

Trial 5. HYC Spring Barley PGR Evaluation

Objective: To assess the value of PGRs with spring sown barley in HRZ regions to increase yield and reduce lodging, brackling and head loss. A harvest delay will be imposed to exacerbate treatment differences.

Key Messages:

- Despite high yields and a 14 day delay in harvest further yield losses and a higher incidences of brackling, lodging, and headloss did not occur from later harvest.
- Irrespective of harvest timing PGRs increased yield in Rosalind by 0.5t/ha across all timings, were as yields were the same in Planet (Table 2).
- Brackling and Lodging responses to PGRs were variable and not consistent.
- Later applications of PGRs reduced headloss in both cultivars, however numbers were low and too insignificant to reduce yield.

Treatments: 4 PGR management approaches applied to two cultivars, to be harvested at two harvest dates. A total of 400ml/ha of Moddus Evo is applied at either 1 or 2 growth stages.

Table 1. Growth stage timings and rates of the plant growth regulator Moddus Evo.

Treatment ID	GS31	GS37
PGR GS31/37	Moddus Evo 200ml/ha	Moddus Evo 200ml/ha
PGR GS31	Moddus Evo 400ml/ha	---
PGR GS37	---	Moddus Evo 400ml/ha
Untreated	---	---

2 harvest dates:

Ontime: 20th of January

Delayed: 4th of February

2 Cultivars: Rosalind and Planet

Table 2. Grain yield, lodging, brackling, and head loss responses to PGR, and harvest delay in Planet and Rosalind.

	Grain Yield (t/ha)		Lodging Index		Brackling Index		Head loss (heads/m ²)	
	Planet	Rosalind	Planet	Rosalind	Planet	Rosalind	Planet	Rosalind
Ontime Harvest								
untreated	10.5	9.9	6.7	20.0	12.5	16.7	13.6	8.3
GS31	10.4	10.5	11.7	0.0	7.0	1.7	4.2	10.6
GS31/37	10.5	10.4	4.2	15.0	0.8	20.0	8.4	6.7
GS37	10.6	10.6	4.2	0.0	7.0	0.0	5.9	5.5
Delayed Harvest								
untreated	10.5	10.2	2.9	0.0	6.4	7.5	8.8	7.5
GS31	10.5	10.6	5.0	3.8	7.1	10.5	6.0	6.7
GS31/37	10.7	10.6	4.3	1.3	7.9	6.3	9.3	3.8
GS37	10.6	10.9	9.3	0.0	16.4	6.3	8.1	4.2
PGR Effect (P val/LSD)	0.001/0.45		ns		0.01/7.5		0.001/ 6.1	
Harvest Date	ns		ns		ns		ns	

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

Varieties:		RGT Planet
Sowing date:		8 September
Seed Rate:		300 seeds/m ²
Sowing Fertiliser:		100kg MAP/ha
Seed Treatment:		Pontiac
Nitrogen:	1 Oct	80kg N/ha
Fungicide:		As per treatment list

Trial 6: Nutrition for Hyper Yielding Barley

Objectives: To assess the value of higher nutrition input for barley and its relationship with yield and biomass accumulation. This will help to assess whether growers are currently under fertilising barley crops in the region and N requirements required to reach target yields of 10–12t/ha within each region.

Key Messages:

- Peak yields of 10.98t/ha were achieved at 90kg N/ha, whereas 10kg of applied N yielded 9.98t/ha (1 t less), and at 290kg N/ha yields achieved were 10.2t/ha (table 1).
- Yield responses match NDVI responses during the critical period reaffirming growth and crops intercepting light during this period is the key to higher yields (figure 1).
- Crop biomass increased with Nitrogen rate from 16.1–20.5t/ha, however harvest index declined due to increased lodging and brackling (figure 2).
- These results are consistent with other HYC sites in that once crop biomass at maturity in barley exceeds 16t/ha it is difficult to achieve a harvest index above 50%.
- Screenings increased and test weight declined at the highest N rates, likely due to lodging and or brackling.

Treatments: Five nutrition treatments

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

	Nitrogen Rate	Yield	% of Mean	Protein	Test weight	Retention	Screenings
Trt.	Kg N/ha	t/ha	%	(%)	(kg/HL)	(%)	(%)
1	10	9.98 b	94.9	11.3 c	67.5 a	87.1 a	4.6 bc
2	50	10.55 ab	100.3	11.0 c	68.1 a	89.7 a	3.5 c
3	90	10.98 a	104.4	11.6 bc	67.0 ab	86.9 a	4.4 bc
4	150	10.84 a	103.1	11.6 bc	67.2 ab	87.5 a	3.9 bc
5	210	10.55 ab	100.3	12.3 ab	66.1 b	82.3 b	5.2 b
6	290	10.20 b	97.0	12.9 a	64.9 c	75.9 c	6.6 a
Mean		10.51	100.0	11.77	66.78	84.87	4.68
LSD (p=0.05)		0.61	5.8	0.69	1.16	3.11	1.29
P Val		0.028	0.028	<0.001	<0.001	<0.001	0.002

NOTE: MAP was applied at a rate of 100kg/ha