

### 4.3 INVESTIGATION OF THE BENEFITS OF SPECIALTY NITROGEN PRODUCTS AND LIQUID NITROGEN OPTIONS FOR LATE APPLICATION IN CEREALS – TRIAL 2 (INVERLEIGH VIC)

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**Location:** SFS Inverleigh Research site

#### Acknowledgements:

The trial is part of a GRDC funded collaborative project between Victorian DPI, Melbourne University and Incitec Pivot.

**Rainfall (2005):** 500.8 mm

**GSR:** (Apr – Nov) 350.3 mm

#### Summary:

When topdressing nitrogen late in the season with a view to protein increase, consideration should be given to lower volatility nitrogen products when the likelihood of follow up rainfall is low. This trial supported their use by demonstrating significant protein increases, although this was confounded by significant production increases in response to 30 kgN/ha as granular urea. No other granular urea treatment gave significant responses.

#### Background:

Research in recent years has demonstrated improvements in nitrogen use efficiency through manipulation of nitrogen fertiliser placement and timing in crops. While such tactical manipulation has provided significant improvements in crop yield and quality, it is often difficult to manage logistically. This project sets out to investigate whether combinations of placement combined with new product technology has the potential to further improve nitrogen fertiliser efficiency whilst easing the logistical complexities of tactical management.

#### Objectives:

To compare in crop protein response to late application of urea, Easy N and dissolved urea in solution.

To assess differences in topdress nitrogen response when these products are treated with Agrotain®.

#### Methodology:

Completely randomised split plot block design with 4 replicates. Plots were 20m x 2m. Granular treatments were top dressed by hand. Liquid treatments were applied either using flat fan nozzles for foliar application or using dribble bands for direct band application.

**Table 4-7: Site Details**

Variety	Chara
Sowing date	4/07/2005
Sowing rate	85 kg/ha
Roundup Powermax	2 l/ha
Dual Gold	500 ml/ha
Granulock CuZn	175 kg/ha
Basal P	35
Basal N	50 kg/ha
PH (1:5 water) 0-10 cm	6.5
Phosphorus Colwell P	90
Triflur @ 1.2L/ha	IBS 4/7/06
Hussar @ 200g/ha + 1% Hasten	26/8/06
Opus @ 250ml/ha	14/10/05
Harvest date	2/1/06
Top dress date	26/10/06

### Results and Discussion

Green Urea 7 at 60kg N/ha and Urea at 30kg N/ha were the only two treatments that were able to significantly increase yield above the control. All Green Urea, Easy N (30 & 60N regardless of application method), urea solution treatments (30 & 60N regardless of application method) and 30N of urea were able to significantly increase grain protein over the control.

The improved performance of lower volatility forms of nitrogen or urease inhibited forms reflects the findings of the adjacent NMI trial where it is assumed that significant volatilisation of nitrogen from granular urea resulted from a protracted dry period after top dressing.

The one exception to this is the performance of 30 kgN/ha as top dressed urea which showed both significant yield and protein response.

**Table 2: Treatments - Yield & Protein**

Product	App. method	ON	15N	30N	60N
Urea	Broad cast	2.81 (8.0)	2.77 (8.4)	3.17 (9.7)	2.72 (9.1)
Green Urea 14	Broad cast				3.03 (11.2)
Green Urea 7	Broad cast				3.18 (11.0)
Entec urea	Broad cast			2.82 (9.2)	2.76 (8.7)
Easy N (UAN)	Flat fan		3.01 (9.1)	3.01 (10.2)	2.83 (11.5)
Easy N (UAN)	Dribble band				2.97 (11.0)
Dissolved urea	Flat fan		2.77 (8.8)	2.80 (10.5)	2.83 (11.0)
Dissolved urea	Dribble band				2.86 (11.5)
	<b>F pr.</b>	<b>LSD</b>		<b>CV%</b>	
<b>Yield (T/ha)</b>	<b>0.006</b>	<b>0.256</b>		<b>6.3</b>	
<b>Protein (%)</b>	<b>&lt;0.001</b>	<b>1.64</b>		<b>11.6</b>	