



Encouraging producers to determine their own research priorities, participate in the research, share their findings and realise the potential of salt affected land

Sustainable Grazing on Saline Lands

Final Report
Victorian & Tasmanian Program
November 2006

Sustainable Grazing on Saline Lands Final Report Victorian and Tasmanian Program

Published by the Victorian Government Department of Primary Industries

PB 105 Hamilton Victoria Australia 3300

November 2006

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Authorised by the Victorian Government
1 Treasury Place, East Melbourne, Victoria 3002 Australia

Printed by DPI Hamilton Centre

ISBN 1 74146 857 4

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Sustainable Grazing on Saline Lands

A collaborative initiative between wool producers, industry bodies and agencies to better understand the value of saline lands.

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Executive Summary

Sustainable Grazing on Saline Land (SGSL) is a sub-program of Land, Water & Wool, a joint investment by Australian Wool Innovation Limited and Land & Water Australia with support from Meat & Livestock Australia and the Victorian Department of Primary Industries. Its aim has been to research profitable and sustainable use of land that has been affected by dry-land salinity.

The producer component of the program has encouraged and supported woolgrowers and meat producers keen to undertake their own investigations and to develop the confidence to adopt appropriate agronomic, grazing and land management initiatives for sustainable grazing on saline land. The initiative was established to work cooperatively with existing groups of producers (such as BESTWOOL groups, farm management groups, Grassland Society groups, LANDCARE groups, and similar grazing-industry groups).

The Victoria/Tasmania Producer Network Committee through its oversight, coordination and administration of the project, supported the successful establishment of 20 research/demonstration sites in the two states.

The project has been very successful in several major respects. All of the participating grower groups identified and directed the nature of the research or investigation, so the work that was undertaken was directly relevant to their needs and the problems faced in managing their saline land. All of the host farmers and significant numbers of the group members associated with each site developed increased confidence and ability in the effective management of their saline land. Many also indicated that they had already instigated changes to improve their saltland management as a result of participation in the SGSL Network Project.

Recommendation: That the amount of site characterisation information required from sites prior to establishment be limited. The committee considered that the extent of the characterisation, particularly the EM38 scan was, of a higher level than required for the program and the funds may have been better used elsewhere within the program. In future, site characterisation should be done with a greater consideration of the immediate value to growers and the opportunity costs associated with the investment.

The inclusion of Tasmania in the project at a relatively early stage is seen as an important success of the project. Salinity in Tasmania has gained a higher profile through engaging Tasmanian landholders and extension staff in the program.

Recommendation: The planning of any potential 'SGSL2' program should ensure that representatives of Tasmania are included on the Producer Network Coordinating Committee.

To achieve effective on-farm trial designs and establishment, considerable technical and 'facilitatory' support is required.

Recommendation: Allow for site monitoring to be undertaken by technicians in conjunction with landholders.

Recommendation: Ensure early establishment of committee prior to the expected time of program commencement in order to allow sufficient time for proper planning.

Recommendation: Devise an extension process that will take SGSL and other products directly to the potential users.

Recommendation: That networking between groups be formalised in order to promote information transfer and exchange of ideas and technologies. There was no formalised process to encourage networking between groups which is seen as being potentially beneficial. A state forum with a format similar to the national forum would be a method of achieving this recommendation.

Recommendation: Some producer sites through either late commencement or current good quality data availability require continued monitoring to realise the full benefit of the investment.

Recommendation: That further research be conducted into the interaction between native pastures on saline land.

Recommendation: That the wool and natural resources industries use the good news generated by the program and that this good news be promoted widely. The term 'farmers fixing the environment' could be used.

Other General Recommendations: There is overwhelming support for the continuation of SGSL and the following issues should be considered in the planning of any potential 'SGSL2' program.

- An 'SGSL2' committee should have some members from SGSL1
- 'SGSL2' should continue to gather data from some SGSL1 sites.
- 'SGSL2' committee should include producers with a proven record of productive and profitable farming and a high level of NRM and/or salt land management capability.
- 'SGSL2' should consider engaging with Rural Training Organisations during the planning of the program.

Products

As part of the effort to meet the objectives of the program the committee is directing the development of products which may be used directly with producers or available to extension personnel for use in their extension programs. Two products are under development by the committee; an update of the DPI AgNote series and a Victoria/Tasmania Sites Booklet.



Sustainable Grazing on Saline Land (SGSL) Producer Participatory Research and Development in Victoria and Tasmania

Background

Sustainable Grazing on Saline Land (SGSL) is a sub-program of Land, Water & Wool, a joint investment by Australian Wool Innovation Limited and Land & Water Australia with support from Meat & Livestock Australia and the Victorian Department of Primary Industries. Its aim has been to research profitable and sustainable use of land that has been affected by dry-land salinity.

The producer component of the program has encouraged and supported woolgrowers and meat producers keen to undertake their own investigations and to develop the confidence to adopt appropriate agronomic, grazing and land management initiatives for sustainable grazing on saline land.

Profitable and sustainable management of saline land is a challenge that has become more important as the impact of salinity has become more widespread. The aim of this program has been to take some of the guesswork out of salt-land management, including how affected land might be integrated into farming systems.

By initiating their own research, woolgrower and meat producer groups have been able to ensure that it is:
Relevant to their particular needs;
Appropriate to their local conditions; and
Appropriate to their local knowledge and experience.

Objectives of the SGSL Producer Network Project in Victoria and Tasmania

- Provide support for a woolgrower and meat producer network (SGSL Victoria/Tasmania) to access, understand and apply information and technology related to the profitable and sustainable use of saline land.
- Facilitate communication links between SGSL groups and between the groups and associated salinity R, D & E initiatives in Victoria and interstate.
- Foster a participative, producer-driven approach through
 - Identifying key producer issues relating to grazing saline land,
 - Exploring producer-nominated options and solutions,
 - Building on producer knowledge and experience,
 - Demonstrating and promoting farm practice change.
- Contribute to the core SGSL objectives of:
 - More profitable and sustainable grazing systems on saline land
 - Improved environmental outcomes from grazing saline land
 - Increased pride of growers in their product, production system and property

How the Program Operated in Victoria and Tasmania

- Groups were invited to submit a simple Expression of Interest to the Project Officer outlining the research they were keen to undertake.
- A 'Producer Network Committee' assessed the Expression of Interest.
- The Project Officer and a farmer member of the Network Committee visited promising applicant-groups to assess the site, and the project, first-hand.
- Successful groups were contacted to further discuss details of the research, including data collection, monitoring and reporting procedures with technical advice being provided where needed.
- The group then implemented the research project.

Eligibility

This initiative has been established to work cooperatively with existing groups of producers (such as BESTWOOL groups, farm management groups, Grassland Society groups, LANDCARE groups, and similar grazing-industry groups). The Committee did not expect new groups to be set up for this program. Individual farmers who were not part of an existing group were encouraged to join the SGSL network to have access to research findings and extension information, but were not eligible to host a research project on their own property.

The Network Committee

The Producer Network Committee was formed from:

- Landholders representing the wool and meat production stakeholders and grazing industry interest groups.
- Department of Primary Industries, and A representative of the national project.

This committee made recommendations on which projects should be supported and provided leadership and direction for the overall project in both Victoria and Tasmania.



Support to Groups

The groups had access to some support from technical specialists to assist with the design, implementation and analysis of the research. In the initial Expression of Interest they also applied to the Network Committee for financial support to help with the implementation and running costs of the research.

Projects varied in size and cost and were assessed by the Committee on the basis of their value for money. Each project (group) was offered an average amount of approximately \$10,000 over the life of the project.

What was expected from producers?

The producer groups were expected to drive the direction of the research and undertake the work to establish and manage the research site and treatments.

They were also expected to:

- Provide records of site-history
- Maintain an accurate record of site treatments and the management regime
- Collect some of the site data that was appropriate to the group's research question. (eg. pasture production or animal production based on measurements such as visual assessment of pasture and grazing-days.)
- Keep site rainfall records.
- Be prepared to host field days or other extension activities on the site.

What was expected from the SGSL project team?

The SGSL team:

- Provided support to the group to help ensure that sites were established in a way that enabled collection of valid results.
- Undertook a comprehensive characterisation of each Network site (soil profile, salinity levels, water table depth, soil/site map, landscape position, vegetation etc).
- Assessed the value the participating farmers derived from the project/site;
- Analysed costs benefits and significant processes associated with selected site treatments.



