



# Winter dormancy in lucerne varieties — Maffra

*What degree of winter dormancy in a lucerne variety best suits the unique climate of the Monaro (i.e. very cool winters and significant summer rainfall), to achieve herbage production during key feed gaps that is balanced with long term persistence.*

Data from this demonstration will give producers added confidence when making decisions on species selection in relation to managing soil moisture profiles and balancing summer/winter feed production.

## Aim

To determine which dormancy rating is best suited to use the rainfall in our wetter, summer months and shut down during our drier months.

## Site

The trial site, located at “Kenilworth” hosted by Andrew and Zoe Rolfe (Rolfe Ag), Nimmitabel, was established in 2021 by S&W Seed Company and is managed by Monaro Farming Systems. Each plot was approximately 10 m X 1.5 m with 4 replications.



Photo 1: November 2022, Year 2 establishment



Photo 2: April 2023, Doug Alcock pasture cuts



**Table 1: Pastures sown in September 2021**

Each plot size approx. 10 m X 1.5 m with 4 replications.

Winter Dormancy Rating	Variety	Sowing Rate (kg/ha)
Winter Dormant (1-3)	Q31	15
Semi-Winter Dormant (4-5)	L56	15
	L56 (bare sown)	15
	Silverland 5	15
Winter Active (6-7)	<b>GTL60*</b>	15
	L71	15
	L70	15
	Silverosa 7	15
	Exp. var #1	15
	SW6330	15
	Exp. var #2	15
	<b>Aurora GS*</b>	15
	Stamina GT6	15
	SARDI 7 Series #2	15
	Exp. var #3	15
	SW9720	15
	Highly Winter Active (8-10)	Silversky 9
SW9720		15

\* Benchmark species

## 2023-2024 data collection

Germination scores.

Herbage mass (kg DM/ha).

Feed quality

- Digestibility (%)
- Crude Protein CP (%)
- ME (Mj/kgDM)
- ME Yield (Mj/ha)

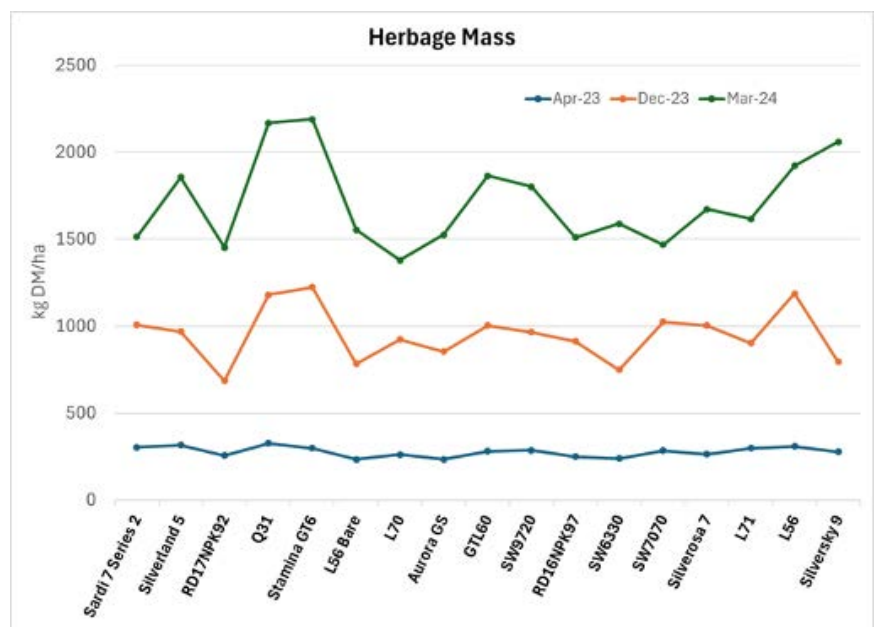
Plant frequency and dormancy assessments.



