HARVEST YIELD RESULTS

HYC Barley Elite Screen Time of Sowing (TOS) 1 Trial

2021 SA Crop Technology Centre

Hyper Yielding Crops Project (FAR2004-002SAX)

A Grains Research & Development Corporation (GRDC) investment

Sown: 21 April 2021
Harvested: 14 December 2021
Rotation position: 1st Cereal after Faba beans, 2019 Canola, 2018 Wheat
Soil type & Management: Neutral-slightly alkaline Organosol (Peat soil) – high organic matter

Key Messages:

- Maximum yields achieved in early sown spring cultivars were 8.0 t/ha in high rainfall control cultivars Planet and Rosalind, and other experimental spring lines.
- Pixel, a 6-row winter barley achieved 10.4 t/ha, and 2 Row winter cultivars achieved 9.7 t/ha.
- Defoliation to delay development did not improve yield in Rosalind and Planet.
- Grain quality (table 3) of high yielding winter lines achieved malt specifications, whereas spring cultivars had lower test weights and higher grain screenings.
- This is an exciting development in earlier sowing barley systems to achieve yields >10 t/ha and suggests this sowing date is unsuited to current and experimental spring barley cultivars.

Table 1. Grain yield (t/ha) and variety type tested under high yielding management conditions[1]

Variety		Type	Grain yield (t/ha)
1.	Planet	2 Row Spring (Control)	8.0 d
2.	Rosalind	2 Row Spring (Control)	8.0 d
Experimental Lines[2]			
3.	AGTB0244	2 Row Spring	7.9 d
4.	Laureate	2 Row Spring	8.0 d
5.	Cassiopee	2 Row Winter	7.9 de
6.	Madness	2 Row Winter	8.7 c
7.	Newton	2 Row Winter	9.7 b
8.	Memento	2 Row Winter	8.9 c
9.	Pixel	6 Row Winter	10.4 a
10.	Visual	6 Row Winter	7.5 de
11.	Rosalind defoliated[3]	2 Row Spring	4.5 f
12.	Planet defoliated[3]	2 Row Spring	7.2 e
		Mean	8.10
		LSD	0.64
		P Val	<0.001

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^Treatment footnotes:

1. Treatments: 12 elite lines tested under high yielding management conditions (full foliar fungicide program (Systiva & 3 foliar fungicides – GS31, GS39 & GS61) and PGR management applied as Moddus 200ml @ GS30 - GS32.
2. Experimental lines are yet to be commercially available in Australia and the first evaluation of longer season winter lines suited to the HRZ.
3. These spring lines were mechanically defoliated (mower) below the first visible node (GS31 – GS32) during early stem elongation to delay crop development.

Table 2. Trial input and management details (kg, g, ml/ha). All inputs of insecticides and herbicides were standard across the trial

Plant population		200 seeds/m^2
Seed treatment:		Vibrance, Gaucho & Systiva
Defoliation:		Planet and Rosalina Reset only
Basal Fertiliser:	18 April	100kg MAP
Nitrogen:	4 August	87 kg Urea (40 N)
	5 October	175 kg Urea (80.5 N)
PGR:	3 August	Moddus Evo 200mL/ha
Fungicide:	3 August	Prosaro 300mL/ha
	26 September	Radial 840mL/ha
	17 October	Opus 500mL/ha

