

# VARIABLE RATE APPLICATION OF NITROGEN IN WHEAT

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## AIM

To evaluate the effect various rates of granular urea spread 3-4 weeks post of seeding has on the yield and profitability of wheat.

## BACKGROUND

This trial is an on-farm demonstration for the Liebe Group's GRDC funded adoption project '**Growers critically analysing new technologies for improved farming systems**'.

Given the current high price of inputs and the dry seasons experienced in 2006 and 2007, opportunities to improve gross margins by using variable and lower inputs across paddocks is of considerable importance to growers in the Liebe region.

This trial assesses various rates of nitrogen within one paddock and the associated impact it has on yield and gross margins.

## TRIAL DETAILS

<b>Property</b>	Rod & Shelley Birch, east Coorow
<b>Plot size &amp; replication</b>	150m x 22m x 3 replicates
<b>Soil type</b>	Yellow sand
<b>Sowing date</b>	13/5/08
<b>Seeding rate</b>	85 kg/ha Wyalkatchem Wheat
<b>Variety</b>	Wyalkatchem
<b>Fertiliser</b>	13/5/08: 50 kg/ha DAPSZC Post seeding (4-13/6/08): Low 0 kg/ha urea; Moderate 50 kg/ha urea; High 80 kg/ha urea
<b>Paddock rotation</b>	2005 = Wheat, 2006 = Wheat, 2007 = Lupins and deep ripped
<b>Herbicides</b>	Pre seeding: 1 L/ha Roundup PowerMAX, 1.8 L/ha Triflurex 6/6/08: 300 mL/ha Tigrex, 300 mL/ha LVE + LVE MCPA
<b>Growing Season Rainfall</b>	230mm

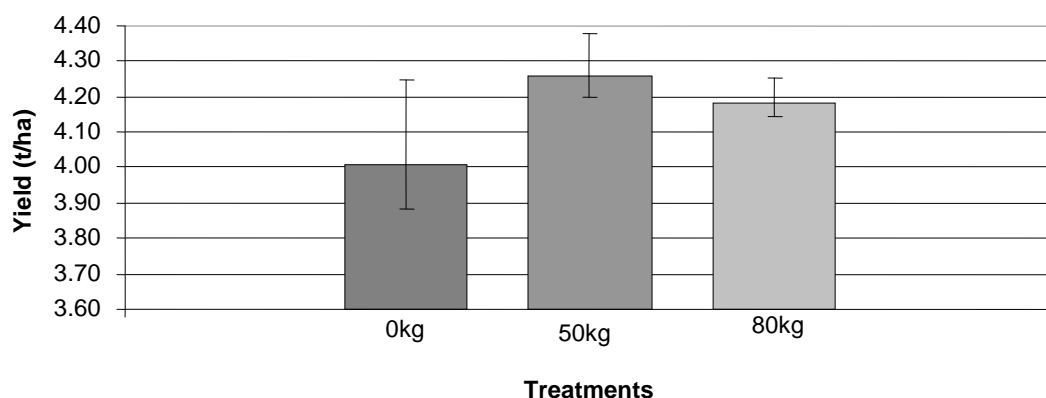
## RESULTS

**Table 1:** Yield, quality and grade of wheat for various replicates of a variable rate trial at east Coorow.

Urea Treatment	Yield (t/ha)	Protein (%)	Screenings (%)	Weight (kg/hectolitre)	Gross Return (\$/ha) <sup>1</sup>	Urea (base plus treatments) (\$/ha) <sup>2</sup>	Gross return less Urea (\$/ha) <sup>3</sup>
0 kg	4.01	9.8	1.42	81.26	1,087	43	1,044
50 kg	4.26	9.5	1.24	81.21	1,154	72	1,082
80 kg	4.18	9.6	1.14	81.54	1,133	89	1,044
LSD (5%)	ns	ns	ns				

<sup>1</sup>Based on EPR on 25/12/08 for ASW \$271/tonne (Agracorp daily grain price).

<sup>2</sup>Costs based on prices in Farm Budget Guide 2008; <sup>3</sup>All other variable costs (eg. pesticides) not included but are the same regardless of treatment.



**Figure 1:** Yield measured in 2008 for various nitrogen rate applications in wheat ( $\pm$ standard error).

The results reveal that there were no significant differences between the three urea treatments, however there was a trend toward the moderate urea application rate of 50 kg/ha having the higher yield and hence higher returns (Table 1). There was no effect of post-seeding urea treatment on grain protein but a trend towards slightly lower screenings with increasing fertiliser although these were at low levels (1.4-1.1%) regardless of treatment. Figure 1 also indicates that there was significant variation in the yield within each treatment with variability being greatest for the plots which received no post-seeding urea.

#### COMMENTS

- Protein and yield responses may have been impacted by nitrogen residues in the soil from the two previous dry seasons. This may have also influenced the overall nitrogen requirements for the trial paddock in 2008. Further testing of the same plots in consecutive years would be required to fully investigate the long term effect of the various nitrogen treatments. Soil testing results will also give an indication of nitrogen requirements for the 2009 season.
- One treatment of 130 kg/ha was also tested, however due an error during the harvesting of the trial and there only being one replicate for the treatment, the results have not been included.

#### ACKNOWLEDGEMENTS

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- Thanks to Rod and Shelley Birch for hosting the trial site and assisting with the seeding, harvesting and implementation of the trial.
- Also, thanks to Emma Wilson (formerly Liebe Group) for initial setup of the trial and the CBH Group for grain analysis.

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