

Comparison of barley varieties

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Key Findings

- The average barley yield for all varieties trialed at Hart in 2021 was 2.61 t/ha.
- Compass, Leabrook, Commodus CL, Maximus CL, Laperouse, Beast, Cyclops, Minotaur, Rosalind and Fathom were the highest yielding barley varieties (2.75 – 2.92 t/ha).
- Beast (pending malt accreditation) and Leabrook met Malt 1 receival standards for protein (%), test weight (kg/hL), screenings (%) and retention (%).
- Screenings and retention across all malt varieties at Hart was poor, averaging 13.5%, 9.7% and 52.1%, respectively.

Why do the trial?

To compare the performance of new barley varieties alongside current industry standards.

How was it done?

Plot size	1.75 m x 10.0 m	Fertiliser	Seeding: DAP (18:20) Zn 1% + Impact @ 80 kg/ha
Seeding date	May 3, 2021		June 12: Easy N (42.5:0) @ 70 L/ha
Location	Hart, SA		August 20: Easy N (42.5:0) @ 70 L/ha
Harvest date	November 1, 2021		

The trial was a randomised complete block design with three replicates and 14 barley varieties. The trial was managed with the application of pesticides to ensure a weed, insect and disease-free canopy. All plots were assessed for grain yield (t/ha), protein (%), test weight (kg/hL), screenings (2.2mm screen) and retention (2.5mm screen).

New varieties trialed at Hart in 2021, include Minotaur (tested as AGTB0113) and Cyclops (tested as AGTB0200), both were released by AGT in 2021. Commodus CL was released by InterGrain in 2020 and was also new to Hart this season.

Yield and quality data is not reported for Kraken barley.

Results and discussion

Grain yield

The highest yielding malt varieties at Hart were Compass, Leabrook and Maximus CL, yielding between 2.51 – 2.91 t/ha. RGT Planet, Spartacus CL and Scope CL were lower yielding this season with grain yields ranging from 1.98 – 2.23 t/ha (Table 1). Long-term yield data shows that Compass and RGT Planet have performed similar or greater than the annual trial average over a number of years.

Leabrook has also performed well over the past two seasons at Hart (Table 2).

All varieties currently pending malt accreditation, including Beast, Commodus CL, Cyclops, Laperouse and Minotaur were high yielding with yields ranging from 2.62 – 2.92 t/ha. Long-term yield data for these varieties is not yet available.

Feed varieties trialed at Hart in 2021 were Rosalind and Fathom. Both varieties yielded similarly with grain yields of 2.75 and 2.79 t/ha, respectively. Historic data shows that both varieties yield well at Hart across a number of seasons (Table 2).

Grain quality

The grain protein content for all malting barley (and pending malt accreditation) varieties was higher than the acceptable Malt 1 receival standards, ranging from 12.8 – 14.6%. High protein levels were likely attributed to applications of nitrogen and below average rainfall leading into grain fill.

All malting varieties had acceptable test weights to meet maximum grade (> 65 kg/hL) with a trial average of 70.7 kg/hL. RGT Planet, Scope CL and Spartacus CL had the highest test weights, ranging from 71.1 – 71.6 kg/hL. Varieties currently pending malt accreditation also performed well, with test weights > 65 kg/hL for maximum grade. Feed varieties, Fathom and Rosalind also met BAR 1 receival standards for test weight.

Barley screenings in 2021 were high across most varieties trialed at Hart, ranging between 3.8% and 15.7%. Malting varieties which met Malt 1 specifications were Compass (5.1%) and Leabrook (5.6%). Beast, previously tested as AGTB0113 (pending malt accreditation) also had the lowest screenings of 3.8%.

Retention for most malting barley varieties was low with a trial average of 52.1%. Malting variety Leabrook and Beast (pending malt accreditation) had grain retention > 70%, meeting maximum grade requirements.



Table 1. Barley grain yield and quality results from Hart in 2021. Values shaded blue in the same column show the highest performing varieties.

