

# Evaluating lucerne varieties for the Mallee



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## Aim

To identify suitable lucerne varieties for the Mallee and test if there are differences in establishment, persistence and production between them.

## Take home messages

- *Good establishment and weed control is more important than varietal selection for productivity and persistence of lucerne*
- *There was no significant difference in establishment or biomass production between lucerne varieties in 2007 and 2008*
- *This trial will continue in 2009 to further evaluate persistence and productivity.*

## Method

In 2007, seven lucerne varieties were sown at Manangatang on a sandy loam soil. The trial was sown dry on 14 June into a moderate stubble load which had been harrowed to assist the shallow sowing of these varieties. The trial was sown at the same depth of 1-2cm. A knockdown application of Roundup PowerMax<sup>®</sup>™ 1.5L/ha (540g/l glyphosate) and 80ml Goal was applied one hour prior to sowing.

Goucho<sup>®</sup>™ (active ingredient: imidacloprid) was applied to seed to protect from red-legged earth mites.

Location: Manangatang

Replicates: 3

Sowing date: 14 June 2007

Seeding density: 50 plants/m<sup>2</sup>

Crop type: *Medicago sativa* (lucerne)

Seeding equipment: Conventional, 150mm sweeps, 175mm row spacing, rolling harrows

Establishment counts were taken 1 October 2007. Establishment was measured by random placement of a 50cm ruler and recording the number of lucerne plants on both sides of the ruler. A total of six counts were taken in each plot.

Biomass production was measured on the 12 February, 9 May and 22 August 2008. Biomass was determined by random placement of a 50cm quadrat and cutting the lucerne plants inside to ground level. Each sample was then placed into a paper bag and dried at 65°C for >24 hours. The dry weight was then recorded and converted into values which reflect dry matter production per hectare (t/ha).

The plots were sprayed with Select<sup>®</sup> (350ml/ha) and Hasten (1% v/v) for grass control on 1 September 2008. Broadleaf weeds such as wild turnip, medic and wild radish were removed by hand as there were limited herbicide options. The summer growing weeds prevalent at the site include caltrop

(*Tribulus terrestris*), common heliotrope (*Heliotropium europaeum*), Afghan melon (*Citrullus lanatus*) and soft roly-poly (*Salsola kali*) and these were also controlled by hand weeding. The site has been ungrazed by stock for the entire period of the trial, although kangaroos have grazed the sown legumes periodically.

## Results

The site received above average rainfall during 2007 and 2008 summer months (Table 1). Both 2007 and 2008 experienced very low September and October rainfall.

**Table 1.** Monthly and long-term average (LTA) rainfall data at Manangatang in 2007 and 2008.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
2007	53	0	17	49	38	6	25	0	4	0	43	41	276
2008	28	0	27	3	19	12	29	40	8	5	34	39	244
LTA	21	24	19	22	32	29	30	30	29	33	25	21	315

Establishment measured in October 2007 found no significant difference between the varieties with high plant numbers in all plots ranging from 40 to 74 plants/m<sup>2</sup> (Table 1).

**Table 2.** List of treatments and the establishment counts in October 2007.

Species	Common name	Variety	Establishment plants/m <sup>2</sup> October 2007
<i>Medicago sativa</i>	Lucerne	Stamina GT6	66
<i>Medicago sativa</i>	Lucerne	Stamina GT6 + Goucho <sup>®</sup>	65
<i>Medicago sativa</i>	Lucerne	Siriver MK II	62
<i>Medicago sativa</i>	Lucerne	SARDI Ten	40
<i>Medicago sativa</i>	Lucerne	SARDI Seven	68
<i>Medicago sativa</i>	Lucerne	Force 5	72
<i>Medicago sativa</i>	Lucerne	Force 10	74
<i>Medicago sativa</i>	Lucerne	L55	55
<i>Medicago sativa</i>	Lucerne	L69	57

Biomass production data collected in 2008 found no significant differences between any of the varieties at any stage (Table 3). The February 2008 biomass measures were low despite significant rainfall during the November 2007 to January 2008 period (Table 1). The daily rainfall records show that the January 2008 rainfall occurred over two days (19-20 January) with no rainfall preceding or following this event. It is therefore likely that much of the moisture has evaporated and plants had lost leaf by the time of the sampling. The May 2008 biomass cuts were also low, but by August, following good rains in the preceding three months (Table 1), biomass ranged from 1.44 to 2.09t/ha.

**Table 3.** Biomass production data in 2008.

Variety	Biomass production		
	February t/ha	May t/ha	August t/ha
Stamina GT6	0.54	1.27	1.85
Stamina GT6 + Goucho®	0.64	0.94	1.66
Siriver MK II	1.10	0.65	1.94
SARDI Ten	0.68	0.67	1.42
SARDI Seven	0.74	0.36	1.44
Force 5	0.71	0.73	1.86
Force 10	0.66	0.62	1.47
L55	0.87	0.60	2.02
L69	0.84	0.93	2.09
Significant Diff.	NS	NS	NS

## Interpretation

Based on this data set to date, there is little difference in productivity between the lucerne varieties. The greatest success in establishment came from above average rainfall in both the 2007 and 2008 summer months. Below average spring rainfall delayed biomass production of many of these varieties. Exceptional November and December rainfall in 2008 has increased dry matter production and this continues to be monitored.

## Application

Lucerne has been commonly grown within the Wimmera Mallee and has been the most popular spring-summer-growing legume species. This data suggests that sound establishment and weed control is more important than varietal selection. Continuing this trial in 2009 will further investigate these conclusions.

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