

# Implementing Best Practice Management Grazing Systems for the Low Rainfall Zone

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**Project Title:** OC13-00091 Implementing best practice management grazing systems for low rainfall zone.

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## Key Issues:

- Native grasses have been established on numerous properties, however the project has highlighted difficulties with sowing light fluffy seeds.
- Wallaby Grass established well at several sites, however the dry summers have drastically reduced populations
- The dry springs have not been suitable for the establishment of Windmill Grass and rain in the middle of summer does not appear to favour establishment.

## Project Activities

Funding was received through the Caring for Our Country Program for one year to implement the findings of previous work conducted on the establishment of native perennial grasses in the Upper North.

Broadacre demonstration sites were sown on five farmer's properties and two grazing properties managing over 7500 ha with species that had been shown to be profitable and productive based on previous work. Sites were planted in 2012 and 2013 when conditions were suitable. The sites were monitored for local outcomes including soil carbon, ground cover, surface cover and erosion risk.

Two publications have been developed as part of this project;

- Experiences with sowing native grasses (UNFS Factsheet)
- Establishment of native grasses for seed production in the Upper North

In addition, a you-tube video on the project is also available:

- Biodiversity in low rainfall grazing systems of South Australia <http://youtu.be/7ouJWCdxXA4>

In April 2013 a Grazing Management Field Day was held with 10 farmers and 5 extension staff attending. Feedback from the field day showed that landholders found the information presented about native grasses and the nutritional value the most interesting topics, with the most useful topic being the implementation of rotational grazing on farm. An individual landholder reflected: "I now understand the important role played by native grasses". The workshop gave the attendees a greater understanding of the costs that are required to implement best practice grazing management over their entire property and has enabled them to plan for a staged approach as resources become available on farm, and to investigate alternative fencing options including electric fencing.

Landholders have recognised that pastures, particularly native perennial grasses are beneficial for a number of reasons including their ability to persist, maintain surface cover and improve water use efficiency. Trials of perennial pasture plants in the Upper North found the most suitable species for low rainfall areas of South Australia were: C4 grasses - Windmill Grass (*Chloris truncata*) and Black-head Grass (*Enneapogon nigricans*); C3 grass - Wallaby Grass (*Austrodanthonia* species); and the legume Annual Medic (*Medicago littoralis* cv. Angel).

## Success of Plantings

Seasonal conditions in 2012 were not favourable for the establishment of native perennial grasses. A small area (0.5 ha) of Wallaby Grass was sown in June, however it failed to establish due to the

dry cold conditions. With very limited stored soil moisture and no significant spring rainfall it was decided not to sow the C4 summer active native grasses. This was a good decision as sufficient follow up rainfall did not occur during spring and summer.

In 2013 light falls of rain were received in late April, however this was not considered sufficient to allow sowing. Follow up rain was received in late May and Wallaby Grass was sown soon after these rains. Establishment has been relatively good at most sites with adequate plant numbers.

Three demonstration sites were monitored for perennials both prior to establishment and 5 to 6 months after establishment. All three sites had increases in the number of perennials but only sites 1 and 3 were significantly higher (Figure 1).

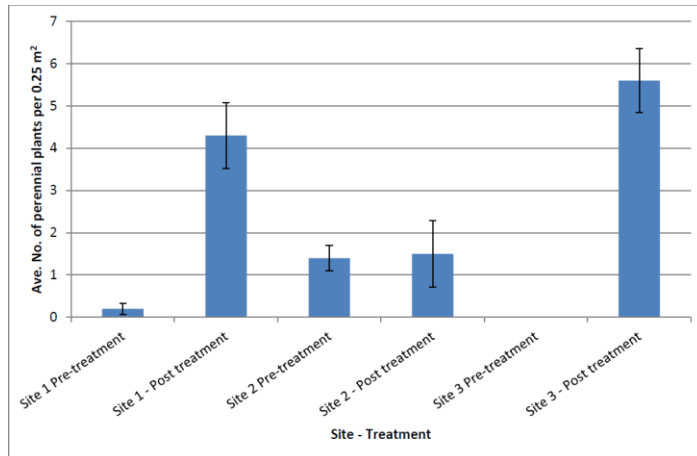


Figure 1: Average number of perennial plants per 0.25m².

The results at both sites 1 and 3 were above expectations with numbers higher than necessary to achieve a productive stand. Site 2 had high levels of Onion Weed, which had been controlled prior to planting with good success. Following establishment with Wallaby Grass in May there was a good germination of seedlings by July, however a further germination of Onion Weed seedlings competed with the newly emerged seedlings and by November the numbers had fallen.

## Establishment Methods

Following several establishment trials using a range of machines and techniques in the Upper North, spreading the seed on the soil surface has proven to be as reliable as most other techniques. It is important to have good weed control before spreading seed and there needs to be adequate soil cover to protect the germinating seed and stop the soil surface drying out.

## Grazing Management

Management of established native grass pastures should be by a form of rotational grazing. Particular care needs to be taken in managing newly established plants, due to the low levels of soil cover, newly establishing roots and high palatability. One landholder endorses this cautious approach to grazing newly established grasses; “both Wallaby Grass and Windmill Grass are preferentially grazed by livestock when green and actively growing. Redgrass is also highly palatable when green, but becomes less palatable as it starts to run up to seed.”

The goal for the composition of a native grass pasture is:

- Productive perennial grasses (60-70% cover)
- Legumes (20-30% cover)
- Weeds (<10% cover)
- Low or little bare ground (<10% bare ground)

The resulting pasture is productive, stable over time and minimises weed invasion.

Once pastures are established, implementation of rotational grazing will allow pastures to grow and restore energy reserves before the next period of grazing. In cereal/livestock areas such as the Upper North, 60 days of recovery may be required during rapid pasture growth; and recovery periods of 120 days may be required during periods of slow pasture growth. One landholder commented that “the drier season last year (2012) combined with grazing halted their (native grasses) chance to gain bulk” indicating the need for a longer rest period in phases of slow growth.

## Seed production and recruitment

For maintenance of a native pasture, or when one is being newly established, maximum levels of seed set are desired therefore native perennial grasses must be allowed to flower and set seed at least once every spring or summer. This can be achieved by:

- Reducing stocking rate or removing stock during the stem elongation, flowering and seed-set stages of the native grasses.
- Further summer and/or early autumn rain will give additional growth and this can be grazed without too much effect on seed set before the new growth becomes rank and of low feed quality.

## Establishment of annuals

Following successful establishment of native perennial grasses (6 to 12 months after sowing) other annual species can be sown into the pasture to improve winter / spring productivity. Trials have shown that a mix of Wallaby Grass and Annual Medic provides a highly productive, quality pasture. Annual medic can be either sown into the established native grass pasture with a disc or knife point machine or seed spread on the soil surface. The application of paraquat before sowing will control other annual weedy species, with minimal impact on the native perennial grasses. Once established the annual medic will regenerate and the perennial grass combined with appropriate grazing will keep annual grasses at low levels.

## Availability and cost of seed

One of the most limiting factors in the broad acre adoption of native grass pastures is the availability and cost of native grass seed. The native grass industry in Australia is currently comprised of a few growers, mostly with small areas of production, in scattered locations around the country. Production of native grass seed is currently variable and only a fraction of the production output of existing exotic grass seed industries.



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