



Demonstration Trial

Corrigin

2003

To establish responses to applications of
Nitrogen, Phosphorus and Potassium

Introduction.

The trial was conducted 4km East of Corrigin, on the property of Adam and Charmaine Rendell. The purpose of the trial was to examine responses to major nutrients, Phosphorus, Nitrogen and Potassium.

Season 2002 began promisingly in many areas, however low winter rainfall caused poor crop yields.

RESULTS:

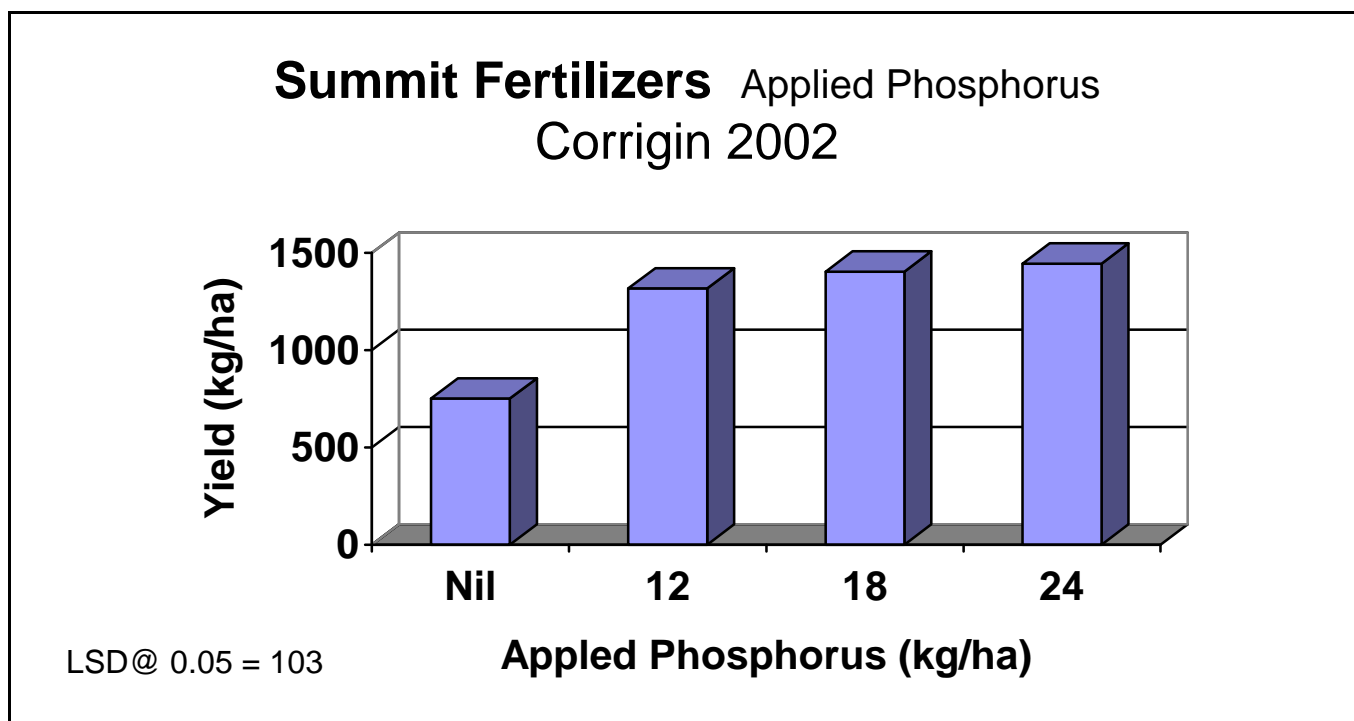
A dry finish meant that the crops didn't finish as well as expected. However there were some very positive results to come from this trial.

Phosphorus responses were consistent and significant up to about 18kg/ha applied P.

