As one of the country's largest land-use enterprises and adapted to a wide spectrum of environmental conditions, our wool industry has a unique role in the management of our land and water resources.

The world's largest suppliers of apparel wool, Australia's 40,000 sheep and wool producers currently manage nearly 100 million sheep across 85 million hectares of the landscape, from the high rainfall areas on the coastal fringe to the medium rainfall wheat-sheep belt and inland to the saltbush and mulga lands of the pastoral zone.

Across this vast area, the industry faces many environmental challenges – including dryland salinity, water quality and managing native vegetation – all within a variable climate and the desire to balance production with good environmental outcomes.

Land, Water & Wool is the wool industry's largest-ever collaborative research investment in sustaining the natural resource base and aims to overcome the major challenge of access to information about sustainable wool production that is relevant, practical and in a familiar language.

Land, Water & Wool recognises that to ensure our wool industry remains healthy, the resource base on which it relies must be managed in a sustainable manner.

As you will see from the Land, Water & Wool Project Guide, our research teams are working closely with woolgrowers to tackle the big environmental issues, with projects currently underway with a range of woolgrower groups on more than 230 properties across Australia.

Woolgrowers will ultimately reap the rewards from the research investment by striving toward greater balance in their production systems – as well as a higher capacity to achieve healthier rivers, richer native bush and grasslands, more sophisticated utilisation of seasonal risk assessment and new confidence in productively managing saline lands.

Land, Water & Wool offers exciting opportunities that will shape the future of natural resource management for the Australian wool industry. On a broader scale, the program has the potential to position the nation's wool industry as more sustainable and competitive in the global marketplace, providing the connection between science and practice to influence change.

I encourage you to contact the people listed throughout this Guide to learn more about our project portfolio, and the benefits available to your business from our research outcomes.

Mike Wagg
Program Manager
Land, Water & Wool
# Introduction

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It is widely accepted by the wool industry that natural resource management results in profitability, productivity and sustainability gains. Working with woolgrowers to develop viable, practical and beneficial systems and solutions for managing natural resources on their farms is a primary aim of Land, Water & Wool.

Land, Water & Wool is the most comprehensive natural resource management research and development program ever undertaken for the Australian wool industry. It is a five-year $60 million collaboration between the wool industry's peak research and development body, Australian Wool Innovation Limited, and the nation's premier broker of natural resource management research and development, Land & Water Australia.

*Land, Water & Wool Best Practice Survey 2003

Our investment approach

Land, Water & Wool has seven core sub-programs:
- Sustainable Grazing on Saline Lands (SGSL)
- Native Vegetation and Biodiversity
- Managing Pastoral Country
- Future Woolscapes
- Benchmarking
- Rivers and Water Quality
- Managing Climate Variability

Grower networks are a critical component of the Land, Water & Wool approach to practical research and development; over 1300 woolgrowers and their families are directly involved in the initiative with a further 6000 growers receiving information regarding sustainability of the land and water resources that underpin their businesses. Many thousands more are indirectly receiving information relating to research outcomes, grower involvement and stories of success.

Land, Water & Wool researchers are working closely with growers to develop production guides, technical manuals, detailed case studies and new science-based information and advisory products for long-term, sustainable management of wool production on-farm. The comprehensive R&D driven initiative is supported by a unique communication and delivery program aimed at integrating improved natural resource management into the day-to-day activities of woolgrowers as well as raising the profile of profitable, productive management options for woolgrowers, and the environmental credentials of Australia’s dynamic wool industry.

How to use this guide

The Land, Water & Wool Project Guide offers a detailed overview of the Land, Water & Wool research portfolio. It is divided into eight sections, representing the seven sub programs with an additional section at the end devoted to Further Information.

Using the road-map on page 8 – and through colour-coding of sections – readers can quickly find their area of interest and determine the linkages with other core components of the program as well as linkages to other research initiatives and information resources.

This Project Guide documents project details such as the research code and project leader, offers an overview of the research to date and provides details on where to go to find additional related collateral. For further details on specific projects, you are encouraged to contact the project leader directly, or visit our website www.landwaterwool.gov.au

Feedback

Would you like to regularly receive information from Land, Water & Wool?

Simply complete and return the feedback form in the Further Information section of this Project Guide to join our mailing list to regularly access program updates, publications and other information resources.
Sustainable Grazing on Saline Lands
Dryland salinity is recognised as one of the major risks to agriculture and the natural environment in the high to medium rainfall zones of Australia. Forty-one per cent of the nation’s woolgrowers indicate they already have land affected by dryland salinity* and it is estimated that many other landscapes used for wool production are under increased risk.