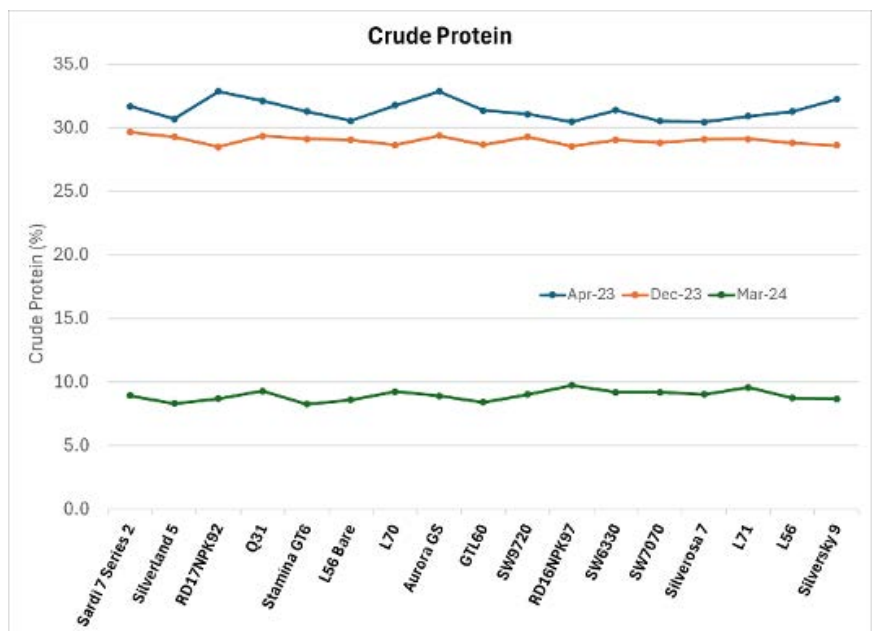
Photo 3 – March 2024, pasture cuts, residual summer production response - low in feed quality (see graphs)

## Results

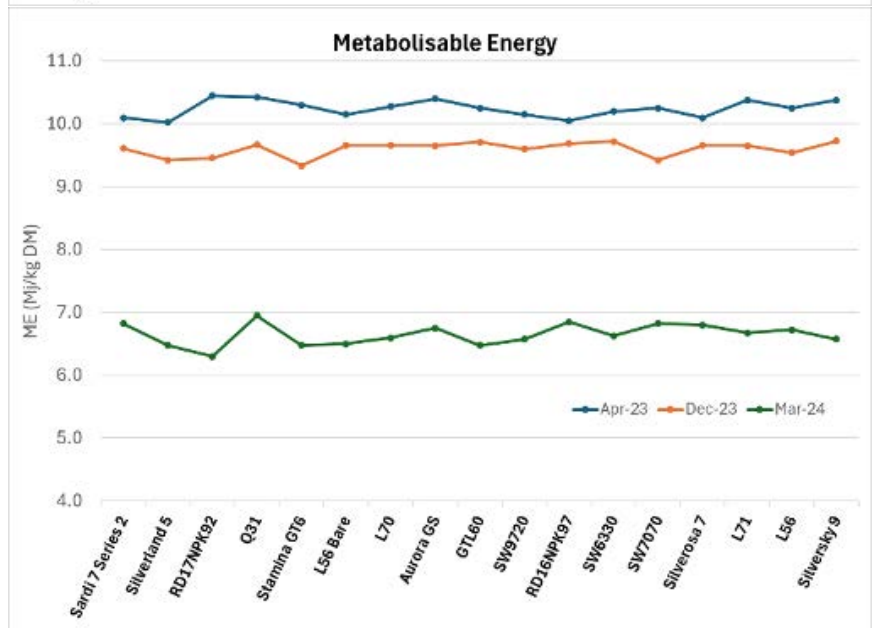
**Graph 1: Autumn and Summer Biomass Production**



