

Nitrogen rates on canola stubble – Neridup

Summary of results

- ◆ On this fertile paddock with some transient waterlogging, there was less response to nitrogen than expected. There was no yield response and only a protein response to the highest rate of nitrogen applied.
- ◆ No rate of nitrogen applied 8 weeks after sowing as Nitrogold was economic.
- ◆ Results are not clear due to a subsurface water logging gradient across the site.

Site Information	
Group	Neridup Soil Conservation Group
Trial location	30 km NE from Esperance
Farmer	Ken and Colin deGrussa
Soil Type	Shallow sand over gravel over clay at 70 cm
Organic Carbon	1.7% OC
Available N ppm	20 nitrate 11 ammonium
Actual annual rainfall	575 mm (Jan-Nov)
Ave annual	490 mm
Growing Season	450 mm
Rainfall (GSR)	(May-Oct)
Ave GSR	333 mm
Yield Potential (t/ha)	7.0 t/ha
Yield Actual (t/ha)	3.1 – 3.4 t/ha
Paddock History	
2002	canola
2001	pasture
2000	wheat
Seeding Date	9 June 2003
Variety & Sowing Rate	Camm 80 kg/ha
Base Fertiliser	Super 100 kg/ha Ammonium Sulphate 110 kg/ha Multi MAP & Muriate of Potash 45 & 20 kg/ha

Aim

To investigate the optimum nitrogen fertiliser rate for yield and protein on a high yield potential sandplain site after canola.

Design

The paddock was sown normally with plots marked out across the working direction. The Nitrogen Calculator fertiliser rate based on paddock details and a 3 t/ha target yield and 10% protein was 60 kg/ha. 25kg/ha was applied at sowing and the balance forming the standard rate that was applied post sowing. A randomised block design of 3 replicates was used.

What happened

Rates of nitrogen fertiliser were applied as Nitrogold (26%N, 14%S) on 7 August, 8 weeks after sowing with a multi spreader. A total of 10 mm of rain was recorded 5,6 and 7 days after application and a further 14 mm recorded 11 days after.

The area remained relatively well drained despite the wet season (above decile 9). Only a small section of an end plot showed visible waterlogging effects but the trend of grain yields across the plots showed the effects of transient waterlogging below the surface increasing over one replicate. The nitrogen treatments were evident during the growing season which was reflected in the flowering biomass cuts.

Only a small yield increase was recorded for increasing nitrogen rates up to 34 kgN/ha. Similarly no protein increase was measured for lower rates of nitrogen but the highest rate of 101 kgN/ha was 1% above the other rates. Higher nitrogen rates led to more lodging but it did not cause grain loss at harvest.

No rate of top dressed fertiliser tested increased returns over the nil treatment. Estimated returns were calculated using the average yield of all plots over the whole site. The value of sulphur was not deducted from the price of the Nitrogold. The lack of a grain yield response and high protein levels indicate that the site was more fertile than estimated by the Nitrogen Calculator or Select Your Nitrogen.

Table 1: Results from rates of Nitrogold fertiliser applied 8 weeks after sowing.

treatment	topdressed nitrogen kg/ha	tillers /sqm.	heads /sqm.	grain yield t/ha	grain protein %	\$/ha return to fertiliser over nil*
nil	0	386	296	3.1	11.2	0
63 kg/ha Nitrogold	16	385	358	3.2	11.2	-\$14
130 kg/ha Nitrogold	34	408	354	3.4	11.1	-\$12
260 kg/ha Nitrogold	68	413	387	3.3	11.2	-\$68
390 kg/ha Nitrogold	101	452	406	3.2	11.7	-\$114
lsd 5%		54	68	0.28 (ns)	0.35	

*based on average yield of all replicates and protein levels of each treatment.

