

Incorporating legumes into a pasture improvement program

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

Authors: Emily Hall and Rowan Smith

P.PSH.2052

Andrew and David Pilkington: *Killara, Redpa*

Background

Killara Pastoral, owned and operated by Andrew and David Pilkington and father Steve, is a 1455 ha property near Arthur River in Tasmania's North-West. The Pilkington family run a 1120 head cow-calf operation with weaned calves typically grown out to weights of 450 kg on an additional 243 ha property at Montagu. With an average annual rainfall of 1150 mm, the Pilkington family face waterlogging challenges like many other farms in the area. To alleviate these challenges, an extensive pasture renovation phase has begun at *Killara*. Their aim is to improve drainage in winter waterlogged areas and establish perennial pastures that will persist and increase animal production.

Hump and hollow drainage

In Winter wet areas prone to waterlogging, it is common to find undesirable and unproductive species that significantly reduce pasture production and grazing profitability. The Pilkingtons have identified areas of *Killara* that have become degraded over time and are overgrown, with pin rushes an indicator species of poorly drained areas. In these areas, hump and hollow drains were formed, with the pin rushes mounded up onto the humps.

The formation of hump and hollow drainage involves the removal of topsoil from the hollows which can pose a challenge when establishing pastures in these areas. The hollows can have low pH levels (<5.5) and nutrient retention is difficult due to persistent waterlogging. The hollows often become a sacrifice area of the paddock, allowing the humps sufficient drainage to improve pasture production particularly during the wetter months.

As part of our Involve and Partner activities we are following the pasture improvement program in two paddocks that have had hump and hollow drainage installed as well as full pasture renovation.

Snapshot

- *Killara* is a 1455 ha family operated 1120 head cow-calf operation
- Typically, calves are grown out to weights of 450 kg on an additional 243 ha property at Montagu
- Annual rainfall 1150 mm
- Currently undergoing extensive pasture improvement in areas that have become degraded over time



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

Pasture Establishment

After the completion of the hump and hollow drainage works, paddocks were ready to be sown. Prior to sowing, the paddocks were disced, rotary hoed and dolomite lime applied to increase the pH of the soil (target >6.0). In March 2022, a pasture mix of perennial ryegrass and white clover were broadcast sown and rolled into Paddock 1. Paddock 2, was sown in March 2023 after receiving the same paddock preparation as Paddock 1. This paddock was sown with a mix of perennial ryegrass, white clover, red clover, strawberry clover and chicory.



Above Left: Paddock 2 after the formation of hump and hollow drainage and sowing in March 2023. **Above Right:** Paddock 2 in September 2023 after the pastures first graze. Notice how quickly the pin rush residue decomposed.

Monitoring the pastures

Now that both pastures have established, we will be tracking feed quality and pasture composition changes over time. Initial feed tests have been taken in the two paddocks. The results show that Paddock 1 has a higher Dry Matter Digestibility (DMD) and Crude Protein (CP) percentage with lower Neutral Detergent Fibre (NDF), although the Metabolisable Energy (ME) levels are the same in both paddocks.

CP is a measure of the nitrogen content in feed. Animals that are actively growing have a greater requirement for protein in the diet compared to animals that are maintaining weight. Feeds with <6% CP are generally considered deficient and will limit rumen function and animal performance.

Generally, pastures with a high clover content have lower NDF values. NDF is an estimate of the percentage of total cell wall content in forages. Pastures containing a lower NDF value are usually better quality as they have higher levels of animal intake and thus animal weight gain. As part of our Involve and Partner activities, we will continue to take regular feed tests in these paddocks to assess how legume content changes feed quality through the growing seasons.

Table 1: Feed test data from the pasture that was sown in Autumn 2022 (Paddock 1) and March 2023 (Paddock 2). Only the humps were sampled in this paddock.

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
Paddock 2	24-10-23	66.1	45.2	17.2	11.5

Next steps in Involve and Partner

We will continue to follow the Pilkington's progress over the coming months as they continue to graze these newly renovated pastures.

Scan for more
project info



This project was co-funded with Meat & Livestock Australia. For more information please contact:
Rowan.Smith@utas.edu.au or visit our project page www.utas.edu.au/tia/research/research-projects/projects/growing-red-meat-productivity-through-the-selection-and-establishment-of-perennial-legumes

DISCLAIMER: While the Tasmanian Institute of Agriculture (TIA) takes reasonable steps to ensure that the information on its fact sheets is correct, it provides no warranty or guarantee that information is accurate, complete or up-to-date. TIA will not be liable for any loss, damage, cost or expense incurred or arising by reason of any person using or relying on the information contained in this publication. No person should act on the basis of the contents of this publication without first obtaining specific, independent, professional advice. TIA and contributors to this Fact Sheet may identify products by proprietary or trade names to help readers identify particular types of products. We do not endorse or recommend the products of any manufacturer referred to. Other products may perform as well or better than the products of the manufacturer referred to.



**DONOR
COMPANY**

