

Alternative species for the nexus between persistence and production

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Iain Bruce: *Western Plains, Stanley*

Background

Traditionally, mid-high rainfall areas on the North-West coast of Tasmania are known to grow some of the most productive perennial ryegrass and clover pastures in the state. The grazing region around Stanley has mild winters due to coastal influences. Despite this, winter wet conditions can cause issues with pasture utilisation as pastures can become muddy and spoiled in drizzly/rainy weather, increasing pasture wastage. Summer dry conditions can also hinder the persistence of shallow rooted perennial pasture species. To combat these issues, Iain Bruce is growing a deep-rooted perennial pasture mix of cocksfoot, prairie grass and lucerne. Iain believes that cocksfoot is stronger in its ability to stand up in winter conditions. Unlike ryegrass that tends to be pushed into the mud and underutilised in wet conditions, cocksfoot tend to stronger in these conditions. In addition, the deep rooting structure of the mix will be more resilient in dry conditions and be able to utilise summer rainfall more effectively. With other paddocks sown to perennial ryegrass on his property, growing this alternative pasture mix provides diversity to the whole-farm feed base.

As part of TIA's Involve and Partner activities we are following the establishment and growth of this mixed pasture sown in Spring 2022.

Paddock preparation, sowing and establishment

One challenge to the establishment of this pasture will be the success of lucerne in the pasture mix. Lucerne is generally grown as a monoculture, in part due to competition issues during establishment when sown as part of a pasture mix. Typically, Iain aims to have spring sown perennial pastures in the ground by the end of August. The free draining ferrosols of the peninsula allow for spring sowing, which advantages legume establishment due to rising soil temperatures. Paddocks earmarked for renovation are sprayed out with glyphosate and left for a few weeks before being cultivated with a mouldboard plough, rotary hoed, seeded with a rotera airseeder drill and rolled following sowing. The slower establishment of the cocksfoot and prairie grass compared to perennial ryegrass aided the establishment of the lucerne. In addition, the paddock did not receive fertiliser at the time of sowing, which reduced competition from establishing grasses and advantaged lucerne establishment. Iain noted that slugs are a large issue effecting pasture establishment in the area. To combat this, slug bait was applied with the seed at sowing and a further applications of slug bait was spread 14 days later.

Snapshot

- Ian Bruce, *Western Plains, Stanley* Tasmania
- 625 ha grazing enterprise
- Currently running 360 breeding cows, 100 replacement heifers, 170 trade heifers, 330 trade steers and 475 weaners
- 930 mm annual rainfall
- Growing mixed deep rooted perennial species which tolerate winter pugging and summer drying
- Establishing lucerne alongside other pasture species can be a challenge

Table 1. Pasture sown at Western Plains

4 kg/ha cocksfoot

2 kg/ha prairie grass

8 kg/ha lucerne



Above: The mixed cocksfoot, prairie grass and lucerne pasture on *Western Plains* with the iconic Nut at Stanley in the background.

Plant frequency

Plant frequency counts were taken of the paddock. Frequency of occurrence of plants (presence or absence) are a useful measure of the persistence of a species as well as the composition of a mixed pasture within a defined area. In this case a 1m² quadrat is broken up into 100 squares (10cm x 10cm). Thus, the score is a score out of 100 rather than an absolute plant count. Initial observations of the paddock (frequency counts taken in mid-December 2022 and late February 2023) indicated a good germination. Prairie grass was not included in these frequency counts however, white clover which germinated from an existing seed bank was included. Figure 1 demonstrates that plant frequency have decreased over time, most likely through competition within the pasture, however the white clover content has increased. We will continue to monitor these numbers.

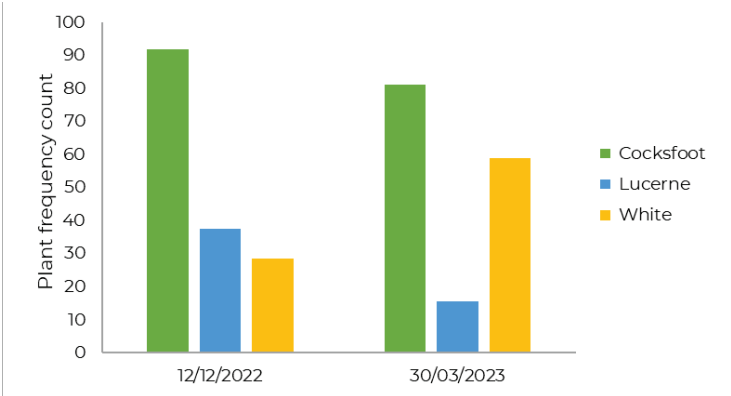


Figure 1: Plant frequency counts from the pasture sown at Western Plains.

Pasture composition and feed quality

As well as monitoring the plant numbers in this pasture, we are also assessing the composition change of the pasture species over time, as well as seasonal changes in feed quality. As of December 2023, the composition of the pasture was dominated by cocksfoot (55% of total dry matter). Background white clover accounted for 30% of total dry matter with only a small content of lucerne and prairie grass in the mix (Figure 2). The feed test results shown in Table 2 demonstrate that as temperature started to warm up in December, feed quality, particularly Metabolisable Energy (ME) and Dry Matter Digestibility (DMD) increase. We will continue to monitor feed quality over the coming months to gain a greater picture of the performance of this pasture mix. We are also collecting data at *Western Plains* to assess the effect that varying levels of legume content have on seasonal feed quality. This data will become available in the coming months.

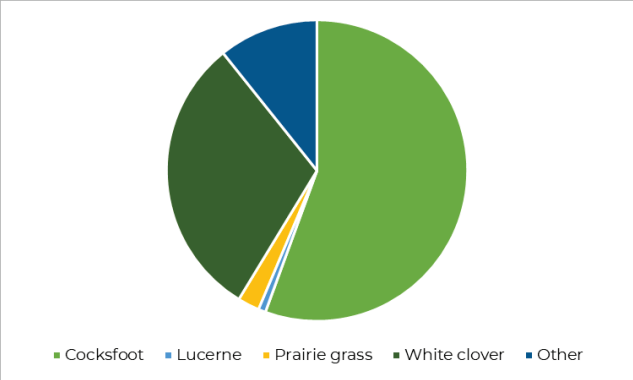


Table 2: Feed test results from pasture mix sown at Western Plains.

Sample Date	DMD %	NDF %	CP %	ME MJ/kg DM
24/10/2023	60.5	51.2	14.3	9.1
12/12/2023	71.6	46.2	16.7	11.2
7/5/2024	71.0	49.7	26.8	10.9

Figure 2: Composition of the pasture mix at Western Plains; 12/12/2023.

Next steps in Involve and Partner

We will continue to follow the progress of Iain's pasture mix over the coming year.

Scan for more project info



Above left: Seed head from a prairie grass plant. Above right: Prairie grass plant sown as part of the pasture mix at Western Plains.

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

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