



HARVEST RESULTS:

Winter Barley Cultivar Plant Growth Regulator (PGR) interaction 2019/20 SA Crop Technology Centre Yield Results (*Provisional*)

Sown: 17 April 2019

Harvested: 17 December 2019

Rotation position: 1st Cereal after Broad bean

Soil Type: Neutral-slightly alkaline Organosol (Peat soil) – high organic matter (0-30cm)

Key Messages:

- Cultivars differed in their response to PGR treatment (significant interaction $p=0.006$) with Urambie and RGT Planet being the least responsive to PGR (0.21t/ha-0.24t/ha increase) and Surge being the most responsive (1.46t/ha).
- Surge was the highest yielding cultivar in the trial (7.48t/ha) when treated with PGR but when left untreated it was out yielded by all cultivars except Maltesse, which lodged badly with or without PGRs.
- With the application of PGRs winter varieties Surge and Salamandre significantly out yielded the spring cultivar control RGT Planet. In the absence of PGR application this was reversed with RGT Planet being the highest yielding cultivar, although the yield advantage over Cassiopee, Salamandre and Urambie was not statistically significant.
- There was a two-month difference in the development time taken to reach the start of stem elongation (GS30), with the UK winter barley Surge being the slowest (22 August) and the spring variety RGT Planet being the fastest (21 June).
- In comparison all varieties reached awn emergence (GS49) within a one-month window (RGT Planet 16 September to Surge & Maltesse 14 October when untreated with PGR).
- Use of PGRs decreased lodging in all but one cultivar (Urambie), with Surge displaying complete lodging control and greatest yield responses when treated with a PGR.

Table 1. Influence of cultivar on grain yield (t/ha) under plus and minus PGR management

Cultivar	Management (Grain Yield t/ha)		
	No PGR t/ha	Plus, PGR t/ha	Difference (+/- PGR) t/ha
RGT Planet (control)	6.68 cd	6.92 bc	0.24
Cassiopee	6.63 cd	7.39 ab	0.76
Maltesse	5.77 f	6.26 de	0.49
Salamandre	6.42 de	7.44 a	1.02
Surge	6.02 ef	7.48 a	1.46
Urambie	6.38 de	6.59 cd	0.21
LSD Cultivar p = 0.05		0.35 t/ha	P val 0.001
LSD PGR p=0.05		0.21 t/ha	P val <0.001
LSD Cultivar x PGR P=0.05		0.49 t/ha	P val 0.006

Please read the notes accompanying these harvest results for interpretation

Yield figures followed by the same letter are not considered to be statistically different ($p=0.05$), for example a yield of 6.76 cd is considered statistically different to 7.65b but not to a yield of 7.08c.

Plot yields: To compensate for edge effect a full row width (22.5cm) has been added to either side of the plot area (equal to plot centre to plot centre measurement).



Figure 1. Influence of cultivar on plant development (date of stem elongation (GS30) and awn emergence (GS49) with and without PGR)

Table 2. Influence of cultivar and PGR application on lodging index (0 – 500 scale with 0-5 of lodging severity (0 = no lodging, 5 completely flat) x % plot area affected by lodging) assessed at crop maturity - 10 December

Cultivar	Management (Lodging Index 0-500)		Mean (0-500)
	No PGR (0-500)	Plus, PGR (0-500)	
RGT Planet (control)	7.5 d	0.0 d	3.8
Cassiopee	107.5 cd	70.0 cd	88.8
Maltesse	366.3 a	227.5 b	296.9
Salamandre	20.0 cd	0.0 d	10.0
Surge	237.5 b	0.0 d	118.8
Urambie	82.5 cd	127.5 bc	105.0
LSD Cultivar $p = 0.05$		80.92	P val <0.001
LSD PGR $p=0.05$		60.37	P val 0.040
LSD Cultivar x PGR $P=0.05$		114.43	P val 0.015

