

## A Comparison of Potassium rates and timings in Canola

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**Purpose:** This was the first year of an intended long term trial investigating the effect of K nutrition on sandplain. Potassium was applied at rates between zero and 100 kg/ha IBS and banded in the forms of MOP and compound NPK product (Vigour).

**Location:** Colty Downs, West Moora (Richard and Pam Hamilton)

**Soil Type:** Yellow sandy loam

### Soil Results:

	P (mg/kg)	K (mg/kg)	S (mg/kg)	OC (%)	Cu (mg/kg)	Zn (mg/kg)	PRI	pH (CaCl <sub>2</sub> )	Al (mg/kg)
Topsoil (0-10cm)	25	31	6	0.83	0.78	1.12	3	4.7	1.3
Subsoil (20-30cm)	8	21	6	0.24	0.29	0.18	4	4.3	7.2

**Rotation:** 2008 Wheat; 2007 Lupins; 2006 Wheat

**GSR:** 381mm

### BACKGROUND SUMMARY

This trial was designed to examine the response to K applied to strong sandplain, and to compare the efficacy of potassium when drilled (a more recent practice) or top dressed. There is a current belief that K is more effective when drilled or banded than when top-dressed in sandy soils. This is based on a belief that top dressing prior to sowing will result in the K being graded in to the non-wetting ridges, while top dressing post seeding may cause decreases in uptake due to delays in application and dissolution. While both theories are sound, most research suggests that K is mobile enough to be plant available no matter how it is applied.

### TRIAL DESIGN

**Crop Type:** Canola (Cobbler)

**Sowing Date:** 19 May 2009

**Row Spacing:** 22 cm

**Sowing Rate:** 5 kg/ha

**Sowing Depth:** 1 cm

**Machinery:** Plot seeder with Knife points and press wheels

**Seed Treatment:** Jockey & Gaucho

- 2t/ha Lime & 200kg/ha Gypsum were applied pre-seeding
- All treatments (except Treatment 1 - UTC) had 100kg/ha MAPSZC (10.6N, 21P, 8S, 0.3Cu, 0.3Zn) basal at seeding
- All treatments (except UTC and Treatment 3 – 0 N) had 120kg/ha N applied as Urea in 3 timings; 1<sup>st</sup> - IBS on 19<sup>th</sup> May; 2<sup>nd</sup> - 4-6 leaf on 29<sup>th</sup> June; 3<sup>rd</sup> - pre-spiking on 3<sup>rd</sup> August

No.	Treatment (kg/ha)
1	Untreated control (UTC) (no fertilizer)
2	0 K
3	25 K banded as MOP (0 N)
4	25 K banded as MOP
5	12.5 K banded as MOP
6	6.25 K banded as MOP
7	25 K topdressed IBS
8	50 K topdressed IBS
9	100 K topdressed IBS
10	12.5 K banded as Vigour
11	16 K banded as Vigour

## RESULTS

In this trial there were no significant differences between any K treatments, with all treatments that received equivalent N and P averaging between 1.73 and 1.96 t/ha. The UTC & Treatment 3 yields were significantly lower than all other treatments (table 1), with 120 kg/ha N resulting in an average grain yield response of 1 t/ha.

**Table 1** Results and Analysis of Variance for Grain yield (t/ha) at harvest.

*Significant difference indicted by letters in right hand column*

No.	Treatment	Yield	
1	Untreated control (no fertilizer)	0.91	b
2	0 K	1.78	a
3	25 K banded as MOP (0 N)	0.79	b
4	25 K banded as MOP	1.73	a
5	12.5 K banded as MOP	1.75	a
6	6.25 K banded as MOP	1.83	a
7	25 K topdressed IBS	1.97	a
8	50 K topdressed IBS	1.94	a
9	100 K topdressed IBS	1.93	a
10	12.5 K banded as Vigour	1.86	a
11	16 K banded as Vigour	1.73	a
LSD (P=.05)		0.25	
CV		8.76	

## DISCUSSION

- There were no significant differences between K sources or rates at this trial, despite soil test model predictions of high K response
- Canola did not respond to high P application at this site in the absence of Nitrogen
- The site was highly N responsive, although the N use efficiency suggests leaching was moderate. This may have been compounded by low pH and the presence of Aluminium in the subsoil.
- More K response may be seen in wheat in the 2010 season.

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