Grazing is one of the few activities that can make productive and profitable use of saline land, and also reduce the negative impacts on the environment, and on property owners and managers. The SGSL sub-program is helping woolgrowers better understand and manage their saline land through a range of activities.

These SGSL activities and projects are achieving:
1. Improved production and profit from grazing saline land;
2. Better environmental outcomes from saline land; and
3. More pride for producers who are proactively changing their management systems to tackle saline land on their properties.

SGSL is the largest of the seven sub-programs in Land Water & Wool, managing $15.3 million in research and capacity building over five years. SGSL receives additional financial and in-kind support from Meat & Livestock Australia, the Cooperative Research Centre for Plant-based Management of Dryland Salinity, CSIRO and State agencies in Western Australia, South Australia, Victoria, Tasmania and New South Wales.

Alongside the five national research projects, SGSL also uniquely supports 120 local producer network demonstration sites in partnership with woolgrower groups across WA, SA, Victoria, Tasmania and NSW.

Sub-Program Coordinator
Dr Warren Mason
T 02 6363 1249
E warren.mason@lwa.gov.au

*Land, Water & Wool Best Practice Survey 2003
SGSL National Research Projects

SGSL has five national research projects across southern Australia. These projects are developing strong scientific evidence regarding ways to establish and maintain productive and sustainable saltland pasture systems.

PROFITABLE AND SUSTAINABLE GRAZING ON SALINE LAND IN WESTERN AUSTRALIA

Project: UWA29 Location: Western Australia

Project Leader
Dr Hayley Norman
CSIRO Livestock Industries
T 08 9333 6671
E Hayley.Norman@csiro.au

Overview
The focus is on whole farm systems, aiming to lower water tables and boost production from a wasted resource while at the same time increasing profitability. Several sites are located in the WA wheatbelt, with a further site at Grong Grong in southern NSW.

PRODUCTIVE AND SUSTAINABLE SALT-TOLERANT PASTURES FOR SOUTH AUSTRALIA

Project: UWA30 Location: South Australia

Project Leader
Dr Nick Edwards
South Australian Research and Development Institute
T 08 8762 9184
E edward.nick@sa.gov.sa.gov.au

Overview
Saltland pastures in the Upper South East of SA are largely dominated by puccinellia. The project focuses on improving the productivity of puccinellia and other complementary saltland pastures through grazing management, fertiliser strategies and different species mixtures. The research sites are located near Mt Charles in the Upper South East. Early evidence is emerging of substantial improvements in the pastures leading to high confidence of animal production benefits.

PRODUCTIVE AND SUSTAINABLE SALT-TOLERANT PASTURES FOR VICTORIA

Project: UWA30 Location: Victoria

Project Leader
Dr Malcolm McCaskill
Victorian Department of Primary Industries
T 03 5573 0957
E malcolm.mccaskill@dpi.vic.gov.au

Overview
Optimising the saltland pasture system for practical and profitable use concentrates on the practical implementation and optimisation of saltbush and understorey systems to provide the most effective inputs into livestock production systems.

OPTIMISING THE SALT LAND PASTURE SYSTEM FOR PRACTICAL AND PROFITABLE USE

Project: UWA33 Location: Western Australia and New South Wales

Project Leader
Dr Ed Barrett-Lennard
WA Department of Agriculture
T 08 9368 3411
E egbarrett-lennard@agr.wa.gov.au

Overview
Optimising the saltland pasture system for practical and profitable use concentrates on the practical implementation and optimisation of saltbush and understorey systems to provide the most effective inputs into livestock production systems.
Overview
Closely aligned with the South Australian project, Productive and sustainable salt-tolerant pastures for Victoria focuses on improving the productivity of saltland pastures. The primary focus is on the high rainfall, tall wheat grass-based pastures used on moderately saline land in Victoria with additional effort directed towards legume improvement, weed management and different pasture species options.

The site is located at Dunkeld in the Western District of Victoria.
The first season's results have been very promising - despite it being one of the wettest winters in about 100 years, some clovers have shown production of almost 10 tonnes of dry matter per hectare, which is equivalent to district standards from pasture on non-saline ground.

