

# North West update

Growing red meat productivity through the selection and establishment of perennial legumes

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## Project overview

The proportion of perennial legumes in dryland pastures in Tasmania is low and is limiting profitability and productivity. This project aims to increase the legume component in pastures from 12-15% currently to 20-25%.

In the high rainfall North West region of Tasmania, this research aims to extend the growing season of dryland pastures through improved establishment and persistence of perennial legumes. The research is trialling various perennial legumes under waterlogged conditions as well as demonstrating legume establishment in mixed pastures.

## Waterlogging tolerance in strawberry clover – screening studies

Screening studies of 40 lines (including cultivars and wild germplasm) of strawberry clover from a range of locations with varying rainfall, temperature and elevation has identified that waterlogging tolerance is quite consistent across the species. This is important for future cultivar breeding efforts. This means that other traits can be focussed on, while maintaining waterlogging tolerance.

In a Tasmanian context, perhaps the most important trait to focus on would be yield. Under high rainfall/irrigation, white clover is generally more productive. However, in a medium rainfall environment where dry summers and extended periods of moisture stress are common, white clover has failed to persist and strawberry clover has survived, perhaps owing to a deeper root system.

Tolerance relates to strawberry clover's ability to form adventitious roots and roots along stolons closer to the surface, where gas exchange is less affected by the saturated soil. Further, aerenchyma formation in the roots effectively provides a snorkel for easier flow of gases from the leaves to the roots.

## Field evaluation of perennial legumes under waterlogging

Field evaluation of perennial legumes under waterlogged conditions has continued at Edith Creek. Legume species have included strawberry clover, white clover, red clover and *Lotus pedunculatus*. Feed test results for individual legume components in May suggested slightly higher feed value of white clover and strawberry clover over red clover and *Lotus pedunculatus*. Further feed tests on the legume and mixed sward components are being analysed along with yield.

**Table 1:** Feed test values for perennial legumes at Edith Creek, May 2023

Species	DMD %	NDF %	Crude Protein %	ME MJ/kg DM
White clover	71	30	27	10.8
Strawberry clover	68	32	25	10.4
Red clover	60	37	25	8.4
<i>Lotus pedunculatus</i>	58	36	23	8

**Figure 1:** Right (top) Strawberry clover growing amongst perennial ryegrass; Right (bottom) *Lotus pedunculatus* growing amongst volunteer weedy grass species



## Involve and Partner

Importantly, the learnings from phase 1 (which focuses on experimental work) are being extended to 10 producer led Involve and Partner sites in the Midlands and North West regions. In each case we have chosen an alternative pasture mix to the one being sown by the producer. It's a low-risk method to allow the producer to try something novel for them with the assistance of the TIA team to monitor and evaluate.

### Andrew and David Pilkington – Killara, Redpa

Killara is a 1455 ha family operated 1120 head cow-calf operation. Weaned calves are typically grown out to weights of 450 kg on an additional 243 ha property at Montagu. A significant pasture renovation phase has commenced, which has included clearing of rushes, installing hump and hollow drainage and resowing. The investment has seen an enormous improvement in productivity on previously degraded pastures.

The mixed pasture has included perennial ryegrass and cocksfoot, white, red, and strawberry clovers, and chicory. Pastures were broadcast sown in autumn onto a cultivated seed bed and rolled. The pastures have been quick to establish and outcompete weeds such as thistles and toad rush. Good proportions of legumes are evident, in particular white and strawberry clover. Chicory has established but has been held back by the relatively cool spring conditions.

**Table 1:** Feed test values for newly established ryegrass, white clover and strawberry clover pasture at Killara

Dry matter digestibility %	NDF %	Crude Protein (CP %)	ME MJ/kg DM
76.5	44	21	11.5



**Figure 2:** Above: Rowan Smith (TIA), Trixie the Blue Heeler, Andrew and David Pilkington standing in an autumn 2023 sown mixed pasture at Killara, Redpa.

### Next steps in Involve and Partner

- We will continue to follow Andrew and David Pilkington's and Iain Bruce's progress over the coming months
- Further Involve and Partner sowings will continue in the North West region with interested producers.



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**Figure 3:** Cocksfoot, prairie grass, white clover, and lucerne mixed pasture at Western Plains, Stanley.

### Iain Bruce – Western Plains, Stanley

Typically, Iain aims to have perennial pastures sown by the end of August. The free draining ferrosols of the peninsula allow for spring sowing. Paddocks earmarked for renovation are sprayed out with 2.5 L/ha Roundup and left for a few weeks before being cultivated with a moldboard plough and seeded with an airseeder drill. As part of TIA's Involve and Partner activities, we have been following establishment and growth of one of the renovations. In this paddock, cocksfoot (4 kg/ha), prairie grass (2), lucerne (8) were sown, and white clover has volunteered to a considerable level.

Traditionally, perennial ryegrass has been grown in this area, but Iain believes that the robust structure of cocksfoot is better suited to handle winter pugging and compaction. With other pastures sown to perennial ryegrass, it also provides diversity in the whole-farm feedbase.