

Lentil, Plant Density X Sowing Time, Southern Mallee (Pinnaroo), South Australia.

Authors

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Aim

To evaluate the effect of sowing time and seeding rates on the production of key lentil varieties grown in the Pinnaroo district.

Treatments

Varieties: Four lentil varieties were sown at a site near Pinnaroo in the South Australia (Table 1).
Plant density: Four target plant populations (Table 1)
Time of sowing: These treatments were sown at two times of sowing (TOS); 25th April and 30th of May. The first TOS was sown dry and emergence did not occur until after the first significant rain event of 7 mm on the 20th of May.

Table 1. Lentil seeding rates (kg/ha) used for each target plant density in each variety

Variety	Seeding rate (kg/ha) for each plant density ¹			
	40	80	120	160
PBA Bolt	19	38	57	76
PBA Hallmark	18	37	55	74
PBA Hurricane	17	34	51	68
PBA Jumbo2	24	48	71	95

¹in plants/m²

Table 2. Other Site Details

Pinnaroo - Flat	
Sowing Dates	TOS 1: 25 th April TOS 2: 30 th May
Plant Density (plants/m ²)	40, 80, 120, 160
Stubble height (cm)	10
Row Spacing (cm)	28
Fertiliser (kg/ha) ¹	50

¹ Granulock Z (N 11, P 21.8, S 4, Zn 1)

Results and Interpretation

- Key messages: Delayed sowing resulted in 25% of grain yield loss in PBA Jumbo2 and 15% loss in PBA Hurricane compared to sowing early. TOS did not influence grain yield of other varieties. Grain yields were not affected by sowing density when sown early as the dry finish to the season resulted in biomass loss in denser plots. However, lower plant densities resulted in grain yield losses in delayed sowing.
- Establishment and plant growth: The actual plant population achieved for each treatment is provided in Figure 1. The number emerged plants in most treatments were within 5 plants/m² of the target density (Figure 1). However, PBA Bolt and PBA Hurricane had 6 and 10 plants less per m² in 120 plants/m² target density at TOS 1 while PBA Hallmark and PBA Jumbo2 had 14 and 6 plants more per m² in 80 plants/m² target at TOS 2.

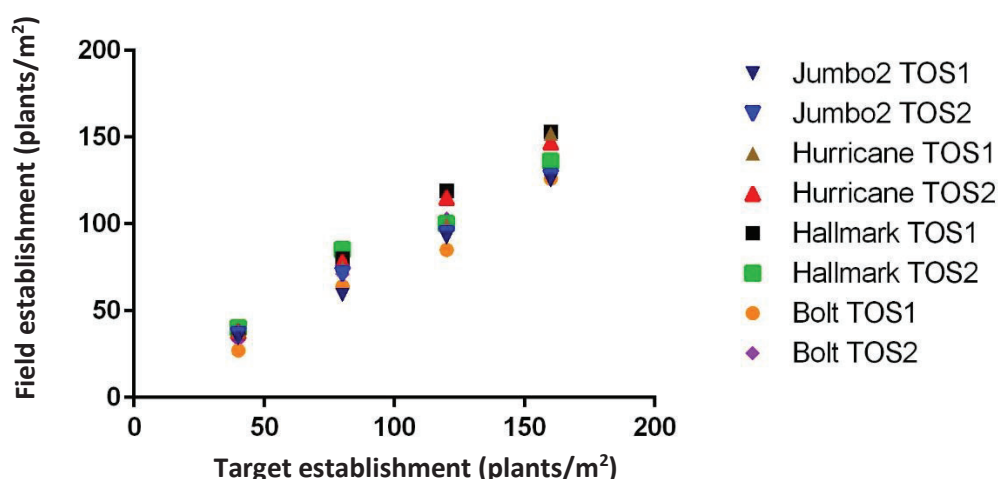


Figure 1. Target plant establishment versus actual field establishment for each treatment.

- Grain yield: PBA Bolt demonstrated the best yield stability across both sowing dates with grain yield of just under 1.0 t/ha for both TOS (Table 4). TOS did not influence the grain yields of PBA Hallmark and PBA Hurricane. However, PBA Jumbo2 suffered a 25% yield penalty with delayed sowing.

There was no grain yield difference between plant density treatments at TOS1. This was possibly a reflection of the very dry finish to the season where haying off was evident in early plots with high biomass. At TOS2, a target plant density of 40 plants/m² resulted in a 20% grain yield penalty relative to treatments sown at 80-120 plants/m² indicating there was less ability for lentil plants to compensate for reduced plant density in the later sown treatments.

Table 4: Grain yield (kg/ha) of varieties averaged across sowing densities for each TOS.

Time of sowing	PBA Bolt	PBA Hallmark	PBA Hurricane	PBA Jumbo2
TOS 1	962	823	885	956
TOS 2	980	921	753	710

LSD Variety x TOS = 116 kg/ha

Table 5: Grain yield (kg/ha) averaged across varieties for each targeted planting density at each TOS.

Time of sowing	40 plants/m ²	80 plants/m ²	120 plants/m ²	160 plants/m ²
TOS 1	905	941	925	849
TOS 2	731	877	918	840

LSD Density x TOS = 124 kg/ha

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