

Trial 4. HYC Disease Management germplasm interaction

Objective: To develop profitable and sustainable approaches to disease management in HRZ barley.

Key Points:

- Compared to the untreated control a single application of fungicide did not improve yields despite reducing the incidence of NFNB in Planet, and Scald in HV8 Nitro.
- The movement to a two spray fungicide strategy with the first timing at GS31 followed by the second timing at GS39 – 49 increased yield by 0.9 and 1t/ha respectively compared to the untreated control or single unit application.
- The inclusion of an SDHI seed dressing Systiva did not improve yields relative to the two unit fungicide strategy.
- These findings suggest the second timing of GS39-49 is providing the majority of the yield improvement observed at this experiment in 2020, this finding is also true for the level of disease infection expressed
- The use of fungicides applied at GS39 – 49 are consistently improving grain quality and the frequency in which malting quality is achieved even in the absence of a yield response and should not be ignored
- The lack of yield response to seed dressings, and early applications of fungicide suggest that the disease is developing later in the canopy from this sowing date. Subsequent work will follow up this observation in 2021.

Treatments: 4 fungicide management levels applied to 2 varieties

Table 1. Influence of fungicide management strategy and cultivar on grain yield (t/ha).

Fungicide Management	Yield			
	RGT Planet	HV8 Nitro	Mean	
1 Untreated	8.01 -	7.55 -	7.78	b
2 GS31 Radial 840mL/ha	8.04 -	7.69 -	7.87	b
3 GS31 Radial 840mL/ha fb. GS39-49 Aviator Xpro 417mL/ha	9.02 -	8.73 -	8.88	a
4 Systiva FB. GS31 Prosaro 300mL/ha fb. GS39-49 Radial 840mL/ha	9.29 -	8.83 -	9.06	a
Mean	8.59 a	8.20 b		
Fungicide Management	LSD	0.33	P val	<0.001
Cultivar	LSD	0.33	P val	0.026
Fungicide x Cultivar	LSD	0.67	P val	0.973
CV	5.15			

Table 2. Influence of fungicide management and cultivar on grain yield and grain quality.

	Yield	Protein	Screenings	Retention	Test weight
	t/ha	%	%	%	Kg/hL
1 Untreated	7.78 b	10.0 -	2.8 a	89.8 b	67.0 c
2 GS31 Radial 840mL/ha	7.87 b	10.2 -	2.7 a	89.7 b	67.0 c

3	GS31 Radial 840mL/ha fb. GS39-49 Aviator Xpro 417mL/ha	8.88 a	10.1 -	1.7 b	92.7 a	68.8 a
4	Systiva FB. GS31 Prosaro 300mL/ha fb. GS39-49 Radial 840mL/ha	9.06 a	10.2 -	1.9 b	92.7 a	68.4 b
LSD P=.05		0.33	0.3	0.6	1.2	0.4
P Value		<0.001	0.229	0.003	<0.001	<0.001
1	RGT Planet	8.59 a	9.9 b	2.1 -	91.2 -	66.7 b
2	HV8 Nitro	8.20 b	10.3 a	2.4 -	91.2 -	68.9 a
LSD P=.05		0.33	0.1	0.4	0.7	0.3
P Value		0.0259	<0.001	0.131	0.942	<0.001
Grand Mean		8.40	10.1	2.3	91.2	67.8

Table 3. Influence of fungicide management and cultivar on net form net blotch infection (% plot) on 26/11/2020.

		Net Form Net Blotch			
		RGT Planet		HV8 Nitro	Mean
1	Untreated	90.0 a		15.0 de	52.5 a
2	GS31 Radial 840mL/ha	78.8 b		8.8 ef	43.8 b
3	GS31 Radial 840mL/ha fb. GS39-49 Aviator Xpro 417mL/ha	26.3 c		5.0 f	15.6 c
4	Systiva FB. GS31 Prosaro 300mL/ha fb. GS39-49 Radial 840mL/ha	18.8 cd		5.0 f	11.9 c
Mean		53.4 a		8.4 b	
Fungicide Management		LSD		4.7	P Val <0.001
Cultivar		LSD		3.8	P Val <0.001
Fungicide x Cultivar		LSD		7.6	P Val <0.001

Table 4. Influence of fungicide management and cultivar on spot form net blotch infection (% plot) on 26/11/2020.

