PGR:	GS30-32	----	----	----	Moddus Evo. 200ml
	GS37	----	----	----	Moddus Evo. 200ml
Fungicide:					
Standard Management		GS31 Tilt 500ml fb GS39 Prosaro 300ml			
High Input Management		Systiva, GS31 Radial 840ml fb GS39 Aviator Xpro 500ml			

Trial 4. HYC Disease Management germplasm interaction

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

Key Points:

- The fungicide treatments were effective in reducing the incidence of foliar disease (namely Scald and Net From Net Blotch), prolonging green leaf area and significantly increasing yield at this site in 2020.
- In two susceptible cultivars a single spray application of Prosaro at GS31 increased grain yield on average by 0.62t/ha and shifting to a two-spray strategy with the addition of Radial at GS39-49 increased yield by 1.5t/ha. The addition of the seed treatment Systiva at sowing to this treatment did not further reduce disease infection levels or increase grain yield. These results highlight the later follow up application is likely to be more effective and important than fungicide usage prior to GS31.
- The yield responses observed from the two foliar spray strategies are correlated to both a reduction in Scald and Net Form Net Blotch but also an increase in green leaf area.
- Grain quality responses were significant, noticeably the later fungicide application increased test weight by 2kg/hL in RGT Planet.
- The benefits of maintaining a green leaf during grain fill are influencing grain quality in malting barley consistently across the high rainfall zone and even in the absence of a yield response should not be overlooked.

Treatments: 4 fungicide management levels applied to 2 varieties

Table 3. Influence of management strategy and variety of barley grain yield (t/ha).

Treatment			**RGT Planet**	**HV8 Nitro**	**Mean**
GS00	**GS31**	**GS39-49**	Yield (t/ha)	Yield (t/ha)	Yield (t/ha)
---	---	---	5.88 -	5.90 -	**5.89 c**
---	Prosaro 300ml/ha	---	6.78 -	6.23 -	**6.51 b**
---	Prosaro 300ml/ha	Radial 840ml/ha	7.71 -	7.08 -	**7.39 a**
Systiva	Prosaro 300ml/ha	Radial 840ml/ha	7.71 -	7.19 -	**7.45 a**
Mean			**7.02 a**	**6.60 b**	**6.81**
LSD Variety P=0.05			0.45	P val	<0.001
LSD Fungicide P=0.05			0.18	P val	<0.001
LSD Variety x Fungicide P=0.05			ns	P val	0.057
CV			3.46		

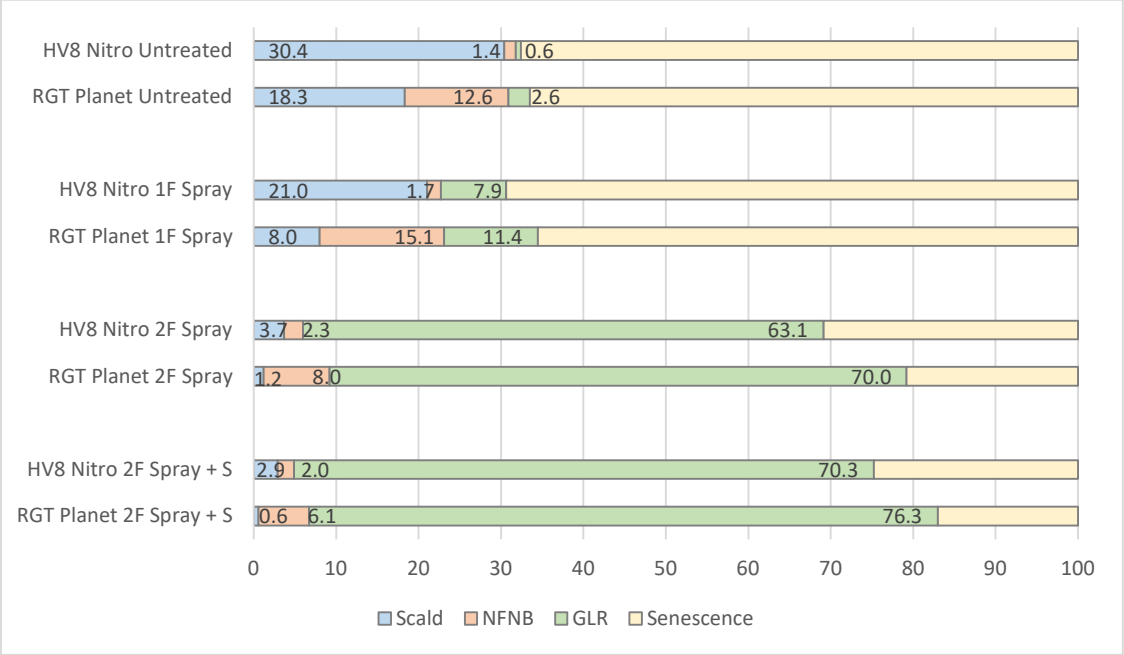

Figure 1. Disease severity, green leaf retention (GLR) and senescence of the flag-1 leaf, assessed 23 October, GS77.

