

## Lentil agronomy

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### Key findings

- Lentil and field pea yields were similar at Hart in 2011 and averaged 2t/ha.
- Sowing date and site location significantly affected variety yield performance with early sowing favouring higher yields at the 'poorer' site.
- The late September rain was critical for the yield of later flowering varieties at the late sowing date and the western site but was of limited benefit to the early maturing PBA Blitz.
- PBA Jumbo was the highest yielding lentil variety when sown early and PBA Blitz and Nipper were generally the lowest yielding varieties in 2011 at Hart.

### Why do the trials?

Interest in growing lentils has increased in recent years primarily due to high relative grain prices. However the availability of more varieties with improved agronomic adaptation, disease resistance and grain quality has also generated renewed interest in growers from more marginal lentil growing areas. Experiments were established to assess the advantages of new lentil varieties with current standards and a field pea at different sowing times and on varying soil types.

### How was it done?

<b>Plot size</b>	1.5m x 10m	<b>Fertiliser rate</b>	MAP 2%Zn @ 90kg/ha
<b>Sowing date</b>	TOS 1: 20 <sup>th</sup> May 2011 TOS 2: 14 <sup>th</sup> June 2011	<b>Inoculant</b>	-
		<b>Row Spacing</b>	22.5 cm (9")
<b>Varieties (plant density)</b>	PBA Gunyah (OZP0602) @ 55 plants/sq m & PBA Blitz (CIPAL610), PBA Flash (CIPAL411), PBA Jumbo, Nipper, Nugget all @ 120 plants/sq m		
<b>Sites</b>	West – shallow, hard setting and more hostile East – well structured, deeper and more friable		
<b>Trial design</b>	Split plot with 3 reps; blocked by site, then rep, then sowing date.		
<b>Fungicides</b>	All plots were treated with Carbendazim @ 500 mL/ha at canopy closure		

### Results

Both sowing date and site location influenced lentil variety yield performance at Hart in 2011. Lentil grain yields ranged from 2.6 t/ha produced by PBA Jumbo sown in May at the eastern site to 1.37 t/ha produced by Nipper sown in June at the western site (Table 1). Grain yields of the field pea check variety PBA Gunyah were similar at both sowing dates at the eastern site (2.4-2.5 t/ha) and dropped away to 1.4 t/ha with the June sowing at the western site.

All varieties incurred a yield loss at the western site when sowing date was delayed. However, only PBA Jumbo and Nipper incurred a yield loss with a delay in sowing at the eastern site. Generally grain yields were lower at the western site than those achieved at the corresponding sowing date at the eastern site. Further to this grain yields of PBA Blitz, Nugget and the field pea PBA Gunyah were lower when sown in May at the western site than those achieved when sown in June at the eastern site. All other varieties achieved similar yields between the June sowing date at the eastern site and the May sowing date at the western site.

At the eastern site the field pea PBA Gunyah was the highest yielding variety when sown in June and along with PBA Jumbo the highest yielding variety sown in May. PBA Blitz was the lowest yielding variety at the May sowing date and along with Nipper the lowest sown in June. PBA Flash, PBA Jumbo and Nugget were the highest yielding lentil varieties at the June sowing date at this site.

At the lower yielding western site PBA Jumbo and the field pea were again the highest yielding varieties and PBA Blitz the lowest when sown in May. At the June sowing all lentil varieties except for the low yielding Nipper had similar yields with PBA Jumbo achieving higher grain yields than the field pea.

*Table 1: Grain yield (t/ha) for lentil and pea varieties in the lentil agronomy trial at Hart in 2011.*

Variety	Grain yield (t/ha)				Variety mean
	Eastern Site		Western Site		
	Sown		Sown		
	20th May	14th June	20th May	14th June	
PBA Blitz	1.89	1.98	1.72	1.53	1.78
PBA Flash	2.29	2.15	2.01	1.57	2.00
PBA Gunyah	2.43	2.54	2.04	1.40	2.10
PBA Jumbo	2.60	2.17	2.23	1.73	2.18
Nipper	2.22	1.89	1.93	1.37	1.85
Nugget	2.37	2.21	1.97	1.60	2.04
Site mean	2.23		1.76		
TOS mean	2.14 (20th May)		1.84 (14th June)		
Site*TOS mean	2.30	2.16	1.98	1.53	
LSD (0.05)					
Site			0.15		
TOS			0.09		
Variety			0.10		
Site*TOS			0.16		
Site*Variety			0.18		
TOS*Variety			0.15		
Site*TOS*Variety			0.23		

## Summary

Overall lentil and pea grain yields averaged 1.99 t/ha across all sites and treatments and performed similarly at Hart in 2011. There was no significant level of foliar disease observed and the major yield limiting factor was the timing of the late rain event in September. The increased grain yield achieved at the eastern site, which is characterised by improved soil structure at depth and lower in salt levels than the western site, highlights the importance of paddock selection to maximise pulse yields in these regions.

Sowing date had a large impact at the western site whereby yields were reduced for all varieties as sowing date was delayed from 20<sup>th</sup> May until 14<sup>th</sup> June. However, it was of lesser value at the more favourable eastern site. At the eastern site only PBA Jumbo and Nipper, both shorter in plant height with good ascochyta blight disease resistance, responded favourably to the later sowing date.

The significant rain event in late September after a 6 week dry period was critical for lentil yields in 2011. In particular it was of significant benefit to the late flowering and mid to late maturing varieties of PBA Jumbo, Nugget and Nipper at the June sowing date as they had not commenced flowering at this stage (Table 2). Conversely this late rain event was of limited use to PBA Blitz in 2011 due to its early flowering and maturing pattern. PBA Jumbo was the highest yielding lentil variety when sown early at both sites however was only similar yielding to other varieties as sowing date was delayed including PBA Blitz at the western site. The late flowering and shorter plant height variety Nipper also had low relative yields at the later sowing date. Despite its lower relative performance at Hart in 2011 PBA Blitz is an early maturing, disease resistant lentil with a medium to large seed that has a key role in maximising yields in short season areas and in dry years. It is also the lentil variety most suited to the agronomic practice of crop topping.

*Table 2: Start of flowering dates for lentil and pea varieties in the lentil agronomy trial at Hart in 2011*

Variety	Start of flowering dates			
	Eastern Site		Western Site	
	Sown		Sown	
	20th May	14th June	20th May	14th June
PBA Blitz	24-Aug	11-Sep	26-Aug	11-Sep
PBA Flash	31-Aug	16-Sep	30-Aug	25-Sep
PBA Gunyah	19-Aug	7-Sep	20-Aug	7-Sep
PBA Jumbo	2-Sep	18-Sep	1-Sep	25-Sep
Nipper	16-Sep	25-Sep	11-Sep	26-Sep
Nugget	5-Sep	20-Sep	5-Sep	25-Sep



*Phosphorus rate trial*



*Barley agronomy*



*Barley agronomy*



*Barley agronomy*



*Durum agronomy*



*Durum agronomy*