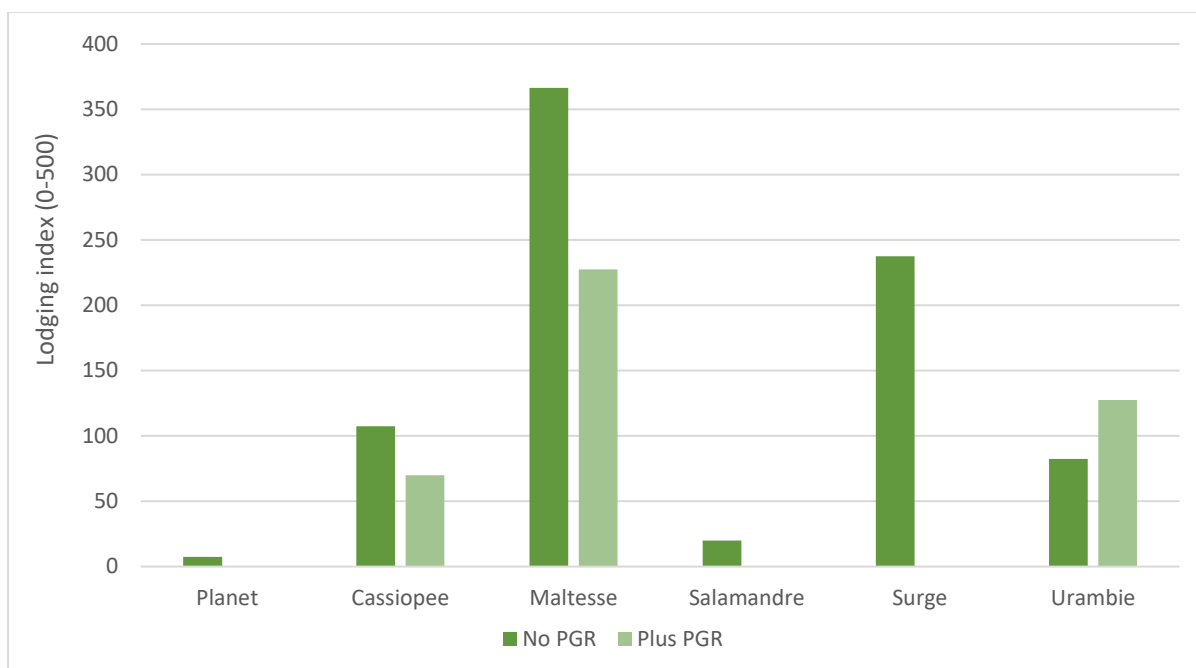


Figure 2. Influence of cultivar and PGR application on lodging assessed 10 December represented as a lodging index (0-500).

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

Plant pop'n:		180 seeds/m ² (150 plants/m ² target)	
		Nil	Plus PGR
Seed treatment:		Rancona Dimension/Gaucho	Rancona Dimension/Gaucho
Basal Fertiliser:	17 April	145kg MAP	145kg MAP
Nitrogen:	6 August	87 kg Urea (40 N)	87 kg Urea (40 N)
	30 August	87 kg Urea (40 N)	87 kg Urea (40 N)
PGR:	GS30 (24-Jun – 27 Aug)	----	Mod. 200ml*
	GS33(25-Jul – 9-Sep)	----	Mod. 200ml*
Fungicide**:	GS31-32	Prosaro 300ml	Prosaro 300ml
	GS49	Aviator Xpro 400ml	Aviator Xpro 400ml

All other inputs of insecticides and herbicides were standard across the trial. Mod. - Moddus

*Timings of PGRs and fungicides were adjusted to take account of the differences in spring and winter barley phenology (development).

Available Soil Nitrogen (10th April) – 445.1 kg N/ha (0 – 60cm) prior to sowing

Meteorological Data- SA Crop Technology Centre

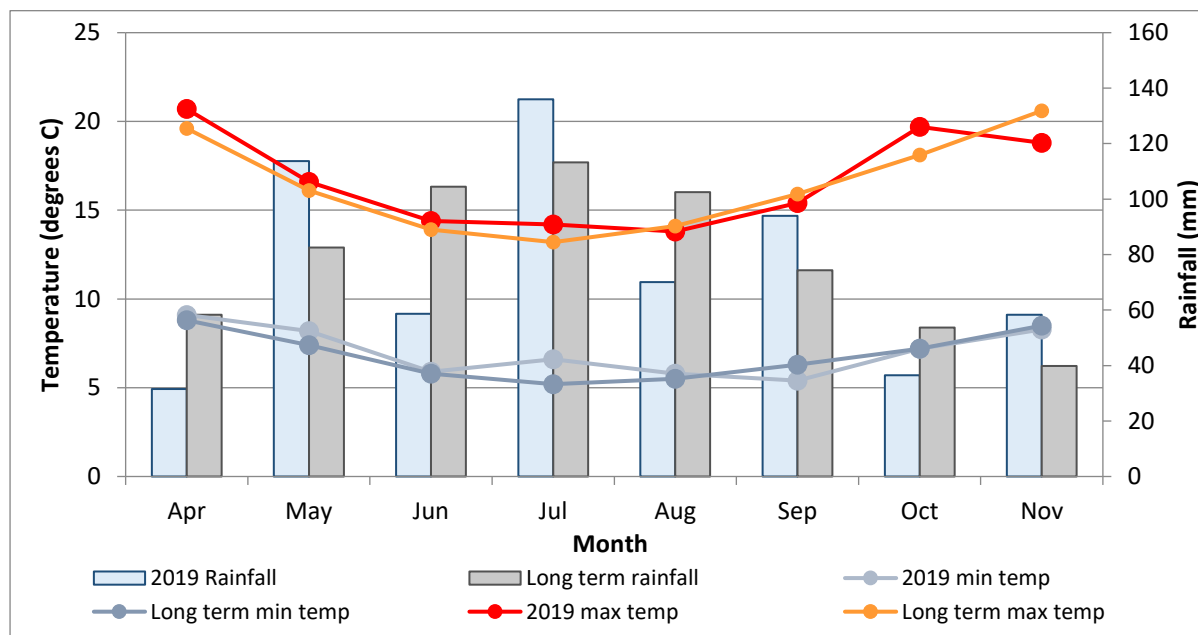


Figure 3. 2019 growing season rainfall and long-term rainfall (1877-2019) (recorded at Millicent), 2019 min and max temperatures and long-term min and max temperatures recorded at Mount Gambier (1941-2019) for the growing season (April-November). *Rainfall April to November= 598.8mm.*

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