

Regenerative Agriculture Program mixed species demonstration case study: Schaefer, Pinkawillinie



Key messages

- The Schaefer family was no worse off sowing mixed cover crops compared to regenerating burr medic pastures – sheep performed equally well in terms of weight gain across all treatments.
- Mixed pasture species provided more ground cover early, and potentially more height at the end of the season, through more degradation resistant (longer to break down) species such as rye.
- A mixed species pasture did require more management; however, it wasn't more difficult, it was just different. The mixed species provided a longer grazing window compared to the medic and vetch pastures.

Background

Paul Schaefer and his wife Caitlin, along with his parents, sister and brother in-law, farm in the Pinkawillinie district. Their enterprise mix is cropping and sheep on 4,550 hectares. The rotation is typically wheat, barley and medic-based pasture, but some of this is not suitable for all of the land, so they do have a one-third break crop that includes lupins. They run between 1,000-1,200 merino ewes which are joined each year.

The soil types are comprised of deep sandy dune swale soils, with patches of heavier red loams, limestone reefs and granite soils.

The average annual rainfall is 308 mm and average growing season rainfall 211 mm. In 2020, the growing season rainfall was below average for April-September (185 mm), though total rainfall for the year was above average at 340 mm, which included 90 mm falling in late October.



The Pinkawillinie area is between Kimba, Kyancutta, and Buckleboo.

How it all began

Some of the reasons the Schaefer family were interested in investigating the use of multi-species pastures, stemmed from their involvement with a farm business course and benchmarking group, Farm Owners Academy. They were looking at ways to increase their stocking rate but still have good stewardship of the land. Heavy stocking rates on fragile soils with a standard medic pasture can cause soil erosion issues in poorer seasons. As they were looking to increase stocking rates to lift profits in the livestock enterprise, alternatives to a medic pasture were sought. Requirements were increasing biomass, palatability and adaptability to land that's not suited to medics.

What did they do?

The Schaefer family sowed nine plots of 0.35 ha each of three treatments replicated three times in autumn 2020. The treatments were:

- Medic pasture (control)
- Vetch and oats mix (district practice) and
- Pre-mix of triticale, rye, oats, radish, vetch, peas, canola and clover (multi-species).

They used the "RAPPA" electric fencing system on the back of a quad bike to install and shift electric fencing as required, to ensure good grazing management of the treatments. Treatments were grazed at 28 DSE (10 lambs per plot) which is far higher than current management practices.

What worked?

The Schaefer family considered that all of the treatments 'worked' and were surprised how well the multi-species grew. They have land that is sandier and more prone to wind erosion and also unsuitable for medic production so a non-medic option will be useful for them into the future. They used this multi-species demonstration site to see how their wether lambs would perform with the different combinations of species. While the medic performed best, the other species also had good performance and due to timing of fencing unit availability, management of the plots was optimal for the medic and not the other species. They used a mix of triticale, rye, oats, radish, vetch, peas, canola and clover which was bought as a pre-mix rather than mixing it themselves. The mixed species had better cover and height at the removal of grazing. It was surprising to note how much all the plots broke down over summer. A better result could be expected if planting multi-species over a

paddock scale coupled with strip grazing. Data showed that a mixed species approach slightly outperformed the standard oats and vetch mix.



Figure 1. Left: Early emergence of the mixed species treatment in autumn 2020.

Figure 2. Right: The same treatment as Figure 1 in early spring 2020.

What didn't work?

Because of the way the season unfolded on this demonstration site, they couldn't graze the third plots in the trial, which affected the result. They were planning to undertake a hay cut, and then compare the hay yield, but due to weather events while it was cut, it could not be baled and compared. While the premix was good - in that it simplified the exercise - maybe in this environment the amount of rye could be adjusted down so that it didn't dominate the mix too much.