Table 2. Influence of management strategy and variety on grain quality, protein (%), test weight (kg/HL) and screenings (%).

	Treatment			**Protein**		**Test Weight**		**Retention**		**Screenings**	
	GS00	**GS31**	**GS39-49**	%		kg/hl		%		%	
RGT Planet	---	---	---	11.4	cd	65.1	d	87.5	c	3.2	a
RGT Planet	---	Prosaro 300ml/ha	---	10.8	d	66.0	cd	91.2	b	2.1	b
RGT Planet	---	Prosaro 300ml/ha	Radial 840ml/ha	10.9	d	67.1	bc	94.6	a	1.4	b
RGT Planet	Systiva	Prosaro 300ml/ha	Radial 840ml/ha	11.3	cd	67.6	b	94.9	a	1.3	b
Mean				**11.1**	**b**	**66.4**	**b**	**92.1**	**a**	**2.0**	**b**
HV8 Nitro	---	---	---	12.2	ab	67.1	bc	85.6	c	4.0	a
HV8 Nitro	---	Prosaro 300ml/ha	---	12.4	a	67.7	b	87.8	c	3.4	a
HV8 Nitro	---	Prosaro 300ml/ha	Radial 840ml/ha	11.9	abc	69.9	a	93.2	ab	1.7	b
HV8 Nitro	Systiva	Prosaro 300ml/ha	Radial 840ml/ha	11.6	bc	69.9	a	94.5	a	1.4	b
Mean				**12.0**	**a**	**68.6**	**a**	**90.3**	**b**	**2.6**	**a**
			Grand Mean	11.6		67.5		91.2		2.3	
			LSD (p=0.05)	0.6		1.2		3.2		0.9	
			P Val	<0.001		<0.001		<0.001		<0.001	

Table 3. Details of the management levels (kg, g, ml/ha).

Varieties:		**HV8 Nitro & RGT Planet**
Sowing date:		**25-April**
Seed Rate:		200 seeds/m^2
Sowing Fertiliser:		100kg/ha MAP
Seed Treatment:		Vibrance & Gaucho ± per treatment list
Grazing:		Nil
Nitrogen:	23 June	69 N kg/ha
	7 August	69 N kg/ha
Fungicide:		As per treatment list

Trial 5. HYC PGR x harvest date interaction

Objective: To assess the value of PGRs with delayed harvest in HRZ regions

Key Points

- RGT Planet achieved a grain yield of 8.3 t/ha significantly higher than the winter cultivar Cassiopee at 8.0 t/ha when harvested on time.
- Untreated (without PGR) and harvested on time achieved an average yield of 7.89t/ha and delaying harvest by three weeks yielded 0.47t/ha less at 7.42t/ha due to headloss. PGR's increased yield on average irrespective of harvest date and enable growers more time to manage harvest logistics with limited downside risk. The two-spray strategy of a PGR at G31 followed by a second application at GS37 – 49 yielded significantly higher at 8.32t/ha when harvested on time, and did not suffer a yield penalty when harvest three weeks later.
- Irrespective of harvest date the PGR had the largest effect in Cassiopee and the use of a single PGR at GS31 increased yield by 0.5t/ha compared to untreated. This application benefit was primarily due to reducing lodging, the addition of a second application at GS37 did not further increase yield, however when the GS31 application was combined with a later application at GS49 yield increased 1.45t/ha due to the added head loss control.
- There wasn't any significant yield difference across all treatments in RGT Planet relative to the untreated control. While there was consistently 5 – 10 heads/m2 on the ground from delaying harvest in RGT Planet, these were not enough to influence yield.
- The pressure on head loss was less at this site in 2020 compared to other hyper yielding centers highlights under moderate head loss pressure RGT planet is unlikely to benefit from PGR applications while winter cultivars will require them.
- These results require further validation in 2021 but have demonstrated there is little downside risk with the use of PGRs in the higher rainfall zone. This works well for farm logistics and the timings of a PGR application at GS31 and later application could also be combined with the most effective fungicide timings.

Treatments: 4 PGR management approaches applied to two cultivars, to be harvested at two harvest dates.