4. Lupin

U1 Sowing Date x Row Spacing, MRZ Lower Eyre Peninsula (Wanilla), South Australia

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Aim

To determine optimum sowing dates and row spacings for maximising yield of new lupin varieties.

In the higher rainfall area lupins have a reputation for producing large bulky growth that isn't being realised in grain yield. The selection of cultivar, time of sowing and row spacing are being evaluated as methods to maximise lupin yield.

Treatments

Varieties:	Mandelup, Jenabillup, Jindalee and potential release 01A012R67
Sowing dates:	4 May (Early), 26 May (Mid), 15 June (Late)
Row Spacing:	Narrow = 24cm (10 inch), Wide = 48cm (20 inch)
Fertiliser:	Map + Zn @ 100kg/ha at sowing

Results and Interpretation

- Grain Yield – a full moisture profile at sowing, followed by high rainfall throughout June and July resulted in waterlogging at this site, and poor and variable yields, all a common occurrence in commercial lupin crops across the Lower Eyre Peninsula in 2011. The use of various scores as covariates during analysis failed to reduce the variability across the trial site (cv =18.8) and caution is required in interpreting results.
  Variety and row spacing had no effect on grain yield of lupins in 2011. However, sowing date had a significant effect on grain yield (Table U1.1). Mid sown (May 26th) lupins yielded higher than early sown (May 4th), which was higher yielding than late sown lupins (June 15th).
- Podding Height – Sowing date was the only variable influencing top pod height of lupins in 2011 (Table U1.2). Top pod height decreased with delayed sowing, likely due to shorter plant height in later sown plants. Row spacing and variety had no influence on top pod height in 2011.
  A two way (Sowing Date x Variety) effect was seen for bottom pod height of lupins in 2011 (Table U1.3). All varieties except Mandellup showed lower bottom pod height with each delay in sowing. Mandellup showed similar bottom pod heights at the two earlier sowing dates, but lower at the later sowing date. Jindalee, the latest maturing variety, had the highest or equal highest bottom pod height of the four varieties.

Table U1.1. Grain yield (t/ha) of lupins at three sowing dates, Wanilla 2011.

Sowing Date	4-May	26-May	15-Jun
Yield (t/ha)	1.83 [b]	2.12 [a]	1.27 [c]

lsd (P<0.05) = 0.28

Table U1.2. Top pod height (cm) of lupins sown at three sowing dates, Wanilla 2011.

Sowing Date	4-May	26-May	15-Jun
Height (cm)	67 [a]	53 [b]	46 [c]

lsd (P<0.05) = 6.5

Table U1.3. Bottom pod height (cm) of four lupin varieties sown at three sowing dates, Wanilla 2011.

Sowing Date	01A012R67	Jenabillup	Jindalee	Mandelup
4-May	35 [ef]	39 [f]	47 [g]	39 [f]
26-May	27 [cd]	31 [de]	35 [ef]	35 [ef]
15-Jun	18 [a]	24 [bc]	24 [bc]	21 [b]

lsd (P<0.05) SD x Var = 4.4 (4.5 same SD)

Key Findings and Comments

Due to early season waterlogging grain yields of lupin on Lower Eyre Peninsula were variable and generally poor in 2011 and no effect of variety choice and row spacing on grain yield was observed. However a sowing date response did occur with the mid sown lupins outyielding early and late sown lupins.

The potential release 01A012R67 performed similarly to other varieties in this trial, however it has shown high yield potential in other trials across the Eyre Peninsula. This line was chosen as a potential release for its earlier flowering and high yield potential, particularly in eastern states, however it has now been surpassed by other advanced breeding lines and will no longer be released.

Previous results have shown a significant variety and row spacing response for grain yield of lupins, so that while there was a general decrease in yield of all varieties at the late sowing date, late sowings of Jenabillup at wide row spacing were able to recover some of the yield lost from delayed sowing. This demonstrates that these varieties have the potential to act differently to sowing time and row spacing in the higher rainfall environment, and row spacing may be a tool for improving the conversion of high biomass into grain yield in some varieties.