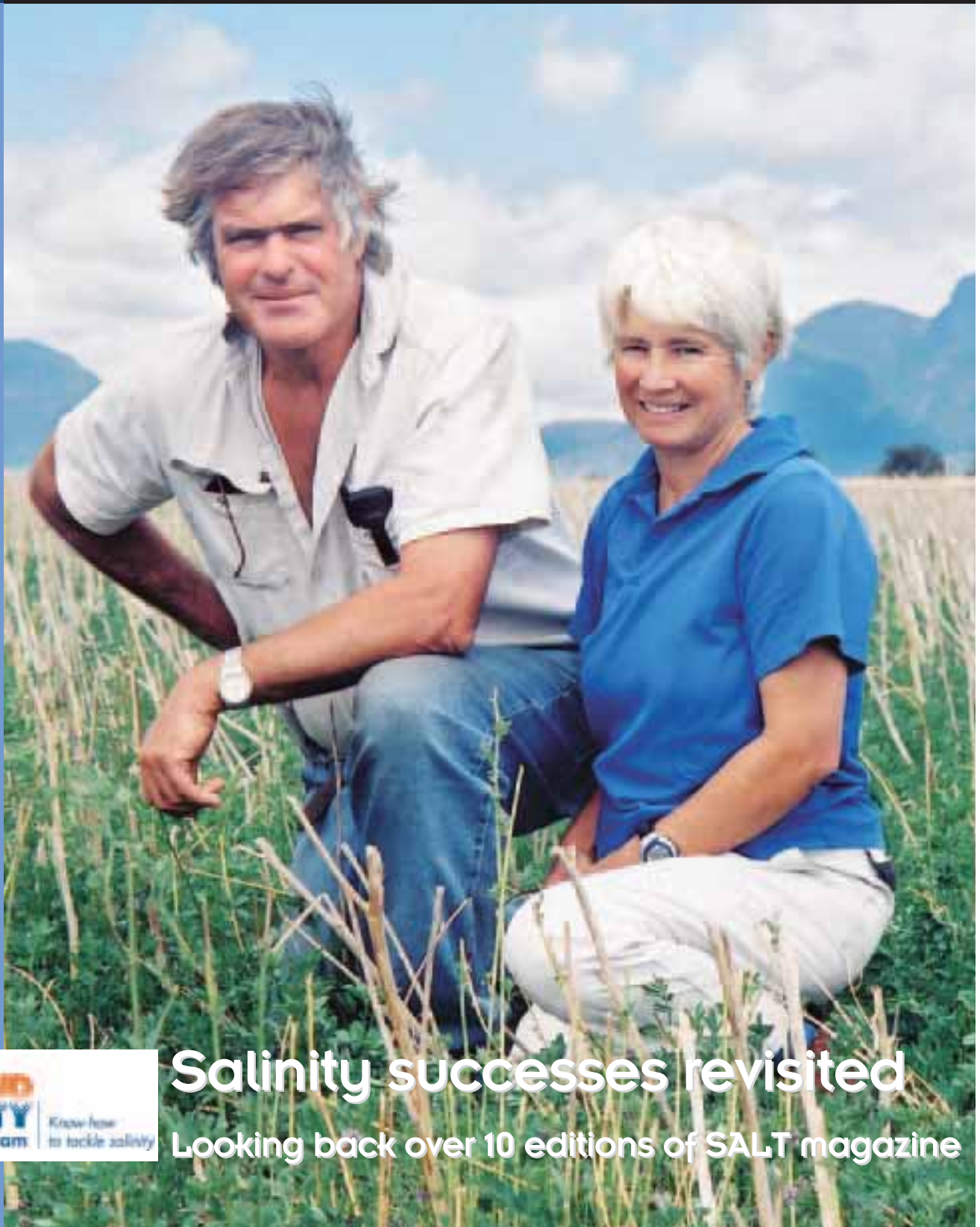


# salt

magazine

The Magazine of Australia's National Dryland Salinity Program

ISSUE No. 10



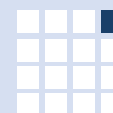
Personal stories  
of Australians  
combating  
and learning  
to live with  
dryland salinity



## Salinity successes revisited

Looking back over 10 editions of SALT magazine

# Farewell from SALT magazine ...?



What a difference 10 years makes! Ten years ago, there was no direct avenue of communicating salinity stories to Australia's farming community in a way that emphasised positive stories of farmers dealing with salt. *SALT* magazine has fulfilled this role for nearly five years! Distributed to grain growers across the nation, to many of the country's graziers and more recently urban and rural communities, *SALT* magazine has gone from strength to strength.

