	0.15	75	146	-71
7	60 Big Phos	114 NS41	114 NS41	80	8	2.30	0.20	100	191	-91
8	120 Big Phos	114 NS41	114 NS41	80	16	2.31	0.21	105	236	-131
9	120 Big Phos	114 NS41	-	40	16	2.30	0.20	100	163	-63
					Prob	0.007				
					Lsd	0.319				

* Economics assume canola at \$500/t and January 17 2012 fertiliser prices (freight and interest included)

DISCUSSION

- There was a strong response to P but no response to N
- Plant tests showed that the crop was unlikely to respond to N
- 0N 24P was nearly \$300/ha more profitable than 80N 16P!
- Profitability is driven by getting the N and P balance AND application rates right.

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