

Trial 3. HYC Wheat Disease Management (FAR NSW W23-04) cv BigRed

Key Points:

- Grain yield varied by less than 0.2t/ha, with the untreated crop of BigRed yielding 7.73t/ha, and the highest yield being 7.74t/ha recorded in the two-spray approach at GS31 and GS39.
- Despite very small improvements in *Septoria tritici* blotch (STB) control associated with the application of a GS31 (1st node) fungicide, the untreated crop was the most profitable.
- The four-unit strategy was the least cost effective, losing approximately \$110/ha because of expenditure that was not warranted.
- Other fungicide programs lost similar amounts of money as the four-unit strategy relative to the untreated as a result of lower expenditure but slightly lower yields (0.05 – 0.18t/ha).

Treatments:

Five levels of fungicide management (treatment 1-5) were investigated with the popular red feed wheat BigRed (Table 1).

Table 1. Fungicide management treatments

Treatment	
Treatment 1.	Untreated control
Treatment 2.	1 Unit - A single flag leaf fungicide applied at GS39 – Revystar 150EC (mefentrifluconazole 100g/L, fluxapyroxad 50g/L) applied at 750mL/ha (75g ai/ha & 37.5g ai/ha).
Treatment 3.	Two-unit (straddle) approach at GS33 (3rd node) Revystar 150EC (mefentrifluconazole 100g/L, fluxapyroxad 50g/L) applied at 750mL/ha (75g ai/ha & 37.5g ai/ha). & GS59 (head emergence) Opus 125 SC (epoxiconazole 125g/L) applied at 500mL/ha (62.5 g ai/ha).
Treatment 4.	Four-unit approach combining at sowing flutriafol on the MAP with three foliar sprays – GS31 Prosaro 420 SC (prothioconazole 210g/L, tebuconazole 210g/L) applied at 300mL/ha (63g ai/ha of each ai), GS39 and GS59 (as stated above).
Treatment 5.	Two-unit (standard) approach at GS31 Prosaro 420 SC (prothioconazole 210g/L, tebuconazole 210g/L) applied at 300mL/ha (63 g ai/ha of each ai) & GS39 Revystar 150EC (mefentrifluconazole 100g/L, fluxapyroxad 50g/L) applied at 750mL/ha (75g ai/ha & 37.5g ai/ha).

Results:

Fungicide management strategy had no impact on the grain yield or grain quality (Table 1) of BigRed at the Wallendbeen location, despite small improvements in lower canopy STB control and green leaf retention (Table 2). Small improvements in test weight and screenings were not statistically significant.

Table 2. Influence of fungicide strategy on grain yield (t/ha) and grain quality (protein (%), test weight (kg/hL), screenings (%), and thousand seed weight (TSW g)) – cv BigRed.

Grain Yield and Quality						
Treatment	Yield t/ha	Protein %	TSW g	Test Weight kg/hL	Screenings %	
1 Untreated	7.73 -	13.6 -	36.7 -	74.0 -	5.1 -	
2 1 Unit	7.69 -	13.7 -	36.2 -	75.2 -	4.7 -	
3 2 Units (Straddle)	7.55 -	13.9 -	34.7 -	75.2 -	4.5 -	
4 4 Units	7.67 -	13.9 -	35.3 -	75.2 -	4.8 -	
5 2 Units (Standard)	7.74 -	13.8 -	35.8 -	73.9 -	4.9 -	
Mean	7.68	13.8	35.8	74.7	4.8	
P Value	0.847	0.502	0.636	0.334	0.812	
LSD P=0.05	ns	ns	ns	ns	ns	

The largest differences in disease control associated with the fungicide management strategies were the effect of the GS31 fungicide which was absent from the straddle and single unit spray. In these approaches the level of STB infection was significantly higher than the standard 2 spray program based on GS31 & GS39 applications (Table 2).

Table 3. Influence of fungicide strategy on disease infection (Septoria tritici blotch (STB) and Stripe rust (SR) – 24 October GS77-80.

Treatment	Flag	Flag-1	Flag-1	Flag-2	Flag-3	Flag-3
	STB %LAI	STB %LAI	SR %LAI	STB %LAI	STB %LAI	GLR %LA
1 Untreated	0.0 -	0.1 ab	0.1 -	0.6 a	2.6 a	4.0 -
2 1 Unit	0.0 -	0.0 b	0.0 -	0.1 b	1.3 b	13.5 -
3 2 Units (Straddle)	0.0 -	0.2 a	0.0 -	0.4 a	2.4 a	7.5 -
4 4 Units	0.0 -	0.0 b	0.0 -	0.1 b	0.3 c	9.5 -
5 2 Units (Standard)	0.0 -	0.0 b	0.0 -	0.0 b	0.2 c	20.8 -
Mean	0.0	0.1	0.0	0.2	1.4	11.1
P Value	1.000	0.030	0.445	<0.001	<0.001	0.199
LSD P=0.05	ns	0.1	ns	0.2	0.9	ns

Table 4. Trial input and management details.

Variety:	BigRed	
Sowing date:	21 April 2023	
Harvest date:	18 December 2023	
Seed rate:	180 seeds/m ²	
Basal fertiliser:	21 Apr	120 kg/ha MAP (12kg N/ha)
Nitrogen:	2 Aug	Urea 217kg/ha (100kg N/ha)
	5 Sep	Urea 108kg/ha (50kg N/ha)
Fungicide:	As per treatment list	

Table 5. Active ingredients and chemical loading (g/L) for products used.

Name	Active 1		Active 2		Type
Fungicide					
Flutriafol	Flutriafol	500 g/L	---	---	SC
Opus	Epoxiconazole	125 g/L	---	---	SC
Prosaro	Prothioconazole	210 g/L	Tebuconazole	210 g/L	SC
Revystar	Mefentrifluconazole	100 g/L	Fluxapyroxad	50 g/L	EC