It is with a tinge of regret then that I must announce that this is likely to be the last edition of *SALT* magazine distributed under the banner of Australia's National Dryland Salinity Program (NDSP). After 10 years, the program is coming to a close, having supported a wealth of knowledge generating research and a strong network of people communicating about salinity: what

it is and just what to do about it. Practical stuff!

For the past year Australia's NDSP has been reflecting upon what it has achieved. Over the coming months, we will be distributing many useful products that bring together 10 years of know-how that should make a difference to producers, catchment managers and policy makers alike in dealing with this as yet unmitigated challenge. You will be kept informed about the release of these products very soon through Grains Research and Development Corporation (GRDC) and others - see our preview of what is in the pipeline on page 3 of this edition.



Richard Price

Reflection is a theme common to this edition of *SALT* magazine too. Over the past five years, we have reported many stories about individuals, families and businesses managing their own salinity concern. I for one have been

interested in what has become of these people and their stoic efforts. Well, in this edition we find out in at least a few cases.

So, with Australia's NDSP almost in the past, what will become of *SALT* magazine? As program leader, I am currently in discussions with a number of industry groups and research organisations, and I am very confident that support for the magazine will continue.

Dare I say it, but *SALT* may be here to stay! In the meantime, may I acknowledge the tremendous efforts of those that put in the hard yards to get this magazine to you, including Kim Mitchell, Jo Curkpatrick, Bruce Munday, Georgina Wilson, Mark Warnick and Lisa Gray from the NDSP Communication Team. Thanks also to all those at GRDC that have provided their significant support over the years.

I wish you all well in your future endeavours.

Dr Richard Price  
National Manager, NDSP

## SALT magazine salinity converter

### To convert:

- MilliSiemens per metre to deciSiemens per metre, multiply by 0.01
- MicroSiemens per centimetre to deciSiemens per metre, multiply by 0.001

## Our cover

Richard and Nannette Sounness have reaped the rewards from widespread establishment of lucerne on their 2800-hectare property in WA's picturesque Borden region since *SALT* magazine first visited them in 1999. The couple use lucerne to help control water tables and as part of a phase farming system with cropping to keep salinity at bay.

- See full story p6.

Photo: Georgina Wilson, NDSP Communication Coordinator (WA)



Any recommendations contained in *SALT* magazine do not necessarily represent the policies of the National Dryland Salinity Program partners. No person should act on the contents of this publication whether as to matters of fact or opinion or other content, without first obtaining specific independent professional advice which confirms the information contained in this publication.

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Land & Water Australia  
Rural Industries Research and  
Development Corporation

### Other contributors



# New salinity management resources the focus for NDSP

By Kim Mitchell  
and Bruce Munday, NDSP

Australia's National Dryland Salinity Program (NDSP) is now mid-way through the development of one of the most comprehensive, and collaborative, communication initiatives ever undertaken to provide farmers and their advisors, communities and government with practical, 'best-bet' and integrated systems to manage the salinity risk.

Over the past 10 years, the NDSP has managed around 50 major research projects valued at almost \$25 million. The second phase of the Program, which commenced in 1998, has supported 30 projects valued at about \$15 million. During this time, nearly 300 researchers, technical assistants, consultants and policy makers have contributed to the program, and have significantly enhanced our understanding of dryland salinity and our knowledge of what might be done to manage it.

In 2003-04, the NDSP Operations Committee and Communication Team, with the support of technical and communication specialists from the CRC for Plant-based Management of Dryland Salinity, have this year focused on four key areas: Key Findings, On-Farm Production, Catchment Management and Networks, as part of an accelerated communication and regional consultation process.

Products and services to emanate from the program later this year will synthesise and promote the latest salinity management systems, data, knowledge and technologies. Drawn from a decade of national and international research and development, this will feed a focused campaign of communication, knowledge transfer and building and supporting networks.

Pulling together all the research outcomes and synthesising them into a coherent 'story' has been the NDSP focus for the past few months. This is about making sense of the separate project outcomes in the context of all the other learnings, including



those undertaken outside of the NDSP. It is about seeing how these projects complement and add value to each other so that the end product is much greater than the sum of its parts.

The other challenge is to put this work in a form that is most useful to the end-users, people who are generally overwhelmed with information rather than starved of it. In other words, the NDSP is working hard to make the information accessible.

As this edition of *SALT* magazine goes to press, drafts of the three major resources for each stakeholder group have been road-tested by small groups of stakeholders in New South Wales, Victoria, Western Australia and South Australia.

