



25 July 2025

Optimising establishment of perennial pasture legumes

On-farm demonstrations

Rowan Smith
Tasmanian Institute of Agriculture

UNIVERSITY of TASMANIA



Tasmanian Institute of Agriculture

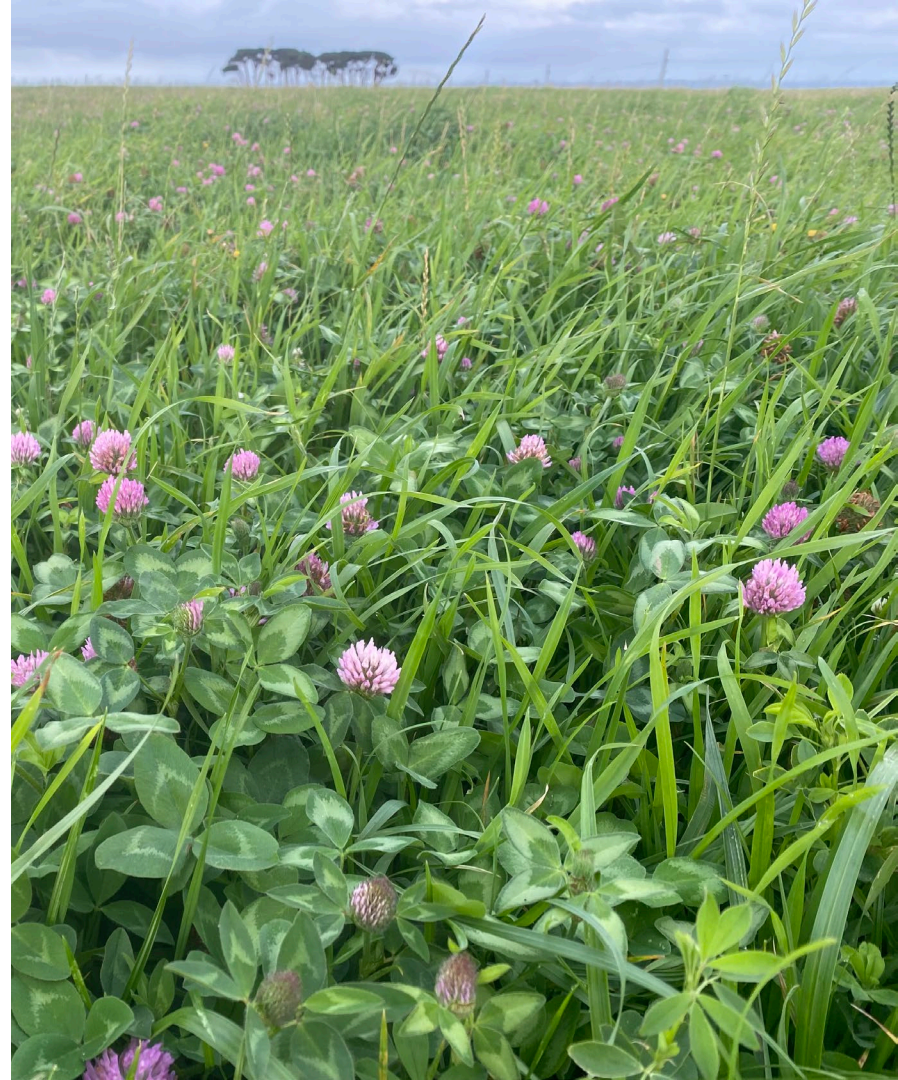
Optimising establishment of perennial pasture legumes

On-farm demonstrations

Red Meat Updates

Rowan Smith
25-7-2025

*This project is funded by the Tasmanian Institute of Agriculture and
Meat and Livestock Australia, through the MLA Donor Company*



Pilkington Family

Killara, Redpa

Snapshot

1150 mm AAR

1455 ha

1120 head cow-calf operation

Extensive pasture renovation

- Reduce impact of waterlogging
- Establish persistent perennial species
- Increase quantity and quality of feed
- Improve animal productivity



Improving drainage



Waterlogged degraded pastures



Hollow implement

Ground preparation



Preparation and sowing: Disced, rotary hoed and limed, seed broadcast and rolled



Improving drainage



Hump and hollow works in March 2003



New pasture after first light graze

Sowing perennial species



Species: Perennial ryegrass, white clover, red clover, strawberry clover, chicory



Improving feed quality

▼ **Table 11:** Feed test results from the two new paddocks sown at Killara.

