

Summit Vigour® in Wheat

Aim: To evaluate the benefits of drilled potassium when used in conjunction with higher phosphorous applications.

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Co-operator: Agritech Crop Research



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Location: Wubin

Background:

Potassium usage on cereal crops has risen dramatically over the past 5 years due to its profitable contribution to grain yield and quality. It has also been shown to have beneficial effects on leaf disease, drought and frost tolerance. From past trials conducted by Summit Fertilizers, drilled potassium has proved to be the most efficient way to spend your potassium dollar, as young plants can access the nutrient immediately. Summit Vigour® contains potassium in every granule and can be safely drilled with wheat. The purpose of this trial is to determine the efficiency of drilled potassium when used as Vigour® compared to top-dressed MOP. The efficiency of drilled potassium when used with high rates of P is also evaluated. Two liquid NPK (VigourFLO) treatments are also compared.

Trial Details:

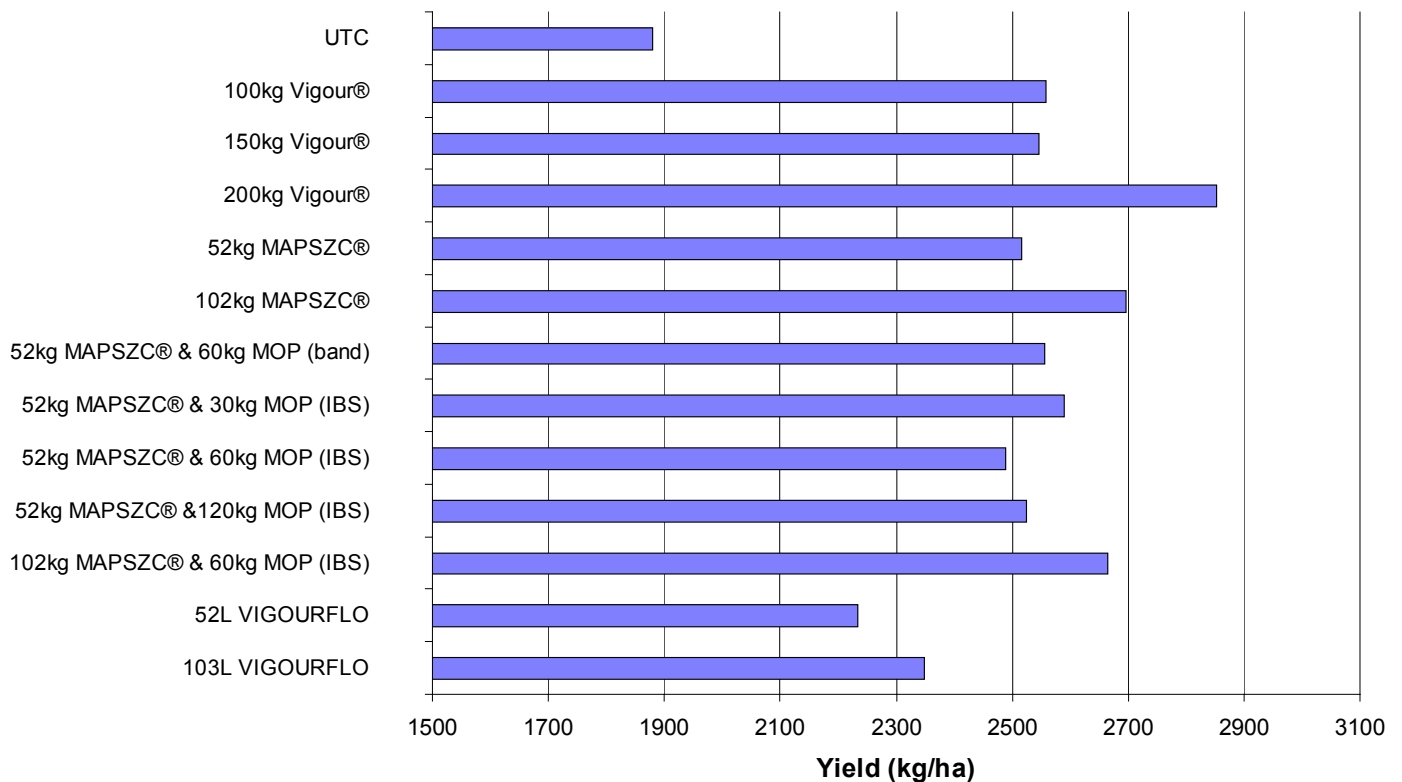
Plot size and replication	1.8 * 20m, 3 reps		
Soil type	Sandy loam		
Sowing date	22 nd May 2003		
Conditions at sowing	Moist		
Machinery	Harrington Point with Gumbo Boot		
Seeding rate	Wyalkatchem @ 75kg		
Fertiliser	Various plus N Basal to 60kg with Urea Traces basal with foliar application		
Herbicides and Insecticides	Roundup P/Max	1.5	L/ha
	Trifluralin	2	L/ha
	Logran	35	g/ha
	Chlorpyrifos	1	L/ha
	Giant	900	mL/ha
Paddock History	2002 =Lupin, 2001 =, 2001=		

Soil Test results:

Depth (cm)	P (ppm)	K (ppm)	Cu (ppm)	Zn (ppm)	S (ppm)	PRI	pH
0 – 10	28	48	0.5	0.1	9	2	5
10 - 20	11	35	0.4	0.1	10	9	4.5

Results:

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Potassium response at this site was limited. This may have been caused by a high aluminium concentration at depth (10-20 cm = 14 ppm), which may have limited the uptake of nutrients. Evidence of aluminium toxicity can be seen in the phosphorous (P) response at this site. A significant (lsd 5%) increase in yield was observed when applied P levels were lifted from 11kg/ha (52kg MAPSZC®) to 22kg (102kg MAPSZC®). Just as Iron ‘locks up’ P in the soil, aluminium essentially does the same. Aluminium becomes more available in the soil as the soil pH falls below 5.0. High aluminium content is picked up by the PRI soil test. This can be seen from the soil test from this site where the PRI lifts to 9 at a depth of 10-20cm.

A significant (lsd = 5%) potassium placement response was observed between 200kg Vigour® and 102kg MAPSZC® + 60kg MOP top-dressed immediately before sowing.

When applied with high P rates (22kg P/ha), the drilled Vigour® produced 190kg more grain yield than the top-dressed MOP at the same rate. A significant (lsd = 5%) grain yield difference was also observed between 200kg Vigour® and 102kg MAPSZC®. There was no difference in yield between a high rate of MAPSZC® or with 60kg MOP top-dressed, which suggests better uptake of potassium when it is drilled.

No difference was observed when MOP was banded below the seed at this site and there were no advantages to using a liquid fertilizer source.

Summary:

- Applying high phosphorous and potassium rates in Vigour® significantly (lsd = 5%) maximised grain yield
- Drilled potassium was significantly (lsd = 5%) more effective than top-dressed potassium, when used with high phosphorous rates
- High phosphorous rates in MAPSZC® (22kg P/ha) significantly increased yield
- Banded potassium did not significantly increase yield (lsd = 5%).
- The PRI soil test efficiently determines soil P lockup by measuring soluble aluminium below pH 5.0.

Technically reviewed by: