

# TRIAL SUMMARIES

## 1. Lentils

### L1 Sowing Time x Row Space, LRZ Southern Mallee (Curyo), Victoria

#### Aim

To investigate the adaptability of a range of lentil varieties and breeding lines to wider row spacing's sown inter-row in to standing stubble compared with conventional cropping systems (narrow row spacing with slashed stubble). The interaction sowing times is also compared.

*Note: Trial is a comparison of systems, not just row space. In the wider row spacing's plots were sown with narrow lucerne points, press wheels and chemicals applied pre-sowing. In the narrow row spacing's plots were sown with narrow lucerne points, harrows and chemicals applied post-sowing, pre-emergent.*

#### Treatments

Varieties: Aldinga, Boomer, Nipper, Northfield, Nugget, PBA Bounty, PBA Flash, PBA Blitz, PBA Jumbo, CIPAL0501, CIPAL0611, CIPAL0801, CIPAL0802, CIPAL0803, CIPAL0901, 99-088L\*02H051.  
Sowing dates: 6 May (Early), 7 June (Late).  
Row Spacings/Stubble: 30 cm row spacing, inter-row, standing stubble (ST30), 17.2 cm row spacing, slashed stubble (s117).

#### Other Details

Fertiliser: MAP + Zn @ 40 kg/ha at sowing  
Plant Density: 120 plants/m<sup>2</sup>

#### Results and Interpretation

- Key Message: Potential grain yields were in excess of 2.5t/ha for varieties such as PBA Flash. Due to extreme rainfall events throughout harvest grain yield losses were between 27% and 65%. The new lentil genotypes continue to show potential in a season considerably different from that which we have had for the last decade, which is promising from a yield stability perspective.
- Plant establishment – Establishment for all lentil genotypes in all treatments was between 100 and 120 plants/m<sup>2</sup>. No significant differences between treatments and varieties were noted (data not shown).
- Flowering Dates - See Table L1.1

**Table L1.1.** Flowering dates of lentil genotypes sown May 6 and June 7 at Curyo in 2010.

Sowing Date	99-088L*02H051	CIPAL0501	CIPAL0611	CIPAL0801	CIPAL0802	CIPAL0803	CIPAL0901	Aldinga
6-May	8-Sep	9-Sep	10-Sep	6-Sep	1-Sep	6-Sep	31-Aug	10-Sep
7-Jun	29-Sep	4-Oct	1-Oct	29-Sep	28-Sep	3-Oct	28-Sep	3-Oct
	Boomer	Nipper	Northfield	Nugget	PBA Bounty	PBA Flash	PBA Jumbo	PBA Blitz
6-May	1-Sep	19-Sep	15-Sep	14-Sep	15-Sep	8-Sep	12-Sep	27-Aug
7-Jun	1-Oct	5-Oct	6-Oct	5-Oct	5-Oct	28-Sep	30-Sep	26-Sep

- Crop and Pod Height, and Lodging - There were no effects of sowing date or row spacing on crop and pod height at maturity at Curyo in 2010. However there were significant height differences between lentil genotypes, with CIPAL801 being tallest and Boomer shortest (Table L1.2). Lodging scores showed a significant difference between sowing dates with the May 6 sowing date showing increased lodging compared to the June 7 sowing date (data not shown). Relative differences in lodging between genotypes were similar to that observed with crop and pod heights.

**Table L1.2.** The main effect of lentil genotype on height of the crop canopy height (crop height; cm) and height to the lowest pod (pod height; cm) at Curyo in 2010.

	99-088L*02H051	CIPAL0501	CIPAL0611	CIPAL0801	CIPAL0802	CIPAL0803	CIPAL0901	Aldinga
Crop Height	28.2	27.1	27.6	30.6	29.9	27.2	27.9	25.1
Pod Height	14.8	12.8	13.7	15.9	14.3	12.9	13.9	12.3
	Boomer	Nipper	Northfield	Nugget	PBA Bounty	PBA Flash	PBA Jumbo	PBA Blitz
Crop Height	25.0	27.1	26.1	28.4	25.3	28.6	26.6	27.0
Pod Height	10.4	13.9	13.4	14.1	11.9	14.4	12.8	12.7

lsd(P<0.05)var = 2.1, (Crop height), 1.9 (Pod Height)

- **Maturity Biomass** – Selected varieties were sampled for biomass and yield component analysis. There was a significant 3 way interaction between sowing date, row spacing and genotype (Table L1.3). Early sown (May 6) treatments produced up to 100% more biomass than later sown (June 7) treatments with Boomer producing more than 10 t/ha in the sl17 treatment. For most genotypes, the sl17 treatment produced slightly more biomass than the ST30. Sampling of these plots occurred just prior to rainfall events that delayed harvest and caused yield loss. Estimated grain yields from these samples enabled prediction of potential grain yield and the grain yield loss indicated in Figure L1.1 and discussed below.
- **Grain Yield** – Due to extreme rainfall events throughout harvest grain yields were significantly reduced. Potential grain yields were in excess of 2.5t/ha for varieties such as PBA Flash (Fig. L1.1), which was equivalent to yields achieved by growers throughout the region who were able to harvest prior to the rain events. It was predicted that in the May 6 sown treatments grain yield losses were between 34% and 65% and in the June 7 sown treatments losses were between 27% and 56%. For both sowing dates Boomer had the greatest yield loss and Nipper the least. Actual harvested grain yields were generally higher in the 7 June sown treatments, however significant genotype differences were apparent (Table L1.4). For example, the grain yield of CIPAL803 sown early was 32% higher than later sown treatments, while PBA Flash and Nugget were 11% and 13% less, respectively. Variety rankings were similar to what could be expected from long term trials in similar seasonal conditions. Nugget, being a mid season variety was highest yielding in the May 6 treatments, while CIPAL0801 was highest in the June 7 sown treatments. There were no major differences in the average grain yield within a row space treatment for the early sown plots, however in the later sown plots the narrow row spacing averaged yields 25% higher (Table L1.5).

