Precision Ag Trials

DEMONSTRATION : Can satellite maps be used for monitoring in season nitrogen requirements?

Rand, Southern NSW

Aim:
To compare the effects of using variable rate N and P on the yield of wheat and to determine if PA monitoring using satellite maps could be used to determine the need for N at or near growth stage Z31.

Background:
The co-operator attended the March 2011 discussion group and decided to undertake a demonstration to determine the optimum rate of P and N.

As part of the overall Rand project it was decided to assess if satellite maps could see the site.

About the trial:
Location of trial: "Allendale" Rand
Crop variety type: Ventura Wheat
Equipment used: Gason 9.2 metres tyne airseeder (250 mm rows) equipped with press wheels, Hardie sprayer and Marshall spreader. Auto farm guidance was used on the sowing tractor and a light bar on the spreading tractor.

Sketch of trial design

Plot		1	2	3	4
Description		0 kg/ha P*	5 kg/ha P	10 kg/ha P	20 kg/ha P
A	0 kg/ha N**				
B	20 kg/ha N				
C	40 kg/ha N				
D	80 kg/ha N				

*- P applied at sowing. **- N applied at growth stage Z31

What and when treatments were applied and what layers of spatial data were utilised.

- P rates were applied at sowing
- N rates were applied near to growth stage Z31.

P rates of 0 to 20 kg/ha were applied using MAP at sowing. N rates of 0-80 kg/ha were applied as urea in early August near to growth stage Z32. The site was not assessed using any spatial data but it was planned that a satellite map would be used to help to determine the optimum N rate.

Assessments:

- Visual assessment prior to Z31.
- Soil analysis: EM was completed in 2011. Soil analysis (0-10 cm) was completed for the whole paddock
- Yield: Determined from the yield map on the header

Results:

P	N	Visual response		Yield (t/ha)
		P	N	
0	0	Yes	No	3.1
	20	Yes	No	3.1
	40	Yes	No	3.2
	80	Yes	No	3
5	0	Yes	No	3.5
	20	Yes	Yes	3.6
	40	Yes	No	3.5
	80	Yes	No	3.5
10	0	Yes	No	3.7
	20	Yes	No	3.2
	40	No	No	3.2
	80	No	No	3.4
20	0	Yes	No	3.5
	20	No	No	3.5
	40	No	No	3.4
	80	No	No	3.5

There was a visual response to P applied at sowing which resulted in additional yield at harvest. Responses were obtained to up to 10 kg/ha of P. The added net income was calculated as $44 /ha or a $3 return for every $1 spent.

There was no visual response to applying N. This may have been a result of the dry spring and the time of application. There was no response to N at harvest.

Who was involved:

Property owner: David Wolfenden
People and or businesses involved in data collection/ analysis/ services: Riverine Plains Inc, Jason Collier of Rand Fertilizers, Peter Baines of P Baines Agronomy, John Sykes Rural Consulting.
Trials coordinator: John Sykes
FSG contact: Leighton Wilksch

Grower/Regional feedback:

The co-operator was please that he noted a visual response to applying P that resulted in higher yields. The lack of N response was due probably due to the dry weather in early October.

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For more information

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