Representing various aspects of agricultural extension, natural resource management, local government, catchment and Landcare groups, they helped the NDSP to assess the synthesised material currently under development and made

suggestions for improvement to enhance its value and functionality for the large variety of end-users.

The resources, prepared in different styles for comparison, have now been evaluated for presentation, structure and content.

The groups also test drove a CD-ROM that complements the hard copies and has links to all cited material ranging from TechNotes (two-page project summaries) to full project reports and scientific papers.

Alongside these major new products are a re-vamped website, including an on-line forum, and the tried and tested stable of products such as the NDSP's *SALT* magazine, *Focus on Salt* newsletter, *SALTLIST* and several project CDs.

• To find out more, including details of the resources currently under development by the various NDSP project teams, visit [www.ndsp.gov.au](http://www.ndsp.gov.au) or contact your nearest NDSP Communication Coordinator (see p23).



# Say cheese! Tall wheat grass and dairying still a prize combination

**Case study:** Ken Shone  
**Location:** Beeac, Victoria  
**Property Size:** 220 ha  
**Rainfall:** 550 mm per annum  
**Enterprises:** Dryland dairy milking  
210 cows, Jersey, Friesian and cross



By Jo Curkpatrick

**I**t is just two years since *SALT* magazine profiled dairy farmer Ken Shone at Beeac in Victoria – and in that time his pastures have just got better and better.

Using tall wheat grass on salt-affected ground as a base to feed his herd of Friesian and Jersey milkers, Ken has achieved outstanding results.

“In August 2003 the *Australian Holstein Journal* had our Friesians at number three in Australia under the Australian Standards Index,” says Ken.

“The Index is a reflection of production and these results show that we are achieving growth in production from our herd.”

When last visited, Ken Shone still had some salt-affected areas across his farm, but today, thanks to his intensively managed pasture system, salinity is getting harder to find.

Working with his share farmer Kirk Bella, Ken’s pastures are providing good cover and the production necessary to run over 200 milking cows on the property.



“You can’t see the bare salinity-affected areas that were there before and our results show that you can grow grass around here, particularly if you manage it right,” says Ken. “Our pastures are a mixture of tall

wheat grass, ryegrass, fescue, Balansa and Kyambra clover. They are grazed on a 24 day rotation across six to 10-hectare paddocks. The paddocks are direct drilled and we graze our milkers on first year pastures.

“During the year we make a couple of applications of fertiliser. We start with DAP sulphur giving 18 units of phosphorus and 10 of sulphur in March/April at 95 kilograms per hectare. We also apply 150 kg/ha of pasture booster and add 150 kg/ha of urea, which provides a hundred units of nitrogen. Round silage bales in plastic are also made and fed out from March onwards.”

Ken remains convinced that the key to productive pastures lies as much in how they are managed as it does in the species used.

He aims to keep the tall wheat grass well grazed to avoid the clumpy, tussocky growth it is often criticised for and if it starts to get away he will take the mower or mulcher to it.

“There are others in the area using tall wheat grass, but we are being careful with

## Key points

- Tall wheat grass pastures underpin high performance dairying operation.
- Salt scalds have all but disappeared.
- Careful management prevents 'tussocky' or 'weediness' issues.



**Opposite page:** Productive, perennial pastures drive Ken Shone's successful dryland dairy operation and form an important component of his salinity management strategy

**Below:** Tall wheat grass underpins the pasture and silage base for Ken's 210-cow dairy operation. Salt scalds have all but disappeared since *SALT* magazine last visited the property in 2001.

where we feed out any hay, to ensure it doesn't develop as an environmental weed," Ken comments.

"There's plenty of useable food in there," he says, proudly surveying the paddocks of well-grown, healthy pastures for his high performance dairy cattle.

• *Jo Curkpatrick is NDSP Communication Coordinator (Victoria).*

### CONTACT:

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Photos: Jo Curkpatrick, NDSP Victoria

## Five years of awarding salinity excellence peaks in 2004

Nominations for the fifth W.E. Wood Award, Australia's most prestigious award for excellence in salinity research and development will close on Friday, 2 April 2004.

Australia's National Dryland Salinity Program (NDSP) sponsors this annual award for outstanding scientific or technical excellence, which recognises a unique contribution to managing salinity over a sustained period of many years.

Consideration is also given to applied, innovative technical and social responses to the salinity challenge. The W.E. Wood Award is open nationally to individuals and will be judged on scientific content, innovation and social implications and the potential for being of lasting significance to Australia. Nominations officially opened in early February.

NDSP national manager Richard Price said the prestigious award attracted a substantial prize and national recognition of work undertaken to overcome the salinity risk to Australia's land and water resources.