Site Results

1. Site Number and Project

1. Table 1. SGS L Producer Network Sites – Victoria and Tasmania.

Project No.	Group Name and Site Location	Project Title
1A	Jallukar LandCare Group Site Location: 20 Km WNW Ararat. Vic.	Comparison of Lucerne and Salt Tolerant Pasture Species on Saline Land
1B	Jallukar LandCare Group Site Location: 20 Km WNW Ararat. Vic.	Investigate the success of establishment of improved salt-tolerant pasture species on saline land.
2	Agricultural Resource Management Action Group Site Location: 15 Km WNW Kerang. Vic.	Grazing Management of saltbush in saline affected land in the lower North Central Region
3A	Murdeduke (Greening Aust) Site Location: 10 Km NW Winchelsea Vic.	Investigating environmental and agricultural benefits of grazing salt tolerant vegetation.- Grazing Management and Stock Health
3B	Murdeduke (Greening Aust) Site Location: 10 Km NW Winchelsea Vic.	Investigating environmental and agricultural benefits of grazing salt tolerant vegetation.- Managing saltland classes
4	Whiteheads Creek Site Location: 8 Km NNW Seymour Vic.	Evaluating Pasture Species suitable for Saline Land in the Whiteheads Creek Catchment
5A	Woody Yaloak Catchment Group Inc. Group 1 Site Location: 30 Km WSW Ballarat Vic.	Quantifying salinity discharge treatment impacts in the WY Catchment – Pittong site.
5B	Woody Yaloak Catchment Group Inc. Group 1 Site Location: 30 Km WSW Ballarat Vic.	Pittong site. 'Spiny Rush' control Demonstration Site
6	Woody Yaloak Catchment Group Inc. Group 2 Site Location: 30 Km SW Ballarat Vic.	Quantifying salinity discharge treatment impacts in the WY Catchment-Illabrook site.
7	Woody Yaloak Catchment Group Inc. Group 3 Site Location: 30 Km S Ballarat Vic.	Quantifying salinity discharge treatment impacts in the WY Catchment - Mt. Mercer site
8	Bairnsdale BESTWOOL Group Site Location: 20 Km SW Bairnsdale Vic.	Agronomic/grazing potential/Water-table benefits of growing saltbush on saline land
9A	Bengworden LandCare Group Site Location: 20 Km SW Bairnsdale Vic.	Bengworden Salinity Pasture Trial. Investigation of salt tolerant species and establishment
9B	Bengworden LandCare Group Site Location: 20 Km SW Bairnsdale Vic.	Investigate persistence of established Tall Wheatgrass pasture under rotational grazing management.
10	Yarram Salinity Group Site Location: 20 Km E Yarram Vic.	Implementing saline pasture species results from test-plots to grazing trials
11	Hamilton LandCare Group Site Location: 10 Km N Hamilton Vic.	Investigation of Tall-Wheatgrass management techniques on saline land and collation of objective data
12	Little Swanport Catchment Management Implementation Committee Site Location: Little Swanport 25 Km S Swansea Tas.	Assessing productive options for saline land in South eastern Tasmania
13A	Derwent Valley Catchment Management Committee-Tas Site Location: 10 Km N Hamilton Tas.	Cross bred sheep weight gains on saline tolerant pasture and fodder species. - <ul style="list-style-type: none"> Determine species establishment and persistence. Highlight the significance of salt affected areas whilst developing a management strategy of value to stock enterprises.
13B	Derwent Valley Catchment Management Committee-Tas Site Location: 10 Km N Hamilton Tas.	<ul style="list-style-type: none"> Establishment of salt tolerant pasture and fodder species in recharge areas managed for grazing. Determine species establishment and persistence.
14	Hindmarsh Landcare Network Site Location: 20 Km N Dimboola Vic.	Productivity of Sheep and Goats Grazing Saltbush
15	Northeast Coast Landcare Group -Tas Site Location: 10 Km ENE Bridport Tas.	Wetland Restoration and rotational grazing in high salinity area
16	Sheep pen Creek Landcare Group – Caniambo - NE Vic Site Location: 30 Km WNW Benalla Vic.	Raising Salt Bush Productivity On Saline Sites
17	Wattle Hills South Tas Site Location: 20 Km ENE Hobart Tas.	Management of saline land. <ul style="list-style-type: none"> New Pasture Species Grazing Management

2. Summary of Site Results

SITE 1A

PROJECT: Lucerne on Saline Ground.

PROPERTY OWNER: Simon Brady

PROJECT OBJECTIVES:

- To investigate the success of growing lucerne on saline land.
- To test the impact of lucerne on water table depth.
- To assess the productivity of lucerne on saline ground.

SITE DESCRIPTION:

Trial Site area: 13 Ha

Rainfall: 616 mm

Soils: Vary in Texture but all are duplex soils with heavy clay subsoil overlying lighter material sandy or silty heavy clay

Soil Profile Summary: pH (w) 5.6 - 7.2 pH becomes more alkaline with depth.
EC ds/m 4.9 - 0.6 Moderately saline -EC reduces over depth

Site Treatments: This site was split into three plots.

Site A (4ha) 6kg /ha of L56 (Pioneer) Lucerne sown on 2/09/05

Site B (4ha) 6kg/ha of L55 (Pioneer) sown on 2/9/05

Site C (5ha) 8kg/ha Dovey and Typhoon Tall Fescue, 3kg/ha Gosse sub-clover; 3kg/ha Riverina sub clover.

All sites were sown on 2/9/05. All sites were spread with 100kg/ha MAP before sowing, then harrowed and sown with a band seeder. Paddocks are rotationally grazed with 3 adjoining paddocks at a stocking rate of 10 DSE per acre, (25dse/ha) using 1-year-old merino ewes.

OBSERVATIONS:

- Moisture and weed control were both good and successful strikes achieved.
- Establishment and growth was excellent through spring. The trial area appeared to be managed well.
- Tall Fescue wasn't as thick as expected, and did have bare spots between plants. Recommended to apply 1kg/ha of Balansa clover with fertiliser application in autumn to reduce gaps.
- There appears to be no correlation at this stage between rainfall, pasture growth and water table levels.
- The owners were keen to grow more Lucerne in the light of results achieved.

Grazing:

- February - March 2006 - 140 grazing days per Hectare on Lucerne and Fescue pasture - Note: Sheep grazed Fescue before Lucerne and a lot harder. Decided to fence Fescue separately to better manage grazing.
- May to August 2006 - 190 grazing days per Hectare on Lucerne
90 grazing days per Hectare on Fescue
- Stock did not lose or gain condition whilst grazing the plots. The value of the trial was that stock were able to maintain condition on an area that was previously unproductive.
- This success of the pasture establishment may have been influenced by the dry year which may have kept the water table at a lower level than would otherwise have been the case.

PERSONAL PERSPECTIVE:

"Prior to the project the site consisted of bare ground with white salt crystals on the surface. The paddock was set stocked as a single large paddock with the adjoining area. No grazing from the saline site. We are now able to graze the treated site, there is no evidence of salt and the production allows high stocking (25dse/ha) for short rotational grazing. Very beneficial outcome" Simon Brady, September 2006.

Simon Brady keeps good records of stock movement in and out of the trial site. Note well-established Lucerne and Fescue pasture.



SITE 1B

PROJECT: Establishment of salt-tolerant pasture species on saline land.

PROPERTY OWNERS: Ken and Eleanor Reid

PROJECT OBJECTIVE: - To investigate the success of establishment of improved salt-tolerant pasture species on saline land.

SITE DESCRIPTION:

Trial Site area: 13.8 Ha

Rainfall: 616 mm

Soils: Vary in Texture but all are duplex soils with heavy clay subsoil overlying lighter material sandy or silty heavy clay.

Soil Profile Summary: pH (w) 6.7 – 9.1 pH becomes more alkaline with depth from 0-10 to 100-150cm. EC ds/m 0.2 – 0.8 Low salinity level - EC increases over depth

Site Treatments: This trial was divided into two plots.

Site A: Sown to Tall Wheatgrass in Spring 2005. Plot size 5.1 ha

Site B: Sown to Fescue in Spring 2005. Plot size 8.7ha

Both plots were managed as one unit with no fencing between each plot.

OBSERVATIONS

- At the time of testing, the salinity levels in the plant root zone were quite low and suitable for a range of pasture species. The trial area had been poorly productive for a number of years and was dominated by barley grass and bare areas. The measured low salinity level in the plant root zone may have been a seasonal effect. There is a need for on-going monitoring of salinity levels in this regard.
- The Fescues, in particular, established well with variable results for the other species sown.
- The Tall Wheat Grass failed and was not re-sown. The owners have expressed some doubts regarding the viability of seed and it was suspected that the seed had been stored for too long.
- The owners were pleased with the establishment of the fescue but disappointed with the failure of the Tall Wheatgrass.
- The site has not been as successful as had been hoped. It is likely that this is not a function of the site but rather due to other circumstances such as fire which have impinged on the site and on the grazing management. The site has highlighted the continuing need for appropriate grazing management to ensure best results from salt tolerant pastures

Grazing: - In December 2005 the plots provided 608 grazing days per Hectare.
- They were grazed again in August 2006 and provided 101 grazing days per Hectare.

PERSONAL PERSPECTIVE:

"We have been devastated by two major fires in the last 12 months. We have had to replace 25km of fence on our properties. The trial has had to take a lower priority in the short term, so we have not been able to put the time and effort into monitoring the outcomes as much as we would have liked to" Ken Reid September 2006.



Ken Reid and Peter Brady - Joint site cooperators, with Rob Shea (centre) – Grassland Society Representative on the Producer Network Committee.

SITE 2

PROJECT: The potential for profit and sustainability in saline affected land in the lower North Central Region (Project approved and commenced but not completed)

PROPERTY OWNER: Brett and Cindy Boyd

CONTACT: Brett Boyd

APPLICANT: ARMAG (Agricultural Resource Management Action Group)

PROJECT OBJECTIVES: To investigate the potential for profit and sustainability in saline affected land in the lower North Central Region through:

- A comparison between set stocking rates and cell grazing of sheep on established saltbush and complementary species.
- A comparison of growth rates and wool characteristics of sheep in set stocking and cell grazing situations.
- A comparison of impact between set stocking and cell grazing on biodiversity of fauna and flora species.
- Continuation of current revegetation programs (1989 – 2003) for saline effected land, including the review of alternative and complimentary species to saltbush in saline pastures; in particular perennial and native grasses.
- At completion of the investigative project the findings will be integrated into ongoing land use practises with monitoring undertaken by the landholder. Depending on results, the management and development area will be adjusted into sustainable farming practices into a larger scale.

SITE DESCRIPTION:

Approximately forty hectares of pre-established salt tolerant pastures will be utilized for the set stocking and cell grazing aspect of the project.

Trial Plan: A detail Investigation plan was submitted as follows:

Sept – Oct 2003	Finalize design of project utilizing the support of ARMAG members and support provided by SGSL and D.P.I. technical representatives. Identification of key technical support persons.
Oct-Dec	Construct cell grazing works in accordance with plans
Jan 2004	Sheep baselines for weights and wool are determined. Baseline flora and fauna stock take.
Jan	First stocking commences. Seed harvest on existing saltbush species for continuing works.
Monthly	Sheep growth rates and wool characteristics are recorded
Feb	Field day to present results of KARF investigative trip to Western Australia, and demonstrate works to date and design planning.
Mar/Apr	Rams in 5 TH March. Sowing/ Resowing pasture species through continuation of existing works.
Mar/May	First rotational grazing completed. i.e. leaf matter reduced to approximately 5%. This will be dependant on climatic conditions. Second commenced.
Monthly	Sheep weights and wool characteristics recorded
Bi- monthly	Flora and fauna stock-take
July	Shearing
Aug	Lambing
September	Results presented to interested parties (e.g. LANDCARE, Greening Australia, Elders and individual landholders) as they become available.
Oct	Lamb mulesing and marking (early in month) Dip all sheep on farm (late in month)
Aug + March 2007	Progress Reports of investigation to SGSL Completion of investigative project

OBSERVATIONS:

Unfortunately, due to unforeseen adverse seasonal conditions and the associated necessity of altering farm management priorities, this site did not go ahead. The Producer Network Committee feels that there is tremendous potential value to be obtained by the inclusion of this site in any future SGSL Program. The enthusiasm shown by the host farmers combined with an active local group and large numbers of attendees at several field days (on other associated work undertaken) makes this an ideal site for future collaboration in the conduct of future research and extension.



