



USING NITROGEN APPLICATIONS TO MANAGE WHEAT CANOPY

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AIM

To determine the response of wheat to different Flexi-N strategies at two seeding rates i.e. canopy management.

BACKGROUND

The theory of 'canopy management' involves varying inputs to regulate crop development and maximise water use and yields. Part of this strategy involves reduced seeding rates and delayed N applications with the aim of conserving soil moisture until grain fill.

A similar trial at Xantippe in 2007 (similar to the one conducted in 2009) was severely drought affected and no grain was harvested, but it did show 'haying off' at the higher seeding rate (80kg/ha). Interestingly, there was no 'haying off' effect with N rates of up to 65kg N/ha.

Soil test results from the 2009 site showed strong N reserves (Nitrate N 22ppm, Ammonium N 6ppm) following lupins in 2008, but indicated that sub soil acidity could limit wheat production (soil pH 4.2, Al 7.1 CaCl₂).

TRIAL DETAILS

Property	Mcllroy Family, Pithara
Plot size & replication	20m x 2.5m x 3 replicates
Soil type	Sand
Sowing date	02/06/09
Seeding rate	40 and 80 kg/ha
Fertiliser (kg/ha)	Basal 80kg/ha Agstar; Flexi-N applied at seeding (banded), Z14 and Z30.
Paddock rotation	2007 = Wheat, 2008 = Lupins
Herbicides	02/06/09: Power Max and Triflur X 22/07/09: Jaguar
Growing Season Rainfall	201mm

RESULTS

Table 1: Effect of Seed Rate and Flexi-N strategy on Wheat Yield and Quality at Pithara.

Trt	Treatment					Harvest			
	Seed (kg/ha)	Banded (l/ha)	Z14 (l/ha)	Z30 (l/ha)	N	Yield (t/ha)	Protein (%)	HL wt (kg/HL)	Screens (%)
1	40	-	-	-	11	2.07	10.3	75	3.7
2	40	-	80 Flexi-N	-	45	2.08	11.1	73	4.1
3	40	-	-	80 Flexi-N	45	2.24	11.3	75	3.8
4	40	40 Flexi-N	-	40 Flexi-N	45	2.01	10.5	73	4.8
5	40	-	40 Flexi-N	40 Flexi-N	45	2.10	11.3	73	4.6
6	40	-	80 Flexi-N	80 Flexi-N	79	2.25	11.0	75	4.2
7	40	40 Flexi-N	40 Flexi-N	80 Flexi-N	79	2.13	11.3	75	3.6
8	80	-	-	-	11	2.18	10.4	74	3.8
9	80	-	80 Flexi-N	-	45	2.27	10.7	75	3.3
10	80	-	-	80 Flexi-N	45	2.25	11.6	73	4.8
11	80	40 Flexi-N	-	40 Flexi-N	45	2.29	10.6	75	3.7
12	80	-	40 Flexi-N	40 Flexi-N	45	2.16	11.2	74	4.2
13	80	-	80 Flexi-N	80 Flexi-N	79	2.13	12.1	75	3.8
14	80	40 Flexi-N	40 Flexi-N	80 Flexi-N	79	2.27	11.1	75	3.3
Prob						0.80	0.002	0.487	0.383

LSD	ns	0.59	ns	ns
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COMMENTS

- This site was unresponsive to N and there was no significant effect of either seed rate or N timing upon yield. There was no adverse effect of high N or seed rates on grain weights or screening levels.
- Crop vigour was poor through the season and this was most likely related to sub soil acidity and aluminium toxicity.
- Plant testing confirmed adequate supply of all nutrients.
- These results show that understanding the overall need for N is more important than application strategy and that a 40 kg/ha sowing rate was as good as 80 kg/ha for a 2 t/ha crop yield.

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