

Precision agriculture demonstrations on sowing and fertiliser rates at Allendale, Rand

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Key points

- Using precision agriculture (PA) to apply variable rates of fertiliser is an easy way to test new ideas on farm.
- Precision agriculture can be used to apply different rates of fertiliser to different areas of a paddock.
- Wheat responded to applied phosphorus, even though soil tests indicated it had a high level of Colwell P (56mg/kg).

Location: Allendale, Rand, NSW

Rainfall:

Annual: 670mm (avg 520mm)

GSR: 225mm (avg 320mm)

Soil:

Type: Red chromosol

pH (H₂O): 5.8

pH (CaCl₂): 5.0 – 5.2

Sowing information:

Variety: Ventura, wheat

Sowing date: 23 May 2011

Sowing rate: 70kg/ha

Fertiliser:

- Phosphorus (0, 5, 10 and 20kg/ha)
- Nitrogen (0 and 40kg/ha)

Sowing equipment: Gason 9.2m tine airseeder equipped with press wheels, Hardie sprayer and Marshall spreader. AutoFarm guidance was used on the sowing tractor and a light bar on the spreading tractor.

Treatments: Phosphorus rates of 0–20kg/ha were applied using MAP at sowing. Nitrogen rates of 0–40kg/ha were applied as urea during early August near to growth stage GS32.

Row spacing: 25cm

Paddock history:

2010 — canola

Plot size: 250m x 27.6m

Replicates: nil

Aim

To compare the effects of using variable rates of nitrogen and phosphorus on wheat yield.

Assessments

List: Visual assessment before GS31.

Soil analysis: An EM survey was completed during 2011. A full soil analysis (0–10cm) was completed for the whole paddock during early 2011.

Yield: Determined from the yield map on the header

Results

There was a visual response to phosphorus applied at sowing, which translated into additional yield at harvest. Yield responses were obtained up to 10kg/ha of applied phosphorus. The added net income of applying 10kg/ha of phosphorus was calculated at \$37/ha, which translated into a \$2.63 return for every \$1 spent.

There was no visual or yield response to applying nitrogen. This may have been a result of the dry spring and the time of application.

TABLE 1 Wheat yield response to variable fertiliser application rates

P (kg/ha)	N (kg/ha)	Visual growth response		Grain yield (t/ha)
		P	N	
0	0	Yes	No	3.1
5	0	Yes	No	3.5
	40	Yes	No	3.5
10	0	Yes	No	3.7
	40	No	No	3.6
20	0	Yes	No	3.5
	40	No	No	3.4

SPONSORS

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