Brett and Cindy Boyd with daughter Eboni and Brett's father Richard in one of their saltbush stands in winter 2003..



SITE 3A

PROJECT: Investigating Environmental and Agricultural Benefits of Grazing Salt Tolerant Vegetation.

PROPERTY OWNER: Bruce Wilson (Manager: Simon Faulkner)

APPLICANT: Greening Australia

PROJECT OBJECTIVES:

- To compare environmental and agricultural effects of altering grazing management of a saline discharge site.
- To investigate differences in species composition, feed quality, dry matter production animal responses and environmental impacts between different management regimes.
- To investigate the effects of grazing saline pasture on the internal parasite burden and live weight of sheep.
- To collect supplementary information such as soil and rainfall data to assist in the interpretation of results.

SITE DESCRIPTION:

Trial Site area: 5 Ha

Rainfall: 552 mm

Soils: Predominantly a heavy clay topsoil with a high salt and Sodicity content. The dryness of the site suggests that high water tables do not contribute continuously to the salinity of the surface. The dull colours in the subsoil, however suggest that there has been a watertable over a long period.

Soil Profile Summary: pH (w) 7.6 – 8.1 pH becomes more alkaline with depth from 0-10 to 100-150cm.
ECe ds/m 3.9 – 10.5 Moderate to high salinity level - EC increases with depth to 100cm

Pasture Species: The species on offer during the grazing period included Phalaris (*P. aquatica*); Cocksfoot (*D. glomerata*) Bearded Glasswort (*Sarcocornia quinqueflora*), Buck's thorn plantain, a clover and Burr medic.

Site Treatments: Twenty 1.5-year-old wethers. Ten were drenched with 1.5ml/hd of "Verbamec" at the commencement of the trial and at each weighing, while 10 were left undrenched for the duration of the trial.

OBSERVATIONS:

- At times, sheep preferentially grazed different vegetation zones within a saline discharge site while having access to the whole site.
- Internal parasite burdens fell without the use of a drench in sheep grazing saline land in summer and autumn, with a corresponding increase in liveweight. While the worm burden decline in the undrenched mob cannot be attributed to the effect of the grazing of saline tolerant pasture species, further work in this area is warranted to elucidate possible effects.
- There was no apparent difference in internal parasite levels between sheep grazing saline and non-saline land. Parasite levels became dangerously high once the pasture had become depleted in dry matter and heavily soiled.
- Fencing saline areas separately provides benefits for farm management in the areas of autumn feed saving, internal parasite control, reduced maintenance and improved stock handling.
- Sheep were grazed from 29/3/05 to 9/5/05. This equated to 164 grazing days per hectare.

PERSONAL PERSPECTIVE:

"The trial provided some benefits to farm management:

Separating saline from non-saline land at the farm scale allows saline areas to be saved as valuable feed over the summer period. - "Greening Australia" and Group Coordinator October 2006.



Frank Carland, Group Coordinator with site owner Simon Faulkner inspecting the site. Set-stocked to the left of fence, rotationally grazed to the right.



Highly saline area on the 'Murdeduke site which has been rotationally grazed.

SITE 3B

- PROJECT:** Investigating Environmental and Agricultural Benefits of Grazing Salt Tolerant Vegetation.
- PROPERTY OWNER:** Bruce Wilson (Manager: Simon Faulkner)
- APPLICANT:** Greening Australia
- PROJECT OBJECTIVES:**
- To note any practical management benefits in managing saline land as a separate unit.
 - To further investigate the effects of grazing saline pasture on internal parasite burdens and live weight of sheep.
 - To determine the feed value of indigenous and exotic salt tolerant species.

SITE DESCRIPTION:

- Trial Site area:** 5 Ha
- Rainfall:** 552 mm
- Soil Profile Summary:** pH (w) 8.1 – 8.6 pH becomes more alkaline with depth from 0-10 to 100-150cm.
ECe ds/m 2.2 – 4.7 Moderate salinity level - EC increases with depth to 100cm

The site is made up of heavy soils overlaying basalt rock and are very salt affected. Soil profiles are predominantly very dry water tables, if present, may be transient in the area. The profiles are naturally saline from cyclic salt which is not leached properly due to low rainfall. Water Table occurred at one site at a depth of 90cms.

- Pasture Species:** Phalaris, Tall Wheatgrass, a variety of grasses, legumes and salt tolerant vegetation – *Samolus repens*, *Schoenus* sp. Buck's thorn plantain.
- Site Treatments:** Half of the plot are was left un-grazed while the remainder was strategically grazed
2005 Grazing: Twenty wethers grazed this site from 10/3/05 to 29/3/05. This was 76 grazing days per Hectare.
- 2006 Grazing:** Twenty wethers were selected. No drenching occurred in this trial. One group of 10 grazed a portion of this site while the remaining group of 10 grazed another non-saline area adjacent to the site. This allowed a comparison between saline and non-saline grazing.

OBSERVATIONS:

- The feed quality at this trial was very low in protein where the Swampweed predominated the site. This vegetation was readily consumed by the stock but was low in feed value.
- Overall Bearded Glasswort provided the best feed value with Metabolisable Energy calculated at 11.8 MJ/Kg DM and a Crude protein level of 16.9% (though Dry matter percentage was only 34% which would affect the voluntary intake of the material by sheep and may limit their ability to take full advantage of the relatively high protein and ME contents. In comparison the feed test results of phalaris/ocksfoot pasture showed an ME value of 12.0 MJ/Kg DM and a Crude protein level of 11.8%.
- Salt tolerant plant species show potential as a high quality feed, particularly Beaded Glasswort (*Sarcocornia quinqueflora*), although this needs to be confirmed by future analysis which includes ash content.
- The feed potential of some salt tolerant species may be limited by low soil fertility levels.
- Very little difference was found between the FECs of each group.
- There were practical management benefits in fencing out saline land and lake frontages as separate management units. Little benefit is seen in subdividing sites based on salinity levels unless the areas are large.
- Twenty wethers grazed this site from 10/3/05 to 29/3/05. This equated to 76 grazing days per Hectare.

PERSONAL PERSPECTIVE:

"Fencing was a valuable tool in controlling internal parasites. Stock could be drenched and turned out onto clean pasture. Rotational grazing should also help with the worm burden". - "Greening Australia" and Group Coordinator October 2006.



Part of grazed 'Murdeduke' Lake frontage.



SITE 4

- PROJECT:** Investigating Pasture Species suitable for Saline land.
- PROPERTY MANAGER:** David Freeman
- APPLICANT:** Whiteheads Creek LANDCARE Group
- PROJECT OBJECTIVES:**
- Evaluation of pasture species tolerant of saline soil that will establish easily and persist in the catchment environment and replace previously productive species that have been lost to encroaching saline discharge.
 - Identify species that will improve animal production from saline areas.

SITE DESCRIPTION:

- Trial Site area:** 8 Ha
- Rainfall:** 599mm
- Soil Profile Summary:** pH (w) 6.8 –7.2 pH is relatively stable with depth from 0-10 to 100-150cm.
ECe ds/m 2.3-12.1 Moderate to high salinity level - EC decreases with depth to 100cm
- Pasture Species Sown:** Dundas TWG (0.75ha), Quantum maxP fescue, Fletcha maxP fescue, strawberry clover (3.06ha)

SOIL ANALYSIS AND SOIL SALINITY:

Rainfall readings since January 2006 are as follows:

Rainfall	Jan.	Feb.	Mar.	Apr.	May.	June	July	Aug
	37.5	10	17	45.5	28	20	40	22.5
Total	37.5	47.5	64.5	110	138	158	198	220.5

SALINITY levels - 8th February 2006:

- Peizometer - 2550EC Dam - 2820EC
- Control: Transect 1 - 120EC Transect 2 - 1940EC
- Treated: Transect 3 - 1170EC Transect 4 - 110EC
- Grazing:

Date	Grazing days	
	Treated	Control
16/10/04 - 7/06/06	6877	8422

OBSERVATIONS:

- Good establishment of: Dundas TWG, Quantum maxP fescue, Fletcha maxP fescue, and strawberry clover.
- Slightly fewer grazing days from the newly established pasture than from the control but less bare ground and increasing proportion of desirable salt tolerant species than in control area.
- The expectation of the site manager is that the 'treatment' area sown with improved pasture species will overtake the 'control' area in growth, production and in grazing days as the sown species increase in vigour and area.
- SGSL committee inspected site on 7th March 2006. Site extremely well managed. Good monitoring of site data and results
- Successful SGSL/GSSA Field Day on 5th April 2006



Inspecting the site with the host farmer, David Freeman at Whiteheads Creek.

SITE 5A & 5B

- PROJECT:** Quantifying Salinity Discharge treatment impacts in the Woody Yaloak Catchment - Pittong Site
- PROPERTY OWNER:** Brent Holding
- CONTACT:** Cam Nicholson
- APPLICANT:** Woody Yaloak Catchment Group
- PROJECT OBJECTIVES:**
- To investigate effective systems for control of Spiny Rush
 - To investigate the establishment and effective grazing management of salt tolerant pasture species on salt affected land.

SITE DESCRIPTION:

- Trial Site area:** Ha
- Rainfall:** 625mm
- Soil Profile Summary:** pH (w) 5.5 – 6 pH tends to neutral with depth to 100cm.
ECe (0-10cm) 2.1 – 22.9 dS/m Highly saline. Decreasing salinity with depth. Low to Moderately saline at 100-150cm
A Peizometer was installed in June 2004 . Only one month registered a recording of 2.35m below surface. Further readings in 2006 did not record a watertable.
A discharge water collection drain was constructed in March 2005
All sites were sown in April 2005 with TWG sown at 7kg/ha, Strawberry Clover at 2kg/ha, Single super at 125kg/ha.
- Grazing:** As at November 2006 the site has not been grazed. This is to allow the TWG to establish, especially given the dry conditions.

