

AgGrow

AGRONOMY + RESEARCH

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MANAGING ROOT DISEASES WITH SEED DRESSINGS

Syngenta product development trial 2013

INDEPENDENT AGRONOMY ADVICE + CUTTING EDGE RESEARCH

Managing root diseases with seed dressings

KEY POINTS

* Root diseases cost farmers millions of dollars every year. In this region rhizoctonia and pythium are commonly measured in soils and crops.

*This trial targeted late sowing, high disease pressure to ensure root diseases were present.

*In this trial, a new product increased yield by 17.5% and profitability by \$85/ha in the presence of rhizoctonia. This product performed better than existing industry standards.

BACKGROUND

Root diseases such as rhizoctonia and pythium cost growers in Australia millions of dollars each year. The erratic nature of their incidence and limited control options makes them very hard to manage, especially when sowing later than ideal.

This trial was established in conjunction with industry experts from Syngenta aimed at measuring the benefit of various seed and fertiliser applied fungicides in the presence of root diseases such as rhizoctonia and pythium.

TRIAL DETAILS

A trial site was established 25km NE of Griffith NSW, in June 2013 in a crop of early sown barley that was showing signs of mild rhizoctonia barepatch.

The barley was sprayed out with 2.0L Glyphosate a few days before sowing on 8th July.

11 fungicide seed/fertiliser treatments were tested aiming to compare district practice with newer molecule fungicides. These treatments were replicated (but not randomised) three times across the trial site. Each fungicide was carefully and accurately applied to seed/fertiliser in a cement mixer, and liquid injection products were applied as a liquid injection through an electric pump with the equivalent of 150L/ha water (figure 3)

Plots were 36m long and 1.75m wide, and were sown with a Morris Contour Drill opener on 2cm guidance and 25cm spacings on 10th July into moist soil.

The variety chosen for the trial was Crusader wheat sown at 40kg/ha.

Establishment counts, vigour scores, NDVI and grain yield were collected from the trial.



Table 1: Treatments evaluated in the trial.

NO.	TREATMENT	PRODUCT RATE (ml / 100kg seed)	PRODUCT RATE (ml / 100kg fert)	Rate to treat 1kg/seed or fert
		Crusader Wheat @ 40 kg/ha		
1	Untreated	--		
2	SYN SIF 1 Low Fert		200	2
3	SYN SIF 1 High fert		300	3
4	SYN SIF 1 + Vibrance - Low fert	180	200	2+1.8
5	SYN SIF 1 + Vibrance - High fert	360	300	3 + 3.6
6	SYN SIF 1 (low in Furrow)		200	
7	Evergol Prime	80		0.8
8	Vibrance	360		3.6
9	Baytan	150		1.5
10	Baytan fb Vibrance	150 + 360		1.5 + 3.6
11	Baytan + SYN SIF 1 (low Infurrow)	150	200ml/ha	1.5

RESULTS AND DISCUSSION

It was evident immediately after sowing that some treatments were establishing faster than others. Products containing SYN SIF 1 (particularly in furrow liquid injected) were visually the fastest treatments to emerge out of the ground.

Treatments containing Vibrance® and Evergol® Prime visually emerged faster than treatments with Baytan®.

This is a common effect of products such as Baytan in colder late sowing conditions.

After a few weeks the difference was still visual however harder to detect.

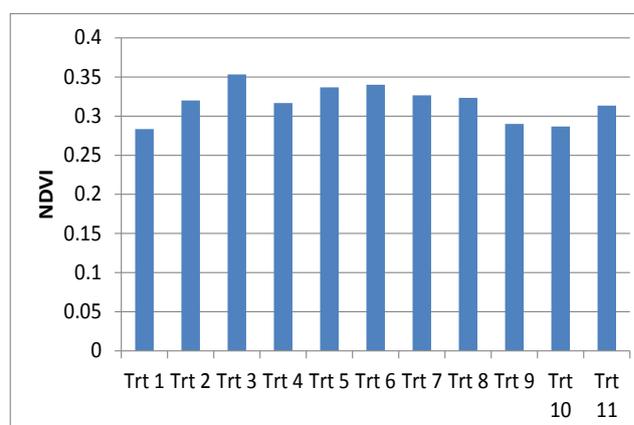
Plants counts were taken on 25th August. The trial was very even across treatments, and so an average count of 98 plants/m² was taken from the control treatments.

NDVI was recorded by a hand held NDVI device on 25th September at Z39. These figures are shown in figure 1.

Leaf diseases such as stripe rust were not observed in this trial. No foliar fungicides were applied.

Post emergent weeds, especially fleabane were controlled with a late application of Lontrel and LV Estericide 680 (Z39).

Figure 1: NDVI taken 25th September @ Z39.





Yield was recorded by harvesting grain with a small plot harvester on 25th November. Treatment differences were quite visual, and most yield differences appeared to be as a result of less root disease patches in the SYN SIF 1 treatments (figure 5).

The average yield of this trial was 1608 kg/ha. The trial was very even between replicates, however a statistical analysis was not performed as treatments were replicated but not randomised. This does not change the outcome of this trial.