Submissions for the award must meet the key criteria of scientific content, innovation, and lasting significance to Australia, as detailed in the Award's Terms of Reference, which are available on-line from the NDSP web-site [www.ndsp.gov.au](http://www.ndsp.gov.au) or from your nearest NDSP Communication Coordinator (see p23 for contact details).

Submissions close on Friday, 2 April 2004.



## COVER STORY

# Lucerne still looking good at Borden

**Case study:** Richard and Nanette Sounness, Salt River Road, Borden  
**Location:** 400 km south of Perth, WA  
**Property area:** 2873 ha  
**Rainfall average:** 425 mm per annum  
**Enterprise:** 7500 sheep for wool and lambs, wheat, canola



By Georgina Wilson

**W**hen *SALT* magazine visited the Paper Collar Grazing Company in 1999, Richard and Nanette Sounness were very positive about the value of lucerne in controlling rising water tables and salt. Five years on and that enthusiasm is just as strong.

They are also delighted that other locals are at least “putting their toes in the water” with lucerne. Some neighbours are now growing even larger areas than the Sounnesses, losing Richard his local ‘lucerne king’ crown, despite being a former chairman of the Western Australian Lucerne Growers.

Richard Sounness was drawn to lucerne about 10 years ago, more as a soil tonic after a long and sustained cropping program, than a salinity treatment. But during the high rainfall years of 1996-98 he was very surprised by its capacity to use soil moisture and therefore control rising groundwater. This was “the icing on the cake”.

The Sounnesses now have 455 hectares or about a sixth of their land, sown to lucerne in phase farming mode. Each year about 80-100 ha is removed and returned to crop while a new area is planted with lucerne.

But Richard is the first to admit that while salinity is under control in most paddocks, it is far from beaten. Bare patches of ground where the lucerne won't grow are still



visible in some paddocks. Barley grass will grow there and Balansa clover has done okay.

“Maybe I started with lucerne a bit late for salinity,” he muses. “But growing lucerne has many advantages for the farming system, controlling water tables being only one of them. It helps to break the cycle in

controlling weeds and diseases such as take-all. It provides good grazing for lambs and pregnant ewes at critical periods such as around harvest. And another bonus is that I'm not getting bogged in my paddocks!”

In 2003 the Sounness properties grew 900 ha of wheat and 575 ha of canola, with the rest of the land in either lucerne or annual legume pasture, a mix of crimson and Balansa clovers, Orion medic and Cadiz serradella.

This mix is sown dry in late March for convenience, assuring that it doesn't get overlooked when everyone is flat out putting in the crop a month or two later.

They finished 1250 lambs for market on the lucerne, getting them to around 21-22 kilograms dressed weight without needing to buy in pellets.

One of their biggest successes in 2003 was under-sowing canola with lucerne in a paddock of about 90 ha. Conventional wisdom was that moisture levels would be insufficient for both crops leading to stunting of one or both, but 525 mm of rain meant that both plants thrived, leaving good lucerne pasture amid the canola stubble.

Soils are mostly duplexes - sand over clay and gravelly sand over clay, always needing addition of lime to raise the pH before growing lucerne.

You can't plant a whole farm to trees and

## Key points

- Lucerne has become an important element of the farming system, helping control water tables and providing other benefits.
- It is very useful in using excess water, but don't expect it to grow in saline conditions.
- Phase farming with lucerne and crops continues to keep salinity at bay.

lucerne is much the same. It's a question of getting the right balance in the system to have enough perennial pasture to suppress the water tables and be used profitably by livestock, but not too much to adversely affect overall returns.

"We need perennials in our farming system, and you have to change that system while showing a profit along the way. This can be a difficult balance," Richard said.

About four years of crop, usually wheat/wheat/canola then wheat, is a typical rotation before returning land to lucerne for three or four years.

While cagey about returns, Richard says their system is now about right with the income to cost ratio looking healthy!

• Georgina Wilson is NDSP Communication Coordinator (WA).



Photos: Georgina Wilson, NDSP WA

**Opposite page:** Checking water table levels with a piezometer installed on the Sounness property. One sixth of the farm is sown to lucerne at any one time to help keep groundwater under control.

**Right:** Canola undersown with lucerne was a star performer in 2003 for Richard and Nannette Sounness.

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## The science behind the story

# Longest phase rotation trial in WA

By Roy Latta

The Sounness property at Borden has been the site of the longest phase pasture rotation trial in WA comparing annual and lucerne-based pastures.