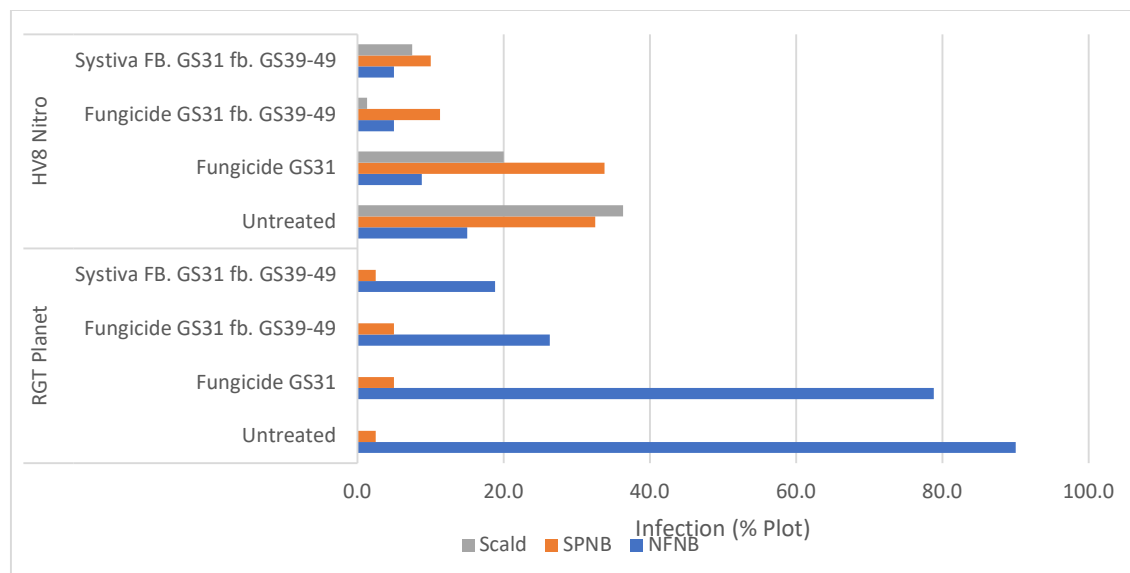
		Spot Form Net Blotch			
		RGT Planet		HV8 Nitro	Mean
1	Untreated	2.5 b		32.5 a	17.5 a
2	GS31 Radial 840mL/ha	5.0 b		33.8 a	19.4 a
3	GS31 Radial 840mL/ha fb. GS39-49 Aviator Xpro 417mL/ha	5.0 b		11.3 b	8.1 b
4	Systiva FB. GS31 Prosaro 300mL/ha fb. GS39- 49 Radial 840mL/ha	2.5 b		10.0 b	6.3 b
Mean		3.8 b		21.9 a	
Fungicide Management		LSD		6.1	P Val 0.002
Cultivar		LSD		4.8	P Val <0.001
Fungicide x Cultivar		LSD		9.5	P Val 0.002

Table 5. Influence of fungicide management and cultivar on Scald infection (% plot) on 26/11/2020.

	Scald		
	RGT Planet	HV8 Nitro	Mean
1 Untreated	0.0 c	36.3 a	18.1 a
2 GS31 Radial 840mL/ha	0.0 c	20.0 b	10.0 b
3 GS31 Radial 840mL/ha fb. GS39-49 Aviator Xpro 417mL/ha	0.0 c	1.3 c	0.6 c
4 Systiva FB. GS31 Prosaro 300mL/ha fb. GS39-49 Radial 840mL/ha	0.0 c	7.5 c	3.8 bc
Mean	0.0 b	16.3 a	
Fungicide Management	LSD	7.2	P Val 0.002
Cultivar	LSD	4.9	P Val <0.001
Fungicide x Cultivar	LSD	9.8	P Val 0.001

Table 6. Influence of fungicide management and cultivar on Ramularia infection (% plot) on 26/11/2020.

	Ramularia		
	RGT Planet	HV8 Nitro	Mean
1 Untreated	0.0 -	3.8 -	1.9 -
2 GS31 Radial 840mL/ha	0.0 -	3.8 -	1.9 -
3 GS31 Radial 840mL/ha fb. GS39-49 Aviator Xpro 417mL/ha	0.0 -	0.0 -	0.0 -
4 Systiva FB. GS31 Prosaro 300mL/ha fb. GS39-49 Radial 840mL/ha	0.0 -	0.0 -	0.0 -
Mean	0.0 -	1.9 -	
Fungicide Management	LSD	3.5	P Val 0.436
Cultivar	LSD	2.4	P Val 0.118
Fungicide x Cultivar	LSD	4.9	P Val 0.449

**Figure 1.** Influence of fungicide management and cultivar on net form net blotch (NFNB), spot form net blotch (SFNB) and Scald infection (% plot) on 26/11/2020.