BUILDING DROUGHT RESILIENCE WITH VETCH IN MIXED FARMING SYSTEMS AT MURCHISON: A DEMONSTRATION

KEY MESSAGES

- **A demonstration trial at Murchison is exploring the effects of grazing a vetch/oat mix, while also considering the flow on effects of hay or brown manuring the crop.**
- **Despite poor early biomass production linked to a dry start, the vetch/oat mix supported Merino ewes grazing sections of the crop at 42– 84 DSE/ha for three weeks in August.**
- **Ungrazed areas of the vetch/oats mix produced up to 6150 kg DM/ha, highlighting the potential for the crop to have multiple end-uses (grazing, hay or brown manuring), for system flexibility**
- **Future monitoring will explore how retaining or removing biomass through hay or brown manuring affects ground cover and soil function, as well as different options for the mechanical breakdown of standing brown manure.**

TESTING A VETCH & OAT MIX IN A DRY SEASON AT MURCHISON

In 2025, a three-year demonstration site was established near Murchison to explore how vetch can be managed within the cropping phase to improve drought resilience in mixed farming systems. The demonstration is also extending insights from The University of Melbourne's central trial at Dookie.

Riverine Plains Head of Farming Systems, Jane McInnes, explained that while the region has an average annual rainfall of 523 mm, establishment of the demonstration coincided with a notably dry year (decile 2), creating an opportunity to observe how these systems perform under stress.

"This context shaped both the decisions made during the season and the outcomes from the trial, providing insights into how flexible management can support resilience in dry years," she said.

Designing the demonstration: grazing and end-use decisions

Morava vetch (sown at 40 kg/ha) and Wintaroo oats (sown at 14 kg/ha) were established as a mixed crop in 2025 to explore two key management questions: how does grazing influence crop performance, and how do different end-uses affect system outcomes?

To do this, different treatment areas were established to compare the effects of grazing on areas set aside for either hay production or brown manuring.

"Seasonal conditions played a major role from the outset, with the dry start delaying germination and limiting early growth, and this created uncertainty about whether grazing would be viable due to low biomass," explained Jane.

"As a result, there was initial hesitation to introduce livestock, however, discussions at a mid-winter field day led to a decision to proceed with grazing, albeit later than usual.

"This decision reflects a common challenge in mixed systems, where timing is often dictated by seasonal conditions, rather than pre-determined or historical management windows," said Jane.

On 1 August, 74 Merino ewes were introduced into the grazing area for five days, before an additional 73 head were added from the same original mob, to increase the grazing pressure to 84 DSE/ha. This mob was then removed 16 days later, on 22 August.

Each ewe was estimated to have a grazing pressure of 1.71 DSE, based on their age (14 months), condition score of approximately 3.5, a growth estimate of 50-60 g/day and an annual greasy fleece weight production of 5.5 kg.

"The livestock performed well on the mix, suggesting that the vetch and oats mix was able to support animal requirements," said Jane.

WHAT WE FOUND

Biomass cuts taken in mid September, 20 days after the end of grazing, showed 500 kg DM/ha of vetch and 1400 kg DM/ha of oats in the grazed treatment area, while the ungrazed treatment had 1050 kg DM/ha of vetch and 5100 kg DM/ha of oats.

"This result highlights the value of vetch/oats as a standing feed source for grazing animals, as well as its potential for hay or green manuring—with flexibility being key to its place in mixed systems," said Jane.

In mid October, the whole paddock was crop topped with glyphosate, before being mown for hay five days later, in keeping with withholding period requirements.

The vetch and oaten hay was baled on 20 October, yielding 6.5 t/ha, while the brown manured areas, totaling 1.4 ha, were left standing.

Jane explained that residue management is an important aspect of brown manuring, and the farmer used a stubble cruncher in February 2026 to help break down the mass ahead of sowing.

"There was a fair amount of standing brown manure, which took two passes with the stubble cruncher to get through — while this matter hadn't completely broken down by sowing, the farmer didn't report any blockages, noting that dry conditions at sowing probably helped the seeder track through more easily than if the material had been wet.

"By comparing the effects of biomass removal as hay, and biomass retention through brown manuring, the trial is providing insights into how residue management can contribute to soil health and moisture conservation in subsequent seasons," she added.

KEY TAKEAWAYS

The demonstration highlighted how strongly seasonal conditions influence both decision-making and outcomes in mixed farming systems.

While the dry year reduced overall biomass production, which in turn affected the timing and intensity of grazing, the crop functioned well as a feed source. Additionally, good biomass results in ungrazed treatments in mid September reinforced hay or brown manuring as a viable alternative to grazing.

"This supports the idea that mixed species pasture crops such as vetch/oats can provide multiple end-use options for farmers in dry seasons, highlighting the benefits of system flexibility rather than following a fixed plan," said Jane.

LOOKING AHEAD

This demonstration highlights the potential for vetch-based crops to support drought resilience in mixed farming systems.

Successful systems are those that balance competing priorities and adjust to seasonal conditions. By continuing to monitor these treatments over multiple seasons, the project will provide further insight into how these decisions influence productivity, soil health and resilience over time.

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