

## Urea and CAN comparison for wheat protein – Neridup

- No difference was measured between urea and CAN as sources of nitrogen fertiliser tested in this demonstration.
- There was no yield but a small protein response to additional nitrogen fertiliser indicating the good nitrogen status of the site and the high potential yield.
- The higher cost of CAN can not be justified on these results obtained in an above average growing season.

Site Information	
Group	Neridup Soil Conservation Group
Location of trial	Neridup, 35 km NE from Esperance
Farmer	Rob and Marg Agnew
Soil Type	20 cm gravelly sand over gravel, 50 cm to clay
Organic Carbon	1.4% OC
Available N ppm	7 nitrate 4 ammonium
Actual annual rainfall	527 mm (Jan-Nov)
Ave annual	400 mm
Growing Season	375 mm
Rainfall (GSR)	(May-Oct)
Ave GSR	275 mm
Yield Potential (t/ha)	5.7 t/ha
Yield Actual (t/ha)	4.0 t/ha
Paddock History	
2002	canola
2001	pasture
2000	subclover pasture
Seeding Date	26 May 2003
Variety &	Cascades
Sowing Rate	75 kg/ha
Base Fertiliser	DAP 80 kg/ha at sowing and Muriate of Potash 35 kg/ha applied in April

### Aim

To demonstrate the importance of adequate nitrogen nutrition to achieve desired protein levels. To evaluate the Nitrogen fertiliser recommendation tools available for optimum N fertiliser strategies.

To compare N sources of CAN and urea for crop response as a post sowing fertiliser.

### Design

11m wide plots 200m long were marked out in a section of paddock. A recommended rate of nitrogen was chosen from the Nitrogen Calculator based on paddock details and a target yield of 3 t/ha with 10.5% protein. 35 kg/ha of nitrogen as urea or CAN was applied as alternate control plots at tillering, on 7 July, 6 weeks after sowing. Other rates were applied between the control plots according to treatments. 18 mm of rain was recorded 4 days after application.

### What happened

The trial area was managed as part of the paddock with herbicides and fungicides applied as required. There was little difference to see between any of the treatments although head counts near maturity showed an increasing number of heads with increasing nitrogen rate. There was no difference in tiller or head density between the two nitrogen sources.

Despite the increasing head density with nitrogen rates, grain yields were similar for all treatments including the nil. Grain protein increased with increasing nitrogen rate but there was no difference between nitrogen sources.

Returns from additional nitrogen applied at tillering were related to the cost of the product used. As there was no difference in yield at this site between the two sources used, the cost of the products influenced the return. The same rates of applied nitrogen as CAN generated

larger losses than equivalent nitrogen from urea. Unfortunately the highest rate of urea plot was not measured for a comparison over the whole range of rates tested. While 10.5% protein was achieved at the highest rate of nitrogen tested, the higher than expected yield across the site meant that protein on the 35 kgN/ha plots was below target. All nitrogen applications were uneconomic with larger losses from higher rates. Application of no late fertiliser N was best, contrary to the Nitrogen Calculator rate. This was despite the higher yields achieved due to good seasonal rainfall (decile 9) on a well drained site.

Table 1: results from rates and sources of nitrogen fertiliser at tillering.

treatment	extra nitrogen kg/ha	tillers /sqm.	heads /sqm.	grain yield t/ha	grain protein %	\$/ha return to fertiliser over nil
Nil	0	605	329	4.1	9.8	0
65 Kg/ha CAN	17.5	627	366	3.8	10.1	-\$15
130 Kg/ha CAN	35	756	399	4.0	10.2	-\$38
259 Kg/ha CAN	70	733	458	4.2	10.5	-\$81
38 Kg/ha Urea	17.5	709	382	3.9	10.0	-\$8
76 Kg/ha Urea	35	773	422	4.1	10.3	-\$15
152 Kg/ha Urea	70	711	462	not harvested		
r <sup>2</sup> fit of line to CAN				ns	0.92	
r <sup>2</sup> fit of line to urea				ns	0.92	

Returns based on average of all plot yields, individual treatment proteins.

