

## **L4 Crop-topping/Desiccation, MRZ Yorke Peninsula (Melton), South Australia**

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### **Aim**

To determine the correct maturity timing required in lentils for successful crop-topping practice.

### **Treatments**

Varieties: see Table L4.1  
Sowing date: 27 June  
Treatments: see tables for dates  
Nil - no desiccant applied  
Early Crop-top - applied 7-14 days pre ryegrass milky dough stage  
Mid Crop-top - applied at ryegrass milky dough stage (“Recommended”)  
Late Crop-top - applied 7-14 days post ryegrass milky dough stage  
Chemical: Paraquat at 800ml/ha  
Fertiliser: MAP + Zn @ 90kg/ha

**Table L4.1.** Lentil flowering and maturity ratings, Melton crop-top trial 2011.

<b>Variety</b>	<b>Flower</b>	<b>Maturity</b>
Boomer	E-M	M-L
Nipper	M-L	M
Nugget	M	M-L
PBA Blitz	E-M	E
PBA Bounty	M-L	M
PBA Flash	E-M	E-M
PBA Jumbo	M	M
CIPAL0501	M	L
CIPAL0607	M-L	M-L
CIPAL0801	E-M	M
CIPAL0802	E-M	E-M
CIPAL0803	E-M	M-L
CIPAL0901	M	E
CIPAL0902	M	E-M

E = Early, M = Mid, L = Late

### **Results and Interpretation**

- Significant two way interactions (Timing x Variety) were observed for grain yield and grain weight (Table L4.2). Despite the reasonably long season these results show little variation across genotypes and maturities, as in previous long seasons.
- Grain Yield – Only one lentil variety (CIPAL0607) showed reduced yield at the Recommended timing in 2011. Maturity scores at each crop-top timing showed CIPAL0607 matured later than Nugget in 2011, but not as late as CIPAL0501. All genotypes showed reduced grain yield from Early crop-topping (2 weeks prior to Recommended timing), and generally followed genotype maturity. The earliest maturing genotypes PBA Blitz and CIPAL0901 showed the least yield loss, while later maturing genotypes Nugget, CIPAL0607 and CIPAL0501 showed the highest yield losses.

All varieties yielded equal to the untreated at the Late crop-top timing (2 weeks after the Recommended).

Long term summary of selected variety response to crop-topping (Table L4.3) shows Nugget has the highest average yield loss from crop-topping at both Early and Recommended timings. PBA Blitz, the earliest maturing of the five, shows the least yield loss from crop-topping, and is therefore considered better suited to this practice. PBA Jumbo has also shown to be better suited to crop-topping than Nugget.

- Grain Weight – a similar trend was observed for grain weight as for grain yield. Only one variety (Nugget) showed reduced grain weight at the Recommended timing. All varieties showed reduced grain weight at the Early timing, however earliest maturing varieties PBA Blitz and CIPAL0901 showed the least effect. Late crop-topping had no effect on grain weight.
- Grain Mould – The effect of crop-topping on occurrence of mould in grain samples was investigated in the 2011, however no response to crop-topping on the incidence of mould was detected in lentil (date not shown).

**Table L4.2.** Effect of crop-top timing on grain yield and grain weight of lentils, Melton 2011  
Varieties are ranked according to their visual maturity rating from earliest to latest.

Treatment	Yield (t/ha)	Yield (% of Nil)			Grain Wt. (g/100)	Grain Weight (% of Nil)		
Variety	Nil	- 2 wks <sup>a</sup> (25/10)	Recommended (2/11)	+ 2 wks <sup>b</sup> (10/11)	Nil	- 2 wks <sup>a</sup> (25/10)	Recommended (2/11)	+ 2 wks <sup>b</sup> (10/11)
PBA Blitz	2.72	82	98	115	4.333	87	100	102
CIPAL0901	3.01	82	100	107	4.29	85	97	99
CIPAL0802	3.08	72	99	94	5.08	74	96	101
PBA Flash	2.93	63	112	109	3.33	69	99	99
CIPAL0902	2.99	61	103	100	3.79	72	93	98
CIPAL0801	3.36	60	89	95	4.37	83	102	102
PBA Jumbo	3.01	55	102	110	5.72	68	96	99
PBA Bounty	2.82	54	98	104	4.84	70	98	100
Boomer	2.75	56	83	113	4.23	71	101	99
Nipper	3.05	52	96	91	3.57	68	96	101
CIPAL0803	3.02	74	100	109	4.79	73	97	97
Nugget	2.69	42	91	109	6.87	65	90	95
CIPAL0607	3.08	42	76	99	4.79	81	97	103
CIPA0501	3.12	59	98	104	3.87	68	97	99
<b>Mean</b>	<b>2.97</b>	<b>1.81</b>	<b>2.86</b>	<b>3.09</b>	<b>4.5</b>	<b>3.4</b>	<b>4.4</b>	<b>4.5</b>

lsd (P<0.05)timing.var = 0.47, (Grain Yield), 0.25 (Grain Weight)

NB: Shading denotes significant difference from the Nil treatment.

<sup>a</sup> = 2 weeks prior to Recommended timing

<sup>b</sup> = 2 weeks after Recommended timing

**Table L4.3.** Long term summary (2008-2011) of grain yield response of selected lentil cultivars to crop-topping, Early and Recommended timings.

Varieties are ranked according to their visual maturity rating from earliest to latest

Variety	Incidence of significant yield losses (# trials)		Average Yield [Range] (% of Control)	
	Early	Recommended	Early	Recommended
PBA Blitz	4 (5)	1 (5)	56 [25-82]	94 [89-101]
PBA Flash	5 (5)	2 (5)	49 [30-70]	92 [80-112]
PBA Jumbo	4 (4)	1 (4)	52 [33-82]	98 [92-102]
Nipper	5 (5)	2 (5)	47 [34-65]	89 [80-98]
Nugget	5 (5)	2 (5)	39 [28-63]	84 [75-95]

### Key Findings and Comments

There was limited varietal response from crop-topping in 2011. This may be due to below average rainfall during late October and early November, the rapid finish on a shallow soil and the relatively late sowing date, suppressing some yield potential of untreated plots. However, a strong link between plant maturity and reduced yield and grain weight was observed at the Early crop topping timing, with earlier maturing varieties PBA Blitz and CIPAL0901 showing the least effect and Nugget, CIPAL0607 and CIPAL0501 presenting the greatest effect, although this was not repeated at the Recommended timing. Previous seasons have also shown a strong link between yield loss

from crop-topping and variety maturity. Long term summary of selected varieties showed the widely grown commercial variety Nugget to be less suited to crop-topping than other commercial cultivars, with PBA Blitz best suited. PBA Jumbo also showed lower yield loss than other varieties in a similar maturity bracket, and with its high yield potential and other agronomic benefits should be considered by growers.

No link between crop-topping and occurrence of field mould in grain samples could be determined in this trial in 2011. However, this appears to be strongly seasonally (and perhaps regionally) dependent, therefore work is continuing in this area.