

**Project Name:** Creating landscape-scale change through drought resilient pasture systems

**Funded by:** Australian Government, Future Drought Fund (FDF) Drought Resilient Soils and Landscapes Grants program

**Duration:** June 2022 – June 2024 (Trial site sown March 2019 by CSIRO)

**Group:** Monaro Farming Systems

**Trial Site:** “Burando”, 20km NW of Bombala

**Trial Site Hosts:** John & Jen Jeffreys, Delegate Pastoral, and Ross Page

**Objective:** Evaluate persistence, productivity, and nutritive quality of a diverse range of alternative non-legume and legume species (varieties) against benchmark pasture species that are currently considered to be productive and resilient options for Monaro pastures. The primary goal was to evaluate pasture options specifically optimised for spring/summer lamb production enterprises ie. grass and legume species that would provide strong quality and quantity options to finish lambs over the summer period as well as persist over the longer term through seasonal challenges.

**What was sown (March 2019):**

**Table 1**

Species	Cultivar	Sowing Rate (kg/ha)
Tall Fescue	Quantum II Max P	15
	Hummer Max P	15
	Finesse Q	15
Cocksfoot*	Porto	5
	Savvy	5
Perennial Ryegrass	Base AR37	20
	Excess AR37	20
	Kidman	20
Prairie Grass	Atom	30
Phalaris*	Holdfast	4
Grazing Brome	Gala	25
Pasture Brome	Bareno	25
Coloured Brome	Exceltas	25
Mountain Rye	Family 10	10
Perennial Veldt Grass	Mission	3
Digit Grass**	Premier	2
Chicory	Puna	5
	Commander	5
Plantain	Tonic	8
White Clover*	Haifa	2
	Nomad	2
	Trophy	2
Red Clover	Astred	5
	Rubitas	5
Talish Clover	Permatas	4
Caucasian Clover	Kuratas	6
Caucasian x White Clover	Aberlasting	2
Strawberry Clover	Palestine	4
Subterranean Clover*	Leura	10
Lucerne*	SARDI Grazer	8
	Titan 9	8

\* Benchmark varieties  
 \*\* Did not establish

- row-column design with 4 replicates
- Plot size was 6 m × 1.8 m

**Photo 1 – Grass trial site in drought May 2020**



**Photo 2 – Grass trial site in wetter years 2021**



**Photo 3 – Legume trial site Nov 2020**



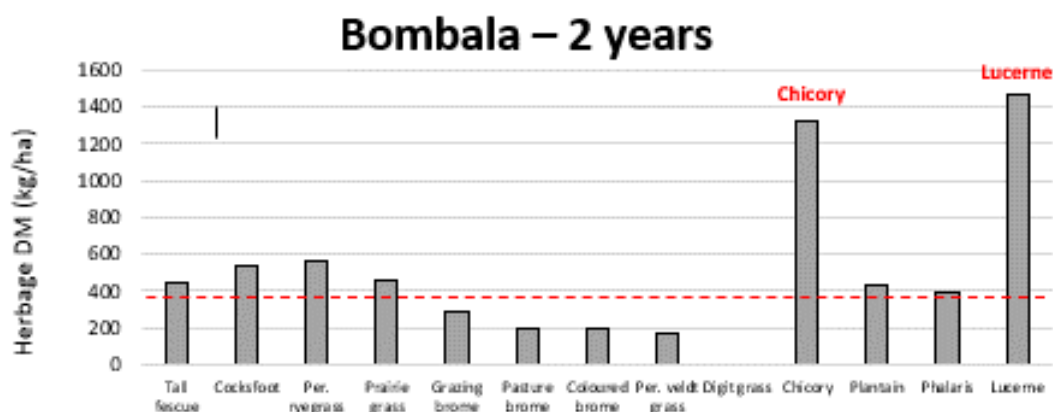
**What data was collected by MFS (2023-2024):**

1. **Plant Frequency** (a measure of persistence)
  - Legume and grasses (June 2023)
2. **Herbage Mass** (an index of productivity)
  - Grasses (May 2023, Nov 2023, Feb 2024, May 2024)
  - Legume was not sampled due to insufficient biomass, cross contamination of plots with volunteer & sown species and weeds and challenges in identifying sown species
3. **Feed Quality** (a measure of quality)
  - Grasses (Nov 2023, Feb 2024, May 2024)
  - Legume not sampled for reasons given above.