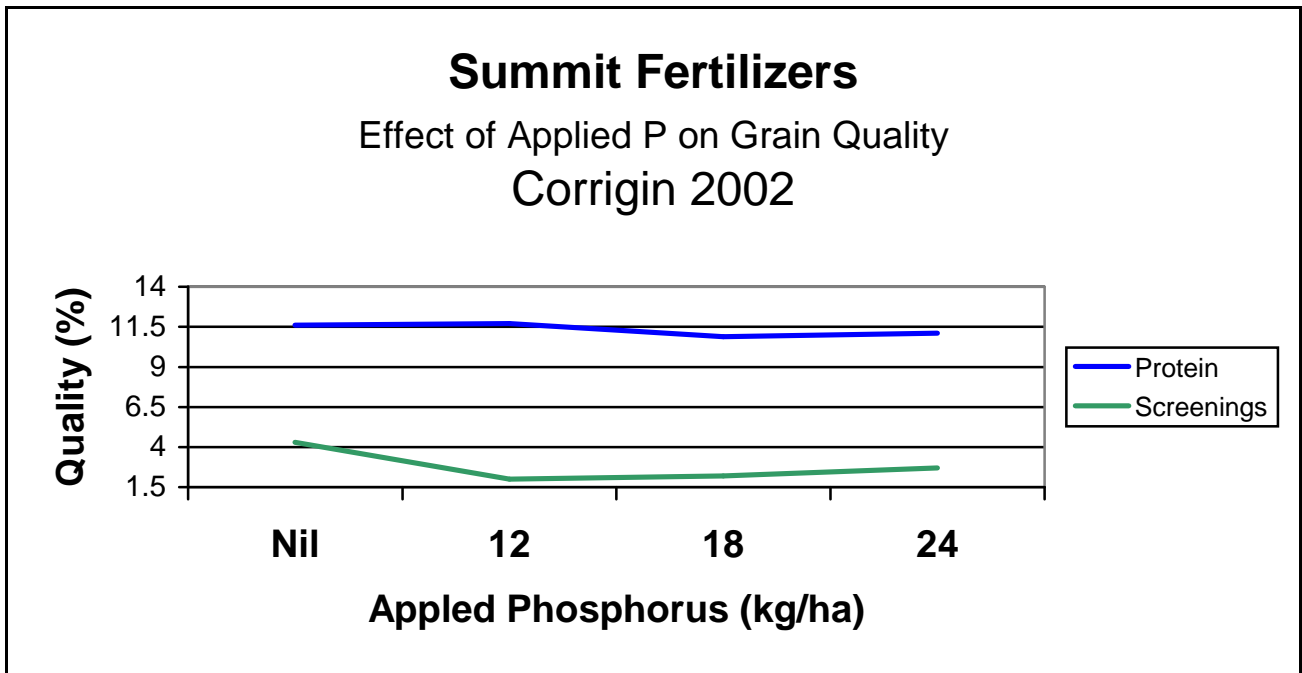
Whilst nitrogen responses decreased, using high rates of Nitrogen did not cause burning off, which is a common concern amongst farmers. Economic responses were not found in these conditions.

The trial was top dressed with Potassium prior to sowing, so any possible response was masked. Earlier inspection showed a response at grain filling, but this failed to materialise to harvest.

