



# Riverine Plains Savernake demonstration site

*Comparing pasture quality and persistence and liveweight gains in clover and lucerne based pastures.*

## Background

This project aims to use the latest research on pasture species and management, to promote the use of perennial pastures within farming landscapes and increase resilience in dry seasons.

A species demonstration and grazing demonstration were established at Savernake and Barooga, respectively, in May 2023. These two demonstration sites aimed to showcase best-practice pasture management to build greater resilience for farmers in central and southern New South Wales.

## Aim

To demonstrate the impact of lucerne seeding rate and variety on pasture persistence and quality.

## Method

The paddock was sown in late May 2023, with the treatments listed in Table 1. Pasture quality samples were collected in mid-late September 2023 as well as mid-January and mid-March 2024. Lucerne and sub clover plant frequency, plant composition and biomass were measured in mid-late September 2023 and mid-March 2024 to measure differences before and after the first summer.



## Farming enterprise

**Property Owners** — Chantelle and Christine Gorman

**Size** — Approximately 2,830 hectares (ha).

**Mixed farming** — a 50/50 split between livestock and cropping. Running beef cattle, merino sheep and first cross ewes for prime lamb production.

**Cropping** — 1,010–1,200 hectares annually of canola, lupins, oats, wheat and barley, as well as grazing wheat and barley for ewes and lambs.

**Irrigation** — running two centre-pivots, sourcing water from a private irrigation scheme, with one centre pivot established during the 2018 drought.



Table 1: Savernake species demonstration site treatments.

Treatment	Perennial Pasture Species	Cultivar	Growth Type	Sowing Rate (Kg/Ha)
<b>Control</b> (Lucerne/ sub clover mix)	Lucerne	SARDI 7s2	Winter active	5
	Brachycalycinum sub clover	Mintaro	Mid-maturing	3
	Yanninicum sub clover	Monti	Early-mid-maturing	3
<b>Treatment 1</b> (Heavy lucerne rate/sub clover mix)	Lucerne	SARDI 7s2	Winter active	9
	Brachycalycinum sub clover	Mintaro	Mid-maturing	3
	Yanninicum sub clover	Monti	Early-mid-maturing	3
<b>Treatment 2</b> (Two lucerne cultivars/ sub clover mix)	Lucerne	SARDI 7s2	Winter active	2.5
	Lucerne	SARDI Grazer	Winter active, grazing tolerant.	2.5
	Brachycalycinum sub clover	Mintaro	Mid-maturing	3
	Yanninicum sub clover	Monti	Early-mid-maturing	3

## Results and discussion

The lucerne and sub clover stands established well across all treatments, with the first grazing event occurring in mid-late January 2024. The eight-month period between sowing and grazing was intended to enable the lucerne to establish an extensive root base to support plant persistence. At the time of the first grazing, the lucerne in the control (lucerne / sub clover mix) appeared shorter and lighter in colour compared to Treatment 1 (heavy lucerne rate / sub clover mix) and Treatment 2 (two lucerne cultivars/ subclover mix).

Average lucerne and sub clover pasture quality was similar in September 2023, as shown by the key feed quality measurements in Table 2. Lucerne quality declined from September to January, as indicated by the increase in neutral detergent fibre (NDF) and decline in crude protein (CP) and metabolisable energy (ME), and then remained relatively stable between January and March. Lucerne quality was consistently similar across all treatments (data not shown).

Table 2: Savernake species demonstration site showing average lucerne and sub clover quality across all treatments.

	NEUTRAL DETERGENT FIBRE (NDF) - NIR %	ACID DETERGENT FIBRE (ADF) - NIR %	CRUDE PROTEIN (CP) - NIR %	DRY MATTER DIGESTIBILITY (DMD) - NIR %	CALCULATION OF METABOLISABLE ENERGY (ME) - NIR MJ/kg DM
Mid September 2023					
Lucerne (Average all treatments)	26.0	17.0	22.3	82.0	12.7
Sub clover (Average all treatments)	28.0	19.0	25.5	82.0	12.3
Mid January 2024					
Lucerne (Average all treatments)	43.0	28.6	12.8	64.1	9.3
Mid March 2024					
Lucerne (Average all treatments)	40.1	28.9	19.1	66.7	9.7

Note: Pasture quality samples analysed on a dry matter basis by near-infrared spectroscopy (NIR).

