

Improved perennial pastures for Kangaroo Island

Background

A number of years has elapsed since replicated pasture trials have been undertaken on Kangaroo Island. The last were the SGS trials sown in 2001, where only a limited number perennial species were sown. In addition, some observational plots were sown at Tremaine's in 2004 and 2005, and these results were reported in the 2006 KI Agricultural Trials booklet, along with a final result from the SGS trials following 5 years of grazing.

The Kangaroo Island Natural Resources Management Board is keen to promote the sowing of persistent perennial grasses on Kangaroo Island properties to:

- improve ground cover in late summer, autumn and winter, and to
- increase pasture water use to minimize soil acidification and salinisation.

There is a large range of new perennial grass cultivars potentially suited to Kangaroo Island soils, so Rural Solutions SA, with funding from both the Kangaroo Island Natural Resources Management Board and a SA Government community Land care grant, undertook to evaluate as many perennial (and some annual) pasture cultivars as possible.

What was done

Three replicated trial sites were established in May 2009 on the following properties, covering three major soil and rainfall zones:

- Merve and Marilyn Tremaine, Playford Hwy: Parndana ironstone plateau soils with 600 mm rainfall
- Dale Paxton, off Harriet Road, Vivonne Bay: waterlogged acid sandy soil with 650 mm rainfall
- Simon Murton, Johncock Road, Stokes Bay: shallow loam soil derived from shale and sandstone with 700 mm rainfall.

Tremaine's and Paxton's pasture cultivars were direct drilled using Bill Roper's Connor Shea Baker Boot seeder, following a knockdown glyphosate herbicide spray. Plot size is 50 m long x 2.2 m wide, whilst Murton's cultivars were direct drilled using their own seeder with a 9 m x 100 m plot size.

Establishment was successful, and trial paddocks were grazed several times during the 2009 growing season, then spelled over summer 2009/2010.

The focus was on evaluating as many cocksfoot cultivars as possible, cocksfoot being tolerant of acid soils with moderate to good summer drought tolerance. Several other perennial species were also sown, along with some newer annual legume species.

All the seed was donated by the following companies:

- Yankalilla seeds
- Stephens seeds
- TasGlobal seeds
- Seed Force
- Cropmark
- Seed Distributors
- Pristine Forage Technology.

Funding has covered the costs of establishment and assessment for year one, but further funding is required for on going monitoring for persistence and productivity.

TABLE 1
Cultivars established

Tremaine	Paxton	Murton
Porto cocksfoot	Porto cocksfoot	Porto cocksfoot
Megatas cocksfoot	Megatas cocksfoot	Megatas cocksfoot
Sendace cocksfoot	Sendace cocksfoot	Sendace cocksfoot
Uplands cocksfoot	Uplands cocksfoot	Uplands cocksfoot
Laserly cocksfoot	Laserly cocksfoot	
Vision cocksfoot	Vision cocksfoot	Exeltas grazing brome
Oxen cocksfoot	Oxen cocksfoot	
Exceltas grazing brome	Exceltas grazing brome	Seaton Park sub clover
Fletcha tall fescue	Fletcha tall fescue	Campeda sub clover
Landmaster phalaris	Landmaster phalaris	Coolamon sub clover
Sirosa phalaris	Sirosa phalaris	Goulburn sub clove
One 50 AR1 perennnial ryegrass	One 50 AR1 perennnial ryegrass	Urana sub clover
Hercules plantain	Hercules plantain	
Tonic Plantain	Tonic Plantain	
Puna chicory	Flairdale lucerne	
	Puna chicory	
Gosse sub clover	Gosse sub clover	
Campeda sub clover	Campeda sub clover	
Coolamon sub clover	Coolamon sub clover	
Goulburn sub clover	Goulburn sub clover	
Napier sub clover	Goulburn sub clover	
Denmark sub clover	Paradana balansa clover	
Leura sub clover	Taipan balansa clover	
Riverina sub clover	Viper balansa clover	
Trikkala sub clover	Arrotas arrow leaf clover	
Ovaflow sub clover	Common Cefalue arrow leaf clover	
Paradana balansa clover		
Taipan balansa clover		
Viper balansa clover		
Arrotas arrow leaf clover		
Common Cefalue arrow leaf clover		
Flash persian clover		
Maral persian		
Serratas french serradella		
Cadiz french serradella		

Results

All varieties were successfully established at each site. Being first year pastures, there was no point in measuring year one dry matter production. Also, differences in persistence will not be apparent for at least one summer, with

preferably at least 5 summers required to evaluate persistence.

Hay production: there is interest in first year production from annual legumes for hay production. For this purpose, first year production was

estimated at Tremaine's using a plate meter on 27 October 2009. Results are shown in Table 2.

TABLE 2

Dry matter production 27/10/2009 at Tremaine's from some legumes estimated using a plate meter. Not analysed statistically. All figures rounded to nearest 100 kg. All other legumes recorded < 2000 kg/ha dry matter at 27/10/2009

Cultivar + maturity	Kg/ha
Paradana balansa mid flowering	6000
Taipan balansa mid flowering	6000
Viper balansa late flowering	5000
Flash persian mid flowering	5000
Napier sub clover late flowering	4000
Gosse sub clover mid/late flowering	3600
Campeda sub clover mid/late flowering	3200
Goulburn sub clover late flowering	2600
Trikkala sub clover mid flowering	2400

Funding/Sponsors

- KI Natural Resources Management Board
- SA Government Community Landcare grant
- Yankalilla seeds
- Stephens seeds
- TasGlobal seeds
- Seed Force
- Cropmark
- Seed Distributors
- Pristine Forage Technology

Take home messages

- Large range of cocksfoot cultivars trialled at three sites: Vivonne Bay, Parndana and Stokes Bay
- Trials will be rotationally grazed
- Persistence and productivity will be monitored over several years, subject to further funding.

For further information contact

Tim Prance, Rural Solutions SA, Victor Harbor on 0427 812 655 or email tim.prance@sagov.au