Phosphorus

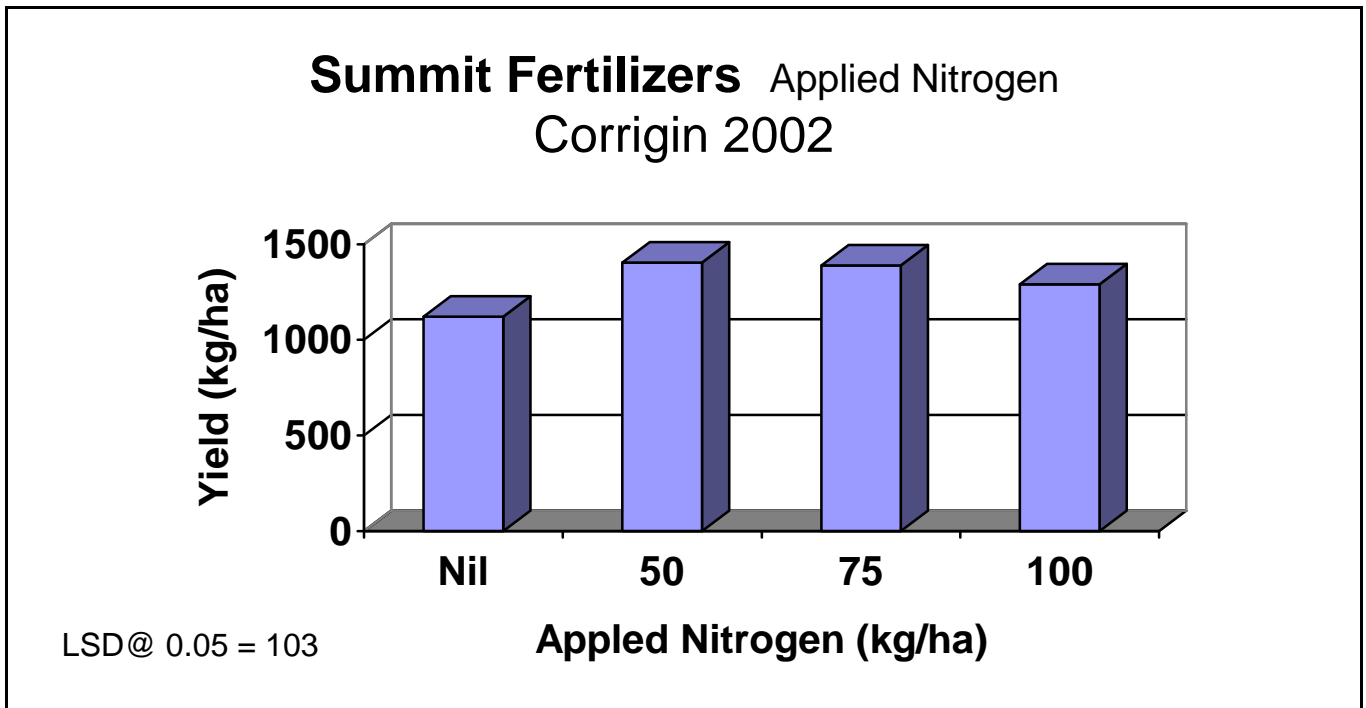


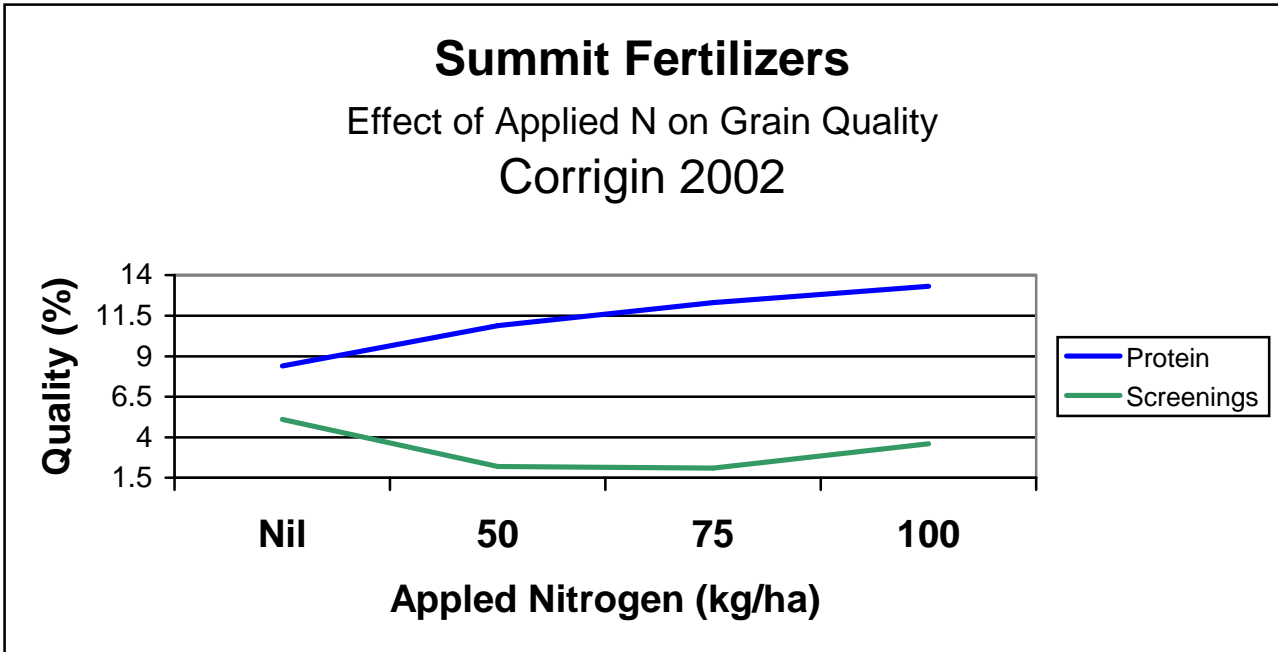
Phosphorus responses are normally increased in situations where there is a continuous wetting and drying of the soil, as happened at this site. But given the low yield of the trial, the result should encourage the use of 12 to 15kg/ha of P to gain maximum yield advantage.