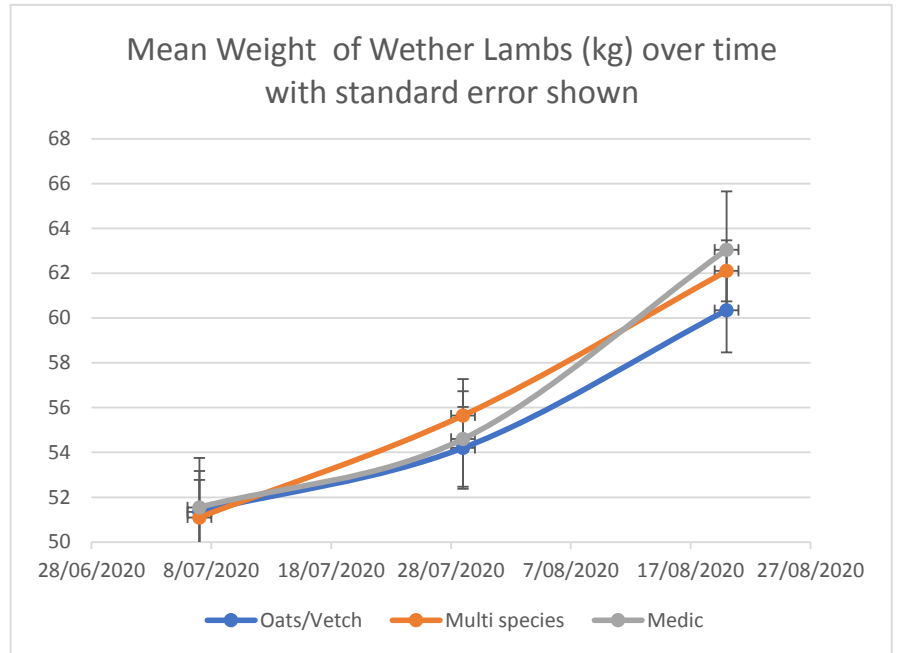


Figure 3. Mean weight of wether lambs (kg) during grazing of treatments in 2020.

What you would do differently if you were to do it over again?

The multi-species pastures had a lot more growth early, but some species flowered and ran to head due to the unseasonably warm July/August. Timing of the loan of the RAPPAs fencing unit meant grazing was optimised for the medic. The multi-species pasture could have been grazed earlier, and so were unfairly compared.



What have you seen or read that you would be excited to try?

Paul is keen to try the use of different vetch varieties like Timok and RM4 on the sandier soils that are less suited to medic production. They have used some vetch/canola sown pastures in the past – in part to get around the issues of high seed costs, particularly on the large scale of land that they operate with – and they would like to use that option more into the future.

Also on the horizon is the prospect of virtual fencing technology, which offers lots of potential to exclude sheep from sandhills, but Paul thinks this might be a way off still.

Figure 4. Monitoring growth of tillage radish in the multi-species mix.

What do you think about the roles a multi-species/regenerative agriculture approach can have in the environments we have on EP?

Paul thinks they could have a role in smaller areas through the winter period, but seed costs probably prohibit large scale adoption. He struggles with the idea of crops grown through summer, and how that impacts water conservation especially in the low rainfall zone. However, Paul does see a role for this kind of approach in his environment potentially where there are 'Mallee seep' soakage areas occurring, to use up surplus water. He is open to the idea but is very cautious in how to best implement this.

The use of sown vetch/canola pasture has been interesting because it can potentially keep the costs down for multi-species pastures when implemented on a larger scale, and while it is not a perfect mix, it's low cost allows it to be implemented on a larger area and allows easier management of grass weeds in the pasture phase.

References

For more information on cell grazing using electric fencing, the [Improving feed utilisation booklet](#) is a good resource.

Farm Owner's Academy:

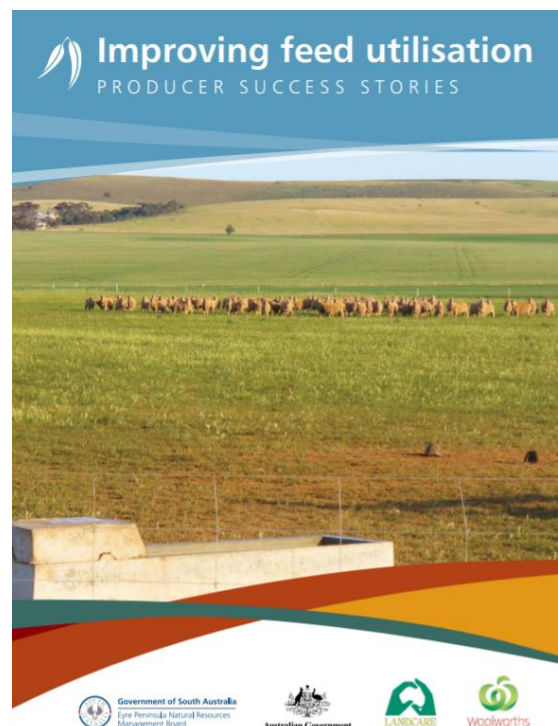
<https://www.farmownersacademy.com/>

Acknowledgements

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