**Table L1.3.** The effect of the interaction between sowing date, row space and lentil genotype on maturity biomass (t/ha) at Curyo in 2010.

Sowing Date	Row Space (cm)	CIPAL802	CIPAL901	Boomer	Nipper	PBABlitz	PBAFlash
6-May	17	7.99	8.21	10.50	5.84	8.75	8.82
	30	8.43	6.62	8.81	6.59	5.94	7.18
7-Jun	17	4.89	4.81	5.02	4.98	4.65	5.53
	30	4.78	4.77	5.38	4.14	4.32	4.64

lsd(P<0.05)SDxRow SpacexGen = 2.15, except when comparing genotypes within a sowing date or row space = 1.20

**Table L1.4.** The effect of the interaction between sowing date and lentil genotype on grain yield (t/ha) at Curyo in 2010.

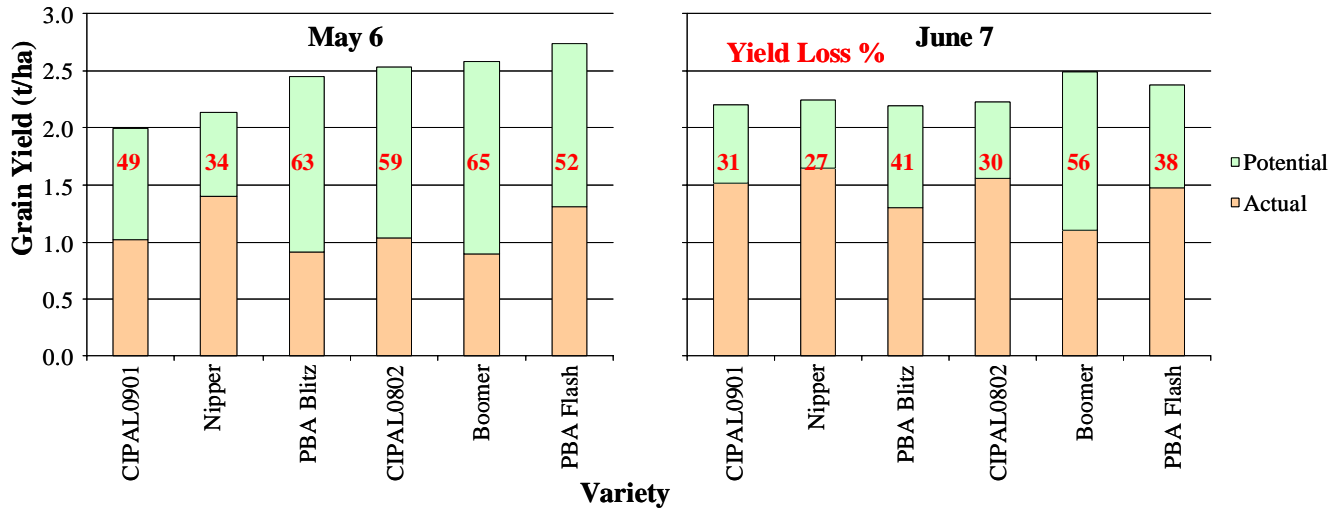
Sowing Date	99-088L*02H051	CIPAL501	CIPAL611	CIPAL801	CIPAL802	CIPAL803	CIPAL901	Aldinga
6-May	1.23	1.14	1.09	1.43	1.03	1.16	1.02	0.84
7-Jun	1.36	1.49	1.40	1.78	1.55	1.70	1.52	0.97
	Boomer	Nipper	Northfield	Nugget	PBABounty	PBAFlash	PBAJumbo	PBABlitz
6-May	0.90	1.40	0.87	1.54	1.23	1.31	1.21	0.91
7-Jun	1.10	1.64	0.96	1.36	1.64	1.47	1.36	1.29

lsd(P<0.05)SDxGen = 0.36, except when comparing genotypes within a sowing date = 0.26

**Table L1.5.** The effect of the interaction between sowing date and row space on grain yield (t/ha) at Curyo in 2010.

Row Space (cm)	6 May	7 June
17	1.12	1.57
30	1.17	1.25

lsd(P<0.05)SDxRowspace = 0.35, except when comparing row space within a sowing date = 0.13



**Figure L1.1.** Potential versus actual grain yields (t/ha) in May 6 and June 7 sown treatments at Curyo in 2010.

### Key Findings and Comments

It is important to interpret the grain yield results with caution as it was demonstrated that yield loss due to extreme rainfall events was between 27% and 65%. Potential grain yields were in excess of 2.5t/ha for varieties such as PBA Flash, however for many genotypes we did not record specific yield loss data. Despite these limitations, the new lentil genotypes continue to show potential in a season considerably different from that which we have had for the last decade, which is promising from a yield stability perspective into the future.