

Trial 5. HYC PGR x harvest date interaction

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

Key points

- Buff achieved a grain yield of 6.29 t/ha significantly higher than RGT Planet at 5.85 t/ha when harvested on time.
- Harvest logistics and cultivar choice was the major factors influencing yield losses due to a delay in harvest. Buff suffered a 1.83t/ha yield penalty from delaying harvest by 3 weeks, and RGT Planet 1.07t/ha.
- Despite large yield losses to delaying harvest, plant growth regulators (PGRs) applied at all three timings did not offer any yield advantage in both cultivars whether harvested on time or when harvest was delayed. This is important because growers can have confidence in higher head loss risk areas that yield potential is unlikely to be compromised by PGR applications.
- Current recommendations to growers are to ensure timely harvest and to choose cultivars with improved head retention. Yields were lower than expected in 2020 and the additional benefits of PGR application for lodging and brackling control were not observed in this experiment.
- The use of PGRs for head loss control requires further development in 2021 but these and other center results have demonstrated there is little downside risk with the use of PGRs in the higher rainfall zone and a GS31 and later application could be combined with the most effective fungicide timings.

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

Table 1. Influence of fungicide management strategy, variety and canopy management regime on grain yield (t/ha).

		<i>RGT Planet</i>	<i>Buff</i>	<i>Mean</i>
Variety		5.31 -	5.38 -	5.35
	LSD	0.31	P-Value	0.475
Harvest Date				
<i>On time</i>		5.85 b	6.29 a	6.07 a
<i>Delayed 3 weeks</i>		4.78 c	4.46 d	4.62 b
Harvest Date Management	LSD	0.18	P-Value	<0.001
Harvest Date x Variety	LSD	0.26	P-Value	0.004
Canopy Management Regime				
<i>Untreated</i>		5.08 -	5.37 -	5.23 -
<i>GS31 PGR</i>		5.29 -	5.29 -	5.29 -
<i>GS31 + GS37 PGR</i>		5.49 -	5.47 -	5.48 -
<i>GS31 + GS49 PGR (Europe style)</i>		5.39 -	5.37 -	5.38 -
Canopy Management Regime	LSD	0.34	P-Value	0.441
Variety x Canopy Mgmt Regime	LSD	0.48	P-Value	0.730
Harvest Date. x Canopy Mgmt. Regime				
<i>On Time</i>				

<i>Untreated</i>		5.46	-	5.95	-	5.70	-
<i>GS31 PGR</i>		5.93	-	6.35	-	6.14	-
<i>GS31 + GS37 PGR</i>		5.99	-	6.68	-	6.34	-
<i>GS31 + GS49 PGR (Europe style)</i>		6.01	-	6.20	-	6.11	-
Delayed 3 weeks							
<i>Untreated</i>		4.70	-	4.79	-	4.75	-
<i>GS31 PGR</i>		4.66	-	4.23	-	4.44	-
<i>GS31 + GS37 PGR</i>		5.00	-	4.27	-	4.63	-
<i>GS31 + GS49 PGR (Europe style)</i>		4.76	-	4.55	-	4.66	-
Harvest Date x Canopy Mgmt	LSD	0.48		P-Value		0.106	
Harvest Date x Canopy Mgmt x Variety	LSD	0.68		P Value		0.379	

Trial 6: Nutrition for Hyper Yielding Barley

Objectives: To assess the value of higher nutrition input for barley

Individual objectives specific to the trial are:

- Assess whether growers are currently under fertilizing barley crops in the region and N requirements required to reach target yields of 10 – 12 within each region.

Key Points:

- A mean yield of 4.24t/ha was achieved across the experiment and proteins were greater than 11.4% and outside of malt specifications suggesting N was not limiting in this experiment.
- There wasn't any additional yield benefit from an extra 25% and 50% N combined when applied either with or without the additional P and S fertilizer compared to the farmer applied nutrition which totaled 86kg N/ha
- The aspirational 25% and 50% more N treatments both increased grain protein by 1.1% and 1.9% which indicates the N was taken up but not contributing to yield
- These results are consistent with other experiments across the high rainfall zones, were limited responses to applied N fertilization are measurable when application rates exceed 150 units of N.

Table 1. Detailed treatment list, grain yield (t/ha) & % Site Mean.

Trt.		Nitrogen rate kg N/ha	Yield (t/ha)	Mean (%)
1	Current Practice	86	4.15 -	97.9
2	Current Practice +25% N	150	4.31 -	101.7
3	Current Practice +25%NPKS	150	4.27 -	100.7
4	Aspirational N	200	4.24 -	100.0
5	Aspirational NPKS	200	4.23 -	99.8
Mean			4.24	100
LSD (p=0.05)			0.42	
P Val			0.951	

NOTE: MAP was applied at a rate of 90kg/ha

Table 2. Influence of nitrogen rate on grain quality, protein (%), test weight (kg/HL), screenings (%) and retention (%).

Trt.	Nitrogen Rate Kg N/ha	Protein (%)	Test weight (kg/HL)	Screenings %	Retention (%)
1	86	11.4 d	69.6 -	2.3 c	86.5 a
2	150	12.5 c	69.1 -	3.6 abc	81.2 abc