

3.1.5 SEED TREATMENTS FOR STRIPE RUST CONTROL - LANDMARK (INVERLEIGH, VIC)

Abstract:

Mitre wheat was treated with a variety of seed treatments primarily targeting stripe rust. Visual differences between treatments were evident at flag leaf stage, which then corresponded to significant yield and net return differences. The difference in yield between treatments is suspected to be a result of stripe rust and possibly pythium, although this needs further verification. The seed treatment of Jockey® along with Jockey® + Impact® showed significant benefits in terms of grain yield and grain quality (test weight and thousand grain weight). All treatments showed high levels of stripe rust in the later growth stages, which is understandable as none of the products give season long protection. The trial would have undoubtedly benefited from a foliar fungicide regime.

Background/Objectives:

A new strain of stripe rust caused damage to wheat crops Australia wide in 2003. Varieties commonly grown in the Geelong area; Mitre and Chara, are susceptible to the disease and have continued to be affected in 2004. Landmark's R&D have run this trial across four sites in Victoria to evaluate fungicide options in wheat.

Objectives:

To assess the impact of commercially available seed treatments on wheat yield and quality

Treatment List:

Trt No.		Rate
	Fertilizer: MAP (Cu & Zn)	100 kg/ha
1.	Raxil seed dressing (Control)	1 litre/tonne
2.	Jockey seed dressing	4.5 litres/tonne
3.	Impact in Furrow (Fertilizer)	400ml/ha
4.	Dividend seed dressing	2.6 litres/tonne
5.	Impact and Jockey	as above

Researcher:

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Acknowledgements:

SFS for support in managing the trial and for analyzing the data.

Location:

Inverleigh

Growing Season Rainfall (April-Nov):

388 mm.

Method:

A fully replicated (4 reps) and randomized block design was used.

The trial was sown on raised beds with each treatment being 2m wide x 14m long.

Buffer plots were sown on each side of the trial.

The site was soil tested for root diseases before sowing. The results are given in Table 3.

Product Registrations in Wheat:

- **Dividend (Syngenta)** provides protection from smuts, bunts, and pythium. The rate used in this trial was twice the registered rate.
- **Jockey (Bayer)** provides protection from take-all, smuts, bunts, stripe rust, leaf rust, and septoria tritici.
- **Impact in Furrow (Crop Care)** provides protection from stripe rust, septoria, and take all. (Smut and bunt protection is still required from a seed treatment such as Raxil or Vincit)

Sowing Date: 23/06/2004

Variety: Mitre

Sowing Rate: 80 kg/ha

Harvest date: 5th January 2005

Results:

Table 1 shows a significant difference in yield between the control and all treatments. Jockey gave the best yield and economical return in this trial. This was not significantly different to Impact or the combination of Jockey and Impact.

Conclusions:

This trial showed considerable infection of stripe rust at flag leaf stage through to grain filling stage. There were visual differences in stripe rust levels between the control and stripe rust treatments at flag leaf stage. A foliar fungicide application would have undoubtedly protected the plant in the later growth stages, thereby providing higher yields. The soil root disease test showed no problem with the root diseases listed above.