OBSERVATIONS:

1. **SGSL treatment area**
Surface water flowing from the surface drain was measured in July and September 2006. The results were both below 3,800 EC suggesting a decrease in surface water despite the very dry winter conditions, which would be expected to result in an increase in salt concentration.
2. The following vegetation was recorded in September 2005: Sea Barley Grass, Annual beard Grass, Spiny Rush, Toad Rush, Buck's horn Plantain, Ruby Saltbush.
3. After spraying and sowing, sea barley grass and toad rush were the two most dominant undesirable species. TWG and Strawberry Clover germinated successfully.
4. In September 2006 the cover of esirable species including TWG and Strawberry clover was above 30%. This would provide sufficient plant population for better establishment over time.

PERSONAL PERSPECTIVE:

"The site has demonstrated that saline areas infested with spiny rush can be successfully rehabilitated". Cam Nicholson November 2006



BEFORE – Spiny Rush, scalded and no productivity



AFTER – Salt tolerant species, ground cover, no spiny rush, productive



SITE 6

PROJECT: Quantifying Salinity Discharge treatment impacts in the Woody Yaloak Catchment - Illabrook Site

PROPERTY OWNER: Col McKenzie - Illabrook

CONTACT: Cam Nicholson

APPLICANT: Woody Yaloak Catchment Group

PROJECT OBJECTIVES:

- To investigate the appropriate establishment of and grazing methods for saline soils.
- To quantify the benefits in relation to changes in salt export and productivity increases.

SITE DESCRIPTION:

Trial Site area:

Ha

Rainfall:

625mm

Soil Profile Summary:

pH (w) 5.8 – 7pH becomes slightly more alkaline with depth to 00cm.

ECe (0-10cm) 4.48 – 28.73dS/m Highly saline. Decreasing salinity with depth Moderately saline at 100-150cm

Soils are acid or neutral at the surface and alkaline at depth. This is related to high sodicity.

The salinity is high but uniform in the low to medium EM range, but is high at the surface in the high EM range. This suggests the presence of high watertable under the high EM area.

Monthly surface water salinity was measured at the commencement of the trial in 2004 to gain baseline data.

The site was sown in August 2005 with TWG at 7kg/ha; Strawberry Clover at 1kg/ha . Sowing was delayed due to poor conditions.

No grazing has occurred as at September 2006 to allow the TWG time to establish.

OBSERVATIONS:

1. Surface water salinity peaked at 9,000EC soon after the autumn break and decreased to 3,500EC during late winter. The volume of surface runoff was small in comparison to other sites. No subsequent surface water salinities have been recorded.
2. The following vegetation was recorded in September 2005: Spiny rush, Streaked Arrow Grass, Toad Rush, Sea Barley Grass, Annual Beard Grass, Buck's Horn Plantain. Due to the very poor conditions no further vegetation surveys have been undertaken.

PERSONAL PERSPECTIVE:

"Progress at this site has been slow due to the long preparation time and drought conditions. Further monitoring will be required to see if the initial objectives of the trial can be realised." Cam Nicholson November 2006.



Committee members inspect the The Illabarook Site. Note the mid slope expression of salinity, typical in this area.

SITE 7

PROJECT: Quantifying Salinity Discharge treatment impacts in the Woody Yaloak Catchment – Mt Mercer Site

PROPERTY OWNER: Bluey Smith

CONTACT: Cam Nicholson

APPLICANT: Woody Yaloak Catchment Group

PROJECT OBJECTIVES:

- To investigate the appropriate drainage and salt tolerant plant establishment techniques.
- Quantify the benefits in an area which is higher in elevation and higher rainfall (1100mm)
- To measure the off site water flows.

SITE DESCRIPTION:

Treatment area 16 Ha

Rainfall: 701 mm

Soil Profile Summary: pH (w) 5.1 – 5.7pH stablewith depth to 100cm.
ECe (0-10cm) 3.15 – 6.93 dS/m Moderate to highly saline. Stable salinity with depth. Low to Moderately saline at 100-150cm
The soil profiles are quite acid except for the 50-100cm layer of the low EM readings. All profiles are saline.
Site Treatments: Pasture was established in May 2005 with: Dundas TWG at 7kg/ha, Dovey Tall Fescue at 5kg/ha, Strawberry clover at 1kg/ha, 100hg/ha DAP, A small amount of short term ryegrass was also sown.

SITE DIARY:

Date	Activity
June 2004	Intensive investigations to characterise the extent and severity of salinity on site.
November 2004	Area was surveyed to identify lowest parts of the landscape and location of drains.
March 2005	Shallow surface drain constructed in the saline area to remove ponded water (not intercept water) and a Diversion drain constructed on grade above the saline area. Wees sprayed & cultivated. Lime 2.5t/ha and gypsum at 4t/ha applied Tanks and troughs in.
May 2005	Saline area sown. Non saline area above treated area was sown to annual ryegrass.
September 2006	5 row interception belt of trees planted at the junction of the saline and non saline areas.

Grazing 2006:

Two grazing events have occurred: October 2005 to December 2005 187 ewes & lambs for 60 days
March 2006 to September 2006 260 wethers for 210 days.

OBSERVATIONS

1. Surface water salinity was much lower than other sites at approx. 2,000 EC. However the volume of surface water was considerable compared to the sites. Surface water flowing from the collector drain was measured in July 2006. These were below 2,000 EC suggesting a decrease in surface water salinity.
2. A Peizometer was installed in June 2004. During the five month period in 2004 water tables remained at 0.70m below surface. Repeated observations in 2006 were dry, indicating the watertable had dropped to below 2m.. This may be an abnormal response due to dry conditions.
3. A survey of the sown species was undertaken in October 2005.. A highly successful establishment was realised for both clovers and grasses: The Composition figures showed Tall fescue 11.2 % of total pasture, TWG 14.6%, Short term ryegrass 31.7%, Strawberry clover 7.9%, Other species (not sown) 34.6%.
4. The stocking rate during the grazing period equates to an annual stocking rate of 10.6 DSE/ha on average since May 2005. Prior to treatment the landholder gained virtually no grazing value from this 16 ha site.
5. Total Costs including landholder input: \$1,395/ha – includes paddock fencing and major water supply works.

PERSONAL PERSPECTIVE:

"The impact of the site has been significant. It clearly demonstrates a rehabilitation techniques that can be successfully applied to these moderately saline areas." Cam Nicholson November 2006.



SITE 8

- PROJECT:** Agronomic/Grazing potential and Water Table benefits of growing saltbush on saline land.
- PROPERTY OWNER:** Rick and Jenny Robertson
- CONTACT:** Don Moore
- APPLICANT:** Bairnsdale BESTWOOL Group
- PROJECT OBJECTIVES:**
- Investigate the benefits of increased grazing and lowering of water table by planting saltbush on saline land.
 - Measure increased productivity in wool and meat.

SITE DESCRIPTION:

Trial Site area: 8.5 Ha

Rainfall: 620 mm

Soil Profile Summary: pH (w) 8.1 – 8.6 pH becomes more alkaline with depth from 0-10 to 50-100, with little change to 150cm. Moderately saline

Site Treatments: An area of 5ha was planted to de Koch saltbush seedlings using a vegetable planter, a further area of 3ha was sown with Old Man Saltbush seed, with a further adjacent area of 0.5ha was sown with Rhagodia saltbush variety seedlings. An adjacent area of ___ ha was used as a control. Stock were introduced in December 2005 until April 2006. The different treatments were not separated, but grazed as a single unit. The site required 18 months to establish sufficiently to graze.

OBSERVATIONS:

1. Salt Bush Establishment & Production
Plants per hectare: Old Man - 18,000 De Koch - 7,600 Rhagodia - 2,200
DM Production: Old Man Saltbush (A. Nummularia) produced an average of 158 grams of dry matter per plant compared with 176grams and 175grams for the De Koch variety and the Rhagodia respectively. When converted to dry matter production per hectare this equates to 2,848 Kg DM/ha for Old Man Saltbush, 1,336 Kg DM/ha for the De Koch variety and 384 Kg DM/ha for Rhagodia.
2. The site required 18 months to establish sufficiently to graze. This is approximately the period expected for saltbush to develop to grazing stage.
3. The saltbush provided 2353 stock grazing days/ha compared to 333 stock grazing days/ha for the control.
4. Stock grazing the saltbush trial gained an additional 0.5 – 1 condition score above the animals grazing the control site. The farmer feels this is of considerable value given the tough times during the period under test.
5. The cost of planting seedlings far exceeded sowing seed. Cost of planting seedlings was \$1,000/ha for seedlings. Cost of planting seeds was \$150/ha for seed. Labour costs are additional. Seedlings required two men to plant while sowing seed only required one-man. The landholder would not plant seedlings again.
6. Host farmer considered that saltbush was comparatively worm-free, had high feed value and provides an excellent feed reserve during summer autumn period.
7. FEEDTEST information showed that Old Man Saltbush had a crude protein content of 17.8% with an ME of 11.2 MJ/KgDM while the De Koch variety had a CP of 19.7% with an ME of 12.3 MJ/KgDM and the Rhagodia had a CP of 18.2% with an ME of 12.8 MJ/KgDM

PERSONAL PERSPECTIVE:

"The value of salt bush is that it is comparative worm free, has high feed value and provides an excellent feed reserve during summer autumn period. Rick Robertson, October 2006.

"I can't wait for improved conditions to sow a larger area" Rick Robertson October 2006.



Saltbush in October 2006. No grazing since April. 2006. Landholder believes this is a good feed reserve for Summer/autumn.

SITE 9A

PROJECT: Bengworden Salinity Pasture Trial
PROPERTY OWNER: Australian Landscape Trust property "Strathfieldsaye"
CONTACT: Gerard Deery
APPLICANT: Bengworden Landcare Group
PROJECT OBJECTIVES:

- To Investigate salt tolerant pasture establishment techniques.
- Compare direct drilling with cultivation followed by drilling.
- Compare return on investment of establishing salt tolerant pastures against a no treatment approach.