This would indicate that whilst there was no effect of applied Phosphorus on protein content, the increased P applied did have an effect on screenings. Similarly there was an increase in hectolitre weight of grain from 77.9 kg/hl up to 81.6 kg/hl with applied Phosphorus.

Nitrogen





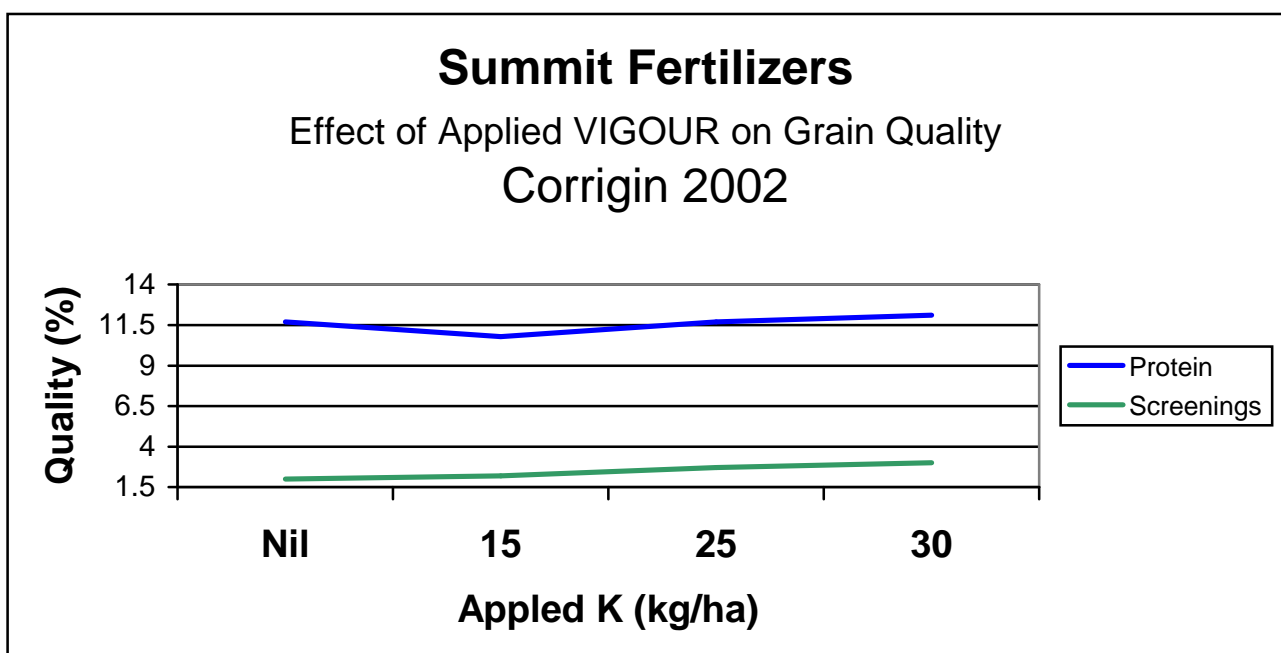
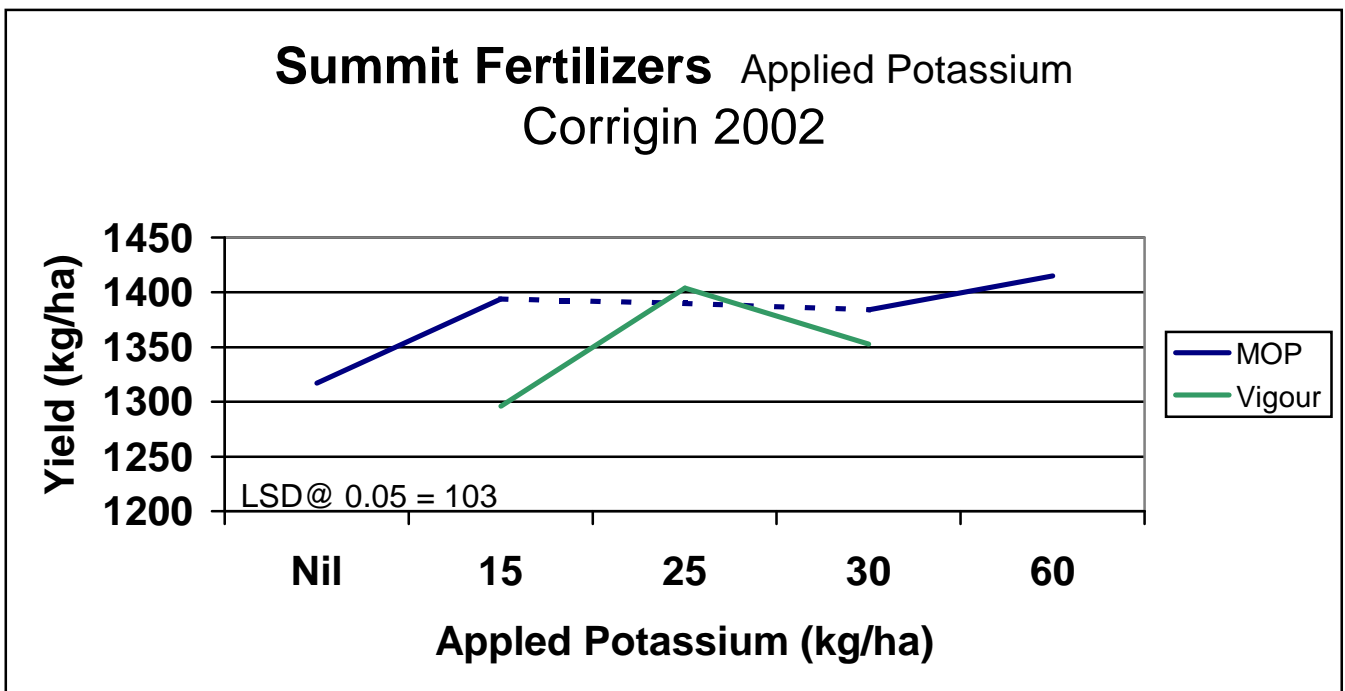
Nitrogen, as expected, increased grain protein from a low 8.4% with no nitrogen, up to 13.3% with the highest rate of N. There are significant price benefits from lifting protein to these levels. Once again screenings fell by getting the nutrition right, although the very highest nitrogen applications began to send the screenings higher (3.6%). There was no significant change in hectolitre weight when applying increasing rates of Nitrogen.