Paddock	Sample Date	DMD %	NDF %	CP %	ME MJ/kg DM
Paddock 1	29-5-23	76.5	44.0	21.0	11.5
	24-10-23	77.0	41.9	22.7	11.5
	6-5-24	84.1	37.1	24.6	12.8
Paddock 2	24-10-23	66.1	45.2	17.2	11.5
	6-5-24	84.6	36.2	24.9	12.7

Extensive pasture renovation



Reduce impact of waterlogging



Establish persistent perennial species



Increase quantity and quality of feed



Improve animal productivity



Bruce Family

Western Plains, Stanley

Snapshot

930 mm AAR

625 ha

Cow-calf and growing operation

Pasture renovation

- Increase persistence
- Later season feed
- Improve feed quality
- Diversify the feedbase



Sowing perennial species



September 2023

Species: Cocksfoot (4kg/ha), Prairie grass (2 kg/ha), lucerne 8 kg/ha, regenerating white clover

Costs of renovation \$/ha

Herbicide applied \$70

Ground prep (Plough, rotary hoe and rolling) \$460

Seed \$250

Sowing \$210

TOTAL \$990 ha

Fertiliser in first year of pasture

March 9-15-0-6 @ 300 kg/ha

May 26-14-0-1 @ 100 kg/ha

September 28-17-0-21@ 250 kg/ha

Total kg/ha of nutrient N 81, P 76, K 0, S 40

Feed quality



September 2023

▼ **Table 5:** Feed test results from pasture mix sown at Western Plains.

Sample Date	DMD %	NDF %	CP %	ME MJ/ kg DM
24 Oct 2023	60.5	51.2	14.3	9.1
12 Dec 2023	71.6	46.2	16.7	11.2
7 May 2024	69.2	51.1	23.3	10.6
11 Nov 2024	70.8	50.8	13.8	10.4

Pasture renovation

✓ Increase persistence

✓ Later season feed

✓ Improve feed quality

✓ Diversify the feedbase

▼ **Table 6:** Average daily gain for a range of feed quality and steer liveweights when grazing a pasture at 2500 kg DM/ha. Data sourced from PROGRAZE.

Feed available (Kg DM/ha)	2500 kg DM/ha			
M/D (MJ ME/kg DM)	7.5	9	10.5	12
Digestibility%	50	60	70	80
200 kg – ADG (kg/day)	-0.02	0.42	1.09	1.31
300 kg – ADG (kg/day)	-0.24	0.3	0.98	1.22
400 kg – ADG (kg/day)	-0.44	0.2	0.86	1.09
500 kg – ADG (kg/day)	-0.72	0.07	0.7	0.92

John & Kate Simpson

Horfield, Nile

Snapshot

625 mm AAR

230 ha

Mixed cropping & heifer agistment

Dryland pasture renovation

- Persistent perennial species
- Extended late-season
- Increase quality of feed
- Diversify feedbase



Sowing perennial species



July 2023

Species:

Mix 1 Perennial ryegrass, tall fescue, timothy, red clover, Persian clover

Mix 2 Cocksfoot, phalaris, red clover, strawberry clover and chicory

Costs of renovation \$/ha

Herbicide \$30

Ground prep (deep ripped and multidisc) \$360

Seed \$220 (\$140 Mix 1)

Sowing \$100

Fert \$140

TOTAL \$ 850 ha

Extend growing season



November 2023



February 2024

Feed quality

▼ **Table 3:** Feed test results for the two pasture mixes at Horfield.

Sample Date	Pasture Mix	NDF%	CP%	DMD%	ME/MJ/kg/DM
13 Nov 2023	Mix 1	49.9	12.1	69.4	10.2
	Mix 2	41.9	16.4	72.9	10.8
6 Feb 2024	Mix 1	55.9	10.6	60.1	8.3
	Mix 2	53.7	12.5	60.3	9.1
29 Aug 2024	Mix 1	49.5	20.9	70.8	10.4
	Mix 2	44.6	26.0	70.2	10.6
6 Nov 2024	Mix 1	48.2	9.8	74.2	10.9
	Mix 2	44.3	15.5	72.4	11.0

Dryland pasture renovation



Persistent perennial species



Extended late-season



Increase quality of feed



Diversify feedbase



March 2024

Headlam Family

Ratharney, Woodbury

Snapshot

430 mm AAR

1820 ha

Cropping and sheep

Irrigated pasture renovation

- Growing and finishing lambs
- High quantity and quality of feed
- Establish persistent perennial species
- Benefits to crop rotation



Sowing perennial species



December 2022



Species: Cocksfoot 2.5 kg/ha, phalaris 2.5 kg/ha, red clover 8 kg/ha, lucerne 3 kg/ha, chicory 2 kg/ha

Preparation:

- Cropped with a mix of rape and oats prior
- Terminated with herbicide \$60 ha
- Multidisc \$85 ha
- Seed \$300 ha
- DAP \$150 ha
- Sowing \$55 ha
- **Total \$650 ha**

Sowing perennial species



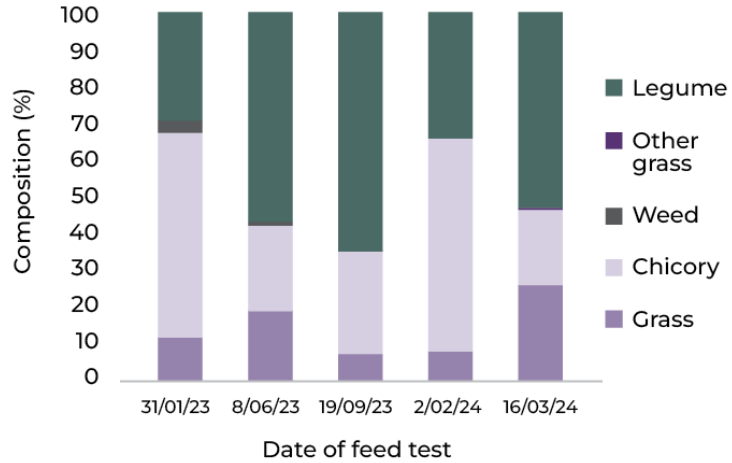
January 2023

Species: Cocksfoot 2.5 kg/ha, phalaris 2.5 kg/ha, red clover 8 kg/ha, lucerne 3 kg/ha, chicory 2 kg/ha



