

Comparison of lentil and field pea varieties

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Key findings

- Lentil yields for all varieties trialed ranged from 1.50 – 1.74 t/ha, at Hart.
- The highest yielding lentil varieties were GIA2002L, PBA Jumbo2 and GIA Leader.
- The average grain yield for all field pea varieties was 1.61 t/ha with yields ranging between 1.14 and 1.82 t/ha, at Hart.
- The highest yielding field pea varieties were Kaspas and PBA Butler, yielding 1.82 and 1.73 t/ha respectively.

Why do the trial?

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

How was it done?

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	May 18, 2021		
Field pea harvest date	November 1, 2021		
Lentil harvest date	November 8, 2021		
Location	Hart, SA		

Each trial was a randomised complete block design with three replicates.

Five field pea varieties were trialed, including GIA Kastar and GIA Ourstar, released in 2020.

Seven lentil varieties were trialed, including PBA Kelpie and GIA Leader, released in 2020 alongside one new pre-commercial line; GIA2002L.

Both 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 1000-grain weight (g).

Results and discussion

Lentil

The average grain yield for lentils was 1.30 t/ha, with yields ranging from 1.07 – 1.48 t/ha, at Hart in 2021. The highest yielding varieties were GIA2002L, PBA Jumbo2 and GIA Leader (Table 1). Although GIA Leader was high yielding, it also performed similarly to all XT varieties trialed.

PBA Jumbo2 was the highest yielding conventional red lentil available for South Australian growers and is a key variety choice where herbicide residues or broadleaf weeds are not an issue.

GIA Leader is a newly released IMI tolerant red lentil that was developed from PBA Jumbo2 and is well adapted to good soil types in medium to high rainfall zones. GIA2002L is an IMI tolerant small red lentil being considered for commercial release. It is a broadly adapted and high yielding line, with high yields in variety trials in 2020 and 2021.

Grain yield for all lentil varieties trialed in 2020 at Hart were similar, ranging from 1.5 – 1.74 t/ha (Table 1).

Table 1. Lentil and field pea grain yields at Hart in 2020 and 2021. Values shaded within each column show the highest performing varieties. NS = not significant ($P \leq 0.05$).

Field pea	Grain yield t/ha	Lentil	Grain yield t/ha
2020		2020	
GIA Kastar ^(d)	1.35	PBA Kelpie XT ^(d)	1.74
GIA Ourstar ^(d)	1.54	PBA Hallmark XT ^(d)	1.57
Kaspa ^(d)	1.55	PBA Hurricane XT ^(d)	1.50
PBA Oura ^(d)	1.40	PBA Highland XT ^(d)	1.64
PBA Butler ^(d)	1.30	PBA Jumbo2 ^(d)	1.71
PBA Wharton ^(d)	1.15	GIA Leader ^(d)	1.58
Average grain yield	1.38	Average grain yield	1.62
LSD ($P \leq 0.05$)	NS	LSD ($P \leq 0.05$)	NS
2021		2021	
GIA Kastar ^(d)	1.41 ^a	PBA Kelpie XT ^(d)	1.07 ^b
GIA Ourstar ^(d)	1.50 ^a	PBA Hallmark XT ^(d)	1.27 ^b
PBA Wharton ^(d)	1.57 ^a	PBA Hurricane XT ^(d)	1.24 ^b
PBA Butler ^(d)	1.73 ^b	PBA Highland XT ^(d)	1.29 ^b
Kaspa ^(d)	1.82 ^b	PBA Jumbo2 ^(d)	1.43 ^c
		GIA Leader ^(d)	1.35 ^{bc}
		GIA2002L	1.48 ^c
Average grain yield	1.61	Average grain yield	1.30
LSD ($P \leq 0.05$)	0.16	LSD ($P \leq 0.05$)	0.14

Field pea

Kaspa and PBA Butler were the highest yielding field pea varieties, yielding 1.82 and 1.73 t/ha respectively (Table 1). The average field pea yield at Hart was 1.61 t/ha, with varieties ranging from 1.41 – 1.82 t/ha.

PBA Butler is a high yielding Kaspa type field pea with broad adaptation and improved resistance to bacterial blight over Kaspa. PBA Butler has wide adaptation across South Australia, performs well in medium to long growing season, and is higher yielding than other field pea varieties in the low rainfall zone.

GIA Ourstar and GIA Kastar are the first commercial field pea varieties with improved tolerances to Group 2 (previously Group B) herbicides and will be a good fit where herbicide residues are an issue.

Seasonal conditions at Hart in 2021 favoured Kaspa and PBA Butler which are both late flowering varieties. Cold spring weather events (below 2° Celsius at 1.2 m) in late September and early October affected pod fill of mid-flowering, mid-maturing varieties like GIA Kastar, GIA Ourstar and PBA Wharton.

Newly released variety PBA Taylor, although not tested at this site in 2021, has shown similar or improved grain yield compared to PBA Butler in National Variety Trials in the Mid North region.

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Field pea (above) and lentil (below) seedling emergence at Hart on June 7, 2021.