Potassium

This site was marginal for Potassium, so large responses were not expected. Added to this the site was topdressed prior to sowing with 25kg/ha of K. In spite of this there was very good visual responses to potassium at grain fill, indicating an increase in grain quality parameters. Unfortunately this didn't translate through to harvest because of a dry finish. There was no significant effect on grain protein or screenings.

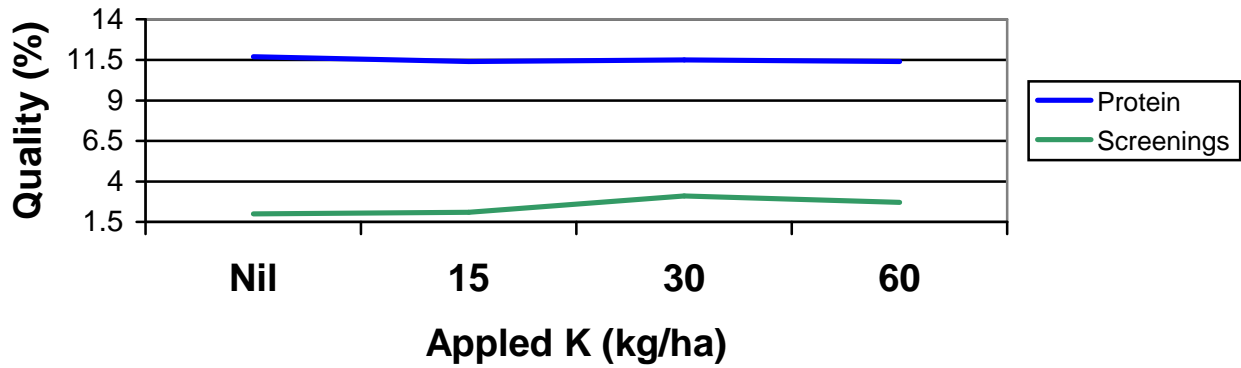
Cereal crops would normally respond when soil tests fall below 60—70 ppm in the surface. In some situations there may be an accumulation of Potassium at depth where the soil type changes. In these instances the surface test rarely falls below 70—90 ppm as the Potassium is deposited on the surface by the plants.

The greater the biomass grown during the season, the higher the demand on the supply from the soil and the greater likelihood of deficiencies occurring.



