NITROGEN RATES AND TIMING

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AIM

To compare at seeding, delayed and split application of nitrogen at varying phosphorus rates.

BACKGROUND

Delaying or splitting of nitrogen applications is sometimes suggested as a way of increasing yield or hedging the cost of nitrogen against a poor season. In high rainfall, leaching soils this may be the case, however in lower rainfall situations application of all nitrogen near to seeding is usually preferable.

TRIAL DETAILS

Property	Liebe Group Long Term Research Site, West Buntine
Plot size & replication	20m x 2.1m x 3 replicates
Soil type	Yellow sandplain
Sowing date	2/6/08
Seeding rate	80 kg/ha Arrino
Fertiliser	2/6/08: As per treatment structure
Paddock rotation	2005 = Wheat, 2006 = Lupins, 2007 = Wheat
Herbicides	2/6/08: Glyphosate, Spray.Seed, Boxer Gold – Farmer applied. 7/7/08: Jaguar 700ml/ha, Ally 3 g/ha, Lontrel 120 g/ha 10/8/08: Monza 25 g/ha
Growing Season Rainfall	234mm

Table 1: Soil test results from the Liebe Group Long Term Research Site, West Buntine.

Soil Tests	P	K	S	OC	Nitr	Amm	pH	PRI
	28	75	11.5	0.9	7	1	6.1	2.2

RESULTS

Table 2: Yield and Quality at Liebe Site.

Treatment	Yield (t/ha)	Protein (%)	Screenings (%)	Gross Return (%/ha)	Fertiliser Cost ($/ha)	Gross Margin ($/ha)
Nil	3.2a	10.6	0.25	896.00	0	896.00
Nil N, 20P	3.3a	10.5	0.20	924.00	97.20	826.80
60N, Nil P	4.2bc	10.3	0.17	1176.00	86.45	1089.55
60N, 20P (at seeding)	4.5bd	10.7	0.26	1260.00	196.14	1063.86
30N, 20P (at seeding)	4.1c	11.3	0.42	1148.00	152.92	995.08
90N, 20P (N Split: 30N at seeding/60N 4WAS)	4.6d	10.7	0.23	1288.00	245.36	1042.64
120 N, 20 P (N Split: 30N at seeding/90N 4WAS)	4.6d	10.5	0.20	1288.00	288.60	999.40
60N, 20P (N Split: 30N at seeding/30N 4WAS)	4.5d	10.9	0.33	1260.00	202.14	1057.86
60N, 20P (All additional N at 4WAS)	4.5d	10.9	0.32	1260.00	202.14	1057.86
LSD (P=0.05)	0.39	n.s.	n.s.			

[1] Based on AWB for Dec ASWN Base Price $338/tonne ($280 At Port).
[2] Fertiliser Prices for March 2008 + Freight $25.00 + N Spreading $6.00/ha
[3] Yields followed by the same letter do not significantly differ.

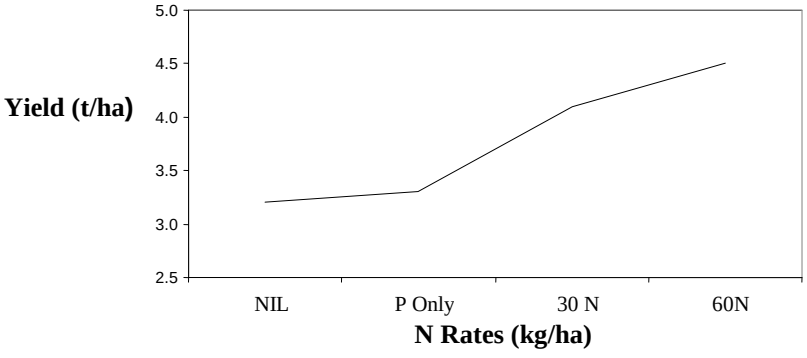

Figure 1: Nitrogen Response in wheat at the Liebe Group Long Term Research Site, West Buntine.

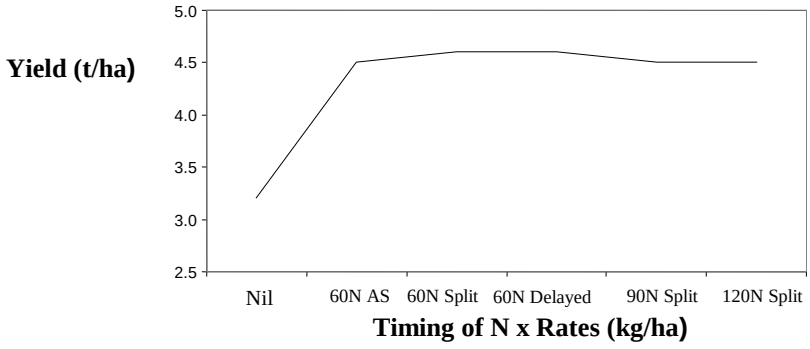

Figure 2: Response to Timing of Nitrogen in wheat at the Liebe Group Long Term Research Site, West Buntine.

COMMENTS

- The trial responded by 800 kg/ha to 30 kg/ha N and 1200 kg/ha to 60 kg/ha N. However there were no significant responses to splitting or delaying the nitrogen applications. Split or delayed nitrogen applications typically only provide a benefit where leaching is a concern or potential yield is higher than initially predicted.

- Nor were there responses to higher rates of nitrogen. Surprisingly, there were no significant responses in grain protein levels at high nitrogen rates, indicating that the extra nitrogen was used in the production of high grain yield.

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