The trial began in 1995 financed by the Grains Research Development Corporation (GRDC) with involvement from CLIMA, the Department of Agriculture, the Western Australian Lucerne Growers and more recently the CRC for Plant-based Management of Dryland Salinity.

A three-year pasture phase was followed by three years of crop (wheat/canola/wheat) then three more years of pasture completed in 2003. In the first phase lucerne was shown to maintain a 40-100 mm soil moisture deficit compared to annual legume pasture (sub-clover).

The lucerne controlled weed populations better through physical competitiveness and knockdown herbicide tolerance, contributed more nitrogen to the soil, and resulted in 10 per cent better wheat yields. When returned to pasture again following

the cropping phase, lucerne created a significant moisture deficit or buffer in the soil compared with the annual pasture, reaching a maximum deficit of 130 mm. When removed in spring of 2003 the lucerne had used 105-120 mm more stored soil moisture than the sub clover. The soil was therefore able to store more in-coming rainfall before leakage to the groundwater could occur.

Although it is widely assumed that lucerne produces less biomass than annual pasture, this was not true after the 2001 establishment year at Borden. While the annual pasture dried off in October 2002, the lucerne continued to grow into summer, producing about 4.5 tonnes per hectare, equalling the 12-month production of the annual pasture and providing valuable early summer forage to fill the gap between annual pasture senescence and stubble availability.

Good conditions in 2003 resulted in higher production with both species

producing about 8 t/ha of legume between April and removal in spring. Lucerne had about half of the weed burden compared with the annual pasture.

This evidence supports a lucerne grazing study carried out on the Sounness property in 2001 and 2002 which found that in response to late spring and autumn rain lucerne extended the seasonal forage production and increased the returns for a sheep meat and wool enterprise compared with the annual pasture/stubble grazing regime.

• Roy Latta, DPI Victoria, leads the CRC for Plant-based Management of Dryland Salinity project 'High Water-Use Farming Systems' that integrate crops with perennial pastures.

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# 'Landscape goals' aim to halt the salt at 'Allendale'

**Case study:** The Marsh family  
**Location:** Boorowa, NSW  
**Property Size:** 814 ha  
**Rainfall:** 620 mm per annum  
**Enterprises:** Sheep (wool), cattle and prime lambs



**T**he property 'Allendale' is located on the south-west slopes of NSW. In the late 1980s, scalds developed on the property following two consecutive wet winters. Using a holistic approach to manage the problem, the Marsh family focused on a system of planned grazing to achieve their landscape goals of increasing the diversity of perennial grassy woodlands and maintaining 100 per cent ground cover all year round. David Marsh tells his story to *Lisa Gray*.

"My family has managed 'Allendale' for 38 years. Like many farms in the district, the property has been used to run sheep, wool, cattle and prime lambs and for crops such as wheat, oats, triticale and lupins.

In the 1970s we noticed some of the yellow box and redgum trees were dying. Sheep had been camping under the trees and there was a lot of scarab beetle activity in the area. So, we planted a mix of native species along the fence lines to provide shelter, wind breaks and to increase biodiversity.

Salinity was identified in parts of the district in the early 1900s, but it wasn't until the late 1980s we realised it could be part of our problem. We had a couple of wet winters and as a result the water table started to rise, bringing salts to the soil surface.

Salt crystals were visible in some of the low-lying paddocks and stock used to lick salt from the ground. There was a large patch of bare ground surrounded by salt-tolerant species like sea barley grass, beard grass, spiny rush and ryegrass.

The affected areas were fenced off and planted with salt-tolerant species such as puccinellia, tall wheat grass and strawberry clover. But we realised the scald was only a



symptom of the problem and decided to look at it from a wider point of view.

Over the next 15 years we concentrated on managing the recharge areas higher up the slope. Perennial pastures were sown at the end of our cropping rotations. We fenced the creek (leaving a 100-metre buffer on either side) and existing vegetation to encourage regeneration and we direct seeded larger habitat areas.

In total we have 160 hectares that are managed for conservation values and to

improve water quality and recharge control.

In 1999, we introduced a system of planned grazing where pastures are grazed intensively for a short period of time and allowed to completely recover before being grazed again. The pasture growth is monitored and recovery rates vary from 30 days in times of fast growth, to between 90-120 days in times of slow growth. In the dormant season we allow for 120 days of no growth and add another 60 days in case of drought. The 60 days of drought reserve time is planned for every year but a new plan is prepared when the season breaks in autumn.

At the moment we have one mob of 5500 sheep and the paddocks have been subdivided so the sheep can be moved easily. The rule of thumb for planned grazing is: "fast moves in quick growth, slow moves in slow growth".