SITE DESCRIPTION:

Trial Site area: 6Ha
Rainfall: 612mm
Soil Profile Summary: pH (w) 6.1 – 6.5 pH becomes more alkaline with depth from 0-10 to 50-100, with little change to 150cm.
ECe (0-10cm) 1.36 –2dS/m Very marginally saline increasing with depth to 100cm
The soils are acid at the surface and become alkaline with depth. pH is satisfactory for plant growth. The surface Boron levels are of concern for growing pasture. Sodidity is high throughout the profile and needs to be rectified.

Site Treatments: Three plots were established. One half of each plot was direct drilled, the second half cultivated and then sown. Each plot was sown at the same time using the baker boot drill. Prior to sowing the area was burnt to reduce surface material to allow machine drilling. The sown trial plots have not been grazed at this stage.

Pasture Species sown: Plot 1&2 Bolton Perennial ryegrass, Strawberry clover, Paradana Balansa clover
Plot 3&4 Quantum Tall Fescue, Sirosa phalaris, Strawberry clover, Paradana Balansa clover
Plot 5&6 Dundas TWG, Strawberry clover, Paradana Balansa clover

OBSERVATIONS:

1. Plots have not been grazed at the time of inspection. Kangaroos have been grazing the plots and have concentrated on the Ryegrass plots to the extent of eating them out.
 2. Concern that the Tall Wheat Grass seed was not viable. Very low germination of TWG occurred.
- Site Coordinator observations : -
"The trial has not advanced sufficiently to deduce any real observations."
"The establishment of ryegrass has been good."
"Result needs to be assessed against the current low soil salinity levels and alternative grasses that may be better able to respond to low salinity."

PERSONAL PERSPECTIVE:

"The trial has not advanced sufficiently to deduce any real observations. The establishment of ryegrass has been good as has the establishment and persistence of the Tall Wheat Grass in (B been impressive. This has to be assessed against low soil salinity levels and alternative grasses better able to respond to low salinity." Gerard Deery October 2006.



Phalaris and Tall Fescue pasture growth on left, Ryegrass on Right – preferentially grazed by Kangaroos. No stock grazing has taken place as at October 2006.



SITE 9B

PROJECT: Established Tall Wheat Grass Paddock
PROPERTY OWNER: Australian Landscape Trust property "Strathfieldsaye"
CONTACT: Gerard Deery
APPLICANT: Bengworden Landcare Group
PROJECT OBJECTIVES: Investigate persistence of established pasture under rotational grazing management.
SITE DESCRIPTION:
Trial Site area: 8Ha
Rainfall: 612mm
Soil Profile Summary: pH (w) 6.8 – 7 pH becomes more alkaline with depth.
ECe (0-10cm) 2 – 9.8dS/m Moderately saline increasing with depth to 100cm
pH levels are normal. The Sodicity is high and must be affecting plant growth and soil structure.
The salinity pattern is variable. Water tables were only registered at one sample site at 43cm depth.

OBSERVATIONS:

1. No records have been kept of grazing on this site.
2. Despite the trial being well behind schedule with respect to pasture growth and grazing results, the Bengworden LANDCARE Group have run a major Field Day on site to improve awareness of soil salinity and rehabilitation and management techniques for saline land. The Field Day has provided participants with well-documented handouts including:
 - Spotting Soil Salinity Talk – September 2004 – Peter Stapleton (DPI) and
 - The Red Gum Plains Restoration Project – Australian Landscape Trust, July 2003
3. Lack of results from this site has been disappointing. This appears to stem from the fact that there has been a lack of participation from group members. There have been a number of management changes during the life of the project and this, combined with communication problems has led to work not having been done. Despite initial enthusiasm from the group, the bulk of the work that has been done appears to have fallen to one or two people. In at least one case the comment was made that "with only one or two people contributing, and the site being half an hour's drive away, it has been difficult to keep things going."
4. Despite the issue discussed above the group will get some benefit from the site provided it is better managed from now on.



Strathfieldsaye Trial Site 9B: Established Tall Wheat Grass being grazed by cattle.

SITE 10

PROJECT: Implementing Saline Pasture Species from Test Plots to Grazing Trials.

PROPERTY OWNER: Elizabeth Balderstone

CONTACT: Fergus Irving

APPLICANT: Yarram Salinity Group

PROJECT OBJECTIVES:

- To trial a mix of salt tolerant pasture to establish ground cover.
- Monitor and evaluate the success of pasture species at a large scale
- Trial grazing regimes to identify most appropriate management practice for rehabilitated areas.
- Monitor Grazing results.

SITE DESCRIPTION:

Trial Site area: 8Ha

Rainfall: 612mm

Soil Profile Summary: pH (w) 6.2-6.5pH becomes more alkaline with depth.
ECe 11 - 1.95 dS/m Low salinity level increasing with depth to 100cm
All sample have high Sodidity which is seriously impacting on permeability. The Cation Exchange Capacity is quite high in all except the 0-10cm layer. This also indicated low permeability. The site has a non saline surface with increasing salinity with depth. Water Tables are not seriously influencing the salinity of the surface . One core sample showed a saturated soil at 145cm. Salinity appears to be based on cyclic salt and high clay content subsoils.

Site Treatments: Plot 1 - Control, Plot 2 - Tall Wheat Grass and Fescue Pasture, Plot 3 - Tall Wheat Grass, Plot 4 - Phalaris + Fescue pasture.

OBSERVATIONS:

1. Pasture establishment has been good but there is some bare ground.
2. At this stage in the development of the pasture, in the control plot is superior to the 'improved' pasture plots. Similarly the number of grazing days achieved from the control is greater than from the 'improved plots. It is expected that the newly sown plots will overtake the control pasture as they become better established. This is not an unusual occurrence early in the life of a newly established pasture.
3. Cost of pasture establishment (Across all treatments) = \$177.50/ha.
Cost per ha of pasture establishment is high and would need to be able to provide more grazing than the control to be economically viable to implement in a paddock situation.

PERSONAL PERSPECTIVE:

"The project is still in its infancy. I am interested in finding out the longevity of the salt tolerant pastures. At this stage production is not as high as the control"

"We have had trouble with the grazing pressure placed on the different land types within the trial. Stock concentrate on the low lying areas where the phalaris has not established well and therefore have not grazed the phalaris as well. It is therefore not a good test of the value of the phalaris"

"The area is suffering from severe drought. There is very little grass on the remainder of the farm". Elizabeth Balderstone, November 2006



This plot had not been grazed since June 2006. Indication of the dry conditions on pasture growth.



Difference between TWG on left and Fescue on right..



SITE 11

- PROJECT:** Investigation of Tall-Wheatgrass management techniques on saline land.
(A data investigation and analysis project.)
- PROPERTY OWNER:** Michael Blake
- CONTACT:** Michael Blake
- APPLICANT:** Hamilton LANDCARE Group
- PROJECT OBJECTIVES:**
- To assess objective information collected from many years experience with the management of saline land.
 - Collate and analyse accumulated data to be utilised to provide direction for the group in looking further at appropriate use and management of Tall Wheatgrass

SITE DESCRIPTION:

Trial Site area: 20Ha
Rainfall: 700 mm

OBSERVATIONS:

The landowner at this site has been successfully using and managing Tall Wheatgrass-based pastures for many years and has a large amount of data on pasture and livestock performance. The producer Network Committee set out to determine how this data could be used to best advantage in future extension and research programs. Lengthy investigation of the data has shown that at present there is not sufficient concrete information on which to base sound management recommendations. However some economic analysis of the saline-land management work on the property has been done and has demonstrated that there are economic benefits to be gained from the efficient and appropriate use of salt-tolerant pasture species. This information is presented in Appendix 5. Further monitoring work will continue on the property and further investigation is required in research and development programs which follow SGSL1.

SITE 12

- PROJECT:** Assessing Productive Options for Saline Land in South-eastern Tasmania.
- PROPERTY OWNER:** Colin and Sue Dyke
- CONTACT:** Jim Walters - Chairman
- APPLICANT:** Little Swanport Catchment Management Implementation Committee
- PROJECT OBJECTIVES:**
- To investigate a variety of approaches to managing saline areas to increase productivity.
 - To trial different pasture species
 - To trial different grazing regimes.

SITE DESCRIPTION:

- Trial Site area:** 2.3Ha
- Rainfall:** 680mm
- Soil Profile Summary:** pH (w) 6.4 – 8.3 pH becomes more alkaline with depth to 50-100. ECe 1.4 – 4.9dS/m Moderately saline high in the centre of the site
- The site is an incipient discharge area for groundwater drifting down slope.

Site Treatments:

- The trial site was divided into five plots.
- Plot 1 (0.5ha):- ploughed then cultivated with two passes of a 5 tyne cultivator. Broadcast sown with “best bet” salt tolerant pasture - Puccinellia @ 6kg/ha, Advance Tall fescue @ 10kg/ha, Resolute Tall fescue @ 8kg/ha, Strawberry clover @ 2.5 kg/ha.
- Plot 2 (0.68ha):Cultivated with two passes of the 5 tyne cultivator. Broadcast with “best bet” salt tolerant pasture.
- Plot 3 (0.56ha):Salt bush seedlings were hand planted at 4 metre spacings.
- Plot 4 (0.58ha): Direct drilled with 5.8kg of saltbush seed (10kg/ha) and with “best bet” salt tolerant pasture.
- Plot 5 (0.53ha): Direct drilled with “best bet” salt tolerant pasture at the same rates as in Plots 1 and 2.
- No grazing or dry matter measurements have been taken at this stage.