Quality	Variety	Grain yield t/ha	% of site average	Protein %	% of site average	Test weight kg/hL	% of site average	Screenings %	% of site average	Retention %	% of site average
Feed	Fathom ^(b)	2.79 ^d	107	13.2	98	69.3	98	7.7 ^{abc}	79	59.8 ^{cd}	115
	Rosalind ^(b)	2.75 ^d	106	13.0	97	70.6	98	13.9 ^{bc}	143	36.7 ^{abc}	70
Bar 1 Receival Standards											
				NA		>62.5		15.0		NA	
Malt	Compass ^(b)	2.91 ^d	112	12.8	95	69.9	99	5.1 ^a	53	67.4 ^d	129
	Leabrook ^(b)	2.79 ^d	107	13.1	97	70.2	99	5.6 ^{ab}	58	70.5 ^d	135
	Maximus CL ^(b)	2.51 ^{bc^d}	96	13.9	103	70.5	99	15.3 ^c	158	36.1 ^{ab}	69
	RGT Planet ^(b)	2.23 ^{abc}	86	14.6	109	71.1	100	9.4 ^{abc}	97	50.4 ^{bcd}	97
	Scope CL ^(b)	1.98 ^a	76	14.4	107	71.2	100	10.3 ^{abc}	106	41.2 ^{abc}	79
	Spartacus CL ^(b)	2.17 ^{ab}	83	14.3	106	71.6	101	15.7 ^c	162	25.7 ^a	49
Malt 1 Receival Standards											
				9-12%		>65		7.0		>70%	
Pending malt accreditation	Beast ^(b) (AGTBO113)	2.9 ^d	111	13.0	97	69.4	101	3.8 ^a	39	70.3 ^d	135
	Commodus CL ^(b)	2.61 ^{bcd}	100	13.6	101	69.9	101	10.4 ^{abc}	107	53.0 ^{bcd}	102
	Cyclops ^(b) (AGTBO200)	2.69 ^{cd}	103	13.3	99	71.5	101	8.1 ^{abc}	84	56.7 ^{bcd}	109
	Laperouse ^(b)	2.92 ^d	112	12.4	92	71.9	102	5.1 ^a	53	68.4 ^d	131
	Minotaur ^(b) (AGTBO213)	2.62 ^{bcd}	101	13.3	99	72.1	102	15.6 ^c	161	40.5 ^{abc}	78
	Site Average	2.61	100	13.5	100	70.7	100	9.7	100	52.1	100
LSD (P<0.005)		0.47		NS	1.14		8.46			23.1	

Table 2. Long term barley variety performance at Hart for 2017 – 2021 (expressed as % of trial average).

Quality	Variety	% Trial average					Grain yield (t/ha)
		2017	2018	2019	2020	2021	2021
Feed	Fathom ^(D)	94	109	104	112	107	2.79
	Fleet ^(D)	104	106	100			
	Hindmarsh ^(D)	98	100	103			
	Keel	102	105	101			
	Rosalind ^(D)	91	102	107	100	105	
Malt	Commander ^(D)	102	104	93	95		2.91
	Compass ^(D)	106	105	106	99	112	
	GrangeR ^(D)	108	89	93			
	La Trobe ^(D)	104	99	107	94		
	Leabrook ^(D)				107	107	
	Maximus CL ^(D) (IGB1705T)			102	95	96	
	Navigator	111	96	93			
	RGT Planet ^(D)	134	97	101	111	86	
	Scope CL ^(D)	89	89	91	93	76	
	Spartacus CL ^(D)	98	98	100	89	83	
Pending malt accreditation	Beast ^(D) (AGTBO113)				99	111	2.90
	Commodus CL ^(D)					100	2.61
	Cyclops ^(D) (AGTBO200)					103	2.69
	Laperouse ^(D)				105	112	2.92
	Minotaur ^(D) (AGTBO213)					101	2.62
Mean yield (t/ha)		4.36	2.86	2.25	3.18	2.61	
Sowing date		May 8	May 14	May 15	May 16	May 3	
April - Oct (mm)		191	160	162	355	232	
Annual rainfall (mm)		331	224	189	503	401	

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