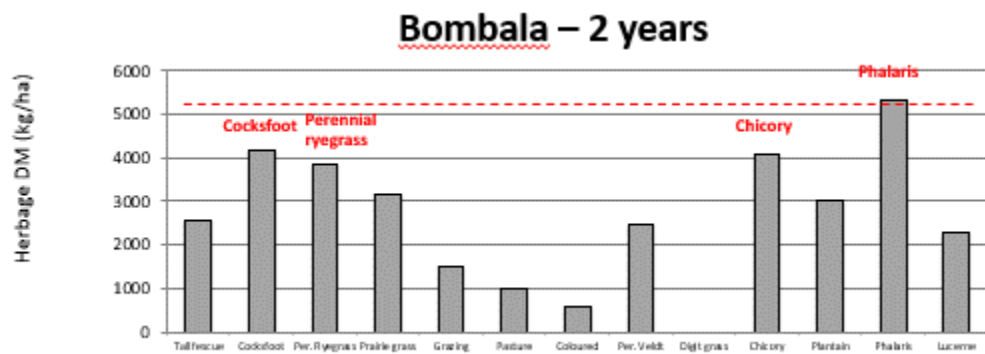
**Results**

Please note the results & conclusions are a combination of the CSIRO trial report and MFS data collection covering the period from 2019 to 2024 from the same trial site. During this time the region experienced both drought and flood conditions.

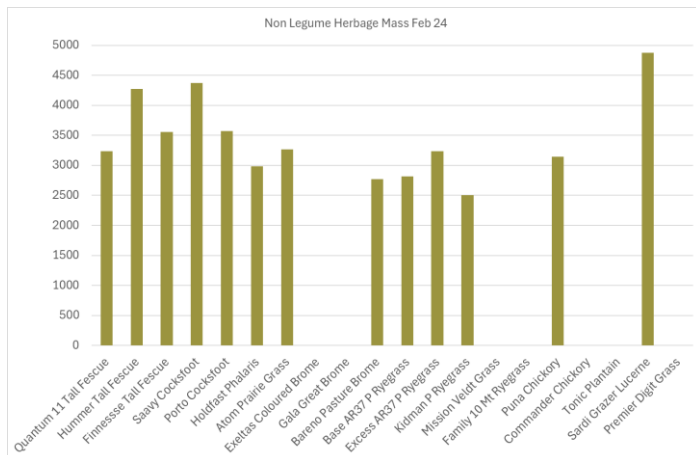
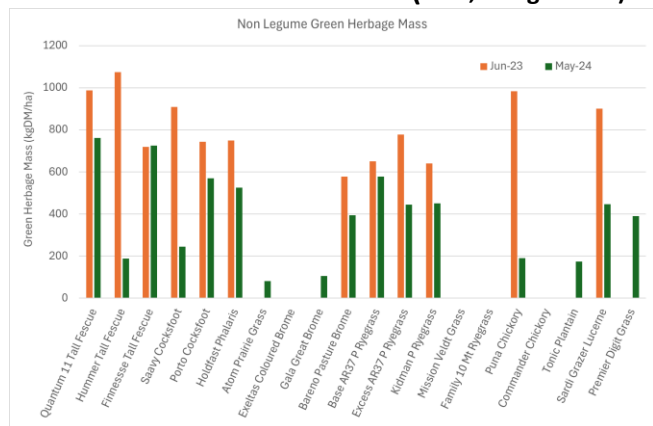
**Total Summer Production – 2019 to 2021 (Dr R Culvenor, Rebecca Stutz, CSIRO)**



