

L4 Lentil Crop-topping/Desiccation, Yorke Peninsula (Melton), South Australia

Aim

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

Treatments

Varieties:	Table 1
Sowing date:	6 June
Treatments:	see tables for dates
	Nil - no desiccant applied
	Early - applied 13 days pre ryegrass milky dough stage (12 Oct)
	Recommended - applied at ryegrass milky dough stage (25 Oct)
Fertiliser:	MAP + Zn @ 90kg/ha

Results and Interpretation

- Significant two way interactions (Timing x Variety) were observed for grain yield and grain weight (Table 1).
- Grain Yield – yield of all varieties in this study was reduced by crop-topping 2 weeks prior to the Recommended timing (ryegrass milky dough stage). Grain yield was also reduced at the Recommended timing in the later maturing varieties Boomer and Nugget. Later maturing varieties tended to show higher levels of yield loss compared to earlier maturing varieties, particularly at the earlier treatment timing. As in previous seasons, PBA Jumbo showed improved suitability to crop-topping than a number of others with a similar maturity profile. Long term summary of selected variety response to crop-topping (Table 2) shows Nugget has the highest average yield loss from crop-topping at both Early and Recommended timings. PBA Blitz and CIPAL0901, the earliest maturing varieties, show the lowest level of yield loss from crop-topping, and are therefore considered better suited to this practice. PBA Jumbo, and the 2012 variety releases PBA Ace and PBA Bolt have shown better suitability to crop-topping than the commercial varieties Nugget and Nipper. The earliest maturing variety evaluated, CIPAL901, shows a lower average long term yield loss (in fewer trials, Table 2) but has shown no significant improvement in suitability to crop topping over PBA Blitz in three years of testing.
- Grain weight - a similar trend was observed for grain weight as for grain yield. All varieties showed reduced grain weight from crop-topping 2 weeks prior to the Recommended timing (Table 1). Three varieties (PBA Bounty, CIPAL0607 and CIPAL0501) also showed reduced grain weight from crop-topping at the Recommended timing, while earlier maturing varieties PBA Blitz, CIPAL0901 and CIPAL0902 showed the least effect on grain weight from crop-topping at this timing.

Table 1. Effect of crop-top timing on grain yield and grain weight of lentil varieties, Melton 2012. Varieties are ranked according to their visual maturity rating from earliest to latest (E = Early, M = Mid, L = Late)

Variety	Maturity Profile		Yield (t/ha) Nil	Yield (% of Nil)		Grain Wt. (g/100) Nil	Grain Weight (% of Nil)	
	Flower Timing	Maturity Timing		Early (12-Oct)	Recommended (25-Oct)		Early (12-Oct)	Recommended (25-Oct)
CIPAL0901	E-M	E	1.63	74	103	4.8	83	100
PBA Blitz	E-M	E	1.55	75	88	5.2	87	100
CIPAL0802	E-M	E-M	1.47	66	99	4.4	82	97
PBA Flash	E-M	E-M	1.58	72	91	5.0	80	96
CIPAL902	M	E-M	1.6	71	97	4.3	85	103
PBA Bolt	E-M	M	1.59	72	87	4.7	82	98
PBA Jumbo	M	M	1.46	75	109	5.4	80	98
PBA Bounty	M-L	M	1.49	63	95	4.1	78	93
Nipper	M-L	M	1.54	64	86	3.6	81	95
PBA Ace	M	M-L	1.66	50	87	4.6	80	95
CIPAL607	M-L	M-L	1.6	63	86	3.7	84	93
Boomer	E-M	M-L	1.67	58	64	6.5	88	96
Nugget	M	M-L	1.51	68	78	4.3	87	98
CIPAL0501	M	L	1.61	55	87	5.3	76	93
Mean			1.57	1.04	1.41	4.5	3.4	4.4

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

NB: Shading denotes significant difference from the Nil treatment.

Table 2: Long term summary (2008-2012) 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
CIPAL0901	3 (3)	0 (3)	63 [34-82]	106 [100-115]
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 Bolt	4 (4)	0 (4)	51 [35-72]	91 [86-101]
PBA Jumbo	4 (4)	1 (4)	52 [33-82]	98 [92-102]
Nipper	5 (5)	2 (5)	47 [34-65]	89 [80-98]
PBA Ace	3 (3)	1 (3)	58 [50-74]	87 [75-100]
CIPAL0607	5 (5)	3 (5)	47 [27-70]	86 [76-93]
Nugget	5 (5)	2 (5)	39 [28-63]	84 [75-95]

Key Findings and Comments

- There was a strong crop-top timing response, but limited variation between varieties from crop-topping in 2012. This may be due to below average end-season rainfall, suppressing some yield potential of untreated plots, particularly in later maturing varieties.
- All varieties showed yield loss from crop-topping two weeks prior to the recommended timing. A link between plant maturity and reduced yield was observed at the Early crop topping timing, with earlier maturing varieties showing the least effect and later maturing varieties presenting the greatest effect. At the Recommended timing only two of the later maturing varieties showed any yield loss.

- 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, further research is required to understand this result.
- No variety improvements on suitability to crop-topping over PBA Blitz have been identified to date.