The Sustainable Grazing on Saline Lands (SGSL) Program in New South Wales

John Powell and Luke Beange[1]

"Woodvale", Old Gap Rd, Yass NSW 2582, and
NSW Department of Primary Industries, PO Box 865, Dubbo NSW 2830

Background

Dryland salinity affects over 2.5 million ha in Australia, mostly in the southern states, with the biggest concentration in WA. The prognosis is for a considerable expansion of the area affected by salinity and waterlogging. Much of this future degradation appears to be inevitable, despite the slowdown induced by the extended drought of the last few years, as only small-scale land management programs have so far been implemented. Grazing is one of the few activities that can make productive and profitable use of saline land.

The Sustainable Grazing on Salinity Lands (SGSL[2]) initiative focuses on making profitable use of saltland. While its scope is national, this paper deals primarily with the activities in NSW. Over a 5 year period (2002-2006), SGSL expects to achieve three outcomes: (a) profitable and sustainable grazing systems for saline land, (b) a reduction in the negative environmental impacts from salinised land, and (c) pride for participating producers in their property, production system and product. SGSL has two major activity streams:

Saltland Systems Research and Development. Key research issues are being investigated in much greater detail in major agency-based research projects managed by researchers.

Producer Network. Under the guidance of four state landholder committees, SGSL works with farmer groups around Australia to undertake farmer initiated research to build and share local knowledge and experience.

[1] John is Chair of the NSW SGSL grower network committee, and Luke is the Project Officer

[2] SGSL is a sub-program of Land Water & Wool, an initiative of Australian Wool Innovation Pty Ltd, with Land and Water Australia and support from the Cooperative Research Centre for Plant-based Management of Dryland Salinity and Meat and Livestock Australia.

NSW SGSL Saltland Systems R&D

SGSL has core research sites in WA (2), SA, Vic and NSW. In WA the first project operates on two large (about 50 ha) sites comparing unimproved saltland and land improved to the current best practice using a saltbush (*Atriplex* spp.)-based system with and without an improved understorey. The second WA project focuses on the value of saltbush-based pastures for sheep. Research in SA is on a puccinellia (*Puccinellia ciliata*)-based pasture where the impacts of fertiliser application and balansa clover (*Trifolium michelianum*) sown into an existing puccinellia stand are being assessed under continuous and strategic grazing. In Victoria, the research is focusing on the use of tall wheat grass (*Lothopyron ponticum*) and annual clovers or *Melilotus* spp. to provide quality out of season grazing compared to unimproved pastures.

Within NSW, the Lachlan and Macquarie catchments have been identified as two of the most 'at risk' from dryland salinity. These catchments are the targets for SGSL in this state due to their high and rising salt load and EC levels and generally small (<10 ha) discharge areas close to waterways, giving them a high salt delivery potential. Research at sites near Gumble (via Manildra) and Young are primarily focused on assessing the impacts of a salt-tolerant, perennial grass-based pasture (tall wheat grass-dominant) on pasture and animal production and water, soil and salt movement off-site – compared to an untreated control. Dr Warren King (NSW DPI at Orange) is the project leader. Due to drought and insufficient water and salt run-off events over the last two years, pasture and animal work has been delayed at these sites, however treatments have been sown to the improved pasture in autumn 2005.

NSW SGSL Producer Network – woolgrowers getting involved

Prior to SGSL, most producers with saline land had to learn how to manage saline land largely by trial and error, using only their own funds. To do so profitably and sustainably is an added challenge that becomes even more important as the impact of salinity spreads.

The SGSL Producer Network provides financial and technical support for wool and meat producer groups undertaking on-farm trials into profitable and sustainable use of saline land. The trials are relevant to the groups' particular needs, appropriate for their local conditions, and at a level of sophistication that matches their knowledge and experience.

The Producer Network aims to take the guesswork out of saline land management, including how it might be integrated into whole farm production systems.

The Producer Network projects in New South Wales are improving local knowledge and interest in saline land management, and are part of a national network of more than 120 grower projects. They are all aiming to improve skills in saline land management and improving the value of saline grazing to the whole-farm business.

Where are the sites and what are they doing?

