

North-West Update

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

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Project Overview

Currently the prevalence 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 of Tasmania the aim is to improve autumn and winter feed supply for grass-fed beef systems by identifying and demonstrating legume species that can successfully fill feed gaps during the late summer/autumn and improve resilience to waterlogging and pugging. The project will evaluate the productivity and waterlogging tolerance of a number of commercial cultivars and selections of strawberry clover and Lotus sp., which are known to be waterlogging tolerant with commonly sown white clover.

In the low to mid rainfall Midlands 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 and sowing practices that advantage legumes during establishment as well as demonstrating how to establish legumes in existing grass dominant pastures.

The project runs from 2020-2025 with research continuing until 2023 and involve and partner activities on farm between 2023 and 2015.

Top image: Rowan Smith (TIA) at Stanley Field Day discussing establishment of legumes

Left: Beau Gooch "Wisedale" speaking at Stanley Field Day

Circular Head Beef Group Field Day, Stanley

On the 21st October a field day was held on the property of Milton and Gaylene de Jonge "Four Winds" at Stanley in conjunction with the Circular Head Beef Group. The field day was well attended by around 40 producers and farm advisors. Milton explained how he uses his feedbase to produce beef cattle, including the strategic grazing of lucerne. Rowan Smith then gave an introduction to the LPP Legume project, discussed current legume options for high rainfall pastures, waterlogging tolerance amongst legumes and planned experiments for the region. He also raised the opportunity for produced to collaborate through involve and partner activities and case studies. Beau Gooch from "Wisedale" at Frankfurt, who is also one of the farm case studies under the project spoke about the gains he had made with pasture renovations and using the new cocksfoot varieties, red clover, white clover and Sulla.



Waterlogging tolerance in perennial legumes

Previous pilot studies undertaken by TIA student Kristy Stephenson evaluated the tolerance of some perennial legumes to waterlogging. Of particular note was the significant reduction in both root and shoot dry matter of species such as red clover, Talish clover, and Caucasian clover. There was even significant reductions in the growth of the high rainfall adapted white clover.

Waterlogging tolerance in perennial legumes

Talish clover

Caucasian clover

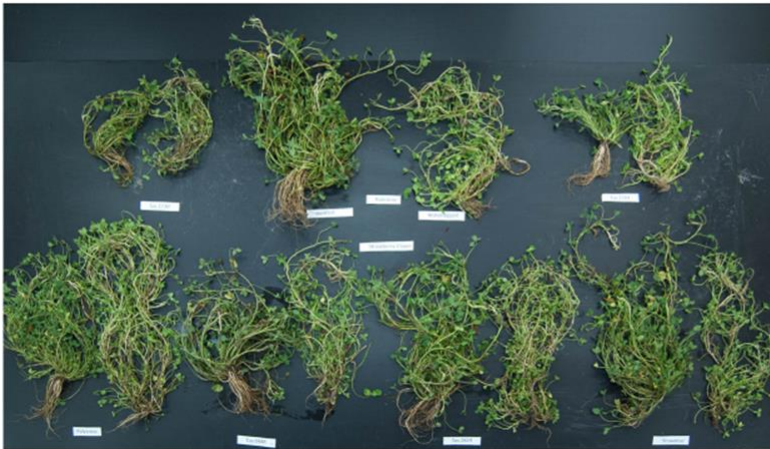
Red clover

White clover



Top image: Waterlogging tolerance of four perennial legumes species. In each panel, the plant on the left is the control and the plant on the right has been under waterlogged conditions. **Below image:** Seven strawberry clover selections pairings with the control plant on the left and waterlogged plant on the right. The top centre pair of plants is the commercially available cultivar Palestine.

Waterlogging tolerance in strawberry clover



Above: Screening for waterlogging tolerance experiments at Mt. Pleasant. **Below:** *Lotus pedunculatus* growing under waterlogged conditions at Edith Creek



Current project activities

An initial screening of strawberry clover and *Lotus* spp. selections for increased waterlogging tolerance and productivity has been completed in a pot study at the Mt, Pleasant Laboratories site. A site has also been established at Edith Creek to evaluate the performance of strawberry clover and *Lotus* sp. under field waterlogging conditions.

Involve & Partner

Importantly the learnings from phase 1 (which focuses on experimental work) will then be extended to 10 producer led sites on-farm to trial alternative sowing techniques and species at a commercial scale that have shown promise during the first phase of the project. In 2023, TIA will be looking for expressions of interest from producers interested in participating in this second phase of the project. Anyone interested in discussing this further should contact: Rowan.Smith@utas.edu.au

KEY POINTS

Waterlogging tolerance rating

- 5 – strawberry clover, *Lotus pedunculatus*
- 3 – white clover, Caucasian clover
- 2 – Red clover, Talish clover, *Lotus corniculatus*
- 1 – lucerne
- Adapted from [Species for Profit - Edition 2 2021](https://www.utas.edu.au/species-for-profit) ([utas.edu.au](https://www.utas.edu.au))

For more information please contact: Rowan.Smith@utas.edu.au or visit our project page <https://www.utas.edu.au/tia/research/research-projects/projects/growing-red-meat-productivity-through-the-selection-and-establishment-of-perennial-legumes>

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