Urease Inhibitors

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Purpose:	To determine the effectiveness of urease inhibitor products
Location:	Warradarge
Soil Type:	Non-wetting white sandy gravel
Soil Test Results:	see below (2.0t/ha lime applied in 2010)
Rotation:	2013: Wheat, 2012: Lupins
Growing Season Rainfall (April- October 2014):	358mm

Depth (cm)	pH	EC	OC	Nit N	Amm N	P	PBI	K	S
0-10	6.0	0.04	1.7	3	4	34	13	53	7

BACKGROUND SUMMARY

Volatilisation losses of up 30 % from urea have been measured in the West Australian wheatbelt under adverse environmental conditions. The alkalinity of dissolved urea is a key driver of volatilisation losses. Flexi-N is at worst half as volatile as urea (and often much less) because only half the nitrogen is in the urea form and the pH of Flexi-N is about neutral.

Urease inhibitors work by reducing the activity of the enzyme (urease) that facilitates volatilisation.

TRIAL DESIGN

	Treatments		
Trt	**Z13 (L/ha)**	**Z30 (L/ha)**	**N**
1	-	-	0
2	65 Urea	-	30
3	65 Urea + Inhibitor	-	30
4	71 Flexi N	-	30
5	71 Flexi N + Inhibitor	-	30
6	71 Flexi N	71 Flexi N	60

Plot size: 2.5m x 20m

Machinery use: CSBP Primary Sales cone seeder

Repetitions: 5

Crop type and varieties used: Mace wheat

Seeding rates and dates: 5 May, 75 kg/ha

Fertilizer dates and rates: Seeding: 100 kg/ha Big Phos, June 18: 50 kg/ha MOP basal, Z13 treatments applied, July 22: Flexi N applied to treatment 6.

Herbicide rates and dates: 118 g/ha Sakura, 2 L/ha Treflan, 400 ml/ha Lorsban, 1.6 L/ha Ultra Max May 5: 650 ml/ha Velocity, 400 ml/ha LVE June 18.

Other applications/ treatment rates and dates: Harvest on 11 November

RESULTS/STATISTICS

Trt	Z13 (L/ha)	Z30 (L/ha)	N	Yield (t/ha)	Protein (%)
1	-	-	0	1.44	10.6
2	65 Urea	-	30	1.97	10.1
3	65 U Tech Urea	-	30	2.12	10.0
4	71 Flexi-N	-	30	1.98	10.0
5	71 Flexi-N + 1% Solvay	-	30	1.82	10.4
6	71 Flexi-N	71 Flexi-N	60	2.10	10.0
			Prob	<0.001	0.35
			Lsd	0.282	ns

FINANCIAL ANALYSIS OF RESULTS

-Cost of an addition 30kg N (Urea @ $580/T) = $38/ha.

-Additional income with a wheat yield increase of 500kg (wheat @ $280/T) = $140/ha

-ROI more than 300%

OBSERVATION/ DISCUSSION/ MEASUREMENTS

-The site was very responsive to nitrogen (N) fertiliser. 30 kg N/ha increased yields by about 0.5 t/ha (18 kg grain/kg N).

-12 mm rain fell 3 days after the N applications in June. This would have limited volatilisation losses.

-The trial site was also quite variable and no response to the urease inhibitors was measured.

-Hectolitre weights were 75-77kg/hl, and screenings about 3%.

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