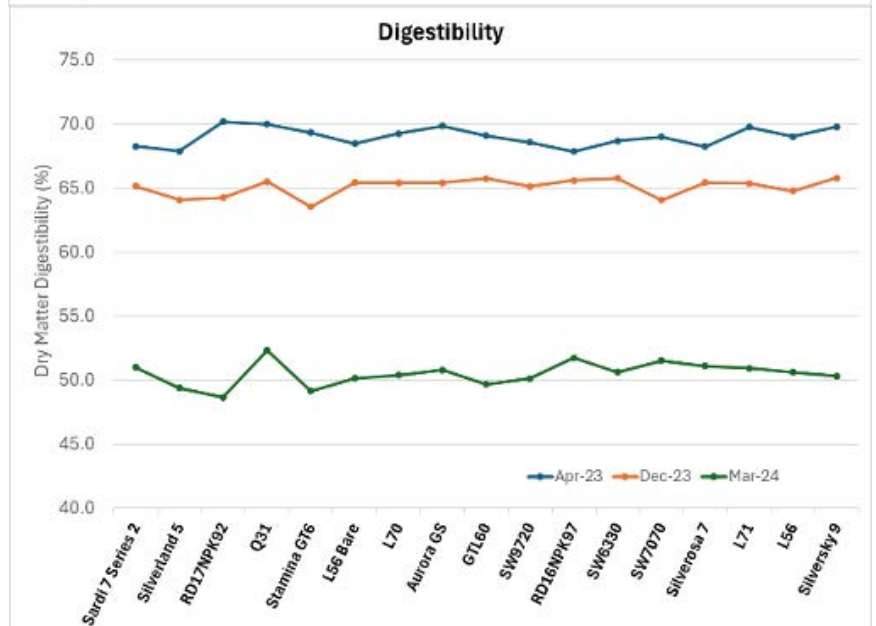
Graph 2: Feed quality results – Crude Protein



Graph 3: Feed quality results – Metabolisable Energy



Graph 4: Feed quality results – Digestibility



## Conclusions

The period of data collection experienced extreme seasonal variability; winter and spring (2023) was very dry and useable rain only occurred in Nov 2023 to Jan 2024. A lack of biomass at critical dates contributed to challenges for data collection

In Graph 1, the **biomass production** clearly shows the growth profile of lucerne. That being the early summer 'wake-up' period, leading into production responses post summer rainfall and the 'shutdown' over autumn/winter. Graph 1 also shows varietal differences in biomass production in the early and late summer periods. This is valuable for considering varieties that will give the greatest production over summer and dormancy over winter.

The **feed quality graphs** show a pattern consistent across all varieties was the highest digestibility (%), CP (%) and ME (Mj/kgDM) of lucerne occurred in autumn, whilst the late summer (March 2024) displayed the lowest feed quality figures. Differences between varieties was minimal (see feed quality graphs 2-4).

Varietal selection depends on enterprise relevance – best fit for your management needs and system; manipulation of yields and harvest timings, maintain genetic variability for pest and disease pressure, utilise rainfall events throughout the year and to buffer from frost events.

Consideration for livestock production may include selecting varieties with new genetics, utilising different dormancy ratings and manage differently to optimise feed production across multiple paddocks, winter grazing management is key to long-term production, consider longer interval recovery periods, consider mixed lucerne system or monoculture and long term vs. short term production impacts on soil moisture and input requirements.

Current research combined with what we would expect is that the **varieties with a dormancy 3 rating will show greater persistence in the longer term** due to their "senescence" over winter and energy diversion into tap root depth and diameter. This places them in a stronger position coming out of winter based on root mass accumulation.

Lucerne **varieties with a dormancy 7 rating are expected to provide a good amount of winter feed** therefore may be a good choice for the Monaro growing season if you are not targeting summer "finishing" pastures.

**Varieties with a 9 rating are not expected to perform well in the Monaro climate** as growth is stimulated over winter and their biomass can get severely damaged by frosts therefore impacting performance into spring and summer.

**For the Monaro climate, lucerne varieties with a dormancy rating of 5 and 6 may provide the best balance in terms of year round overall production.**

Ideally, in terms of managing lucerne for persistence, you need to select varieties that invest in root growth over winter rather than foliage. The added advantage is significantly more spring and summer growth which would suit an enterprise looking to finish lambs or grow out weaners for joining. However the expense to winter growth needs to be taken into consideration.

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### For more information

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