OBSERVATIONS:

1. This has been one of the most successful sites of all the sites funded under the Victorian/Tasmanian Program. It has largely provided the impetus for the next steps in salinity work in Tasmania.
2. The ‘best bet’ pasture mix has shown to be tolerant of the saline conditions and the best results to date has been from broadcast sowing on lightly or heavily cultivated ground.
3. In the absence of competition from weed species, saltbush appears to tolerate the extremely saline and dry conditions at the site. At this site and to this stage saltbush has proved to be extremely successful. Future planting of saltbush would benefit from weed control.
4. Hand planted saltbush in scalded areas looked better than in un-scalded areas.
5. Direct seeded saltbush was very patchy and had poor result.
6. Best bet pasture seemed to be successful in low salinity areas where there was also an abundance of other grasses eg Fog grass, but not as impressive where buckshorn plantain was the dominant species.
7. Although a vermin proof boundary fence had been erected there was evidence of possum invasion with destruction of some saltbush around the perimeter of the site.
8. Plots 1 and 2 had excellent ground cover with a mix of sown species, fog grass and other species providing a 100% ground cover.
9. Property Owner Observation - “The area affected by salt has increased substantially over the past 10 years. There are other areas that could make use of these results.”
10. An important partnership has developed between this group and The Natural Resource Management group in Tasmania – NRM North. This connection has been built as a result of the project and stands the group in good stead for future work of this nature.
11. From a management perspective, a particular issue arose at this site concerning a misunderstanding between the Network Committee and the producer group relating to what activities were covered by the allocated funding. In future work of this nature with grower groups it will be important to enunciate in a clearer fashion, the exact nature and extent of the work to be undertaken.
12. It will be important in future work to provide ‘professional’ assistance and guidance to growers in the conduct and collection of site data.



PERSONAL PERSPECTIVE:

"The area affected by salt has increased substantially over the past 10 years. There are other areas that could make use of these results, but I want to fix it up. I would like to investigate shelter plantings across the trial for both stock and pasture shelter. The areas are mostly small and will be hard to manage separately." Sue Dyke, October 2006.



BEFORE



AFTER - Pasture where there was none.

SITE 13A

PROJECT: Cross Bred Sheep Weight Gains on Salt Tolerant Pasture and Fodder species.
PROPERTY OWNER: Tim Parsons "Curinga" Farm, Hamilton Tasmania
CONTACT: Tim Parsons
APPLICANT: Upper Derwent Valley Landcare Group
PROJECT OBJECTIVES:

- Determine species establishment and persistence.
- Highlight the significance of salt affected areas whilst developing a management strategy of value to stock enterprises.

SITE DESCRIPTION:

Trial Site area: 2.67 Ha
Rainfall: 578 mm
Soil Profile Summary: pH (w) 6.5 – 7.2pH becomes more alkaline with depth.
ECe (0-10cm) 3.48 – 5.42S/m Moderately saline increasing with depth to 100cm
The site is an incipient discharge area. Water table depth varied from 85 – 100cm below surface.

Site Treatments: The Curinga trial was an in-depth trial of a number of pasture species with a range of salinity tolerances. The trial consisted of 8 treatments, with pasture species including strawberry, Persian and sub clover; Fescue, ryegrass and Tall Wheat Grass, Puccinellia and Lucerne. The trial consisted of two plots of each treatment and 3 of the shotgun mix.
All sites were sown on 29 March 2005. There was no spraying of first germination weeds before sowing as there was no rain to stimulate weed germination. Due to the lack of feed on the farm, the area was grazed in August and again during spring, despite this not being best practice for establishment of most species sown.

OBSERVATIONS:

1. The site has been a 'failure' in the sense that there was very poor establishment of the sown species to the extent that there were, for practical purposes, none present at monitoring post sowing.
2. There have been a number of management and communication factors throughout the project which have contributed to a poor result in establishing the pasture trial at Curinga. From an establishment and utilization perspective the trial can be considered a failure. However significant knowledge and experience has been gained by those involved which will contribute to future better management and utilisation of saline land in this area.
3. Despite the site being considered a failure, there has been a very high and commendable level of monitoring of the pasture emergence and growth. The group members involved along with the coordinators have shown tremendous determination to 'get it right' (this time without success!).
4. This trial has clearly demonstrated that unless best practice management practices are followed, the chances of success are dramatically reduced.
5. Comment from the landowner of Curinga Farm: "Saline ground is extremely unforgiving. There is NO room for error." "Don't go against nature to try to put a crop in if weather conditions aren't right".
6. Difficulties were found in calibrating Puccinellia sowing rates, and project staff will be better prepared for this issue when next sowing this species.
7. All of the coordinators involved have gained considerable knowledge about salt tolerant pastures and rehabilitation of saline areas.
8. The SGSL and NLP funded work in the Derwent Catchment has highlighted a number of areas that would benefit from more work to increase understanding of how to better manage saline areas in Tasmania.



Looking east across Curinga – Part of the trial block is the wet area in the centre of the photograph.



SITE 13B

PROJECT: Cross Bred Sheep Weight Gains on Salt Tolerant Pasture and Fodder species.

PROPERTY OWNER: Tim Parsons "Montfort" Hamilton Tasmania

CONTACT: Tim Parsons

APPLICANT: Upper Derwent Valley Landcare Group

PROJECT OBJECTIVES:

- Establishment of salt tolerant pasture and fodder species in recharge areas managed for grazing.
- Determine species establishment and persistence.

SITE DESCRIPTION:

Trial Site area: 2.5 Ha

Rainfall: 578 mm

Soil Profile Summary: pH (w) 6.5 – 7.2pH becomes more alkaline with depth.
ECe (0-10cm) 3.48 – 5.42S/m Moderately saline increasing with depth to 100cm

The site at Montfort was a 2.5 ha scald in the hill country above Hamilton. Saline ground water seeps out into a high level basin. The site is waterlogged for most of the year and damp through most of the summer, providing an opportunity for an extended season of green pick in an otherwise extremely dry area. The site was planned to be sown to TWG, clovers and Puccinellia

The trial site on Montfort was not sown. Preparation of this site was difficult, due partially to other commitments of the land owner and communication difficulties (site preparation was occurring during a project co-ordination changeover). Once the site was prepared to a satisfactory standard (sprayed, disced and sprayed), there was difficulty sourcing any TWG seed, and rain made the site waterlogged and impossible to get a tractor on. The group were then made aware that the property was for sale and felt that given the difficulties up to this point, ongoing management would be critical for success, and this couldn't be guaranteed. Project staff have since contacted the new owners who are willing to proceed with the trial. This will occur in autumn 2007 with further site preparation and fencing required before it can be sown.

OBSERVATIONS:

1. The group involved has developed a much better understanding of how to achieve good establishment of salt tolerant pastures despite having only bought the site to the preparatory stage.
2. Some Saltbush that was planted at "Montfort" as a 'side trial' has established and wintered well, and the landholder is keen to fence off a scalded area in an adjacent paddock and plant more salt bush this spring (2006).



Figures 4A and B: Trial site at Montfort – showing worked areas, and area in middle of scald line that was too wet too work.

SITE 14

PROJECT: Productivity of Sheep and Goats Grazing Saltbush (Project approved but not commenced.)

PROPERTY OWNER: Don McKenzie

CONTACT: Don McKenzie – Chairperson of Network

APPLICANT: Hindmarsh Landcare Network

PROJECT OBJECTIVES:

1. To determine whether there is a productivity difference between sheep and goats grazing on a saltbush rotation compared with cereal stubble in the normal feed gaps.
2. We would like to see what influence saltbush has on both of these systems.
3. To measure the difference in wool micron and fleece weight from the sheep on saltbush.

BACKGROUND:

Hindmarsh Landcare Network is an umbrella network for 13 local Landcare groups. The Hindmarsh shire employs a Hindmarsh Landcare Network Coordinator to oversee the group's activities, and maintain enthusiasm in the local community. The network runs programs for the farming communities, to raise awareness of farming systems and environmental issues to benefit all.

Some of the main Hindmarsh Landcare Network activities include extensive planting of saltbush in saline areas over the last 5 years. This has seen more than 480,000 plants being planted on farms to increase production off saline land. Another key project for the region is the Hindmarsh Landcare Weekend, where 300 + volunteers come to help plant trees each year. This has been running for 6 years, and has planted more than 1 million trees in to the Hindmarsh region, linking the Big and Little Desert's together by corridors. Both of these activities cannot occur without numerous other agencies support.

The majority of saltbush in the Wimmera is grazed in the summer and winter feed gaps. The normal Wimmera grazing system incorporates stubble grazing and some pastures, depending on market outcome (either wool or meat). The group set out to see what influence saltbush has on both of these systems.

OBSERVATIONS:

Unfortunately, due to unforeseen adverse seasonal conditions and the associated necessity of altering farm management priorities, this site did not go ahead. The Producer Network Committee feels that there is potential value to be obtained by considering the inclusion of this site in a future SGSL Program. This may be a valuable site for future collaborative work in the conduct of future research and extension



Committee Members inspect the Hindmarsh site. Note the badly scalded areas.



A well established saltbush stand which would be ideal for a trial on grazing management.



SITE 15

PROJECT: Wetland Restoration and Rotational Grazing in high saline area.
PROPERTY OWNER: Kevin and Elizabeth Hall
CONTACT: Andrew Campbell
APPLICANT: North Coast Landcare Group
PROJECT OBJECTIVES:

- To determine if reduction of salinity in low lying areas is possible by re-establishing previously drained wetlands
- To use rotational draining and pasture establishment of wetland to improve production and biodiversity on ephemeral wetlands across the region.

SITE DESCRIPTION:

Trial Site area: 20 Ha
Rainfall: 1028mm
Soil Profile Summary: pH (w) 6.5 – 7.2pH becomes more alkaline with depth.
ECe (0-10cm) 3.48 – 5.42S/m Moderately saline increasing with depth to 100cm

Site Treatments: Wetland – Previously drained in early 20th Century
Old drain reconstituted to drain wetland. Plug inserted to hold water back over wetland with the intent of flushing out the surface salt, redraining and using some of the previously inundated area and peripheral areas for strategic grazing. Wetland drained in September 2005.
The trial methodology changed with the idea of spreading local sand and lime over half of the trial site included. Local sand with a pH of 7 was spread over half of the trial site to a depth of 25 – 50mm.
Lime at a rate of 10 tonne/ha was spread over the sand.
The adjoining dune was planted to potatoes and watered by a pivot irrigator last season. The pivot extended its watering onto this sand and lime treated area.
No pastures have been sown due to time constraints and climatic conditions. However the following photos show the impact of just applying dune sand and lime to the treated area.

OBSERVATIONS:

1. The area is subject to dramatic accumulation of wind-blown salt (Approximately : 400kg/ha wind blown salt accumulated yearly).
2. The group has had a strong focus on improving biodiversity as well as improving productivity. They have collected a large amount of data on changes in flora and fauna during the project (see full site report)
3. The Photographs below speak for themselves

PERSONAL PERSPECTIVE:

“This will be a tremendous breakthrough if we can maintain the current trial results and even better them if sown pastures increase production even further. There are a number of sites along the coast that will benefit from this project” Kevin Hall, October 2006.