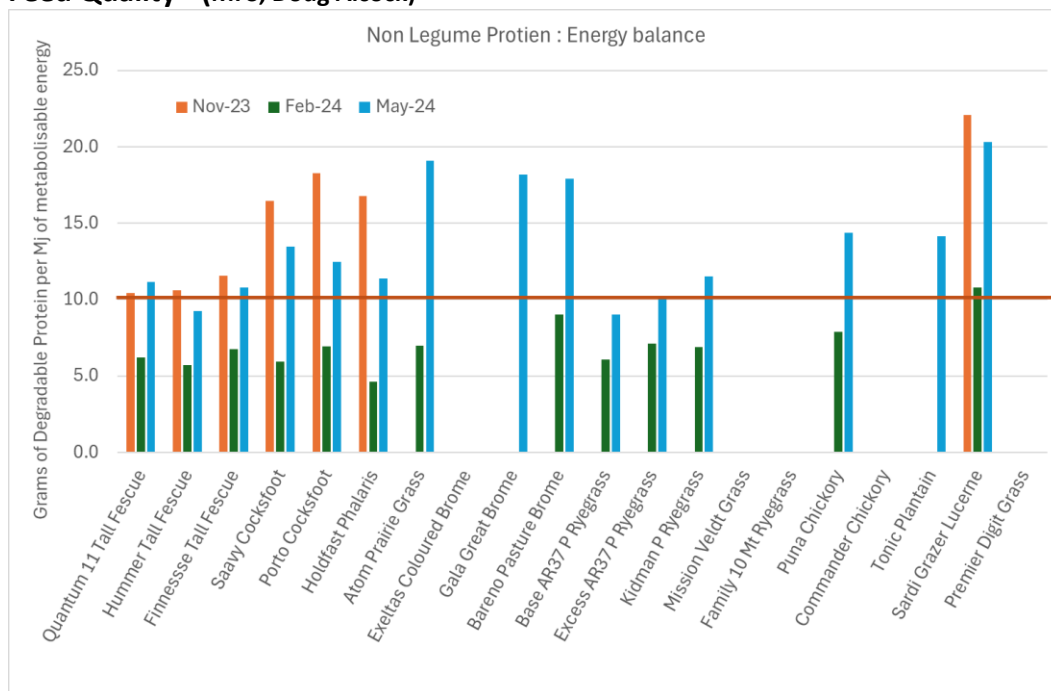
**Total Autumn Production – 2019 to 2021 (Dr R Culvenor, Rebecca Stutz, CSIRO)**



**Total Production – 2023 – 2024 (MFS, Doug Alcock)**



## Feed Quality - (MFS, Doug Alcock)



## Conclusions and Key Messages

### Non-legume/grass site

- **Chicory and lucerne** demonstrated the highest summer production with highest ME content
- Very little winter production of Chicory and requires adequate Nitrogen
- In Summer 2024, the 3 stand out cultivars in terms of DM were **lucerne, cocksfoot and hummer fescue**
- Summer-active **cocksfoot and tall fescue** demonstrated similar potential for superior summer growth cf. phalaris in wet summers (1-1.5t/ha), but appeared less drought tolerant
- **Cocksfoot** appears preferred over **tall fescue** based on slightly lower plant loss in drought, higher post-drought production and acid soil tolerance (depending on soil type)
- Perennial **ryegrass** showed a rapid establishment, high quality and high yielding and has a role in summer-autumn production in cooler districts or where growers are prepared to re-seed if stands do not persist.
- **Prairie grass** and **brome** species performance showed no evidence in this trial to select these species over benchmark varieties for the Monaro.
- No strong evidence to recommend **plantain** in pasture systems but may have a possible role, in short term pastures or in cooler areas.

### Legume site (results from 2019 to 2021)

- White and red clover had the highest autumn production while lucerne and red clover had the highest summer production (herbage DM kg/ha)
- White clover performed well with a strong ability to respond in wet periods however it cannot be relied upon under normal summer conditions and will decline severely during droughts.
- Red clover is more suited to shorter term pastures as it has rapid establishment but does not recover density from drought damage.
- Caucasian clover showed superior persistence and similar in quality to white clover but less productive than other clovers in this trial.
- Talish clover was similar in production to white and red clover but more drought-tolerant during this trial period and slightly lower in quality.

“When choosing the optimum perennial pasture systems for the Monaro environment the main challenge remains finding the right balance between autumn and summer production, feed quality

when you need it and sowing species that will persist over the longer term in a challenging environment.” – Nancy Spoljaric, MFS Project Officer

### **Acknowledgements**

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