Eyre Peninsula Grain & Graze 2

Summary

The Eyre Peninsula (EP) Grain & Graze 2 (G&G2) project, jointly funded by GRDC and Caring for Our Country, developed and promoted the adoption of production practices in mixed farming systems to improve whole-farm profitability and sustainability. Growers were equipped with decision-making skills and shown how to identify profit drivers by participating in grower forums (sheep groups). Research and extension into grazing cereals, the impact of livestock on soil health and the investigation of suitable perennials for Eyre Peninsula was undertaken to further assist growers with decision making, filling feed gaps and maintaining soil cover.
Outcomes

Objectives

The project objective was to provide information to develop management tools that improve productivity of mixed farming systems on EP. The work focused on assessing the potential contribution from grazing winter cereals on the productivity and sustainability of farming systems and the value of perennial species in areas constrained by poor soils and low rainfall.

Proposed practice changes:

* Increase the number of growers sowing cereals for multi-purpose use.
* Increase use of perennials on less productive soils.
* Increase in the number of growers adopting improved grazing.

Background

In 1994-95, sheep were part of 94% of farm businesses on EP. This declined to 73% by 2006-07 with a 488,000 fall in sheep numbers because of a combination of improvements in crop agronomy, increased use of break crops, higher grain prices, drought, declining livestock prices, use of no-till sowing and consequent intensification of cropping systems, particularly on Lower and Eastern EP. But input costs increased considerably and, when coupled with greater machinery investment, businesses that reduced livestock numbers substantially, and focused more heavily on cropping, were at greater financial risk.

The EP G&G project showed that a mixed farm with a well-managed livestock enterprise could be as profitable as a continuous cropping business for most districts across EP, and carried less risk. There is a role for EP G&G2 to continue to improve the understanding of profit drivers and whole-farm finance of EP businesses, and to ensure the livestock component is well-run and can complement, not hinder, cropping programs and practices, such as no-till.

Research

Finding suitable forage shrubs for Upper EP:

Supported by the national Cooperative Research Centre (CRC) Future Farm Industries' Enrich program, the project has shown that it is best to have mixed species stands of forage shrubs, rather than single species. A mix of Atriplex nummularia, R. preissii, A. semibaccata, Eremophila tomentosa.
and *A. amnicola* has been the most productive, calculated by plant establishment, biomass, persistence and palatability. As a progression, three direct seeding trials to investigate low risk/low cost perennial establishment methodology were sown from 2011-2013 with the most productive perennial forage shrubs selected from the results of two of the trial sites. Production and persistence will be monitored on these sites and grazing in their second year of growth will allow further assessments of grazing preference.

**Finding suitable annual and perennial species for grazing on EP:**

Establishment of a trial to evaluate the potential of alternative herbaceous perennials (sulla, tedera and cullen), as alternatives to lucerne, started in 2009 with four sites sown, encompassing low to high EP rainfall zones and alkaline to acidic soil types. After four years of evaluation, it has been established that lucerne is well-adapted to the better, deeper cropping soils on EP. But it lacks persistence on the shallow soils, compared to tedera (well-adapted in neutral to acid soil types) and cullen (more alkaline soil types). Sulla was highly productive on the neutral to alkaline soil types and well-adapted to a two to three year break in an intensive cropping system, not necessarily as a longer term crop replacement on retired cropping land. The slow rate and lack of commercial development of tedera and Cullen, respectively has meant there has been little opportunity to promote the species as alternative pastures. As a result of the project, Sulla has been included in crop rotation studies as a phase pasture and is being assessed as an alternative break crop - with weed control and animal production benefits - to annual pastures.

**Filling the autumn feed gap with cereals:**

A number of grazing cereal trials and demonstrations were conducted throughout the project. Rules of thumb for grazing cereals have been developed for the low rainfall areas, with more work required on refining those rules.

**The impact of livestock on soil health:**

Grazing has benefitted production and soil health outcomes.

### Achievements/Benefits

**Outcomes**

The following changes in practice were recorded as a result of the EP Grain & Graze 2 project:

* 304,781ha of enterprise selection, location and interaction are informed using land capability assessment compared with 2009 levels.
* 16,454ha additional area of perennials species grown on marginal cropping land or as part of a crop rotation.
* 181,140ha of land is managed to enhance the capture and storage of rainfall in the soil through the use of grazing cereals.
* 122 more growers use improved land class knowledge to adopt practices and enterprise mixes more appropriate for the land class and climatic conditions (increased percentage of all crop grown on more suitable crop land).

Growers adjust livestock numbers, duration, intensity of grazing and using other feeding regimes (containment areas) to improve profit while maintaining groundcover targets. The number of growers not using strategies to improve usage of the whole-farm feed base declined from 72 to 61. There was a shift to using even more strategies from 2010 to 2013.


These practice changes are providing economic, environmental and social benefits for mixed growers on EP.

Farm results: increase in profitability of $9.6 million annually, or $38.4 million over the life of the project (2010 to 2013).

*Source: Nicholson, Outcomes of the Grain & Graze 2 program (2010 to 2013).*

**Overview of achievements:**

**Other research**

**Research and development opportunities**

Further investigate the impact of livestock on soil health and production in high and low input situations.

The Enrich sites provided excellent information to assist with forage shrub selection and management, but establishing shrubs from seed appears one of the major hurdles in the further adoption of forage shrubs.

**Additional information**

**Booklets:**

- Use of Saltbush and other Perennials on EP: Joint publication with EPNRM, RSSA, EP G&G 2
- Changing land management to increase ground cover - Producer Surface Stories: Joint publication with EPNRM, RSSA, EP G&G 2.
- Feed budgeting and Ground Cover Workbook.

**Conference papers**

- EPFS Summary articles:
  - Crettenden, J and S Holbery (2013). Identifying causes for lamb losses in low rainfall mixed farming regions. EPFS Summary...


Ashton, B (2013). Livestock options in dry times. EPFS Summary 2012: 134