Table 3. Grain Quality parameters of barley cultivars

Variety		**Quality Parameters**			
		Protein	Test weight	Screenings	Retention
		%	Kg/hL	%	%
1.	Planet	11.5 bc	65.9 bcd	4.7 ef	85.6 b
2.	Rosalind	11.1 c	64.1 de	11.4 b	64.5 d
3.	AGTB0244	11.2 c	65.4 cd	6.0 de	80.3 c
4.	Laureate	10.6 c	62.4 e	7.5 cd	80.8 c
5.	Cassiopee	13.4 a	69.7 a	2.3 h	92.1 a
6.	Madness	13.4 a	69.7 a	4.3 efg	88.9 ab
7.	Newton	12.5 ab	67.7 ab	3.3 fgh	91.3 a
8.	Memento	12.6 ab	67.9 ab	2.9 gh	91.6 a
9.	Pixel	11.4 bc	67.3 bc	2.7 gh	89.9 a
10.	Visual	10.8 c	67.9 ab	2.9 gh	90.2 a
11.	Rosalind defoliated	11.8 bc	63.0 e	16.0 a	56.3 e
12.	Planet defoliated	11.0 c	63.2 e	8.2 c	77.5 c
	Mean	11.78	66.19	6.00	82.41
	LSD	1.24	2.13	1.77	3.76
	P Val	<0.001	<0.001	<0.001	<0.001

Meteorological Data – South Australia (SA) Crop Technology Centre

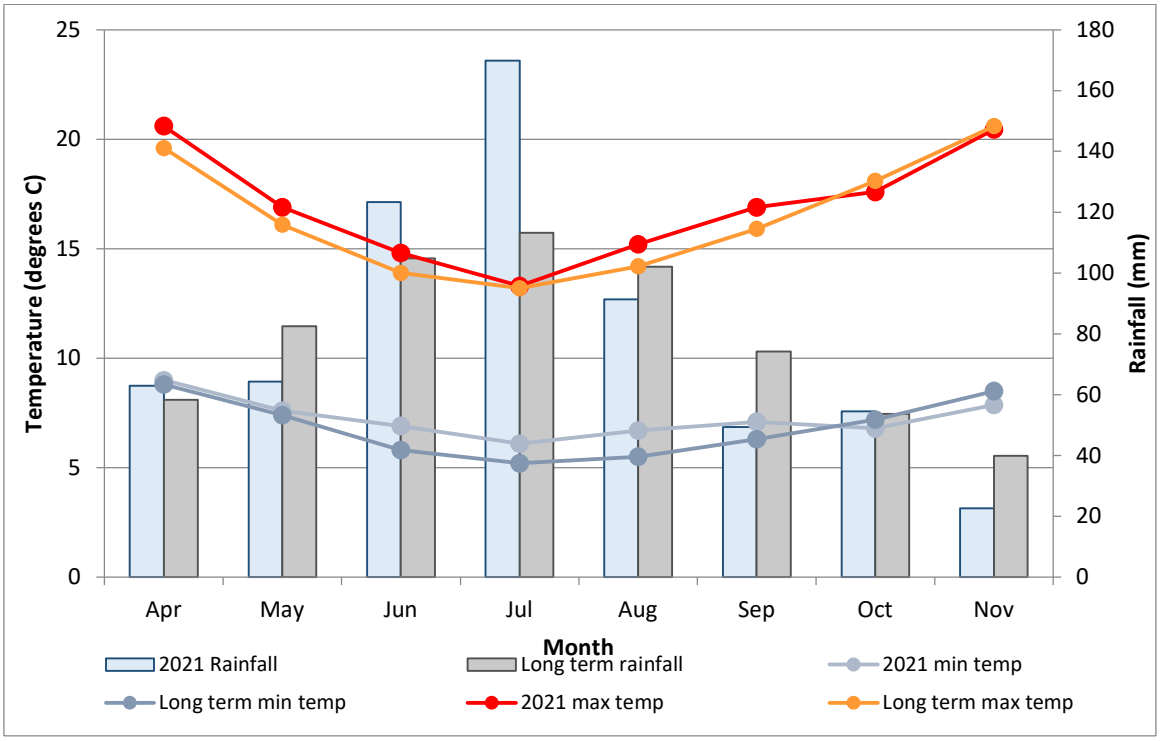

Figure 1. 2021 growing season rainfall and long-term rainfall, 2021 min and max temperatures recorded at Millicent (1877-2021) and long-term min and max temperatures recorded at Mount Gambier Aero (1941 to 2021) for the growing season (April to October). *Rainfall April to November= 638.5mm.*

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