

# SGSL TRIAL SITE SUMMARY #11b



## PASTURE LEGUMES FOR SALINE SOILS ON YORKE PENINSULA

### Southern Yorke Peninsula Alkaline Soils Group, SA

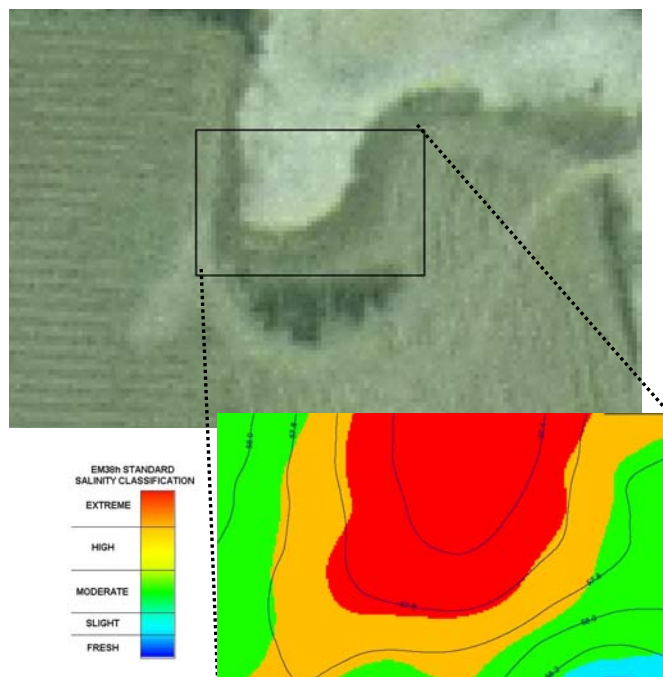
#### Research Objectives

To establish pasture legumes and other pasture species on increasing levels of salinity in soils adjacent to cropping land.

To evaluate the performance of pasture varieties in varying levels of soil salinity.

#### The Trial

- This site (John Voigt's property) was one of two sites in the district trialling pasture varieties on saline land.
- In 2003 a range of species including clovers, medics, lucerne, serradella, vetch, melilotus, puccinellia and tall wheat grass were sown. The site was also sprayed for reg legged earth mite control in 2003.
- Each plot ran across ground of varying salinity, which could be broadly classified into 3 zones:
  - Sand over clay ryegrass zone (low salinity),
  - Sea barley grass zone (moderate salinity), and
  - Scalded zone (high to extreme salinity).
- In 2004, pastures were monitored for regeneration. Species were rated in terms of growth, seed production and salt tolerance.
- Strips of 'Eco-shelter' pig manure were also applied in 2004.
- In 2005, pasture species were monitored for regeneration and growth.
- 2 control plots (worked and unworked) were also included to assess the presence of volunteer pastures and weeds.



*Aerial photo & EM survey.*

#### Fast Facts

**Location:** Stansbury Scrub (near Yorketown), Yorke Peninsula

**Soil Type:** Sand over clay, calcareous at depth

**Rainfall:** 600mm

**Pasture Base:** Various pastures trialled, on previously undeveloped saltland

**Landscape:** Discharge area in internally drained dune system. Salinity increases downslope into discharge area.

#### Results

- Puccinellia has thrived on scalded areas. Fertiliser/ mulch in the form of pig manure improved puccinellia establishment in marginal

scald areas. In extreme salinity bare areas puccinellia failed to establish.

- Tall wheat grass has established well in the moderate salinity sea barley grass zones, performing better in these areas than puccinellia.
- Scimitar and Santiago medics regenerated very well on the sand over clay soil. Scimitar medic may be a better competitor than ryegrass on these areas. However they have not tolerated conditions in the saline areas.
- *Medicago arborea* and *Melilotus albus* were present with a small number of plants amongst the sea barley grass areas. *M. albus* had good late season growth (still green and yet to seed in Nov 2003). *M. sulcatus* also had good growth.
- Pastures that were surviving in 2004 (from both sites) were rated in terms of growth, seed production and salt tolerance (see Table).
- Dry conditions in spring 2004 stopped seed set in many of the annuals, preventing ongoing regeneration.
- This highlights the importance of good seed set in the first year when relying on ongoing regeneration to establish annual varieties.



Adjacent trial plots running up the salinity gradient.

**Performance of surviving varieties (in 2004)**

Cultivar / variety	Growth	Seed set	Salt tolerance
Puccinellia	2	4	5
Tall wheat grass	1	2	4
<i>Melilotus sulcatus</i>	3	3	3
Survivor lucerne	1	0	3
Eureka lucerne	1	0	3
Palestine strawberry clover	1	0	3
Frontier balansa clover	5	4	2
Zulu arrow leaf clover	3	2	2
Res B persian clover	2	2	2
Lightning persian clover	1	1	2
Morbulk persian clover	1	1	2
Morava vetch	5	4	1
SARDI Rose PC10 clover	2	3	1
Prolific persian clover	2	1	1
Santarini seradella	2	1	1
Cadiz seradella	2	1	1
Santiago medic	4	4	0
Cavalier medic	4	4	0
Scimitar medic	4	4	0
Parabinga medic	3	4	0
Antus subclover	4	1	0
Toreador medic	1	1	0

[5 = best, 0 = poorest]



General view of the trial site.



'Eco-shelter' pig manure being spread on the salt scald.

**Want to know more?**

**Participating Host Farmer:**

John Voigt

**Technical Support:**

The Late Trevor Dillon; and

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