Summit Fertilizers

Effect of Applied MOP on Grain Quality
Corrigin 2002



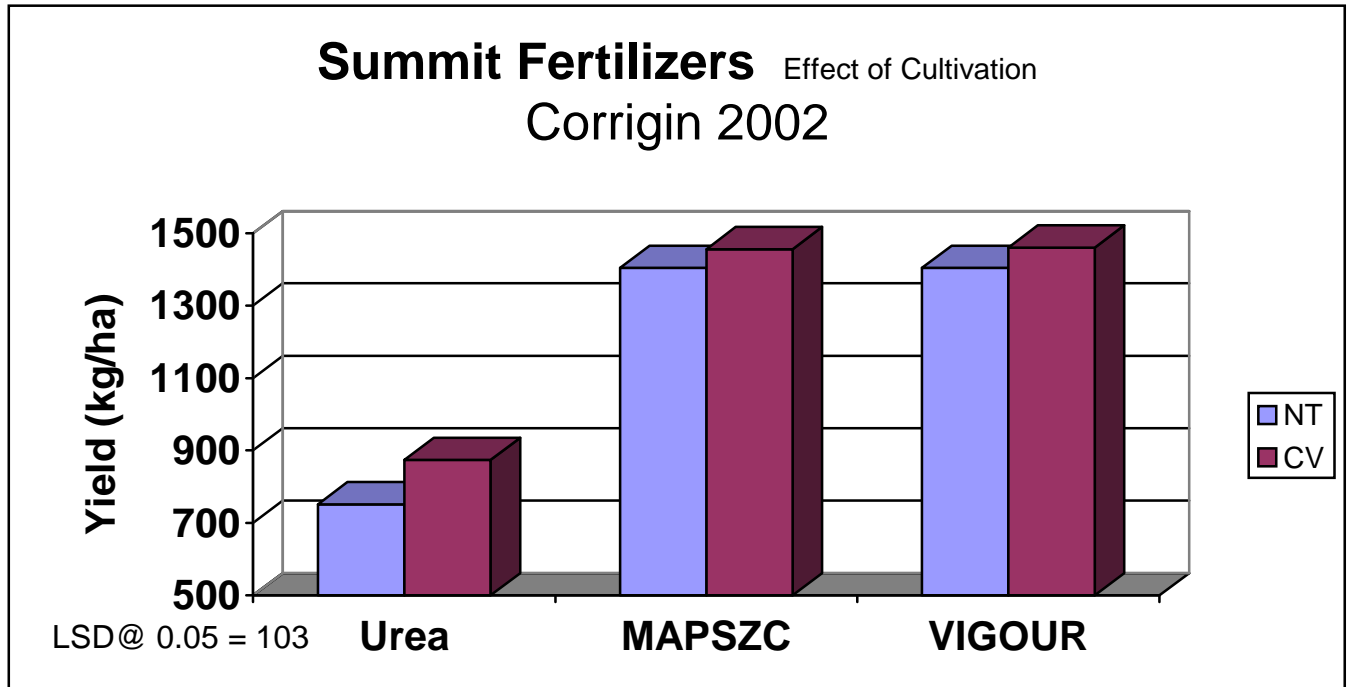
In a normal year, Potassium is known to increase the efficacy of nitrogen uptake, generally increasing protein (as has happened in this trial) and decreasing screenings. In this trial, screenings were low anyway.

Cultivation

Part of this trial was to look at the effect of cultivation on nutrient uptake. We used a scarifier to cultivate the soil twice before sowing.

General observations during the season suggested that weed control was poorer in the cultivated area, and moisture stress was higher during the season.

The final result gave approximately 14% increase in yield over the no tillage plots.

