Multi-species pasture case study

Mark and Roslyn Lambert

Farm overview – The Lamberts

Mark and Roslyn Lambert and their children run a dairy farm at Sunnyside near Sheffield, in northern Tasmania, 300m above sea level. Mark started out on the property in 1996 when he was 18 and has continued farming there for the last 29 years. The total area of the property is 415 hectares, with 212 hectares set aside as the dedicated milking area and 82 hectares of bush and dams.

The farm receives an average annual rainfall of approximately 1,050mm which is supplemented with irrigation. About 71 per cent of the pasture on the dairy platform is irrigated, all from on-farm dams. They began moving away from perennial ryegrass dominant pastures to multi-species pasture mixes a number of years ago.

The soils are predominantly red volcanic ferrosols and are deep, well-draining, high in iron and have a high clay content with good nutrient holding capacity. They are well suited to dairy farming with good year-round pasture production. Peak growth rates occur in late spring, a secondary peak in autumn, and a lull in winter. The rocky nature of most of these soils at higher altitudes is not well suited to tillage or crops requiring tillage.

Mark started out with a herd of 75 Jersey cows on a 40 hectare block in 1996 and since that time has built the herd up to 570 cows. Calving occurs mostly in August/ September but, they now also calve about 40 cows in autumn to supply some winter milk to a local cheesery and an ice creamery.

Why shift to multi-species pastures?

The Lamberts had farmed conventionally until about 12 years ago when a lack of clover and biodiversity in general, combined with high rates of milk fever, prompted Mark to start looking for information on soil health and different pasture varieties. This opened his eyes to the importance of soil pH and the calcium/magnesium ratio. This was a key motivator for change and led them to a biological style of farming. The biological system developed over time and was followed by organic certification.

"Over time we realised we only had to go a little further to become totally organic and get a premium for our milk. I wasn't aiming to be an organic farmer when I set out on this journey. But I am very happy with how we farm now".

The farm has been changed from perennial ryegrass dominant pastures to multi-species pasture mixes. Their typical pasture is now a mix of perennial ryegrass, cocksfoot, prairie grass, chicory, plantain, white red and sub clovers and a range of other minor species (fennel, parsley, yarrow, comfrey, sheep's burnett).

Delivering for Dairy

Annual crops and pastures are avoided due to the higher altitude red volcanic soil having many stones. Hence, they aim for no resowing. However, shallow tillage using discs, power harrow and air seeder are used when needed on the less rocky areas, with seed broadcast and then rolled in on rocky areas.

Soil testing underpinned decisions related to the type and application rate of soil amendments to be used on the farm. Mark commenced the change to biological practices by switching the focus on fertiliser from nitrogen (N), phosphorus (P) and potassium (K) to soil pH and cation balance. Under the organic system, as plant growth stabilised, the time between application of inputs has increased, with fertiliser application generally now every third year.

Following the success of the soil and pasture improvement practices identified above, Mark went on to make further changes, including extending grazing rotations on irrigated and dryland areas, and also introducing standing hay to allow pastures increased time to rest from constantly being cut for hay (Mark has a heavily undulating farm, and hay is generally cut off the same paddocks each year). These practices have allowed multi-species to spread around the farm naturally and have improved performance on hay paddocks.

The rotation length has increased by about 50 per cent. The irrigated pasture is grazed six to sevem times per year with rotation lengths of 33 to 100 days. The dryland pasture is grazed about four times per year, with rotation lengths of 36 to 180 days.

Prior to transitioning to organic farming, Mark was feeding 700-800kg of grain per cow per year. Following the transition this was reduced to 200kg per cow per year and recently removed completely. These days the milking herd is fed only pasture, hay and silage. They make about 700 rolls of hay and 100 rolls of silage each year, which is fed out starting in April and continuing into September when pasture growth rates start to increase.

Key learnings and benefits

Mark has observed that the best paddocks have a similar yield to what they had in a conventional system, but the poorest areas yield better with the change in focus on fertiliser and the multi-species system. The multi-species mix hangs on a month longer into summer and there is still some growth even in the very dry years on the non-irrigated areas.

The changes in farm system have been associated with the following benefits:

- Maintenance of pasture species diversity due to self-seeding of plants which helps minimise resowing and tillage.
- Decreased concerns about weeds such as dock buttercup, dandelion, crow's-foot, cats ear, ragwort, and cape-weed. They can manage weeds through grazing, topping and fertilisers rather than with herbicides.
- Pasture nutritional quality and palatability generally hasn't been a problem. They do top pastures if necessary.
- Observed increase in resilience to climate variability (pasture quality improved during dry seasons and more feed held standing on farm).
- They have been able to irrigate a larger area with the same amount of irrigation water.
- Due to no soil tillage, all paddocks are growing and usable through the winter.
- Improvement in cattle health observed with reduced prevalence of grass tetany and milk fever.
- Less damage from plant pests and disease observed (rust, lucerne flea, cockchafers).
- Increase in soil and farm life including worms, birds and beneficial insects.

Economic Analysis

It is difficult to analyse the impact of the multi-species and biological practices on profit as multiple changes have occurred over the years. In addition to the reduced fertiliser and chemical expenditure, the Lamberts reduced grain feeding dramatically, went to once-a-day milking and received a premium for the milk price upon becoming certified organic.

The key points are:

Income

- Milk production is lower. A shift to once-a-day milking and the removal of grain from the ration are the main contributors to the reduced milk production rather than the shift to multi-species pastures.
- They received a premium for the milk price upon becoming certified organic which helped offset lower milk production.

Costs

- The shift to once-a-day milking reduced labour costs.
- The removal of grain from the ration reduced costs and exposure to fluctuations in grain price.
- The fertiliser and chemical expenditure reduced over time.
- The seed and sowing costs for the multi-species are relatively low in this perennial based minimal tillage system.
- Fodder conservation costs are low with a relatively flat pasture growth pattern.

Combined, these changes support the Lamberts' observation that they have been able to maintain a steady profit over the last 12 years.

> "Profit has been steady through this journey but the enjoyment has increased dramatically".
>
> *Mark Lambert*

Where to next?

The Lamberts never seem to stand still and are already looking well into the future. They have plans to plant more trees on their farm in 'tree islands' of native plants, orchards, European trees and grazing trees as opposed to shelter belts. This will maintain views across the landscape. Tree islands will increase biodiversity, provide shelter and shade whilst improving deep nutrient cycling. The Lamberts have reared replacement dairy and beef calves on the milking cows and are evaluating whether to continue with this. Low rates of molasses feeding will get incorporated into the dairy to improve cow flow, now that grain has been eliminated. And they will probably change from once-a-day milking to three-in-two or ten-in-seven milking styles to increase production from the current once-a-day system.

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