

L2 Sowing Time x Row Space, MRZ Wimmera (Vectis), 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, CIPAL0804, CIPAL0901.

Sowing dates: 12 May (Early), 16 June (Late)

Row Spacings/Stubble: 30 cm row spacing, inter-row, standing stubble (ST30);
30 cm row spacing, inter-row, slashed stubble (sl, 30);
17.2 cm row spacing, slashed stubble (sl17).

Other Details

Fertiliser: MAP + Zn @ 60 kg/ha at sowing

Plant Density: 120 plants/m²

Results and Interpretation

- Key Message: Potential grain yields were likely to be in excess of 3.5t/ha, however due to extreme rainfall events throughout harvest grain yield losses were likely to be greater than 50%. The new lentil genotypes, in particular CIPAL0801 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 was variable at the Vectis site in 2010 ranging between 75 and 130 plants/m². There were significant issues with stubble dragging and mouse damage (Figure L2.1). Plot damage was more severe in the early sown 30 cm row spacing treatment compared with later sown treatments, however in the 17 cm plot damage was similar across sowing dates. At the early sowing date the 30 cm row space treatment, had much more damage than the 17 cm treatment, however this was reversed at the later sowing date. Plant establishment was highest at both sowing dates in the narrow row spacing, slashed stubble treatment (sl17) compared with both wider row treatments (sl30 and ST30; data not shown).



Figure L2.1. Examples of issues with stubble and mice at sowing at Vectis in 2010. L to R: Wobbly stubble rows in Faba Beans; All stubble dragged from a lentil plot and resultant establishment; Mouse damage to one end of slashed stubble lentil plot; Good establishment of lentils sown inter-row into standing stubble.

- Grain Yield – Similarly to Curyo, extreme rainfall events throughout harvest resulted in significantly reduced grain yields. Estimated potential grain yields were in excess of 3.5t/ha, however we were unable to take maturity biomass cuts prior to rainfall, due to the slightly later maturity than Curyo, so specific calculations were unable to be made. It was also expected that early sown treatments were more severely affected than later sown treatments. Given these limitations and the sowing issues previously outlined it is important to interpret actual grain yields with care. Machine harvested grain yields were generally similar in the two sowing date treatments, however there were significant interactions between row spacing and genotype (Table L2.1). For example, Boomer showed higher yield in the ST30 treatment compared with both slashed stubble treatments, while in CIPAL0501 the opposite response was observed. Across all treatments CIPAL0801 was highest yielding and Northfield lowest.

Table L2.1. The effect of the interaction between row space treatment and lentil genotype on grain yield (t/ha) at Vectis in 2010.

Row Space (cm)	CIPAL0501	CIPAL0611	CIPAL0801	CIPAL0802	CIPAL0803	CIPAL0804	CIPAL0901	Aldinga	
sl17	2.07	1.89	2.14	1.82	1.79	1.60	1.96	1.53	
sl30	1.83	2.00	2.27	2.04	1.92	1.52	1.71	1.37	
ST30	1.44	1.91	1.65	1.80	1.69	1.50	1.46	1.26	
<i>Average</i>	<i>1.78</i>	<i>1.93</i>	<i>2.02</i>	<i>1.89</i>	<i>1.80</i>	<i>1.54</i>	<i>1.71</i>	<i>1.39</i>	
	Boomer	Nipper	Northfield	Nugget	PBA Bounty	PBA Flash	PBA Jumbo	PBA Blitz	Average
sl17	1.61	2.16	1.55	1.94	1.84	2.06	1.98	1.91	1.53
sl30	1.53	1.71	1.31	1.64	1.65	1.84	1.62	1.58	1.37
ST30	1.84	1.63	1.11	1.77	1.49	1.63	1.83	1.32	1.26
<i>Average</i>	<i>1.66</i>	<i>1.83</i>	<i>1.33</i>	<i>1.79</i>	<i>1.66</i>	<i>1.84</i>	<i>1.81</i>	<i>1.60</i>	

lsd(P<0.05)Row SpacexGen = 0.37, except when comparing genotypes within a row space = 0.35. lsd(P<0.05)Gen = 0.2. lsd(P<0.05)Row Space = 0.2.

Key Findings and Comments

It is important to interpret the grain yield results with caution as there was likely yield loss due to extreme rainfall events and variable plant establishment. Similar to Curyo, CIPAL801 was the highest yielding variety in 2010. Unlike previous seasons the narrow row space treatment generally resulted in slightly higher grain yields. Reasons for this are unclear, but it may be due to better establishment observed in this treatment. Economic implications of the various systems are being investigated, accounting for the various costs associated with each of the different cropping systems.