

A summary of the experiment statistics is below:

Table 29: Key statistics for each response analysed

Statistic	Yield (t/ha)	Dry Matter (t/ha)	Test Weight (kg/hl)	Screenings	Protein
LSD	0.58	1.37	1.30	0.29	0.39
Mean	6.94	14.61	76.29	1.25	15.27
Cultivation p-value	0.53	0.00	0.96	0.77	0.03
Seeding Rate p-value	0.00	0.25	0.60	0.20	0.02
Interaction p-value	0.51	0.70	0.98	0.16	0.03
CV %	6.41	7.82	1.10	17.12	3.01

Trial 6. Germplasm Disease Management Interaction

Project objective: To assess the relative importance of fungicide input for DBA Aurora and DBA Vittaroi under overhead irrigation

Location: Finley IRC

FAR Code: FAR D21-07-1

Sown: 20 May

Cultivar: DBA Aurora and DBA Vittaroi

Harvested: 22nd December 2021

Rotation position: Faba Bean (2020), Fallow (2019), Faba beans (2018)

Soil Management: Cultivation with speed disc in Autumn

Irrigation: Overhead irrigation, 5 applications totalling 77.5mm

GSR: April-October 192 mm. Total water available 269.5mm

Key Messages:

- DBA Vittaroi developed higher levels of stripe rust infection than DBA Aurora but levels at mid flower were still below 5% on the flag leaf (3.5% v less than 1% on flag leaf at mid flower).
- The low levels of stripe rust infection did not generate any significant yield increases ($p=0.3$) when controlled with different fungicide strategies.
- The trend with DBA Vittaroi was non-significant yield increases associated with fungicide application with increases of 0.24 – 0.59t/ha with the two spray approach being the most reliable for yield and stripe rust control.
- Fungicide strategy had no significant effect on grain protein (range 14.3-15.0%) which averaged 14.7% (not shown)
- DBA Aurora at 13.9% had significantly less grain protein than DBA Vittaroi at 15.5% (not shown) but was significantly higher yielding than DBA Vittaroi at (8.04 vs 6.46 t/ha).
- The GS31 fungicide was very important to reduce initial infection but there was little additional value of Systiva seed treatment in this trial.

Table 1. Fungicide treatment list.

Treatment	Treatment mL/ha			
	At sowing 20 May	GS31 27 Aug	GS39 22 Sep	GS65 17 Oct

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1. Untreated				
2. 1 spray (GS31)		Radial 840		
3. 1 spray (GS39)			Radial 840	
4. 2 spray		Prosaro 300	Radial 840	
5. s.t. + 2 spray	Systiva		Radial 840	Prosaro 300
6. 3 spray		Aviator 416	Radial 840	Prosaro 300

S.t. Seed treatment: Systiva applied at 150mL/100kg seed

Table 2. Grain yield under different fungicide strategies.

Treatment	Grain Yield			
	DBA Aurora Yield t/ha	DBA Vittaroi Yield t/ha	Mean Yield t/ha	
1. Untreated	8.00 -	6.12 -	7.06	-
2. 1 spray (GS31)	7.81 -	6.36 -	7.08	-
3. 1 spray (GS39)	7.93 -	6.44 -	7.19	-
4. 2 spray	8.06 -	6.66 -	7.36	-
5. s.t. + 2 spray	8.16 -	6.49 -	7.33	-
6. 3 spray	8.24 -	6.71 -	7.48	-
Mean	8.04 a	6.46 b		
LSD Fungicide p = 0.05	ns	P val	0.300	
LSD Cultivar p=0.05	0.162	P val	<0.001	
LSD Fungicide x Cultivar P=0.05	ns	P val	0.5228	

Table 3. Influence of variety and fungicide strategy on % Stripe rust leaf area infection (%LAI) on flag leaf, F-1, and F-2 at flag leaf (GS39) & flowering (GS65) – Assessed 22 Sep and 14 Oct respectively.