There are 26 Producer Network project sites in New South Wales, located from Inverell in the north of the State to Albury in the south. The sites are:

Bannockburn
Nullamanna
Bellata
Manilla
Coomoo Coomoo
Narangarie
Tucklan (CWSFN)
Tallawang
Maryvale (CWSFN)
Arthurville
Stuart Town (CWSFN)
Gumble
Mid Macquarie
Ootha
Cudal (CWSFN)
Cranbury
Eugowra (CWSFN)
Cudgel Creek (CWSFN)
Taylor's Flat (CWSFN)
Fullerton Hadley
Boorowa
Grong Grong
Gundagai
Gundaroo
Avon Keajura
Keajura
West Hume

The project sites cover a wide range of saline land situations, being located across summer-dominant, uniform and winter dominant rainfall zones and in different landscapes and soil types. Some project sites are in locations that are waterlogged most of the year but are only slightly saline, while others are in locations that are not often waterlogged but are highly saline.

The Producer Network projects are addressing priority issues being faced by producer groups in different regions. They are also examining how different livestock types (dry sheep, weaners etc) perform within various saline land management systems. Collectively, the projects will dramatically improve the availability of knowledge about the establishment, management and performance of saline land grazing systems for the various saline land situations encountered across the State.

A Case Study of one SGSL grower network project

Strong livestock prices, three years of dry seasons and a new research project have encouraged farmers in the Cranbury region of Central West NSW to take a fresh look at establishing salt-tolerant pastures on difficult-to-manage areas of their properties affected by dryland salinity. In one of the few positives to emerge from recent severe drought conditions, areas of land seasonally affected by waterlogging and salinity have dried out sufficiently for local farmers to be able to get machinery into the paddocks to spray out weeds and sow an experimental 'shotgun' mix of productive, perennial and salt-tolerant pasture species.

Two SGSL trial sites have been set up by members of the Cranbury Landcare Group to investigate the performance of new pasture varieties and identify the best combination of species for year-round

grazing opportunities. The 'Melvale' site is a four-hectare area at the bottom of a broad valley that experiences severe waterlogging over winter and spring and it has moderate salinity, making it very hard to establish a desirable mix of productive species. The 'Trelawney' site is a 3.5 ha saline site higher up in the landscape which is influenced by geological faults. A dam was constructed near the site in the mid-eighties, but now the water is too salty for sheep to drink and until recently it has been impossible to even get a vehicle on the paddock. While very different in nature, both sites are representative of the way salinity can present itself in the Central West region.

The project involves establishing and then grazing a 'shotgun' mix of grasses and legumes in both highly and moderately saline sites, depending on species suitability. Species being investigated include chicory, perennial ryegrass, Balansa, strawberry and Persian clovers, prairie grass, lucerne, tall wheat grass, puccinellia, phalaris and tall fescue.

Cranbury Landcare Group chair and local farmer, Lawrence Balcomb says that when favourable seasonal conditions return to the district, which in a normal season enjoys 600 millimetres of rainfall spread evenly throughout the year, farmers will be in the driver's seat to profitably and productively manage their saline sites.

"Every farm around the region has a little bit of salt tucked away somewhere," he said. "The SGSL trial aims to show what can be done with saline areas of our farms – whether it is for environmental or production purposes. If we can successfully establish a pasture on these areas then treating salinity doesn't become an expensive exercise. Through the trial we aim to get it right the first time and learn from both our mistakes and successes."

Lawrence argues that in the current farming environment it would not take too many lambs to pay off what will otherwise be a very important, long-term grazing resource over the summer period. "Anecdotal evidence this season from both sites shows that they provided valuable grazing during a dry spring," said Lawrence. "We are still looking at working on re-establishing barer areas before stocking it to capacity. If the trials are successful there is potential to double current production from these sites."

The group see the SGSL trials as having numerous benefits - not only for the 33 families involved in the Cranbury Landcare District - but also for the wider community. "There is still an important role for trees in salinity management, particularly for aesthetic, shade and biodiversity reasons, but if we can identify a summer grazing option which has more immediate benefits – effectively making an irrigation block out of the salt-affected country – this will appeal to many farmers and help them to re-think the way they manage salinity." "We can't expect to ever get rid of the salinity, but the idea of making these sites an evergreen paddock through summer that can be grazed for profit, as well as reducing the export of salt into the local Mandagery and Boree Creeks, is a major incentive for change."