Summit Vigour® in Wheat

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

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Location: Wickepin

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	2.2 * 20m, 3 reps
Soil type	Sand
Sowing date	28th May 2003
Conditions at sowing	Moist
Machinery	Harrington Point with Gumbo Boot
Seeding rate	80kg Wyalkatchem
Fertiliser	Various + Basal 60kg N with UREA. 100kg Gypsum across all treatments
Herbicides and Insecticides	SpraySeed 2 L/ha Trifluralin 1.5 L/ha Logran 35 g/ha Chlorpyrifos 1 L/ha SpraySeed 2 L/ha MCPA 500 1.2 L/ha
Paddock History	2002 = Lupins, 2001 =Pasture , 2000 = Pasture

Soil Test results:

Depth (cm)	P (ppm)	K (ppm)	Cu (ppm)	Zn (ppm)	S (ppm)	PRI	pH
0 – 10	24	25	0.7	0.6	6	5	4.2

Results:

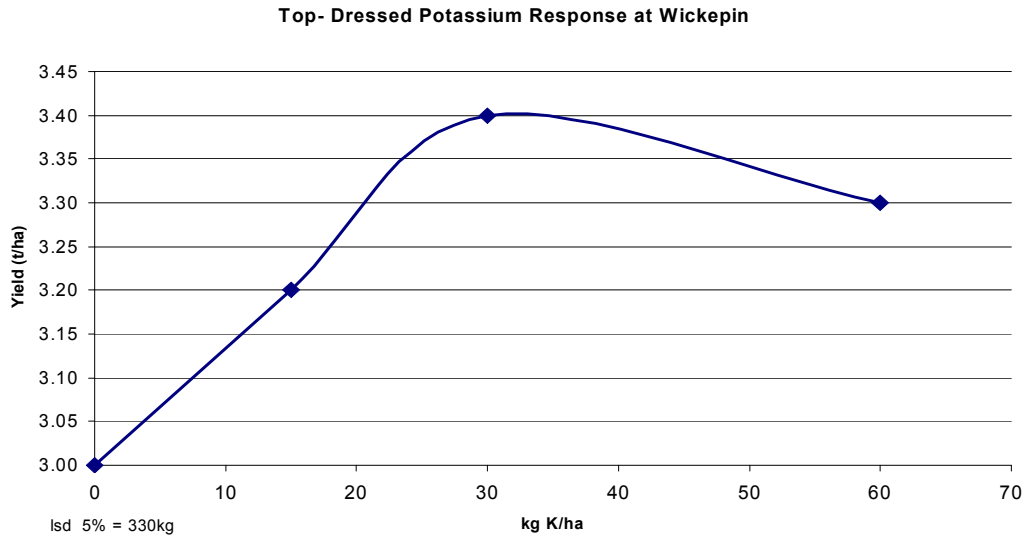

Figure 1. Potassium response in wheat applied immediately before sowing.

This site responded to applied potassium. Muriate of Potash top-dressed up to 60kg/ha immediately before sowing produced 400kg/ha (lsd 5%) more yield than the untreated plot (Figure 1). There was no further response to applied potassium above 30kg K/ha.

Vigour® applied at 200kg/ha produced maximum grain yield of 3.47t/ha. This was significantly (lsd = 5%) higher than Vigour® applied at 100kg/ha. The higher rate of Vigour® also contained the higher rate of phosphorous (22kgP/ha) which may indicate a P response also. To check for a P response, a high rate of MAPSZC® and a high rate of MAPSZC® plus top-dressed potassium were included in the treatments. MAPSZC® at the high rate produced a slight increase in grain yield above the low MAPSZC® rate. There was little difference between the high MAPSZC® rate and the high MAPSZC® rate plus potassium treatments.

At the same rate of P applied as MAPSZC®, there was no difference between MOP applied at 60kg top-dressed or banded (Figure 2). There was a potassium placement response observed between 200kg Vigour® and 102kg MAPSZC® + 60kg MOP top-dressed immediately before sowing. When applied with high P rates (22kgP/ha), the drilled Vigour® produced 246kg more grain yield than the top-dressed MOP at the same rate.

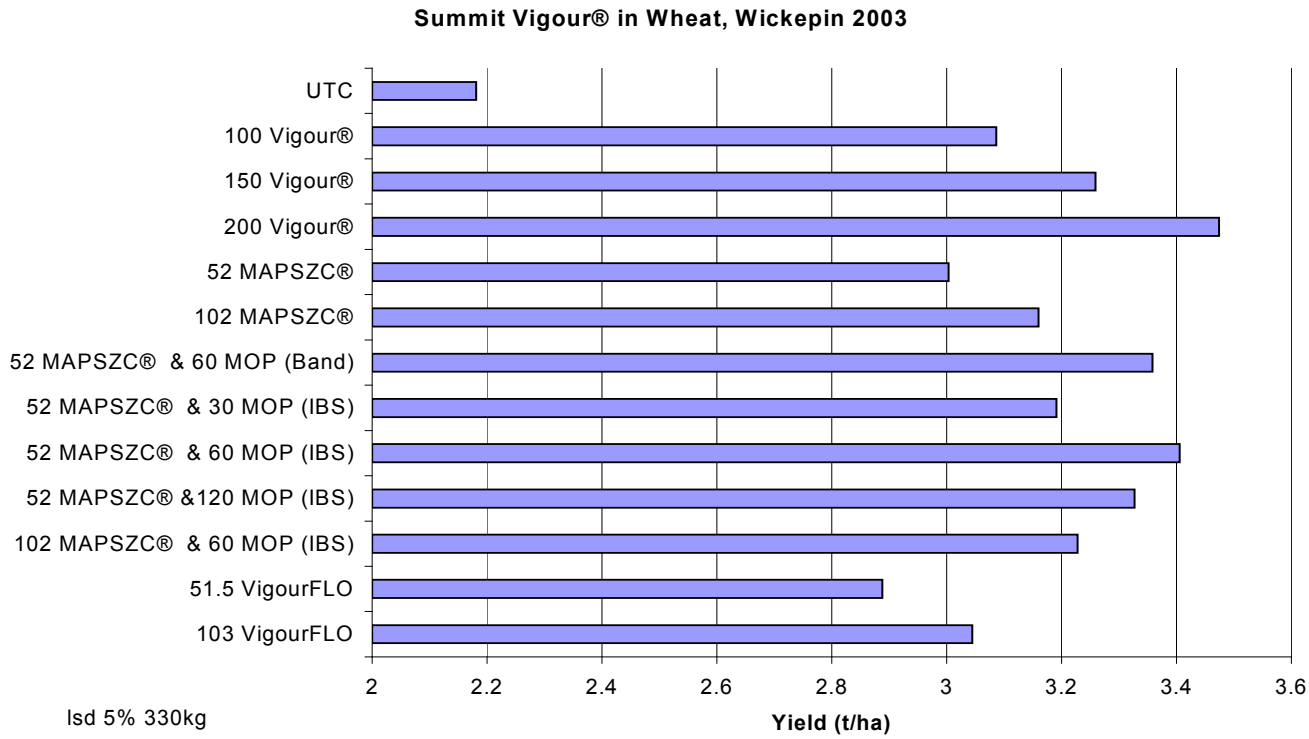

Figure 2. Wheat grain yield (t/ha) response.

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 potassium in Vigour® significantly (lsd = 5%) maximised grain yield at high (22P) phosphorous rates
- Drilling Vigour® with the seed produced more grain yield than top-dressed potassium, when used with high phosphorous rates
- MOP banded below seed did not significantly increase yield (lsd = 5%).