TwinN Crop Trials

Canola Trial conducted by Dr. Brendon Neumann, Neu-agri Consulting

W. Cape, South Africa 2009

Canola

Summary:

A field trial was conducted in the Overberg region of the Western Cape, South Africa. The primary objective of the trial was to investigate the efficacy of TwinN on canola under dryland, winter rainfall conditions. TwinN is a microbial based product which claims to be able to supply significant quantities of nitrogen to crops (leguminous and non-leguminous crops) through microbial nitrogen fixation. The nitrogen so supplied can replace a portion of the plants nitrogen requirement thus reducing the amount of synthetic N that needs to be applied.

Unfortunately, serious bird damage prior to harvest meant that seed weight data was very inconsistent and no meaningful statistical data could be generated. As a result, total biomass was the only parameter that could be used as an indication of crop growth under different treatment conditions.

The combinations of TwinN with 25% synthetic N did not work effectively in this trial. It appears that canola requires a higher level of N fertilizer, especially on the nutrient poor soils of this site. TwinN combined with 50% synthetic N however, resulted in positive results.

Objective:

To determine what proportion of synthetic N can be replaced by two applications of TwinN in a dryland canola crop grown in the winter rainfall region of the Western Cape, South Africa.

Materials & Methods:

Trial Site:

The trial was conducted on Badgers Creek Farm, in Stanford, South Africa. The farm falls within the Overberg region of the Western Cape which is an extensive canola and wheat producing region. Soils were of the sandy loam type, the following soil test results for the trial field are shown in the table below.

Experimental Design:

The experiment was conducted using a randomised blocks design with 14 treatments and four replicates of each treatment. Each treatment plot measured 4m x 2m with 1m wide pathways between blocks.

Planting details:

The trial area was ploughed and disc harrowed prior to planting. All plots were then marked out with string and pre-plant fertilizer was applied to each plot as required (see treatment table below). Basal fertilizer was incorporated by raking the plots over twice in perpendicular directions. Shallow planting furrows were then made at 20cm spacing using a modified rake. Seed was then weighed out for each furrow to ensure an extremely accurate and even planting density. Seeds were lightly covered with soil by raking over the furrows.

SOIL TEST RESULTS FOR THE TRIAL FIELD

Acidity cmol/kg	pH KCl	P (citric) mg/kg	K mg/kg	Na mg/kg	Ca cmol/kg	Mg cmol/kg	NH_4-N %	Total Cations cmol/kg
0.78	5.4	37	138	31	2.82	1.45	0.14	5.54

Mapleton Agri Biotec Pty Ltd
137 Obi Obi Road, Mapleton Qld 4560 Australia
Phone: 1300 989 470 or +61 7 5445 7151
Email: TwinN@mabiotec.com
www.mabiotec.com

Mapleton International Ltd
EU, UK, USA & Africa
Phone: +44 1666 849415
Email: info@mapletoninternational.com
www.mapletoninternational.com
OR LOCAL DISTRIBUTOR

All other countries
Phone: +61 7 5445 7151
Email: TwinN@mabiotec.com
www.mabiotec.com
OR LOCAL DISTRIBUTOR

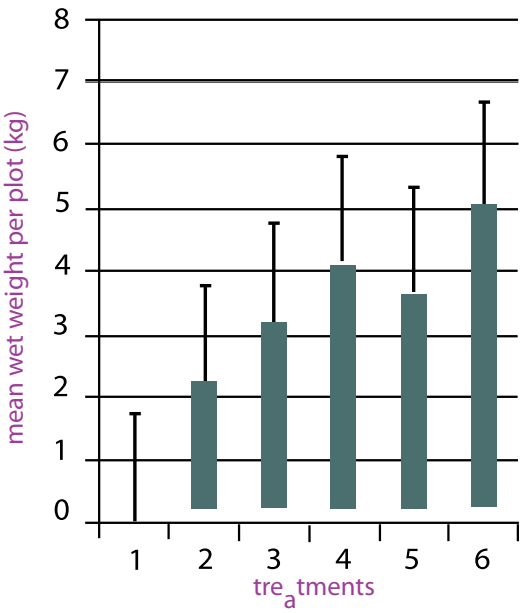
Canola

0% Fertilizer Control | 25% Fertilizer Control | 50% Fertilizer Control | 100% Fertilizer Control

Treatments:

	Description	Basal fertilizer	Topdress or TwinN week 5	TwinN week 9	Total Synthetic N/ha
1	0 % of standard	-	-	-	0
2	25% of standard	45kg/ha MAP 72kg/ha LAN 80kg/ha KCℓ	-	-	25
3	50% of standard	45kg/ha MAP 72kg/ha LAN 80kg/ha KCℓ	-	-	50
4	100% fertilizer control	45kg/ha MAP 72kg/ha LAN 80kg/ha KCℓ	178kg/ha LAN	89kg/ha LAN	100
5	25% + TwinN	45kg/ha MAP 72kg/ha LAN 80kg/ha KCℓ	TwinN	TwinN	25
6	50% + TwinN	45kg/ha MAP 72kg/ha LAN 80kg/ha KCℓ	89kg/ha LAN TwinN	TwinN	50

Figure 1 Graph showing the effect of various fertilizer treatments on canola plant mass



Results:

A good response to synthetic N fertilizer can be seen in treatments 1-4 in figure 1. Unfortunately, the difference between 50% and 100% synthetic N is not significant which does detract from the data slightly. As seen with the wheat data from the same trial site, 25% fertilizer plus TwinN treatments resulted in yields below the level of the 100% synthetic fertilizer control. The reductions in yield were however not significant at P=0.05. 50% synthetic N and TwinN resulted in yields above those achieved by 100% synthetic fertilizer. Further to this, the combination of 50% synthetic N and TwinN (treatment 6) resulted in significantly higher plant mass than 50% synthetic N alone (treatment 3).

KEY
1 = Zero fertilizer control
2 = 25% synthetic N control
3 = 50% synthetic N control
4 = 100% synthetic N control
5 = 25% synthetic N + TwinN
6 = 50% synthetic N + TwinN

Time-line: **Planting = 10 July 2009. 1st TwinN/LAN topdress = 11 August 2009. 2nd TwinN = 09 September 2009 Harvest = 09 November 2009**