



**Community
Grants Hub**
Improving your grant experience



National Landcare Program – Smart Farms Small Grants Round 2 Project Summary

As part of your funding, the Australian Government requires that you produce a summary of your project so that the community can learn from this investment. This is a short story – no more than two pages that tell the story of the project.

1. In your own words, please describe “what was the problem/issue that this project intended to address and how did you identify the issue?” *If you have a photograph of the area(s) prior to work beginning please include.*

The objective of this project was to turn land that is considered to be of low productivity for cropping into productive livestock pasture via the use of perennial pasture systems, in the low rainfall areas of the upper Eyre Peninsula.

Perennial pasture systems are not widely adopted in this area as there is a lack of knowledge on how to establish a pasture that will persist through dry conditions, and which species are best adapted. The upper EP is a low rainfall area that had recently experienced two seasons with dry starts. Many farmers watched their topsoils blow away during prolonged dry conditions with significant damage on many farms. Soil was exposed during dry sowing of crops and on pastures that did not have sufficient ground cover to stabilise the soil during hot, dry and windy conditions. Most farmers removed their stock completely from their paddocks and resorted to feeding them in containment systems, however many farmers made this decision late, after the erosion damage was done. Crop yields had been low in these drier seasons and grain prices have also been variable, whilst livestock had been very profitable. Instead of sowing land that is of low productivity, which involves the expense and damage to the environment of cultivation and herbicide use and may in a dry year not even generate a crop that is economical to harvest, this project aimed to give farmers the option to establish this land as a permanent pasture system that would potentially be able to generate profit through livestock, even in poor cropping seasons.

2. In your own words, please describe what you did to address the problem/issue– e.g. work/workshops/begin trials. *If you have a photograph of the beginning of the work please include here.*

Two demonstration trial sites were selected based on their low productivity for cropping. One on a grey calcareous soil at Warrambo, and the other on a shallow limestone loam at Minnipa. Plant species were selected based on their suitability for the local rainfall and soil type, seed availability, ability to be included in mixes, nutritional value, palatability to livestock and existing district practices. The species were also selected to include legumes, grasses, cereals, herbs and shrubs. Treatments were the perennial species: Veldt grass, lucerne, chicory and saltbush (unsown); and the annual species: Safeguard annual ryegrass, medic (Toreador disc at Warrambo and PM-250 strand at Minnipa), triticale (Warrambo) and cereal rye (Minnipa). The perennial species were sown as both monocultures and mixtures also containing annual species. The Warrambo site was sown on 23 June and the Minnipa site on 24 June 2020.

3. How did you measure/record your project activities?

Plant establishment and growth was measured through plant emergence counts and a dry matter cut to assess biomass and species composition. These measurements were only completed in 2021 as in 2020 extremely poor plant emergence and establishment meant that I had insufficient plant growth to complete any trial measurements and for them to be a suitable site for farmer crop walk visits. Photographs were regularly taken.

4. What do you think was the most significant outcome of your project?

This project showed that perennial pasture species can grow in the low rainfall environment of the upper EP however establishing them in sufficient numbers to be a productive pasture option is challenging. Weed control strategies must be considered and implemented in the season prior to establishment, and pre-seeding, as there are limited options for weed control in mixed species perennial pastures. With the upper EP's rainfall being predominantly in winter with cold temperatures, annual species may still provide a more productive pasture option even on poorer soils.

5. In your own words please describe any unexpected outcomes of the project

The 2020 sites were sown in late June with rainfall in July well below average, coupled with frosts and very cold overnight temperatures. This resulted in extremely poor plant emergence for all species. Of the perennial species only a few tiny chicory plants were present. The annuals all emerged but growth was very slow, and the Toreador disc medic failed to establish at Warrambo. Due to this poor establishment the decision was made to not sow the saltbush seedlings into the trials in late July as was originally planned.

Although some lucerne and veldt grass plants emerged following the spring rainfall there was still insufficient growth to complete any trial measurements and the pasture plants were not expected to persist into the 2021 growing season. Some of the perennial species at Warrambo did survive until April 2021 but not at high enough numbers to be considered productive.

Due to the poor establishment in 2020, the trials were re-sown in 2021 on 22 April following an opening rainfall, with a modified trial plan. The Warrambo trial was sown on the same site, but a new less shallow and rocky site was selected within the same paddock at Minnipa for ease of sowing.

The cold, wet winter in 2021 favoured the growth of the annual species with only the chicory having emerged when plant counts were completed in early July, however plant numbers were considered sufficient. Unfortunately, the Minnipa demonstration site soon became dominated by barley grass which managed to outcompete even the sown ryegrass. The perennial species all yielded < 30 kg/ha of Dry Matter (DM) and there was no veldt grass present. The annual mix yielded > 1 t/ha. The cereal rye had heavier stems than the other species, which boosted the weight, however the medic and cereal rye (annual species) were still present in greater quantities than the perennial species.

At the Warrambo site the main weeds were broad leaf ones, especially Ward's weed. Plant growth following the plant counts was unable to be measured as the farmer's sheep flock managed to get inside the electric fence and grazed out most of the sown species. There was no triticale left, only small amounts of medic and no veldt grass present. Some lucerne and chicory remained but the DM yield was < 20 kg/ha due to grazing. There was still a lot of ryegrass, but it was impossible to know how much of this was actually background weeds.

Please include any photographs that either show before and after progress or show the finish of the project.



Photos L-R: Annual Mix and Chicory at Minnipa 10 August 2021