Planned grazing helps us maintain healthy pastures and encourages regeneration of native perennials such as wallaby grass, red grass, giant spear grass and microlaena. The plants grow to their full potential instead of being kept small by constant grazing and the large leaf area is synonymous with higher water use. The deep perennial root system also improves the soil water-holding capacity.

Monitoring our grazing system has increased our awareness of changes in the landscape and allows us to change our practices if necessary. The drought conditions in 2002-03 were tough but we were able to look ahead and sold 2500 sheep while things were still okay. We only had to feed 1500 weaner sheep for two months, so selling the stock early saved us feed costs of around \$100,000. The pastures recovered quickly and we were able to buy stock back earlier than most and at a reasonable price.



Photos: Lachlan Salt Action Team

## Key points

- Salt-tolerant pastures provide a productive, perennial pasture base in saline areas.
- '100 per cent groundcover, 100 per cent of the time' policy in place to manage water tables.
- Planned grazing and rigorous pasture monitoring a priority.

This year we decided not to crop for the first time. Like many farmers we have been concerned about the high cost structure of the cropping enterprise and the increasing reliance on herbicides. We think it's important to find a system of agriculture that can make a profit as well as help regenerate the landscape. Our livestock enterprise is profitable, so we decided to focus on our landscape goals.

We manage our property to maintain 100 per cent ground cover 100 per cent of the time, to increase the proportion of perennials and to improve biodiversity. In the last 20 years, we've increased the tree cover from three per cent to nearly 20 per cent, providing habitat for the many species of birds that help spread seed through the landscape.

Aesthetically the place looks very different and the trees and pastures have helped control recharge in the area. It's hard to say if the water table has dropped because we've had three very dry years. But, our groundcover is much better and the scalded areas have almost completely healed."

\* Lisa Gray is NDSP Communication Coordinator (NSW)



**Above:** Livestock are managed as a single mob in an intensive rotational grazing system.

**Opposite page:** David Marsh (top) uses a planned system of grazing to increase the biodiversity of perennial grassy woodlands on his property. Healthy pastures now dominate the landscape on 'Allendale' (bottom).

### CONTACT:

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## The science behind the story

# Positive approach sees opportunities emerge from salinity

By Dr Peter Orchard

The story of 'Allendale' is not unique in respect to the development of the symptoms of salinity but is unique in many respects in the subsequent management. While many still call salinity the 'problem', David realised that scalds were 'symptoms' of a farming system out of balance with its environment and that a change of system was needed. So while the 'band-aids' of puccinellia, tall wheat grass and strawberry clover were applied to the scald, David also set about changing his system. Increased perenniality, with trees and pastures, and a planned grazing system clearly gives David greater control over his situation.

Producers are likely to have a better range of options in future years for both discharge and recharge sites as results come to hand from research organisations such as the CRC for Plant-based Management of Dryland Salinity (Salinity CRC).

David is obviously one of the leaders in adopting a perennial-based farming system and serves as a model for others (although it has to be acknowledged that longer-term outcomes need to be measured).

Since the mid-1980s, NSW Agriculture has focused on restoring perenniality in the landscape via lucerne, introduced grasses such as phalaris or cocksfoot, and native grass-based pastures such as microlaena, redgrass or wallaby grass. In most cases this was to address soil acidity problems and the need to reduce the leakage of water and nitrate, but clearly the issues are linked and there are multiple benefits in re-introducing perennials.

All State agencies involved in the Salinity CRC, together with Landmark, are assembling information on establishing and managing perennials as part of the national extension program. However, 'what do I do first?' and 'what goes where?' will be frequently asked questions. Research outcomes from the Salinity CRC will, in time, provide the answers. In the interim, there is still a large amount of information available to landholders to assist them to start in the right direction.

• Dr Peter Orchard, NSW Agriculture, leads the CRC for Plant-based Management of Dryland Salinity project 'National extension of farming systems based on lucerne and other perennial pasture plants' in collaboration with Landmark.

### CONTACT:

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# Sustainable grazing boosted by beds

By Georgina Wilson

**G**ary Peacock is a really happy man. In the last year (2003) the Land, Water & Wool Sustainable Grazing on Saline Lands (SGSL) project on his property has yielded his best annual pasture yet, plus a barley crop that is providing a massive feed bonus for his sheep.

Through the Evergreen Group, Gary proposed a trial of raised beds which was approved in the first round of Land, Water & Wool SGSL projects in Western Australia in mid-2002. Land, Water & Wool is a national research initiative between Australian Wool Innovation Limited and Land & Water Australia. Then followed a precise contour survey with a differential GPS surveying system and the design and construction of a series of drains to remove run-off and root zone drainage, supervised by researcher Greg Hamilton.