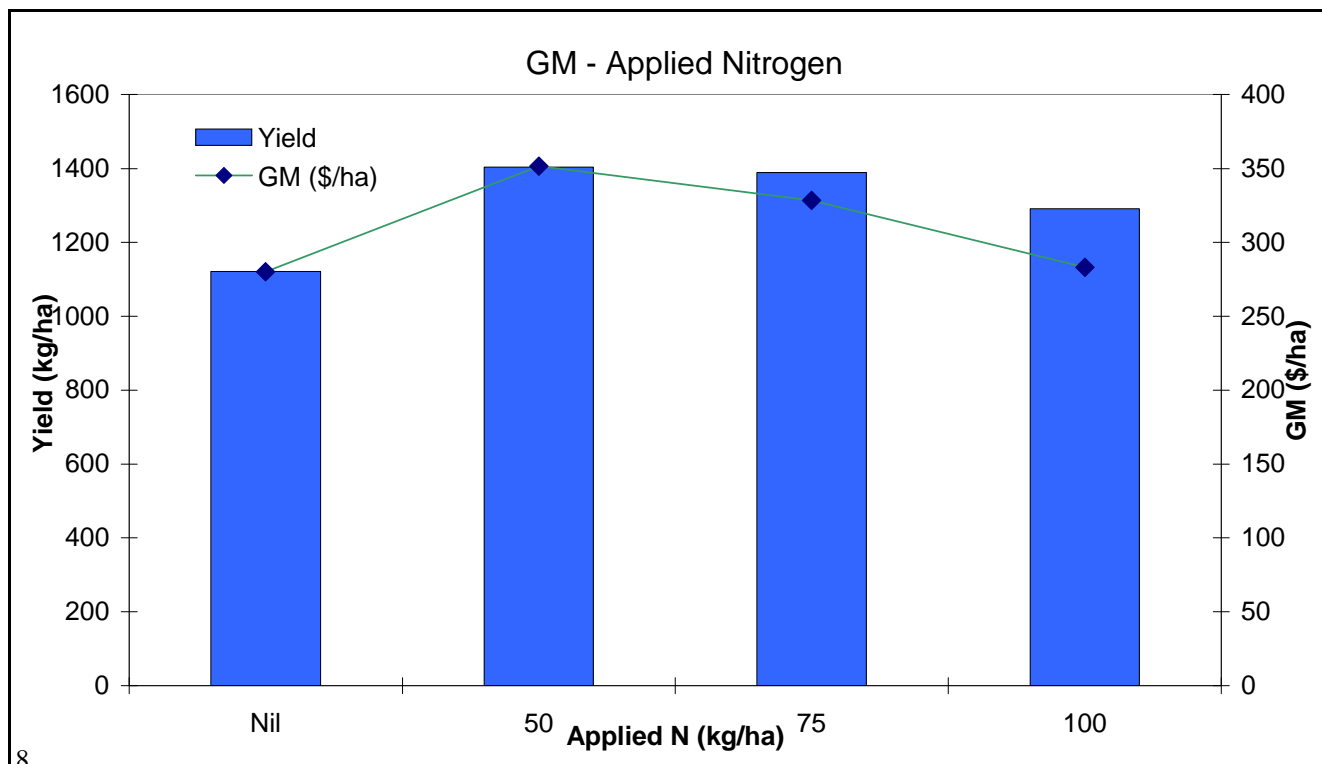
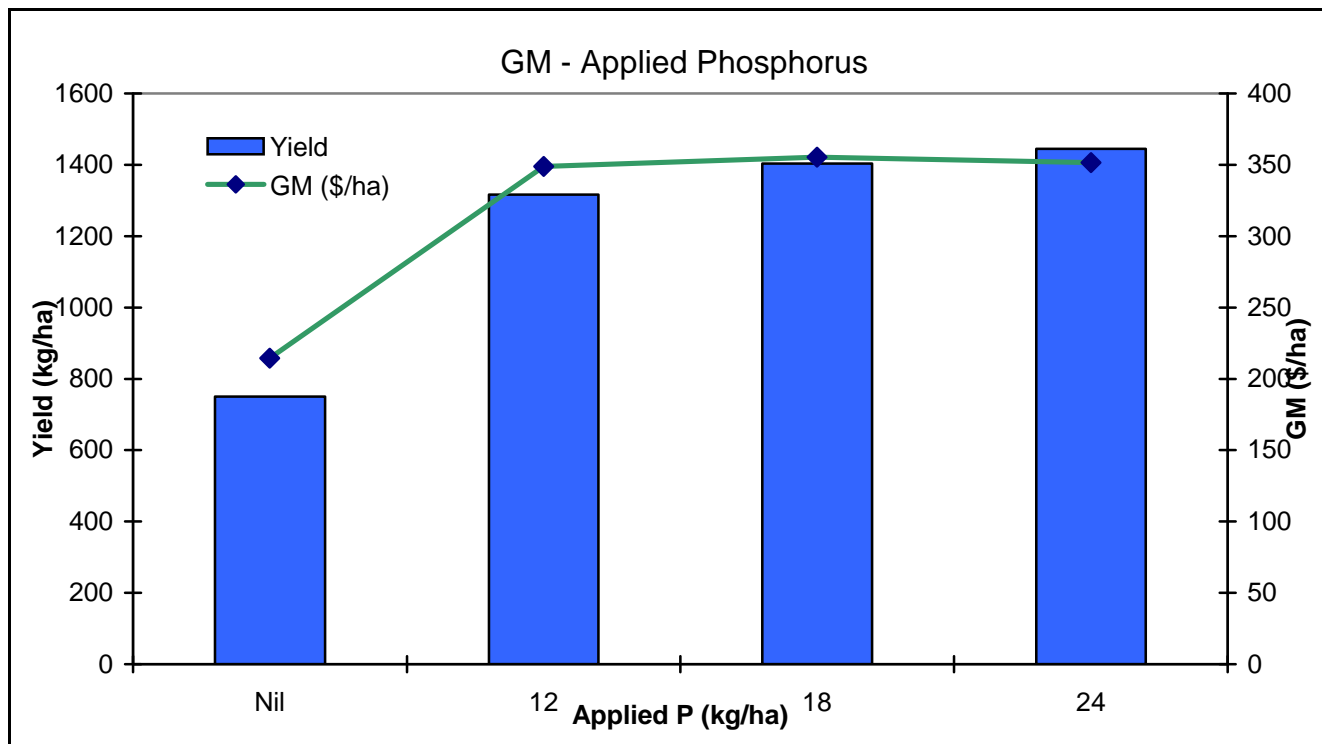


