N X P WHEAT VS CANOLA

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Аім

To demonstrate and compare nitrogen and phosphorus responses in wheat and canola side by side.

BACKGROUND

Some in the industry believe that canola requires only 60% of the P that wheat requires to maximise yield. Previous CSBP canola trials (New Norcia 2007 and Condingup 1999) have shown canola to respond strongly to P. At Condingup, canola was more responsive to P than wheat. In 2008, this trial and another canola trial at New Norcia were conducted to further investigate the N and P requirements of canola relative to wheat. While this trial was unresponsive (due to good soil reserves and growing conditions), the New Norcia trial again showed that canola was as responsive to P as wheat.

TRIAL DETAILS								
Property	Ian, Helen and Clint Hunt, Marchagee							
Plot size & replication	20m x 2m x 3 replicates each for wheat and canola							
Soil type	Gravelly loam							
Sowing date	5/5/08							
Seeding rate	Wheat: Calingiri, Jockey treated, 80 kg/ha. Canola: Cobbler, Jockey treated, 5 kg/ha							
Fertiliser	Whole site 150 kg/ha Gypsum, 0,8,16 kg/ha Phosphorus and 0,42,84 kg/ha Nitrogen							
Paddock rotation	2005 = Wheat, 2006 = Brown manured pasture, 2007= Wheat							
Herbicides, Insecticides & Fungicides	5/5/08 Canola 1.2 L/ha roundup powermax Pre, 2 L/ha atrazine, 200 ml/ha talstar, 300 ml/ha imidan PSPE Wheat 1.2 L/ha roundup powermax, 2 L/ha trifluralin Pre, 200 ml/ha talstar, 300 ml/ha imidan PSPE 1/7/08 Canola 2 L/ha atrazine, 450 ml/ha select + oil + SoA 5/8/08 Canola 125 ml/ha cypermethrin Wheat 145 ml/ha folicur, 125 ml/ha cypermethrin							
Growing Season Rainfall	324mm							

SOIL ANALYSIS

Depth	pН	Salt	OC	N (Nit)	N (Amm)	Р	Fe	K	S
0-10cm	5.8	0.052	0.83	4	1	27	283	108	9.1
10-20cm	4.7	0.037	0.54	1	1	12	286	92	8.4

Table 1: Tielu, quanty and Gross Margin of wheat and canola sown at Marchagee.											
Tmt	Crop	Flexi	N Applica	tion (L/ha)	Ν	Р	Yield	Protein	Gross	Variable	Gross
		4	Z14/	Z32/	(kg/ha)	(kg/ha)	(t/ha)	/Oil	Return	Cost	Margin
		DAS	Rosette	Bolting				(%)	(\$/ha^)	(\$/ha #)	(\$/ha)
1	Wheat	-	-	-	0	0	3.15	9.1	756	-	756
2	Wheat	-	-	-	0	8	3.89	9.7	934	40	894
3	Wheat	50	50	-	42	8	4.70	10.1	1128	118	1010
4	Wheat	50	50	100	84	8	4.92	10.5	1181	195	986
5	Wheat	-	-	-	0	16	4.07	9.8	977	80	897
6	Wheat	50	50	-	42	16	4.91	10.0	1178	158	1020
7	Wheat	50	50	100	84	16	4.96	10.3	1190	235	955
8	Wheat	50	50	100	84	0	4.80	10.1	1152	155	997
						Prob	<0.001	0.294			
	I	1	1	-	1	LSD	0.46	nsd		r	
1	Canola	-	-	-	0	0	2.32	*	1114	-	1114
2	Canola	-	-	-	0	8	2.29	*	1099	40	1059
3	Canola	50	50	-	42	8	2.61	*	1253	118	1135
4	Canola	50	50	100	84	8	2.48	*	1190	195	995
5	Canola	-	-	-	0	16	2.43	*	1166	80	1086
6	Canola	50	50	-	42	16	2.42	*	1162	158	1004
7	Canola	50	50	100	84	16	2.49	*	1195	235	960
8	Canola	50	50	100	84	0	2.44	*	1171	155	1016
						Prob	< 0.04				
						LSD	0.18				

^ based on Wheat \$240/t, Canola \$480/t on farm.

Fertiliser only - based on Nitrogen at \$1.85kg and Phosphorus at \$5kg.

* Canola oil % unavailable at the time of writing.

COMMENTS

- Good growing conditions produced wheat yields of up to 5.0t/ha and canola yields of up to 2.6t/ha.
- Plant sampling at eight weeks after sowing (WAS) showed that soil P supply was excellent (wheat: 0.45% P • (plant weight 0.6g); canola: 0.5% P (1.0g)) without P fertiliser. Nitrogen appeared to be adequate at this time, but marginal plant nitrate levels (<1000ppm) in the wheat crop suggested that it would respond well to N fertiliser if yield prospects remained good. The canola crop was better satisfied by soil N supplies (nitrates >7000ppm – at 1.9g). All other nutrients appeared to be adequately supplied.
- Yield responses mirrored plant analysis results. •
- Wheat yields responded strongly to 42kg N/ha (+ 0.8 t/ha at 8 kg/ha P and 0.9 t/ha at 16 kg/ha P), but there • was no response to additional N applied at Z32/bolting. Canola was relatively unresponsive to N.
- There was no response to P in either crop where N was applied. Ideal growing conditions for most of the • growing season ensured that good soil P reserves satisfied most of the crops P requirements.

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