WATER SOIL AND SALT MOVEMENT FROM SUSTAINABLE SALT-TOLERANT PASTURES
Project: UWA32 Location: New South Wales

Project Leader
Dr Warren King
NSW Agriculture
 T 02 6391 3824
 E warren.king@agric.nsw.gov.au

Overview
The focus of the project Water, soil and salt movement from sustainable salt-tolerant pastures is on the movement of water, soil, salt and nutrients from saline discharge sites to waterways, and the impact on these flows by productive saltland pastures. The main research sites are located near Young in the Upper Lachlan catchment and Manildra in the Macquarie catchment.
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**Sustainable Grazing on Saline Lands (SGSL)**

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### Sustainable Grazing on Saline Lands (SGSL)

#### SA GROWER NETWORK PROJECT

The SA grower network committee is chaired by Bruce Munday and is supporting 15 grower sites.

For further information relating to Producer Network projects in SA please contact:

**Jock McFarlane**
Rural Solutions SA

**T** 08 8762 9100

**E** mcfarlane.jock@saugov.sa.gov.au

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### VICTORIA AND TASMANIA GROWER NETWORK PROJECT

The Victorian grower network committee is chaired by Christine Forster and is supporting 16 grower sites.

For further information relating to Producer Network projects in Victoria and Tasmania please contact:

**Trevor Pollard**
Department of Primary Industries Victoria

**T** 03 5573 0907

**E** trevor.pollard@dpi.vic.gov.au
### PROJECT TITLE | GROUP NAME | LOCATION
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Quantifying salinity discharge treatment impacts in the WY Catchment – Pittong site. | Woady Yalloak Catchment Group Inc. Group 1 | Pittong/ Ballarat
‘Spiny Rush’ control demonstration site – Pittong site | Woady Yalloak Catchment Group Inc. Group 1 | Pittong/ Ballarat
Quantifying salinity discharge treatment impacts in the WY Catchment – Mt. Mercer site | Woady Yalloak Catchment Group Inc. Group 3 | Mt Mercer/ Ballarat
Comparison of lucerne and salt-tolerant pasture species on saline land | Jalukar Landcare Group | Ararat
Saline pasture systems for profit: cell grazing vs set stocking. | ARMAG Group | Kerang
Bengworden saline pasture trial | Bengworden Landcare Group | Barinsdale
Evaluating pasture species suitable for saline land in the Whiteheads Creek Catchment | Whiteheads Creek | Seymour
Investigating environmental and agricultural benefits of grazing salt tolerant vegetation. | Murdeduke | Winchelsea
Agronomic/grazing potential/ water table benefits of growing saltbush on saline land | Berrisdale Bestwool Group | Barinsdale
Implementing saline pasture species results from test-plots to grazing trials | Yarram Saliency Group | Yarram
Assessing productive options for saline land in South Eastern Tasmania | Little Swanport Catchment Management Implementation Committee | Little Swanport, Tas
Wetland restoration and rotational grazing in high salinity area | Northeast Coast Landcare Group | Bridport, Tas
Cross bred sheep weight gains on saline tolerant pasture and fodder species | Upper Derwent Valley Landcare Network | Hamilton, Tas
Saltbush vs normal grazing productivity differences in sheep and goats | Hindmarsh Landcare Network | Hindmarsh
Investigation of tall wheat grass management techniques on saline land and collation of objective data | Hamilton Landcare Group | Hamilton
Raising salt bush productivity on saline sites | Sheep Pen Creek Landcare Group | Cania MB

### NSW GROWER NETWORK PROJECT

The NSW grower network committee is chaired by John Powell and is supporting 25 grower sites. These are strongly focused in central NSW (where most salinity expression is evident), but are distributed from Inverell in the north to Albury in the south. The sites are predominantly investigating the suite of saltland options available for the rehabilitation of saline land, and the associated establishment and management questions.

For further information relating to Producer Network projects in NSW please contact:

Luke Beange
NSW Department of Primary Industries
T 02 6881 1294
E luke.beange@agric.nsw.gov.au

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<td>Can grazing management rehabilitate a saline site?</td>
<td>Bannockburn</td>
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## Sustainable Grazing on Saline Lands (SGSL)

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<td>Inverell</td>
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### FURTHER INFORMATION

SGSL has a number of emerging information products and guides containing further information on dryland salinity, the program and its projects which are either free or available for purchase.