Fertilizer Gross Margins

Gross Margins in this sort of trial are difficult to calculate, as it doesn't compare recommended practises. (eg the method of increasing P in this trial was to mix MAP and MAPSZC, whereas farmers would generally just increase the rate of their chosen fertilizer.) I have costed Phosphorus using the price of TSP, and Nitrogen using the price of Urea. P is valued at \$1.93/kg, and N at \$0.77/kg.

Price of grain is valued using the AWB Golden Rewards table for APW (\$265.00 ± changes for screenings and protein).

These results should be read knowing that this was a very low rainfall year and better results could be expected given better seasonal conditions.



Conclusions:

Attempting to draw conclusions from trials of this type, in a season where growing season rainfall was down by over 40% is fraught with problems. What we see in such a season may not be possible to reproduce in any other conditions.

However, the positives from this trial were obvious throughout the growing season.

There was a very good response to applied Phosphorus, demonstrating, again, how important this nutrient is in Western Australia. Application of P, near the seed becomes more important in dry season and in situations where applied P may be “fixed” or root growth impaired.

Whilst applications of Nitrogen were not economical above 50 kg/ha N, this rate is considered quite high by many farmers in the area for an average season.

There was also no indication of “burning off” at high rates of nitrogen, which was a major concern of many farmers who attended the field day. Nor was there any serious affect on screenings in the sample, whilst there was a positive affect on protein.

This result should encourage farmers that they can use applied nitrogen to increase yield and quality with confidence, where the start to the season is such that yield potential is high. In the event that this judgment is incorrect, then the application of higher rates of N is not going to cause major yield loss. Other nutrients must be in adequate supply.

Visually, there was a response to potassium which didn't translate to yield, however the basal application will have masked any response.

Cultural Information

Previous Crops	Year		
Canola	2001		
CROP AND WEED INFORMATION			
Crop	Variety		
Wheat	Carnamah		
Sowing Date:	20 May 2002		
Tillage Type:	knifepoint (min till)		
Seed Bed:	friable, 10% stubble cover		
Soil Moisture:	dry 0-4 cm		
Rate:	75 kg/ha		
Depth:	6 cm		
Row Spacing:	22 cm		
Crop Protection			
No.	Date	Treatment	Rate
1	15/05/02	Touchdown	1 L/ha
2	20/05/02	SpraySeed	0.6 L/ha
3	20/05/02	Trifluralin	1.8 L/ha
4	20/05/02	Logran	35 g/ha
5	20/05/02	Chlorpyrifos	1 L/ha
6	22/07/02	Hoegrass	1.5 L/ha
7	22/07/02	Tigrex	500 ml/ha
8	22/07/02	Lontrel	75 ml/ha
9	22/07/02	BS 1000	0.25% v/v
APPLICATION DESCRIPTION			
		A	B
Application Date:	20/05/02		20/05/02
Application Method:	topdressed		drilled
Application Timing:	IBS		at sowing