Lucerne plant density remained stable over the first summer, as shown in Table 3, illustrating good initial pasture persistence. Sub clover is an annual plant which experiences seed dormancy over summer, and as such, density and composition (data not shown) were zero in March 2024.

In September 2023, lucerne composition was greatest in Treatment 1 (heavy lucerne rate/sub clover mix), and similar between the control (lucerne/sub clover mix and Treatment 2 (two lucerne cultivars/sub clover mix). This was as expected given the heavier lucerne sowing rate in Treatment 1 (data not shown).

Total biomass was similar across all treatments at both measurement times, with the greater biomass recorded in Treatment 2 being attributed to a historic soil disturbance from the digging of a pipe beneath part of the treatment (Figure 1). Across all treatments, total biomass was greater in March than September, despite two short grazing periods in late January and early February.

Table 3: Savernake species demonstration site plant density.

Treatment	September 2023		March 2024	
	Lucerne	Sub clover	Lucerne	Sub clover
Control	41	32	43	0
1	50	29	50	0
2	47	37	45	0

While little difference was found between the treatments at four and 10 months after establishment, it's recommended that farmers sow the most appropriate species and cultivar at the best sowing rate for the region's rainfall and temperature, and the type of farming system. This is important for maximising pasture production and persistence.

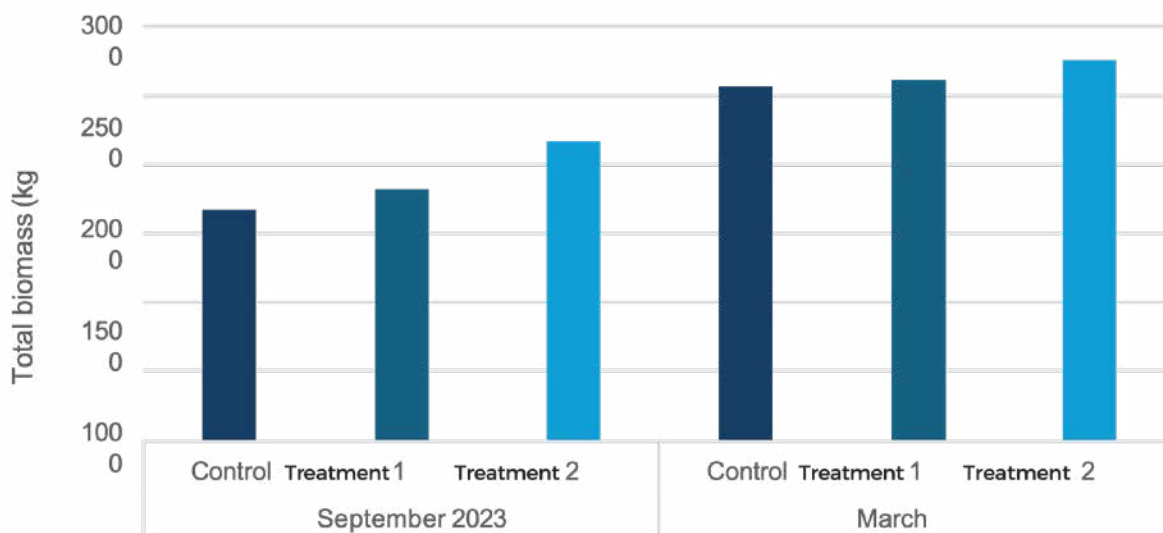


Figure 1: Savernake species demonstration site Total biomass (kg DM/ha).

**For more information**

Details about the demonstration sites, as well as the results, are published in Research for the Riverine Plains, 2024.

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