	GS39 %LAI			GS 65 %LAI		
	Flag	Flag-1	Flag-2	Flag	Flag-1	Flag-2
DBA Aurora						
1. Untreated	0.0 c	0.0 -	0.0 -	0.5 c	0.7 cd	0.4 cd
2. 1 spray (GS31)	0.0 c	0.0 -	0.0 -	0.1 c	0.1 d	0.0 d
3. 1 spray (GS39)				0.1 c	0.4 d	0.1 d
4. 2 spray (GS31 & 39)	0.0 c	0.0 -	0.0 -	0.0 c	0.0 d	0.1 d
5. S.t. + 2 spray (GS39 & 65)	0.0 c	0.1 -	0.0 -	0.3 c	0.5 d	0.4 cd
6. 3 spray (GS31, 39 & 65)	0.0 c	0.0 -	0.0 -			
DBA Vittaroi						
1. Untreated	1.0 a	0.7 -	0.1 -	3.5 a	2.6 a	2.8 a
2. 1 spray (GS31)	0.1 c	0.0 -	0.0 -	0.2 c	0.2 d	0.4 cd
3. 1 spray (GS39)				1.8 b	1.1 bc	1.4 b
4. 2 spray (GS31 & 39)	0.0 c	0.0 -	0.0 -	0.0 c	0.1 d	1.2 bc
5. S.t. + 2 spray (GS39 & 65)	0.3 b	0.1 -	0.0 -	2.0 b	1.4 b	1.0 bcd
6. 3 spray (GS31, 39 & 65)	0.0 c	0.1 -	0.1 -	--	--	--
LSD Cultivar p=0.05	0.1	ns	ns	0.5	0.3	0.4
P val	<0.001	0.053	0.206	<0.001	<0.001	<0.001
LSD Fungicide x Cultivar	0.2	ns	ns	1.2	0.6	1.0
P val	<0.001	0.060	0.771	0.009	0.003	0.043

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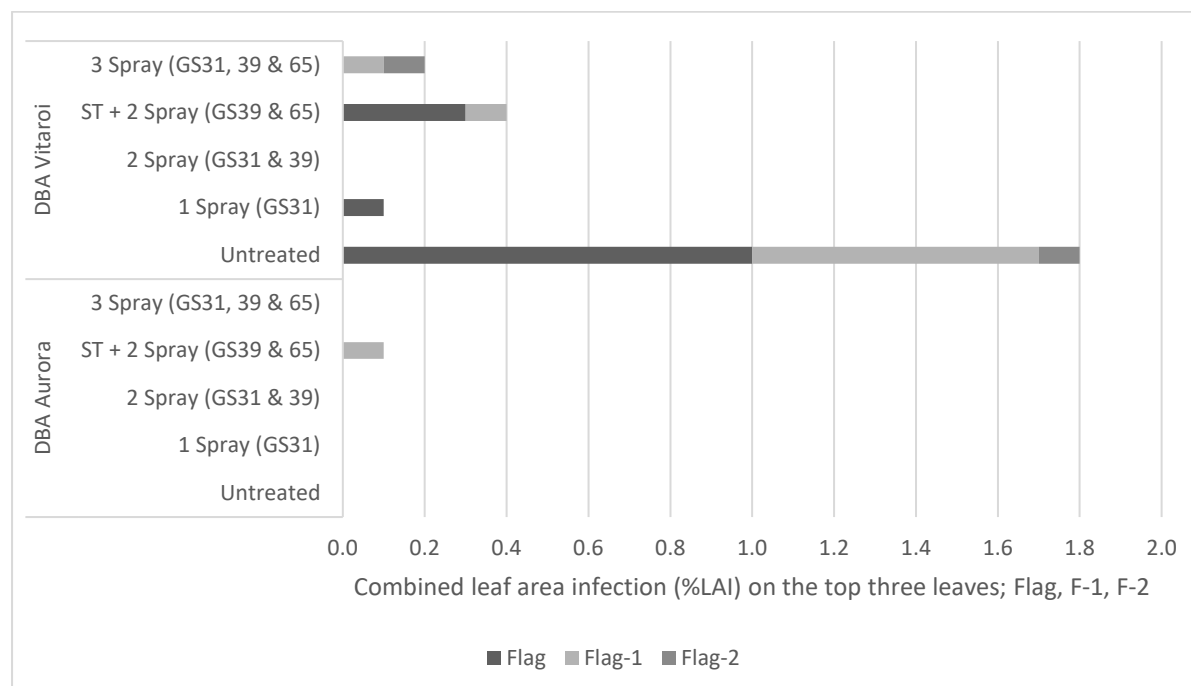


Figure 1. Influence of fungicide strategy on stripe rust infection (% leaf area infected) on flag, F-1, and F-2 at (GS39) in durum wheat grown under overhead irrigation. Note GS65 still to be applied.