March 2023

Feed quality



▲ **Figure 6:** Comparison of dry matter composition change over time for the diverse pasture trial at Ratharney.



Feed quality

▼ **Table 9:** Feed test results from pasture mix sown

Sample Month	DMD %	NDF %	CP %	ME MJ/kg DM
January 2023	73.0	33.0	19.3	11.4
June 2023	64.0	43.0	21.8	9.6
September 2023	78.0	27.0	29.2	11.9
February 2024	66.7	40.3	22.0	10.0
September 2024	78.5	28.9	28.2	12.1
November 2024	73.1	27.6	22.4	11.9

4 Take home messages

1

Plan and prepare early

Use crops to bring weeds under control, fix soil constraints, be prepared to change plans

2

Establishment method is context specific

There are a number of ways to renovate pastures, but success often depends on timing and attention to detail

3

Species that fit

Right plant, right place, right purpose

4

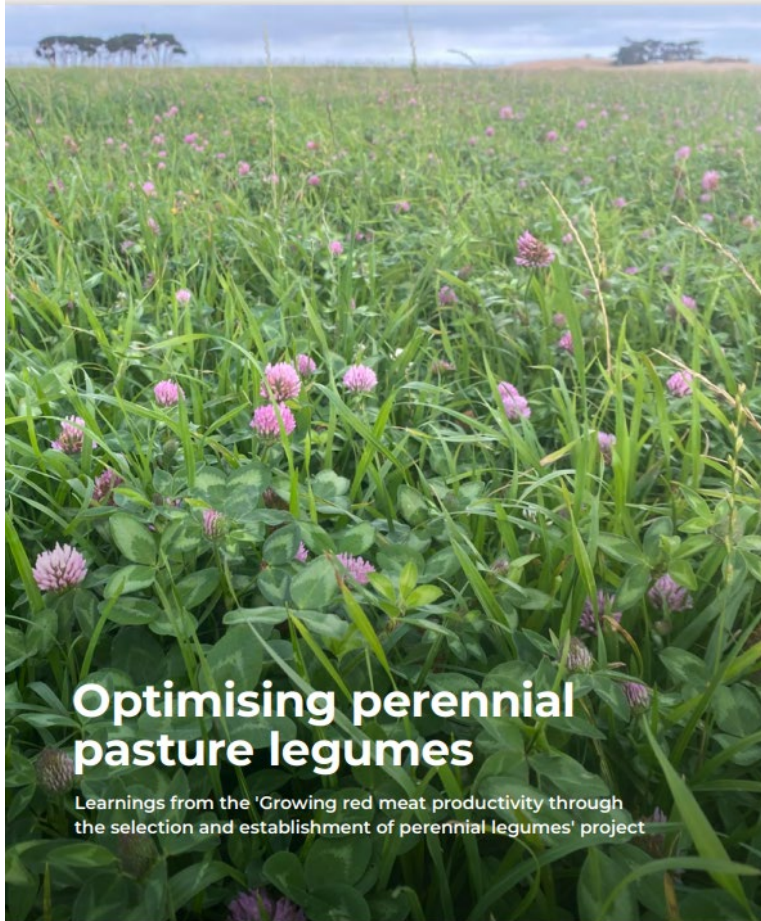
Eat it

Make best use of increased quantity and improved quality



Producers Acknowledgments

- Pilkington Family – Killara, Redpa
- Aiden Coombe – Westmore, Redpa
- Stafford Heres – Shamford Park, Marrawah
- Bruce Family – Western Plains, Stanley
- McGlone Family – Borrowah Pastoral, Alcomie
- Archer Family – Greenhythe, Hillwood
- Jock Hughes – Jessiefield, Longford
- Knox Heggaton and Dylan Browning, Scone, Perth
- John and Kate Simpson – Horfield, Nile
- Burbury Family – Rokeby, Campbell Town
- Foster Family – Fosterville, Campbell Town
- Headlam Family – Ratharney, Woodbury
- Emma Boon – Mount Vernon, Kempton
- Will Bignell – Thorpe Farm, Bothwell
- John Ramsay – Ratho Farm, Bothwell



Optimising perennial pasture legumes

Learnings from the 'Growing red meat productivity through the selection and establishment of perennial legumes' project

UNIVERSITY of TASMANIA



Tasmanian Institute of Agriculture

Thank you

Shout out to Emily Hall who has done the majority of the involve and partner work with on farm demonstrations and development of the highlights booklet