

## Summit Vigour® in Wheat

---

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

---

**Research Officer:** Steve Cooke & Justin Fuery  
**Company:** SUMMIT FERTILIZERS  
**Co-operator:** Agritech Crop Research



**Farmer:** Brian Mayfield  
**Location:** HYDEN

### 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 demonstrate the effectiveness of drilled potassium when used as Vigour® compared to top-dressed MOP. The effectiveness of drilled potassium when used with high rates of P is also evaluated. Two liquid NPK ( VigourFLO) treatments are also compared.

### Trial Details:

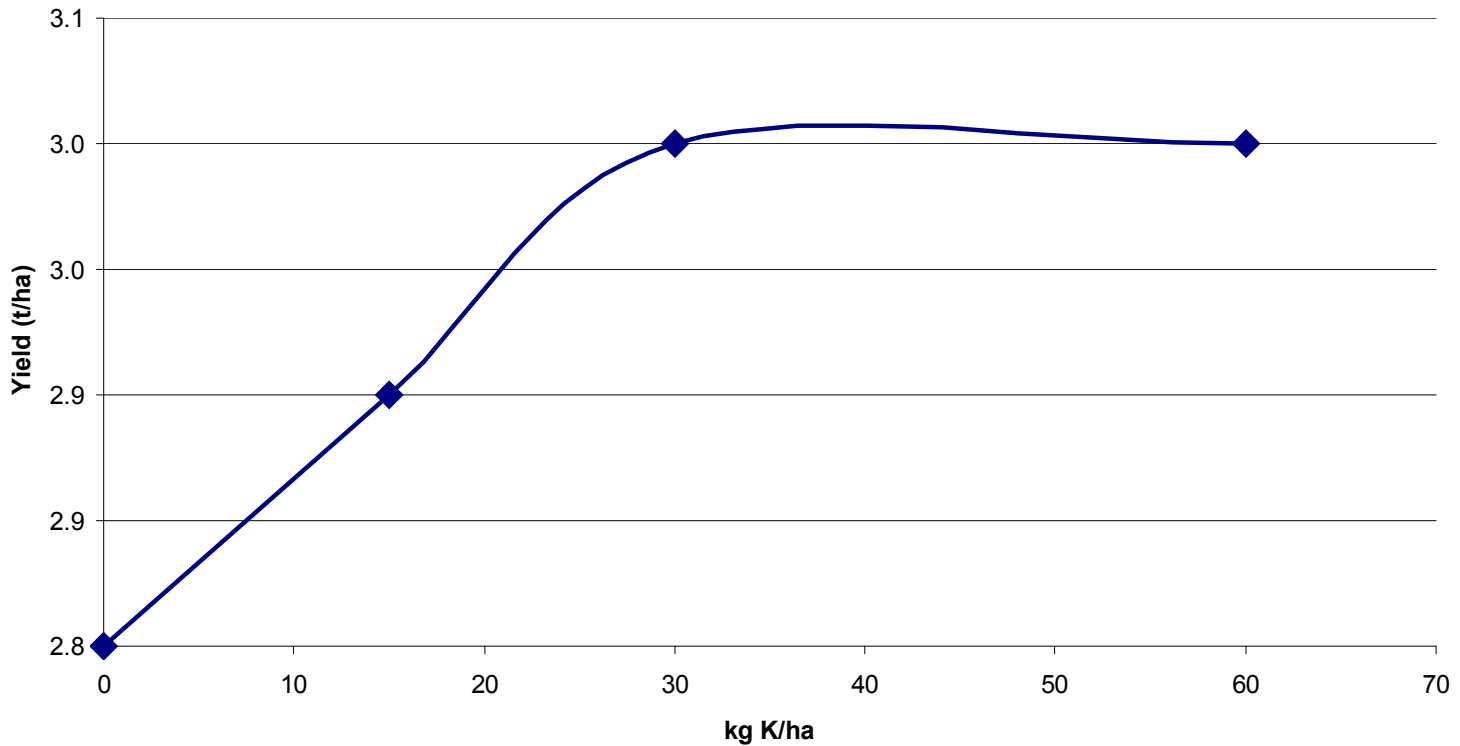
Plot size and replication	2.2 * 20m, 3 reps		
Soil type	Sand		
Sowing date	22 <sup>nd</sup> May 2003		
Conditions at sowing	Moist		
Machinery	Harrington Point with Gumbo Boot		
Seeding rate	75kg Wyalkatchem		
Fertiliser	Various + Basal 60kg N with UREA. 100kg Gypsum across all treatments. Traces basal with foliar spray		
Herbicides and Insecticides	Trifluralin	1.5	L/ha
	Logran	30	g/ha
	Glyphosate	1.5	L/ha
Paddock History	2002 = Lupins, 2001 = Barley, 2000 = Wheat		

### Soil Test results:

Depth (cm)	P (ppm)	K (ppm)	Cu (ppm)	Zn (ppm)	S (ppm)	PRI	pH
0 – 10	30	21	0.2	0.5	6	1	6.4