BEFORE TREATMENT



AFTER TREATMENT

SITE 16

PROJECT: Raising Salt Bush productivity on Saline Land

PROPERTY OWNER:

CONTACT: Robert Campbell – Chairman
Barry Oswald – Project Manager

APPLICANT: Sheep Pen Creek Landcare Group

PROJECT OBJECTIVES:

- Trial the new variety of salt bush (De Koch)
- Compare the productivity of saltbush with and without raised beds on discharge sites.
- Reduce water logging to allow other species to be established with the saltbush.
- Develop high value fodder in saline and unproductive areas
- Utilise saltbush as part of a drought management strategy.
- Deep rooted long lasting plants to assist with lowering water tables.

SITE DESCRIPTION:

Trial Site area: 4 Ha

Rainfall: 551 mm

Soil Profile Summary: pH (w) 6.6 – 7pH becomes more alkaline with depth to 100cm.

ECe (0-10cm) 1.05 – 5.1dS/m Moderately saline increasing with depth to 100cm

The site has a serious salinity problem with lower salinity at the surface and increasing with depth. The highest salinity levels are in the 100-150cm layer.

Site Treatments: The site was ripped and gypsum applied. Saltbush plants planted in November 2004 and due to dry conditions and failure of plants, saltbush was replanted in March 2005. Salt tolerant pastures were sown between the saltbush plants in May 2005. Species planted were: 32% Puccinellia, 52% Tall wheat grass, 5% Balansa Clover, 11% strawberry Clover. Width of sowings 2.5 metres. The size of the area was approx 1 ha. Over the remaining 3 ha the following was sown: Creeping saltbush (*atriplex semibaccata*), Ruby saltbush, (*enchylaena tomentose*), Spiny Saltbush (*rhagodia spinescens*), River saltbush (*atriplex amnicola*)

Grazing: The area was grazed lightly twice early in project and was again grazed June /July 2006 with 300 merino lambs for 4 weeks. This was overgrazed and salt bush eaten well back. Lambs did move in and out of area over that time for water etc.

OBSERVATIONS:

1. Minor drop in water table depth is more likely due to weather conditions (no rainfall recharge rather than species sown at this stage of the project.
2. 8,400 grazing days were achieved. Note: Stock moved in and out of the area over this period, so time associated with trial is hard to calculate.



Newly established saltbush seedlings in Autumn 2005.



The saltbush after being grazed. The sheep tended to go for the saltbush more so than the tall wheat grass.



Discussion

The SGSL Regional Producer Network project in Victoria and Tasmania set out to achieve three objectives

1. To provide support for a livestock producer network (SGSL Victoria/Tasmania) to access, understand and apply information and technology related to the profitable and sustainable use of saline land.
2. To foster the development of links for SGSL groups via the producer network, and links from the producer network to associated salinity initiatives in Victoria and interstate.
3. To develop and foster a participative, producer-driven approach eg. Identifying key producer issues relating to grazing saline land, exploring producer-nominated options and solutions, building on producer knowledge and experience and demonstrating and promoting farm practice change.

These objectives were framed to relate closely to the sub-program 'Sustainable Grazing on Saline Land' and to make a significant and positive contribution to the core SGSL objectives of:

- More profitable and sustainable grazing systems on saline land.
- Improved environmental outcomes from grazing saline land.
- Increased pride of producers in their product, production system and property.

The Victoria/Tasmania Producer Network Committee through its oversight, coordination and administration of the project, supported the successful establishment of 20 research/demonstration sites in the two states.

These research sites were established in particular areas or regions on a local 'host farm', and were overseen by groups of woolgrowers, whose land was affected by dry-land salinity. The grower groups were supported financially through the allocation of grants ranging from \$5,000 to \$20,000 and averaging approximately \$10,000. They were also supported through the assistance provided by a Project Officer, who, in conjunction with farmer members of the committee, assisted in the coordination of the establishment of the 'focus-sites' as well as in the design of the research work and provision of advice on appropriate data collection and interpretation. In addition technical support was provided to groups, where required, in the establishment and conduct of the work.

The project has been very successful in several major respects. All of the groups of woolgrowers who participated, decided on, and directed the nature of the research or investigation. So the work that was undertaken was directly relevant to their needs and the problems that they faced in managing their saline land. Secondly, worthwhile results were achieved and useful information and experience gained at almost all sites. Consequently, the evaluation of changes in grower attitudes and practices indicates that all of the host farmers and significant numbers of the group members associated with each site had developed increased confidence, ability and desire to more effectively manage their saline land. In addition, many indicated that they had already instigated changes to improve their saltland management as a result of participation in the SGSL Network Project. The Network Committee sees the outlay of funds to the participating groups as being particularly cost effective in this respect.

Several aspects of the management of the project have directly contributed to its impact on the woolgrowers involved. In particular, the process undertaken by the Network Committee in selecting the successful applicant groups has been very effective. The three main steps in this process involved a 'tendering' process and subsequent consideration of submitted expressions of interest, followed by a site inspection by the Project Officer and a farmer member of the committee. The 'tendering' process was flexible in that it provided for an advertised 'call' for expressions of interest as well as the sourcing of potential groups by Committee contact to provide for a reasonable level of representation of regions across the two states. The assessment of applications and the site inspection ensured that the application for support complied with the criteria set down by the Committee. These included factors such as the clarity of objectives, value to the group, a clear focus on salinity and clear economic/environmental benefits as well as being a proposal from which the group was prepared to share results. It also ensured that the proposal was realistic and practical, that there was a reasonable 'comparison' aspect to the work and that the group had the capacity to bring the work to fruition. The committee was also very aware of the importance of balancing the need to obtain meaningful data and information from the sites, with the danger of imposing too much rigour on the trial design and data collection. Ignoring this balance could have detracted from the practicality and credibility of the trial. Consequently the investigations were relatively simple and practical trials involving a clear comparison that would give growers the confidence and enthusiasm to further explore the management options available to them.

The deliberate focus on seeking applications from pre-existing groups was considered beneficial in that it obviated the need to encourage the formation of new groups in an industry where the group approach was viewed as being 'over-done' and having reached its limit in numbers. The effect of this policy was that applications were received from a wide variety of groups including LANDCARE groups, BESTWOOL groups, Salinity groups, and Grassland Society groups. It is also likely that it encouraged the applications from, and participation of, groups involved with 'Greening Australia' and the 'Woody Yaloak Catchment' Group. The successful meshing of the objectives of

these valuable collaborating groups contributed in considerable measure to the success of the project. In addition the feedback from the host farmers and group members in general suggested that the project had been successful in re-igniting the interest and enthusiasm of many of these groups in a new area of common concern about saline land management. This occurred at a time when group enthusiasm, cohesiveness and effectiveness had otherwise been 'flagging'.

The structure and operation of the Network Committee itself, is seen as having contributed to the successful outcome of the project. The mix of farmer representatives, an independent chair and Program Coordinator, along with DPI Project Officer DPI research representative, technical officer and administrative officer, combined to create an effective working team. However at the conclusion of the project, members of the committee commented that the structure of the committee at the outset should have reflected a greater focus on the operational or 'on-ground' knowledge, salt-land experience and capability of its members. In this regard, the inclusion of the research representative as well as the technical advisor mid-way through the project were definite positive influences on the operation of the committee and should have occurred earlier.



Each of the 'host farm' sites was 'characterised' by conducting EM 31 and EM 38 scans to provide a map representing the current and incipient salinity levels of the of the area. Soil tests and cores were also taken to provide detailed soil descriptions and salinity measures in the plant root zone as well as fertility levels in the various areas designated by the EM maps. The characterisations were intended for two purposes. Firstly they provided a common and uniform basis across all sites in both states from which to make valid comparisons and interpretations of trial results for the benefit of both participating growers and researchers.

Secondly they were an overall site description which provided the host farmers and grower groups with guidance on the trial establishment and design as well as 'benchmarks' for subsequent measurements on a range of site parameters.

The Network Committee considered that the characterisation work was cost effective and a good investment overall at approximately \$3000 per site. It was, however, also suggested that for the woolgrower audience, the data collected and presented may have been somewhat detailed and complex to be of as much immediate practical use as was intended. Use of this sort of site description, should, in future, be done with greater consideration of the immediate value to growers and the opportunity costs associated with the investment.

The inclusion of Tasmania in the project at a relatively early stage is seen as an important success of the project. Despite a slow start to the involvement of this state and to the establishment of suitable sites, the eventual success of the sites and the information and experience gained has reflected well on the objectives of the project. Feedback from leaders in extension and research in Tasmania suggests that the SGSL Producer Network Project has provided the impetus for a much greater concentration of effort in this area, and has, in fact, lead the state into a much more pro-active approach to addressing its salinity problems at a stage in the development of salinity in the landscape that is regarded as being "where Victoria was 10 years ago".

Despite the project's successes in the areas of; -

- Encouraging grower-driven investigation of management options for saline land
- Woolgrowers at almost all sites achieving indicative results, gaining confidence and useful information and experience.
- Changes in grower attitudes and practices,

there are several areas where the outcomes from this form of on-farm trial work could be considerably improved. The first of these is the need to recognise that in order to achieve effective on-farm trial designs and establishment, considerable technical and 'facilitatory' support is required. In addition, where it is expected that host farmers and/or grower group members will take measurements and data and generally undertake the task of monitoring the site treatments and their effects, there is a clear need for considerable technical support from staff experienced in the monitoring procedures required.

It became clear as the project developed that both the quality and quantity of data collected from sites was less than had been hoped. Despite initial good intentions on the part of host farmers and growers many were either unwilling, unable (due to time constraints or lack of familiarity and confidence with techniques), or were slow to start taking the measurements required. Consequently the quantity and quality of monitoring data at the Victorian and Tasmanian sites is variable and limited. It should be noted that the same problem was encountered to varying degrees in the other states' producer networks.



