

Shrub-based Grazing Systems for Low-Medium Rainfall Zones (Enrich Project)

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RESEARCH



Location: Elbow Hill
Scott Williams

Rainfall
Av. Annual: 280 mm
Av. GSR: 190 mm
2009 Total: 210 mm
2009 GSR: 163 mm

Soil Type
Strongly alkaline clay/loam and highly saline

Plot size
1 ha (50 m x 50 m x 4 reps)

Limiting Factors
Magnesia soil constraints and limited rainfall

Location: Streaky Bay
Tim Hollitt

Rainfall
Av. Annual: 378 mm
Av. GSR: 300 mm
2009 Total: 447 mm
2009 GSR: 400 mm

Soil Type
Strongly alkaline clay/loam and highly saline

Plot size
1 ha (50 m x 50 m x 4 reps)

Limiting Factors
Magnesia soil constraints

Location: Minnipa Ag Centre

Rainfall
Av. Annual: 345 mm
Av. GSR: 260 mm
2009 Total: 421 mm
2009 GSR: 333 mm

Soil Type
Strongly alkaline clay loam

Plot size
1 ha (50 m x 50 m x 4 reps)

Key messages

- **Grazing perennial native shrubs are being trialled on Eyre Peninsula.**
- **Three sites established, Elbow Hill, Streaky Bay & Minnipa.**
- **Perennial native shrubs could potentially help fill the summer-autumn feed gap while providing other benefits such as drought management, nutritional value, reduced soil erosion, carbon sequestration and in some species fodder production in a saline environment.**
- **Increasing ground cover in low-medium rainfall farming systems.**

Why do the trial?

The aim of this trial is to identify alternative grazing systems that are both sustainable and profitable in low-medium rainfall zones where cropping is no longer viable due to high risks and changing climatic conditions. Farming properties in marginal cropping areas are in need of good quality stock fodder reserves that can sustain ground cover over that crucial summer period.

In 2006 the Cooperative Research Centre (CRC) "Flora Search" program, established a site at Monarto, SA using native shrubs to research multi-purpose, healthy grazing systems. Future Farm Industries CRC (FFICRC) approached the Eyre Peninsula Natural Resources Management Board (EPNRM) in 2008 to locate a farming group to fast track and further expand this research into grazing perennial shrubs.

How was it done?

A group of farmers on Eastern Eyre Peninsula was approached in 2008, leading to the establishment of an Enrich site at Scott Williams'

property, Elbow Hill, 13km south of Cowell. Extra funding was accessed, enabling two further sites to be established in 2009, one at Tim Hollitt's, Streaky Bay and the other at the Minnipa Agricultural Centre.

From a potential 50 species of native shrubs, already trialled at Monarto, Jason Emms SARDI research officer for FFICRC, selected 15 mainly native perennial shrubs, for each site. The three sites are 1 ha in size, divided into 4 replicated plots of 15 species x 36 plants each.

Sites where sprayed and ripped to facilitate a soft weed free environment for tube stock planting and unlike Elbow Hill in 2008, the sites at Streaky Bay and Minnipa in 2009 had excellent soil moisture at planting, thus improving survival rates.

What happened?

While most areas across EP had good seasonal rains, Eastern EP around Cowell again struggled to produce sufficient stock fodder and ground cover due to a lack of rainfall. This has led to another year of well below average available soil moisture, further compounding the magnesia (dry saline) affected soils in this area. Most shrubs, however, have survived (up to 80%) through another tough year and due to establishing ground cover in-between the rows earlier in 2009 should not be subject to any more sand blasting as in 2008. Shrub growth range is varied, with species ranging from a stunted 20 mm to 1 metre in height, as indicated by canopy volume (Table 1). This will pose some issues when the trial grazing commences in autumn next year and will need to be closely monitored to avoid some of the shrubs being over grazed.

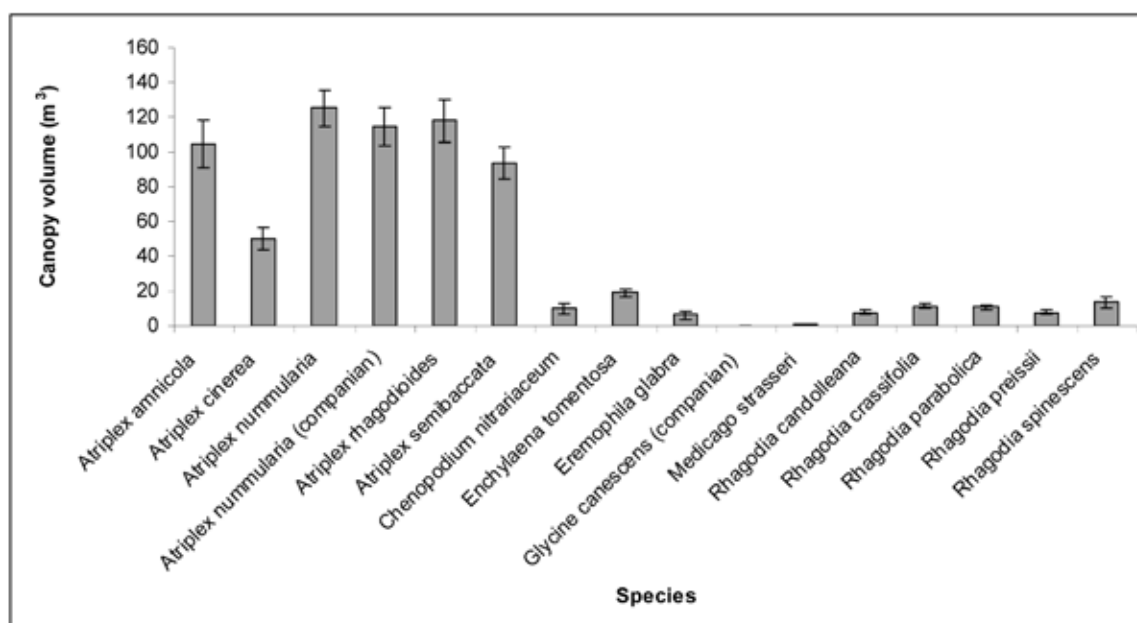


Table 1 Average production (expressed as canopy volume) of the perennial forage species at Elbow Hill in April 2009

Shrub canopy measurements were again undertaken in November 2009, with limited growth on a large variety of shrubs being observed, due to below average rainfall during the growing season.

Standout shrubs to date are most of the *Atriplex* saltbush species.

What does this mean and where to from here?

Shrub measurements and leaf material will be collected to test for nutritive value, anthelmintic (parasite/worm expelling) activity and for effects on rumen fermentation in the anticipation that some of these shrubs may have other secondary grazing attributes. Each plot will be grazed

at Elbow Hill in May 2010 to a uniform level, around 80% of their leaf material while at the same time monitoring grazing preferences of each of the species. The other two sites will be monitored throughout the coming year and grazing and measurements of those sites will commence in autumn 2011.

Further evaluation of shrubs will be required before recommendations can be made about what shrubs are suitable for this feed base.

With the development of these and other sites across southern Australia, some of the challenges faced when developing a shrub-based grazing system may be overcome. While shrubs are

not the complete answer and livestock require a balanced diet, this research along with other “best practice” land management and farming systems has the potential to increase soil cover, thus reducing erosion on some of EP’s more vulnerable soils.

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