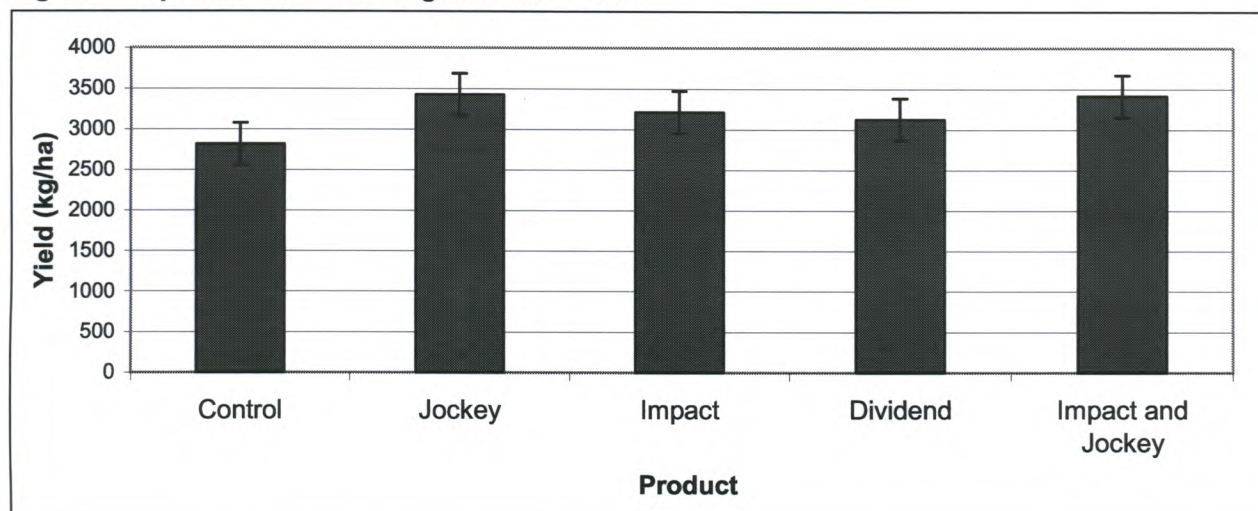
One disease, which cannot be commercially tested for at this stage, is pythium. Dividend does not claim to have any effect on stripe rust so the increase in yield in the Dividend treatment could be attributed to pythium. The other treatments have clearly had a yield benefit from stripe rust suppression, as this was the only visible foliar disease in the trial. The trial will be extended in 2005 to include foliar fungicide applications and other combinations of products used in this trial.

Table 1: Effect of Seed Dressings on Grain Yield

Trt. No.	Product	Yield (¹ kg/ha)	% of control	Gross return (\$/ha)	Treatment cost (\$/ha)	Net benefit over control (\$/ha)
1	Control	2,820	100	428	2.50	0.00
2	Jockey	3,428	122	532	25.00	89.50
3	Impact	3,214	114	493	23.00	52.50
4	Dividend	3,128	111	482	8.00	56.50
5	Impact and Jockey	3,413	121	524	48.00	58.50
LSD 5%		259				
CV		9.25				

¹ Average of 4 reps. Yield corrected to 12% moisture.

Note: Price/tonne based on Golden Rewards program for protein, moisture, and screenings. (AWB Pool)

Figure 1: Impact of Seed Dressing on Grain Yield**Table 2: Effect of Seed Dressing on Grain Quality**

Treatment	Product	Screenings (%)	Thousand Grain Wt (TGW)	Test Weight (kg/hl)
1	Control	5.175	35.03	73.03
2	Jockey	3.980	38.03	75.45
3	Impact	4.582	37.17	74.52
4	Dividend	4.225	34.90	74.21
5	Impact and Jockey	4.147	38.88	75.86
LSD 5%		1.084	1.3005	1.12
CV		17.90	4.82	1.66

Table 2 shows a significant effect of seed treatments on grain quality. All treatments showed a significant reduction in screenings compared to the control. In terms of grain test weight, treatment 5 produced grain of a significantly higher test weights than treatments 3, 4 and 1. There was no significant difference between treatments 5 and 2 for grain test weight. The control (treatment 1) produced a test weight which dropped the grain below ASW standard and into the GP1 grade. Similarly, the 1,000 grain weight (TGW) was the greatest for treatment 5 (Jockey + Impact). This treatment was significantly better than treatments 1, 3 and 4 but not significantly better than treatment 2.

Table 3: Predicta B Soil Test Report

TEST	RESULT		RISK CATEGORY			
			Below Detection	Low	Medium	High
CCN	<1	eggs / g soil	*			
Take-all	22	pg DNA / g soil		*		
Rhizoctonia	<19.5	pg DNA / g soil	*			
Pratylenchus neglectus	2	nematodes / g soil		*		
Pratylenchus thornei	<1	nematodes / g soil	*			
Blackspot	20	DNA / g soil		*		
Take-all -Oat Race	Not Detected					
Crown Rot (F. pseudograminearum)	<3	pg DNA / g soil	*			
Crown Rot (F. culmorum)	54	pg DNA / g soil		*		

The data reported in these trials is only from one season and previous experience would indicate that the responses of various products will changedramatically from season to season. Seek qualified advice on when the optimum response from various products can be expected

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