Long Term Phosphorus Demonstration – 4th Year

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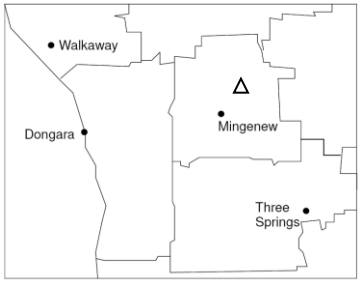

Morawa Rd, Mingenew

Soil Type: Clay Loam

GSR (Apr – Oct): 218mm

Paddock History:
2012: Wheat
2011: Wheat
2010: Poor Canola
2009: Wheat

Plot Size:
18.3m x 100m

Reps: 2

Seeding date:
18th May 2012

Seeding Rate:
Westonia 70 kg/ha

Paddock avg yield:
1.45 t/ha

Seeding Machinery:
DBS 15.2m wide, 250mm spacings and 8 inch knife points, with press wheels, 30mm closing tools

Why do the trial?

The demonstration was conducted to evaluate the yield responses to different phosphorus regimes over time in regards to yield and quality. Often P response trials are run over just 1 year, during this time frame it is difficult to see a build up or run down in the residual P levels in the soil which are a vital source of P to the crop. This trial will aim to measure this decrease in P levels or a build up of P levels and the associated yield affects of these P levels.

Background:

Phosphorus is a vital part of cell membranes, genetic material of the plant and part of the energy storage and transfer systems for chemical reactions in plant cells. Phosphorus is needed early in plant growth due to the rapid cell division and expansion that occurs at this time. Reduced tillering, head and grain number, stunting and yellowing can all be indicators of phosphorus deficiency. Residual P is an important source of P for crop needs and can supply up to 75% of a crop's requirements in any one season. It is important to therefore compare residual P levels as measured by soil testing and determine how the influence P response.

Crop Management

Fertiliser:	**pre:**	Agstar Extra Varying depending on Treatment
	post:	80 kg/ha Urea
Chemical:	**pre:**	1.5 L/ha Trifluarin
	post:	600 ml/ha Jaguar, 400 ml/ha Ester 680, 150 ml/ha Tilt, 3 g/ha metsulfuran, 100 ml/ha Dimethoate

Total Fertiliser Cost (post): *$47.04 / ha*
Total Chemical Cost: *$23.26 / ha*

Key Messages:

- There are two nil treatment Reps, which will be used in future years to add a variable to the trial.
- 2011 was the first year there was a response to the treatments, with the double recommended rate of Phosphorus achieving a yield significantly higher than other treatments.
- Although fertiliser costs were higher for the double rate application, the yield benefit still outweighed costs, though not significantly.
- Vigour assessments during the season were inconsistent with treatments leading to a suggestion that establishment may have been as significant as treatments in a variable season
- Murray observed a colour difference during the season between the nil plots and the applied fertilizer plots

Table 1. Yield and Returns for 2012

Treatment	Yield t/ha	Plants /m²	Returns $/ha
100 kg/ha Agstar Extra (2 x recommended rate)	1.5	98	517.50
25 Kg/ha Agstar Extra (1/2 x recommended rate)	1.42	120	489.90
0 kg/ha Agstar Extra (nil)	1.32	124	455.40
50 kg/ha Agstar Extra (Recommended rate)	1.26	119	434.70
LSD 5%	0.32		
CV %	8.4		

Price Notes: All prices EPR delivered Geraldton, not including delivery and handling charges and GST exclusive. Refer to appendix 3.
All results based on APW classification

Table 2. Yield comparisons through the last 4 years.

Treatment	2009 Yield t/ha	2010 Yield t/ha	20011 Yield t/ha	2012 Yield t/ha
Recommended Rate	2.08	NA	4.63	1.26
½ Recommended Rate	2.30	NA	4.69	1.42
2 x Recommended Rate	2.38	NA	5.03	1.50
Nil	2.26	NA	5.52	1.32
LSD 5%	NS	NA	0.26	0.32
CV %	6.5	NA	2.0	8.4

- There were no yield results in 2010 when it was in canola due to chemical residue issues. The Treatments however were applied to the relevant plots in 2010.

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