

Comparison of lentil and field pea varieties

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Key findings

- Grain yields for lentil varieties at Hart in 2022 were high, ranging from 4.31 – 6.04 t/ha.
- The highest yielding lentil varieties were GIA thunder (GIA2002L), testing line CIPAL2122 and PBA Jumbo2, achieving 6.64, 6.04 and 5.88 t/ha, respectively.
- PBA Jumbo2, GIA Thunder (GIA2002L) and PBA Highland have consistently performed well across a number of seasons at Hart.
- Field pea grain yields achieved a trial average of 3.63 t/ha at Hart in 2022. The top eight varieties achieved between 3.60 – 4.07 t/ha.
- Kaspera field pea continues to yield well at Hart across a number of seasons, consistently yielding above the trial average.

Introduction

To compare the performance of newly released pulse varieties alongside current commercial standards.

Methodology

Plot size (field pea)	2.0 m x 10.0 m	Fertiliser	MAP (10:22) + 2% Zn @ 80 kg/ha
Plot size (lentil)	1.75 m x 10.0 m		
Seeding date	June 9, 2022		
Field pea harvest date	November 29, 2022		
Lentil harvest date	December 14, 2022		
Location	Hart, SA		

Two trials were designed as randomised block designs with three replicates for lentil and field pea varieties. Eleven field pea varieties were trialed, including a new testing line GIA2202P. Thirteen lentil varieties were trialed, including newly released GIA Thunder, GIA Sire, GIA Metro and GIA Lightning and testing line CIPAL2122. Trials were managed with the application of pesticides to ensure a weed, insect and disease-free canopy. All plots were assessed for grain yield (t/ha) and analysed as a one-way ANOVA in Genstat 22nd Edition.

Results and discussion

Lentil

Grain yields for lentil varieties trialed at Hart in 2022 were high, ranging from 4.31 – 6.04 t/ha. The highest yielding varieties were GIA thunder (GIA2002L), testing line CIPAL2122 and PBA Jumbo2, achieving 6.64, 6.04 and 5.88 t/ha, respectively (Table 1). GIA Sire and GIA Metro were the lowest yielding lentil varieties at Hart in 2022, however in addition to these varieties having imidazolinone-tolerance, GIA Sire also has improved tolerances to clopyralid (sulfonyleurea soil residues) with GIA

Metro having tolerances to metribuzin herbicide. Therefore, reductions in grain yield could be expected (GRDC, 2022). Long term yield data shows that PBA Jumbo2, GIA Thunder (GIA2002L) and PBA Highland have performed well across a number of seasons at Hart (Table 2). New varieties GIA Lightning and CIPAL2122 performed well in 2022 and will continue to be evaluated at Hart.

Table 1. Lentil grain yields at Hart in 2022. Values shaded within each column show the highest performing varieties.

Lentil variety	Grain yield (t/ha)
PBA Kelpie XT ^(b)	5.12 ^{bcd}
PBA Hallmark XT ^(b)	5.36 ^{b-e}
PBA Hurricane XT ^(b)	5.68 ^{de}
PBA Highland XT ^(b)	5.63 ^{cde}
PBA Jumbo2 ^(b)	5.88 ^{ef}
GIA Leader ^(b)	5.69 ^{de}
GIA Thunder ^(b) (GIA2002L)	6.64 ^f
GIA Sire ^(b) (GIA1703L)	4.31 ^a
GIA Metro ^(b) (GIA2004L)	4.33 ^a
PBA Bolt ^(b)	4.86 ^{ab}
PBA Blitz ^(b)	4.88 ^{abc}
GIA Lightning ^(b) (GIA2003L)	5.67 ^{de}
CIPAL2122	6.04 ^{ef}
Average grain yield	5.42
LSD (P≤0.05)	0.43

Table 2. Long term yield data for lentil varieties at Hart 2020 – 2022.

Variety	% of trial average			Grain yield (t/ha)
	2020	2021	2022	2022
PBA Kelpie XT ^(b)	106	82	94	5.12
PBA Highland XT	100	99	104	5.63
PBA Jumbo2 ^(b)	104	110	108	5.88
PBA Hallmark XT	95	97	99	5.36
GIA Thunder ^(b) (GIA2002L)		113	123	6.64
GIA Leader ^(b)	98	103	105	5.69
PBA Hurricane XT ^(b)	91	95	105	5.68
GIA Sire ^(b) (GIA1703L)			80	4.31
GIA Metro ^(b) (GIA2004L)			80	4.33
PBA Bolt ^(b)			90	4.86
PBA Blitz ^(b)			90	4.88
GIA Lightning ^(b) (GIA2003L)			105	5.67
CIPAL2122			111	6.04
Average grain yield (t/ha)	1.62	1.30	5.42	
Sowing date	May 18	May 18	June 9	
April - Oct (mm)	355	232	355	
Annual rainfall (mm)	503	401	519	

Field pea

Above average rainfall at Hart improved field pea yields in 2022, with a trial average of 3.63 t/ha. This was a minimum increase of 2.02 t/ha when compared to recent seasons at Hart (2020 – 2021). Field pea yields ranged from 3.06 – 4.07 t/ha, with many varieties yielding well.

The highest performing varieties for grain yield at Hart were Kaspas, PBA Oura, PBA Butler, PBA Wharton, PBA Percy, PBA Taylor, PBA Pearl and testing line GIA2202P, ranging from 3.60 – 4.07 t/ha. Long term data shows that Kaspas continues to perform well at Hart across a number of seasons, with Butler performing well in two out of three years. New testing line GIA2202P will continue to be evaluated at Hart, yielding 110% of the average trial yield in the first year of evaluation.

Table 3. Field pea grain yields at Hart from 2020 – 2022. Values shaded within each column show the highest performing varieties.

Field pea variety	2022
GIA Kastar ^(b)	3.12 ^a
GIA Ourstar ^(b)	3.06 ^a
Kaspas ^(b)	3.86 ^{bc}
PBA Oura ^(b)	3.66 ^{abc}
PBA Butler ^(b)	4.07 ^c
PBA Wharton ^(b)	3.61 ^{abc}
PBA Gunyah ^(b)	3.36 ^{ab}
PBA Percy	3.60 ^{abc}
PBA Taylor ^(b)	3.80 ^{bc}
PBA Pearl	3.83 ^{bc}
GIA2202P	3.99 ^{bc}
Average grain yield	3.63
LSD (P≤0.05)	0.39

Table 4. Long term yield data for field pea varieties at Hart 2020 – 2022.

Variety	% of trial average			Grain yield (t/ha)
	2020	2021	2022	2022
GIA Kastar ^(b)	98	88	86	3.12
GIA Ourstar ^(b)	111	93	84	3.06
PBA Wharton ^(b)	83	98	99	3.61
PBA Butler ^(b)	94	108	112	4.07
PBA Oura ^(b)	101		101	3.66
Kaspas ^(b)	112	113	106	3.86
PBA Gunyah ^(b)			93	3.36
PBA Percy			99	3.60
PBA Taylor ^(b)			105	3.80
PBA Pearl			106	3.83
GIA2202P			110	3.99
Average grain yield (t/ha)	1.38	1.61	3.63	
Sowing date	May 18	May 18	June 9	
April - Oct (mm)	355	232	355	
Annual rainfall (mm)	503	401	519	

Acknowledgements

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References

GRDC (2022) 2023 South Australian Crop Sowing Guide

<https://grdc.com.au/resources-and-publications/all-publications/nvt-crop-sowing-guides/sa-crop-sowing-guide>