Yield varied by 17.5% from the highest yielding treatment (SYN SIF 1 low rate in furrow) to the control (figure 2).

This equates to an additional \$82.94 income as grain was AH category and could have been sold at harvest for \$260/t.

When SYN SIF 1 was applied to the fertiliser instead of being applied as a liquid injection, the yield appeared slightly lower. These treatments however were consistently higher yielding than anything without the SYN SIF 1.

Vibrance on seed appeared lower yielding than the SYN SIF 1 treatments, but higher than treatments with EverGol Prime and Baytan.

One highly visual assessment was the positive growth response that SYN SIF 1 had on seed treated with Baytan. As mentioned previously, seed treated with Baytan emerged slower and showed lower early vigour. This is well documented in other trials. Treatments with Baytan + SYN SIF 1 in furrow were noticeably more vigorous, and were slightly higher yielding (figure 2). The difference in yield was lower than expected.

ACKNOWLEDGEMENTS

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This trial was conducted by Ag Grow Agronomy and Research Pty Ltd in partnership with Syngenta Australia.

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Figure 2: Grain yield for treatments in the trial.

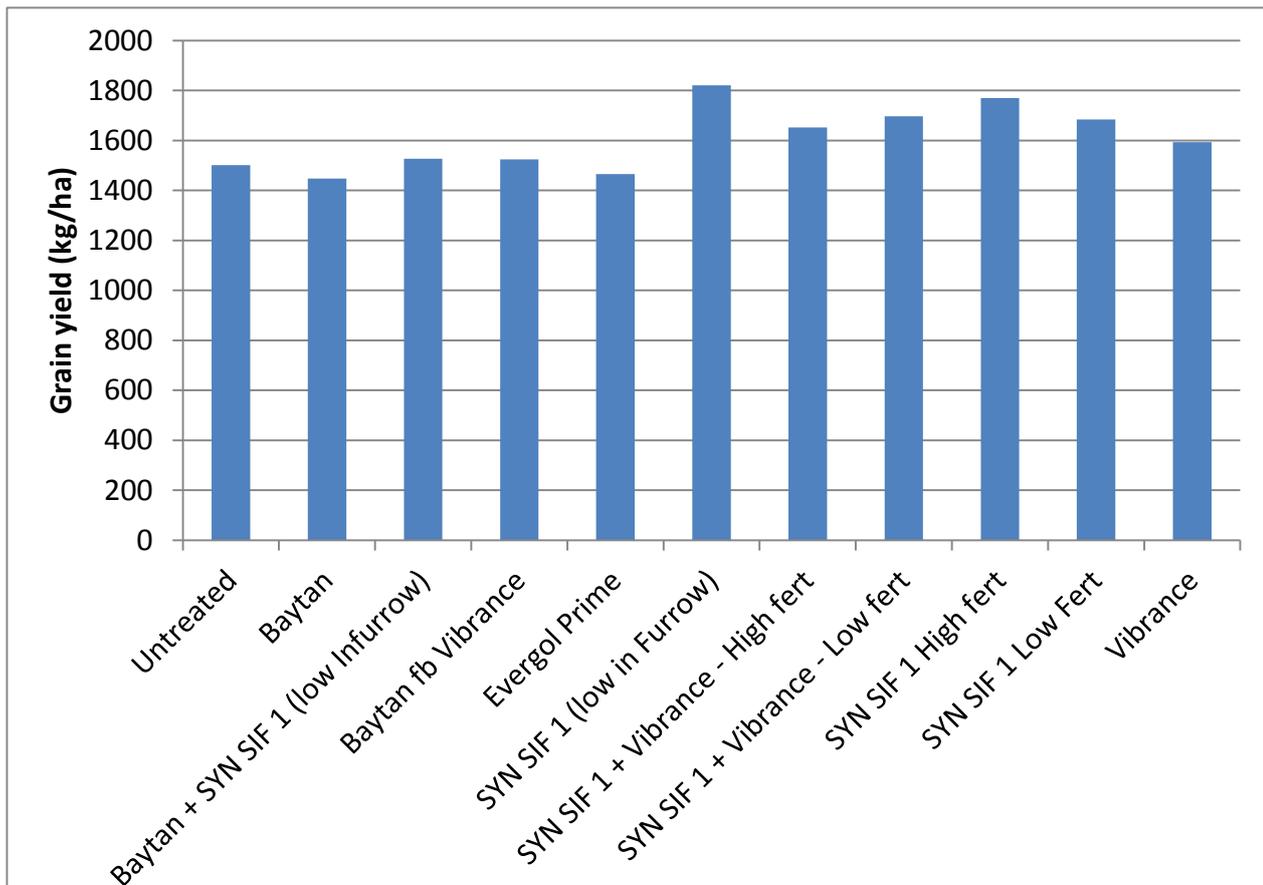


Figure 3: The liquid injection system on the Morris contour drill tines.



Figure 4: The visual different between the control (left) and the SYN SIF 1 on the fertiliser at the low rate (right). Note the rhizoctonia patches in the control.



Figure 5: The visual difference between the Baytan + SYN SIF 1 in furrow (left) and control (right). Note the rhizoctonia patches in the control.