## Results:

### Top-Dressed Potassium Response at Hyden

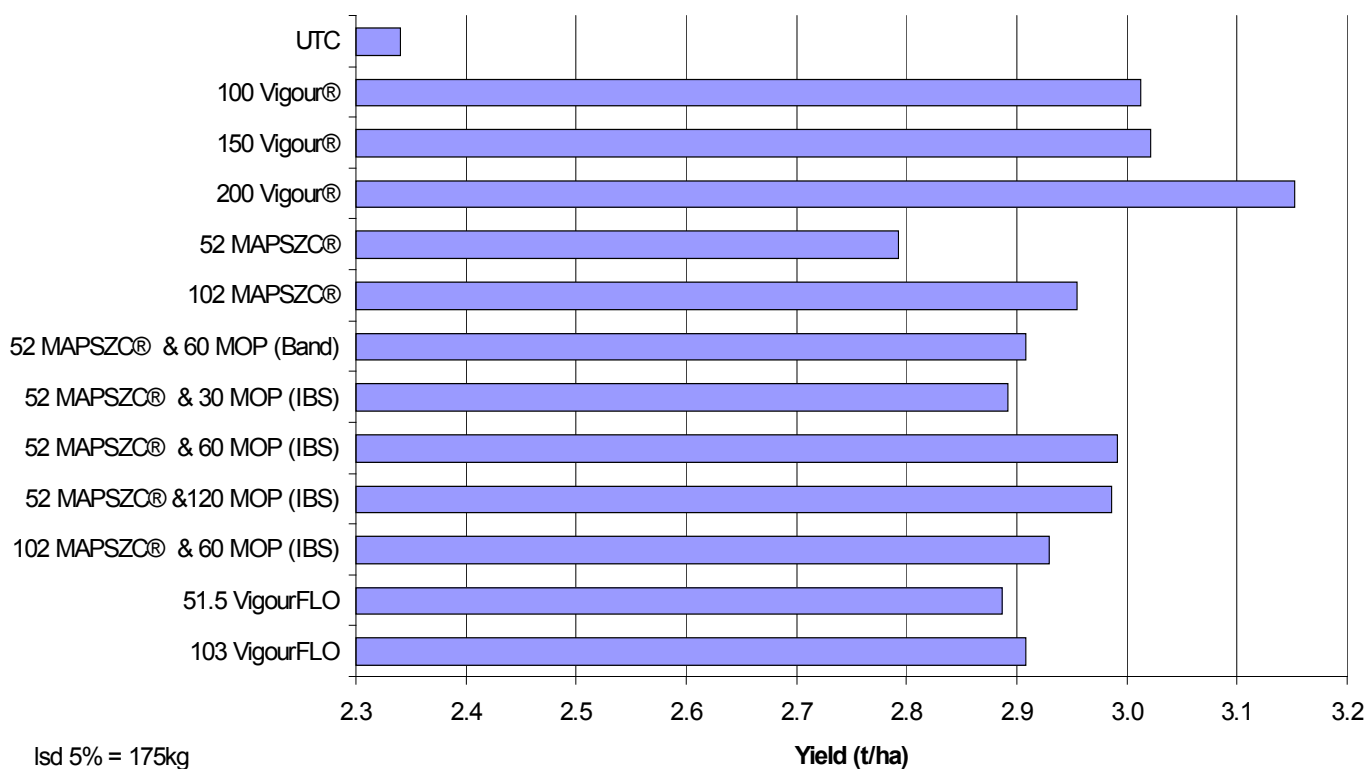


**Figure 1. Potassium response in wheat applied immediately before sowing.**

This site responded to applied potassium. Muriate of Potash top-dressed up to 60kg/ha immediately before sowing (IBS) produced 200kg/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 3.15t/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® with and without potassium were included in the treatments. There was little difference between the high MAPSZC® rate with and without potassium (Figure 2). MAPSZC® applied at the high rate produced a 160kg/ha increase in grain yield above the low MAPSZC® rate indicating a slight P response.

### Summit Vigour® in Wheat, Hyden 2003



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

There was a significant (lsd = 5%) potassium placement response observed between the 200kg Vigour® and 102kg MAPSZC® + 60kg MOP (IBS) treatments. When applied with high P rates (22kgP/ha), the drilled Vigour® produced 223kg more grain yield than the top-dressed MOP at the same rate. At the same rate of P applied as MAPSZC®, MOP banded below the seed at 60kg, resulted in slightly less grain yield than the same rate top-dressed immediately before sowing (IBS) (Figure 2).

At the same rate of applied P, Vigour® applied at 100kg produced significantly (lsd = 5%) more grain yield than the MAPSZC® treatment. Applying 30kg MOP (IBS) at the same P rate did not significantly increase wheat yield. Vigour® applied at 100kg provides the equivalent potassium as 30kg MOP. This result suggests an improved uptake of potassium when it is seed placed as Vigour®. The data from this trial suggests that to achieve the equivalent grain yield produced from applying 100kg Vigour®, 60kg MOP (IBS) had to be applied at the same rate of P (Figure 2). There were no advantages to using a liquid fertilizer at this trial.

**Summary:**

- Applying potassium in Vigour® significantly (lsd = 5%) maximised grain yield at standard (11P) and high (22P) phosphorous rates
- Drilling Vigour® with the seed produced significantly (lsd = 5%) more grain yield than top-dressed potassium, when used with high phosphorous rates
- MOP banded below seed did not significantly increase yield (lsd = 5%).