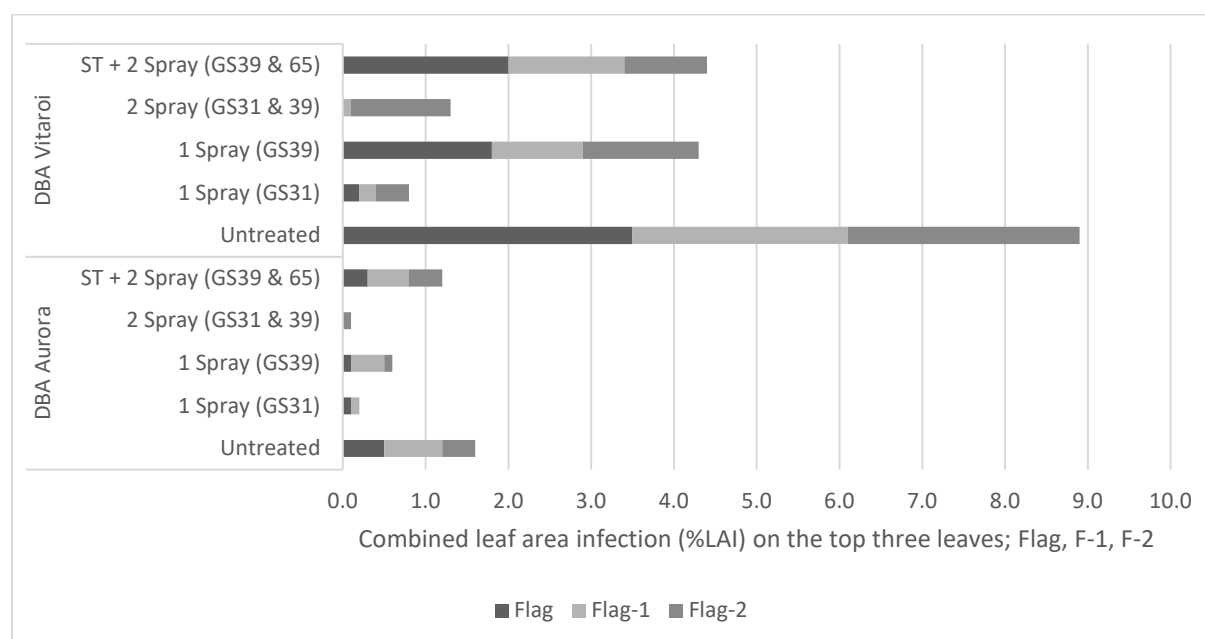


Figure 2. Influence of fungicide strategy on stripe rust infection (% leaf area infected) on flag, F-1, and F-2 at (GS65) in durum wheat grown under overhead irrigation.

SAGI statistical analysis (Predicted values for Yield, Harvest dry matter, test weight, screenings and grain protein)

The following statistical analysis of key harvest assessments has been carried out by SAGI. This analysis uses spatial statistical analysis to refine predicted values for key assessment values.

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Table 20: Harvest Traits for the Treatments

Cultivar	Fungicide	Yield (t/ha)	Test Weight (kg/hl)	Screening %	Protein %
Aurora	2sprays	6.9 ± 0.53 -	79.04 ± 0.21 - bcd	0.7 ± 0.18 -	15.43 ± 0.53 -
Vitaroi	2sprays	7.66 ± 0.52 -	78.61 ± 0.23 - abc	0.99 ± 0.18 -	14.27 ± 0.53 -
Aurora	3sprays	7.43 ± 0.5 -	79.87 ± 0.21 - d	0.75 ± 0.18 -	14.62 ± 0.54 -
Vitaroi	3sprays	7.62 ± 0.5 -	79.05 ± 0.21 - bcd	0.92 ± 0.18 -	14.63 ± 0.54 -
Aurora	GS31	7.64 ± 0.51 -	78.61 ± 0.21 - ab	0.88 ± 0.17 -	14.86 ± 0.53 -
Vitaroi	GS31	6.45 ± 0.51 -	79.08 ± 0.21 - bcd	1.05 ± 0.18 -	14.77 ± 0.54 -
Aurora	GS39	6.69 ± 0.51 -	78.5 ± 0.21 - ab	0.79 ± 0.18 -	15.16 ± 0.55 -
Vitaroi	GS39	7.87 ± 0.5 -	79.17 ± 0.21 - bcd	1.14 ± 0.17 -	14.44 ± 0.53 -
Aurora	st2sprays	7.54 ± 0.5 -	79.3 ± 0.21 - bcd	1.01 ± 0.17 -	14.86 ± 0.53 -
Vitaroi	st2sprays	6.88 ± 0.51 -	79.74 ± 0.21 - cd	0.82 ± 0.18 -	15.09 ± 0.53 -
Aurora	Untreated	6.87 ± 0.53 -	77.7 ± 0.21 - a	0.96 ± 0.18 -	14.61 ± 0.54 -
Vitaroi	Untreated	7.12 ± 0.53 -	78.93 ± 0.21 - bcd	1.3 ± 0.18 -	13.94 ± 0.54 -

Notes: values expressed as mean ± standard error of prediction
 - no subscripts relevant for this response

A summary of the experiment statistics is below:

Table 21: Key statistics for each response analysed

Statistic	Yield (t/ha)	Test Weight (kg/hl)	Screenings	Protein
LSD	1.210	0.600	0.510	1.410
Mean	7.220	78.970	0.940	14.720
Cultivar p-value	0.321	0.019	0.092	0.159
Fungicide p-value	0.725	0.000	0.427	0.437
Interaction p-value	0.197	0.001	0.769	0.857
CV %	13.850	0.830	37.620	7.440

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