At the outset of the SGSL Producer Network project, despite the formation of an enthusiastic and effective committee, the level of resources committed to technical support was relatively low in relation to the actual size and nature of the support task required. The project officer was initially employed at less than 0.3 of his available working time. This was insufficient to undertake and maintain the level of communication, guidance and support (and the development of the associated trust and empathy with host farmers and group members) required to ensure effective establishment and continuing operation of the site and grower-group. Exacerbating this problem was the fact that insufficient attention was given to the effective involvement of a support network of DPI (or other) technical staff who could be 'on-tap' locally to provide support and assistance to the site owner and grower group. In some instances technical staff time from DPI was provided on an 'ad-hoc' basis and in others, local coordinators with technical expertise were found or stepped in to fill the gap. Nevertheless this arrangement was less than satisfactory in ensuring appropriate and timely assistance and support and should be addressed in similarly structured projects which follow SGSL. The need for this network is further emphasised by the relative success of the inclusion of funded technical staff in the projects in Western Australia, in particular, and in New South Wales.

Several issues need to be highlighted in relation to timing. These relate not only to the scheduling of committee tasks and operations but to the impact of seasonal conditions on the establishment of sites and the extent to which the Victorian and Tasmanian trials have been able to produce meaningful results with long-term and/or robust significance.

The Victorian Committee was formed in early 2003 and later incorporated the Tasmania component of the project. It was not until mid 2003 that the structure of operations and appropriate personnel were in place within the committee to enable a 'call' for expressions of interest from interested grower groups.

Soon after, many of the sites and the establishment of pastures were affected by adverse seasonal conditions. Saltland sites are difficult environments in which to establish anything – the windows for establishment are small, the growers are often not familiar with the species and their particular requirements and therefore the failure rates and re-sowing requirements and missed opportunities are often (and were in this project) higher than was planned for.

These delays combined with the short duration of the project (in biological/agricultural terms) meant that almost all of the Victorian sites had only relatively recently established their sites, had collected limited growth data and were only just grazing many of the pastures. It will be important in any work which follows the current project that sufficient time is allowed for the establishment of the committee and its modus operandi without detriment to the 'research' component of the project. It is equally important that sufficient 'lee-way' is allowed in the duration of the overall project that the vagaries of climate and biological systems do not prejudice the research outcomes.



At a recent committee meeting committee members posed some questions they thought were important to consider.

- Did we get the balance of the funding right? Should we have established fewer sites and monitored more?
The committee agreed that given the monitoring was below expectations and it may have been improved by more financial support a reduction of two or more sites could have been the right number. However there were areas of Victoria and Tasmania where salinity is present and no sites were established.
- To what extent have we built a case for a better understanding of salt in Vic?
The committee considered that the program has substantially built a better understanding. This understanding is demonstrated through results of the survey which records the words such as confidence, 'doing something positive' and 'I will extend the trial to paddock size'.
- Are we confident we have enough information to go out into an extension campaign?
The committee judged there was sufficient information. However, more information which will come from continued site monitoring would be helpful, and needs to be packaged into farmer friendly products.

Several Victorian sites were assessed for their economic performance, to understand whether the treatments employed would be of economic value to producers. The three sites were spread throughout the state with trials being conducted in Hamilton with 40 hectares, Bairnsdale with 16 hectares, and Seymour with 8 hectares. Either Tall Wheat Grass or Saltbush has been established. The results show that average carrying capacity has increased by 13 dse/ha. It can be said that from the treatments studied it is economic to replace unproductive salt affected pastures with improved salt tolerant species. It must be stressed that the assessment has only occurred on a small sample of sites. Details of the report and tables are available in Appendix 5.

Products

As part of the effort to meet the objectives of the program the committee is directing the development of products which may be used directly with producers or available to extension personnel for use in their extension programs. Two products are under development by the committee, an update of the DPI AgNote series and Victorian/Tasmanian Sites Booklet.

This series of AgNotes represent a collation of current technical and practical knowledge and information from SGSL work and all other available sources which will assist landholders and their advisers to address the key saltland management questions.

The Sites Booklet will provide a collection of information and stories in a maximum of four A4 pages from each site in a 'poster' format that includes photos and site data as well as information on the group, the host farmer, the site and its history and management, the issue being addressed, and key messages and results.

This is 'work in progress' and full details are available in Appendix 2

Project Assessment

Project Outputs

A number of activities were undertaken by the project team, comprising the Producer Network Committee, DPI support staff and other agency representative personnel. These activities included field days, farm walks and site inspections, each activity targeted to a different audience and with a different intention. The public activities comprising field days conducted at the producers sites were generally well attended and with the range of agencies involved valuable information was provided. Farm walks were generally conducted with the group attached to the producer site as a means of providing information and allowing the group to participate in the planning and delivery of the R&D program already agreed. The committee tried to incorporate meetings with site inspections as a means of building committee knowledge and assisting producers with enquiries as well as offering support.

Communications have had a significant role in the SGSL program and taken the form of media tours, TV coverage, city based as well as local newspapers and farm journals. Presentations on the activities of SGSL have been delivered to salinity groups in Victoria as well as Tasmania. Displays have been mounted a various field days as well as posters at conferences. The photo competition winning entries were displayed at the Victorian CMA conference.

Project Impacts

Responses to verbal survey evaluation questions indicate that all (100%) of 'host farmers' recognise the potential value of work of this nature being conducted in the context of their own regional or district conditions. They have all commented that they see further application of the findings to their own farms.

Discussion with producer groups involved and in particular with host farmers indicates that they have developed a greater understanding of the requirements for successful sowing and establishment of salt-tolerant pasture species. As well, there is recognition of a further need to increase that understanding.

Eighty-eight percent of the Victorian and Tasmanian host farmers responded that SGSL had improved their knowledge, skills, and/or confidence in managing saltland.

Anecdotal evidence suggests that technical advisers from a range of organisations are talking to producers about how best to make better use of salt affected land and are 'watching' the progress of network sites re local applicability.

A recent media tour of SGSL sites and the interest from those involved, suggests that there is interest from a range of media audiences, including urban, in receiving information that demonstrates that woolgrowers are making genuine efforts to improve the sustainability and productivity of salt-affected land.

More than half (55%) of the farmers involved with the sites stated that they had changed practices in light of the results of the SGSL trial. All of the remainder said that it was either too early in the establishment and utilisation of the site and the interpretation of results to be definitive about changing practices but were assessing what action they should/could take.

A detailed report of the project assessments can be found in Appendix 2.



Conclusions

That the method of funding groups to engage in self chosen R&D programs is successful.

That a committee of producers, scientists and extension personnel can plan and deliver a complex R&D program.

That the tendering or expressions of interest process for selecting interested parties is a valid and effective method of selection.

That it is possible to introduce a proposed program into pre-existing established groups.

That the process of linking 'research sites' with farmer groups and extension personnel can be a highly successful method of extension.

That the process of combining site visits with committee meetings is a useful and economic use of resources.

That the process of producer involvement and management of the sites was a useful and effective method of learning.

That the program was not able to establish a vibrant interactive network. This may have been due to factors such as landholders only having small areas of salt on their land, adverse seasons hindering producer involvement and late starts to site development.

By engaging Tasmanian landholders and extension staff in the program the issue of salinity in Tasmania has gained a higher profile.

That the program did not engage well with other salt interested parties and extension officers due to insufficient resources being allocated to this area of communication.

That the method of engaging producers with on farm R&D is a cost effective technique for learning and extension.

That as a result of the program, farmers whose land is salt affected, have more confidence in its effective management.

The program generated good news for the wool industry by doing something positive.

That all treatments studied in the economics case studies showed that it is economic to replace unimproved salt land species with salt tolerant species.

Recommendations

Recommendation:

Devise an extension process that will take SGSL and other products directly to the potential users.

Programs in the past have generated many products which remain on shelves and are unused. It is therefore a priority to ensure SGSL products get to their intended user. This may be achieved by the establishment of a stand alone function solely for extension purposes.

Recommendation:

Ensure establishment of committee prior to expected time of program commencement in order to have planning completed.

There is a need at the commencement of a program that the steering committee be established in good time prior to the program delivery in order to have sufficient time for proper planning.

Recommendation:

Allow for site monitoring to be undertaken by technicians in conjunction with landholders.

There is an opportunity to use professional data collectors in conjunction with the landholder and or the group. This process will provide an opportunity for increased learning opportunities for all parties.

Recommendation:

That networking between groups be formalised in order to promote information transfer and exchange of ideas and technologies.

There was no formalised process to encourage networking between groups which is seen as being potentially beneficial. A state forum with a format similar to the national forum would be a method of achieving this recommendation.

Recommendation:

That the amount of site characterisation information required from sites prior to establishment be limited.

During a review of the program the committee agreed that the extent of the characterisation, particularly the EM38 scan was, of a higher level than required for the program and the funds may have been better used elsewhere within the program.

Recommendation:

That further research be conducted into the interaction between native pastures on saline land.

The program did not address the relationship between salinity and native pastures. There are considerable areas of grazing land that bring together these two elements and consideration should be given to the issue in future research.

Recommendation:

That the wool and natural resources industries use the good news generated by the program.

The program generated good news regarding the wool industry and demonstrated that wool is doing something positive regarding environmental issues and this good news should be promoted widely. The term 'farmers fixing the environment' could be used.

Recommendation:

There is overwhelming support for the continuation of SGSL and the following issues should be considered in SGSL2

SGSL2 committee should have some members from SGSL1

Other programs that have not had committee continuity have difficulties in early program management

SGSL2 committee should have Tasmanian members on the committee.

A recommendation from the Tasmanian salinity officers and fully supported by the committee

SGSL2 should continue to gather data from some SGSL1 sites.

Some producer sites through either late commencement or current good quality data availability require continued monitoring to realise the full benefit of the investment. The small amount of economic gathered to date shows the move to new salt tolerant species can be economically worthwhile.

SGSL2 committee should include producers with a proven record of productive and profitable farming and a high level of NRM and/or salt land management capability.

The current committee recognises the need for potential members to meet the suggested criteria in order to discharge their responsibilities to the best effect.

SGSL2 should consider engaging with Rural Training Organisations during the planning of the program.

There may be an opportunity to develop a training product for producers from the learnings in SGSL1 and the program of SGSL2 and to realise on this opportunity RTO personnel should be engaged during the planning process.