"We surveyed a much larger area than the immediate trial paddock (75 hectares) to see where the water was moving and then selected the site, a compromise between the best and the worst land on the farm," Gary commented. "Layout was designed in March 2003, followed by fencing and earthworks in May."

Over the year Gary has discovered one of the harsh realities of research. Six weeks of unexpected dry weather in May and June delayed bed forming which required a machine from the Department of Agriculture. Shortage of pasture seed was another hurdle, so rather than wasting a year, a third of the trial paddock was sown to Moondyne barley in early July – a local variety available from a mate.

Gary Peacock has always been concerned about salinity. Being only 14 kilometres from the coast, regular sea breezes and rain-bearing fronts that cross his property are laden with salt. Bare patches of ground and extensive areas of sea barley grass indicate hazardous areas.

His property is second to lowest in the

**Case study:** Gary Peacock (and Evergreen Group through SGSL)

**Location:** Bibby Springs, 220 km north of Perth, WA

**Farm area:** 1730 ha

**Average rainfall:** 550-600 mm falling May-October

**Enterprise:** 7000-8000 sheep for wool



Photos: Georgina Wilson, NDSP WA

catchment and receives considerable run-on drainage. It is very flat, and its sand over clay soils are often waterlogged and flooded for long periods in winter. Before Gary moved shearing from September to November, teams often had to leave their cars and wait to be ferried 1.5 km on a tractor and trailer to make it to the shearing shed.

The waterlogging makes cropping very difficult and various attempts at drainage had little success. The Evergreen Group has been experimenting with sub-tropical pastures to use excess water stored in the soil over winter, but Gary's summer grass production has been poor, possibly affected by salinity.

For him, raised beds are now looking better. He has the option of both cool and warm season pastures without the problem of waterlogging. The sub-tropical component needs to be re-sown because the 2003 sowing was too late and spring too dry for reasonable establishment.

Whether the impromptu barley or the winter pasture of Balansa clover, Seaton Park and Trikkala sub clovers and four ryegrasses has done better, it is difficult to tell.

"Our barley planting was late, and not pasture-topped," Gary said. "So I'm not too fussed about the actual yields. The fact that this land yielded a reasonable crop despite the agronomic difficulties is amazing."

Being normally a livestock producer only, organising harvest of 25 ha of crop was another challenge, not possible until just before Christmas. By then, some shedding combined with a non-stop buffet for large numbers of local emus reduced yield to 31 tonnes of grain or 1.35 tonnes per hectare. This went into a farm silo and was being fed out in January, improving the nutrition of ewes prior to joining, and helping carry the last of his lambs through summer.

"For people in regular cropping country, this mightn't sound too special, but in this

## Key points

- This is the first year of a Land, Water & Wool Sustainable Grazing on Saline Land (SGSL) trial using raised beds for pasture production.
- Raised beds eliminated waterlogging and produced above-average yields of annual pasture and barley on previously unproductive waterlogged and saline barley grass land.
- Being able to grow a crop such as barley is proving a huge bonus on a purely livestock enterprise.

area it was fantastic,” Gary said. “By comparison, the barley grown on the control area without the beds just wasn’t worth harvesting.”

The winter pasture grasses grew to nearly a metre and clovers to half a metre. Both stubbles and pasture have provided

valuable extra grazing, when Gary normally has to buy in lupins to feed stock over summer. Despite concerns that the beds could be a stock hazard, both the sheep and uninvited emus have tended to follow the furrows, resulting in less damage to the beds than expected. Moving stock on and off has not been difficult.

“There are many advantages in combining crops with livestock,” Gary commented. “People take it for granted, but with cropping there is automatic pasture regeneration, you break the cycle for worm control, and the stubbles provide useful feed. Using the raised beds, it looks like we can break into this system for the first time.”

• Georgina Wilson is NDSP Communication Coordinator (WA)

### CONTACT:

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**Above:** Gary Peacock thigh-high in a raised-bed barley crop.

**Opposite page:** Barley on raised beds at Bibby Springs.

## The science behind the story

# Nurturing soil is crucial for raised beds

By Greg Hamilton

Dramatic boosts to crop yields and profits achieved by large-scale field research have generated widespread interest in raised beds during the last few years. More farmers are adopting them each year, particularly in the Esperance area of the WA south coast.

This success has fuelled optimism that the concept of raised beds may well rehabilitate moderately saline land.

