8. CROP DISEASE TRIALS

8.1 PREVENTATIVE LEAF RUST TRIAL

Location: Gnarwarre

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Background:
Leaf rust in southern environments is becoming more of a problem as the area of wheat expands. Over the last 2 years we have seen a marked increase in the level of leaf rust, particularly in the variety Kellalac, which is widely grown in the area. There are mixed messages getting to the farming community as to whether or not they should spray the crop with fungicide to control the pathogen. Much of the information on which the decision is made, seems to be coming from Western Australia, a markedly different environment to southern Victoria.

Urgent work needs to be done to ascertain at what level of infection spraying is economic and what product is likely to give the best results. This demonstration trial aims to give a better understanding of both of these issues.

Aim:
To identify whether spraying for leaf rust in wheat will give an economic yield benefit.

Treatments:
Each treatment (see below) was applied at late tillering to 3 beds of wheat in each case. A buffer of 1 bed between treatments was left to minimise the effect of spray drift onto neighbouring treatments. The bed length was 60 metres.

Each product was applied using 90 litres/ha of water along with Hasten oil at 5%.
The control treatment had no fungicide applied.

Only the centre bed of each treatment was harvested using the DNRE plot harvester.

There was no replication to the trial, so no statistical analysis could be done.

Variety: Kellalac
Seed treatment: Nil
Sowing Rate: 100 kg/ha
Fertiliser: 100 kg/ha MAP
Sowing Date: 15th June 2000
Herbicide: 800 ml/ha Tigrex 28/9
Harvest date: 3rd January 2001

Results:

Economic evaluation of rust spray treatments

Treatment	Yield (kg/ha)	Protein %	Test Weight	Screenings	Visual Rating
Impact 500 ml/ha	5138	11.4	78	.6/2.1	3
Impact 250 ml/ha	4732	11.6	76	.3/2.7	4
Triad 1000 ml/ha + Dominex 250 ml/ha	4559	11.5	76	.2/2.4	3
Folicur 150 ml/ha	4450	11.3	68	Na	4
Dominex 250 ml/ha	4354	11.8	75	.3/2.8	4
Triad 1000 ml/ha	4260	11.7	77	.2/2.7	3
Control	3505	12.1	70	.5/2.5	5

Conclusions:

All treatments gave higher yields than the control, where no fungicide was applied. Despite the lack of replication, it would appear that Impact at 500 ml/ha gave an increased yield by comparison to the control. A yield advantage of 1633 kg/ha would certainly more than pay for the cost of the treatment.

The two other fungicides, namely Triad and Folicur appeared to give some yield advantage, however the benefit is less clear.
The reason for including the insecticide Dominex, is due to the belief that by controlling the aphid population and subsequently the amount of BYDV, the plant is under less stress and therefore less likely to be affected by leaf rust. This however still remains a belief and not a proven fact.

It would appear that the highest yielding treatments gave the highest test weight. This is consistent with the understanding that leaf rust can have a negative impact on grain size. This is particularly the case if the leaf rust comes in late in the crop growth cycle and damages the flag leaf.

Generally speaking as grain size decreased, grain protein increased. This is consistent with the understanding of the correlation between grain size and protein percentage. A crop that is under pressure from leaf disease is less able to fill the grain with starch and therefore there is higher percentage of protein in the grain.

The visual rating was done at late flowering and appears to substantiate the yield data. A rating of 5 equates to a heavy infection of leaf rust, and a rating of 1 to a minimal level of infection.

My only concern with this particular demonstration trial is that the grain was not treated with any fungicide prior to planting. This was done so that we could get the highest infection of rust possible. However, commercial practice would suggest that a grain fungicide prior to planting should be used. Interestingly in the neighbouring wheat demonstration trial where Baytan ® was used as a seed dressing and no fungicidal spray applied, Kellalac yielded 5070 kg/ha, significantly higher than the control in this particular trial. The question therefore must be asked, does seed dressing with Baytan ® give an economic control of leaf rust throughout the season?

Clearly before any clear recommendations can be made, more trial work needs to be undertaken.

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Treatment	Yield t/ha	$ per T	Total $	Cost	$ less Cost	$ Benefit	% Increase
Impact 500ml	5.14	165	848	41	807	230	40
Impact 250ml	4.73	165	780	24	756	179	31
Triad 1000ml + Dominex 250ml	4.56	165	752	22	730	153	26
Folicur 150ml	4.45	165	734	26.5	708	130	22
Dominex 250ml	4.35	165	718	13.6	704	127	22
Triad 1000ml	4.10	165	677	15.25	661	84	14
Control	3.50	165	578	0	578	0	0