Evergreen Group used the opportunity of Land, Water & Wool Sustainable Grazing on Saline Lands (SGSL) funding to become the first farmer group to run a research project involving raised beds. More groups have followed, and the ‘producer network’ established with this funding now has nine projects involving raised beds.

Principal Research Officer Greg Hamilton believes the Badgingarra sandplain on which Gary Peacock’s property is located, is potentially another ‘Esperance’ in terms of success of raised beds.

He describes raised bed farming as a package of soil and surface water management practices that creates a porous

seedbed that drains and aerates the top 30 centimetres of the root-zone – nirvana for plants that would otherwise be waterlogged.

The latest research of Greg’s team is supported by Grains Research and Development Corporation (GRDC), WA Department of Agriculture and the CRC for Plant-based Management of Dryland Salinity. It is underway on three waterlogged and moderately saline sites at Cunderdin, Woodanilling and North Stirlings. The plots total about 300 ha, with equal areas of crop and pasture.

While farming systems to improve crop production through reduced waterlogging and salinity are his prime objective, Greg believes that productivity could be greatly improved using a system of raised beds if the pasture was harvested as hay or silage, rather than grazed. This would avoid pasture trampling, and the transported fodder would feed more stock for longer. Maintaining good soil conditions in beds for pasture would then be as simple as maintaining them for crop.

“No matter whether raised beds are used for cropping or pasture, they need to be managed with clear objectives of improving soil aeration, internal soil drainage and removing any hardpans to get the best results,” he said.

“Grazing sheep or cattle on beds will damage them and degrade the improved soil. In addition, grazing would involve the complications of providing water and fencing. But taking the pasture to the sheep rather than sheep to the pasture would increase both pasture and animal production and increase profit.”

• Greg Hamilton, Department of Agriculture WA, leads the CRC for Plant-based Management of Dryland Salinity project ‘Soil and water management for profitable crops and pastures on water-logged and saline land’.

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# Feeling more optimistic than ever about saltland

**Case study:** Wolford and Marie Parsons  
**Location:** Port Vincent, Yorke Peninsula, SA  
**Farm area:** 620 ha  
**Enterprise:** Cropping and wool, but moving into wool and meat



**E**nthusiasm spurred on by production and environmental successes for Wolford and Marie Parsons has only increased since SALT magazine first profiled their farm business nearly four years ago. Wolford tells the next chapter of their story to Bruce Munday.

Four years after our first article for SALT magazine (April 2000) we are now emerging from our best cropping year on record. At the same time we are adjusting out of cropping, planning to run this as a grazing enterprise in tandem with another family property in the Burra district.

When salinity first 'visited us' we saw the result as just a wasteland – good cropping land, now useless. Twenty or so years on, as we move more into grazing, we are seeing this saltland as a significant asset with real potential to increase in value. All our saltland is now fenced out and we are working towards getting it into sustainable production, not as a separate entity but as a valuable part of the farming system.

When we started trying to manage salinity the message was generally 'trees will fix it'. We also picked up on saltbush as something that would obviously grow on saline land and apparently had some grazing value.

We still believe trees have an important role to play, but they need to be the right species in the right place. The local *Melaleuca halmaturorum* does particularly well around the margins of saline land, but some of the 'salt-tolerant' eucalypts we were encouraged to plant for agroforestry are really struggling, either for lack of moisture



Wolford Parsons at trial paddocks for measuring animal production from saltbush and puccinellia with supplements.  
Photo: Bruce Munday, NDSP South Australia

now that the water table seems to have retreated or because their root zone has become salted out.

Saltbush has been something of a focus for us, and now a few years down the track we are even more enthusiastic. Whilst sheep apparently don't gain weight on saltbush alone, they certainly do well when there is a pasture sward of puccinellia between the rows. This is a great boon for us in autumn when there is generally a feed shortage that might otherwise have to be filled with grain. We have gradually introduced 'pucci' into all our older saltbush plantations, but with new areas we find it much better to start with the pucci and then establish the saltbush.

A couple of years ago Jim Franklin-McEvoy, a student at the University of Adelaide, did some research here on the

value of roughage and energy-rich supplements to improve the performance of sheep grazing saltbush. He found that supplementing saltbush with grain is indeed a profitable exercise and this has now led on to further more detailed research by the CRC for Plant-based Management of Dryland Salinity.

Slashing saltbush after heavy grazing has kept the bushes nice and leafy and within the reach of lambs and this appears to be a sustainable practice. Last year we fertilised with urea which certainly improved production, but we are yet to determine if it is profitable.

Addressing the recharge areas on the farm is more of a challenge, partly because we cannot be sure where the main areas of recharge are or even if they are on our farm. We don't have any test wells or piezometers