These include:
- **Saltland Pastures in Australia: A Practical Guide** (Product number PR 030 563)
- **Productive Solutions to Salinity Management** (Product number PX 030 508)
- **SGSL Projects and Products** (Product number PF 030 608)
- **Insights – Case studies on how farmers are successfully managing saltland for profit and sustainability** (Product Code: PK 040 658)
- **The Sustainable Grazing Lands Producer Network in WA – Growers and Researchers working together to turn the tide** (Product number PF 040 801)
- **SGSL section of the Land, Water & Wool website**: www.landwaterwool.gov.au

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### Other resources

A two-day EDGEnetwork™ course **Making a Profit from Saline Land** has also been developed by Meat & Livestock Australia with input from SGSL. For further information regarding the course, visit the website www.edgenetwork.com.au

SGSL Producer Network and National Research Site information is regularly published in the salinity research and management journals **Focus on Salt** and **SALT Magazine**. To subscribe, visit the CRC for Plant-based Management of Dryland Salinity website: www.crcsalinity.com

### On-line links:

- [CRC for Plant-based Management of Dryland Salinity](www.crcsalinity.com)
- [Australia's National Dryland Salinity Program](www.ndsp.gov.au)
- [CSIRO Livestock Industries](www.csiro.au/livestock)
Healthy rivers, creeks and streams are the arteries of the Australian environment. They provide the water to sustain many different plant and animal communities, as well as being the lifeblood of our agricultural enterprises and rural communities. Without healthy water bodies, Australia does not have a sustainable future.

With 78 per cent of Australian woolgrowers having properties that adjoin at least one waterway*, managing these water systems and keeping them healthy is a crucial part of running a profitable wool producing enterprise.

Land, Water & Wool's Rivers and Water Quality sub-program is helping woolgrowers find profitable, productive management options for land around rivers and streams. To do this, the program is studying issues such as gully and streambank erosion, water quality, weed management, and riparian zone management within a total grazing system.

Rivers and Water Quality is managing $1.4 million in research over five years. There are currently four projects in the sub-program. Three of these are working with a core group of eight to 10 woolgrowing families. A further 40 growers in each region are expected to participate through field days and workshops that demonstrate best practice for combining wool production with good environmental management. The fourth project in the sub-program is national in scope and will develop Land, Water & Wool River Guides for woolgrowers in high rainfall and sheep wheat zones of Southern Australia. Results of the projects will reach the wider wool industry through rural newspapers, industry-based publications and events and web information.

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*Land, Water & Wool Best Practice Survey 2003
Rivers and Water Quality National Research Sites

Rivers and Water Quality has four projects comprising three national research sites in NSW, Tasmania and SA and one national project.

MANAGING GULLY EROSION IN THE SOUTHERN NEW SOUTH WALES TABLELANDS TO IMPROVE WATER QUALITY AND MAINTAIN PRODUCTIVE WOOL PASTURES

Project: CLW56 Location: New South Wales

Local Project Coordinator
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Overview
Gully erosion is a major issue for woolgrowers in many Tableland areas. If left unattended, it can lead to large areas of valuable soil and nutrients being washed away, choking streams and rivers with sediment. Gully erosion can also make stock management and pasture utilisation difficult, reducing whole farm productivity.

The objective of this project is to measure the impact of gully erosion on wool enterprises, trial different management options, and decide on the most appropriate and cost effective ways to treat it. The first stage of the project involves monitoring selected gullies in the Murrumbidgee Catchment to determine how much sediment and nutrients the erosion is delivering to streams on-farm. As part of the project, Land, Water & Wool has also installed scientific equipment at the main research site at Bookham to monitor the water quality and its turbidity.

The project is trialling and closely monitoring different land management strategies at the research site, which include fencing off, revegetation, limiting stock access, and the possibility of building a dam at the top of the main gully. This work is acting as a catalyst to demonstrate to woolgrowers the costs of gully erosion, the practical methods to prevent, stabilise or rehabilitate gullying; and the benefits to production and the environment that can be achieved.

SUSTAINABLE SHEEP GRAZING SYSTEMS FOR RIPARIAN LANDSCAPES

Project: TPI2 Location: Tasmania

Local Project Coordinator
Ms Biz Nicolson
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Overview
Tasmania has a reputation for producing some of the finest and cleanest wool in the world. Helping woolgrowers determine the best ways of integrating good riparian management into sustainable grazing systems is the focus of this project. It is investigating the management of riparian pastures and native vegetation, and how different land use practices affect the health of rivers. The study is linked with the LWW Native Vegetation and Biodiversity project Integrating Biodiversity with Sustainable Grazing Systems that is also located in the Macquarie Catchment.

This project is monitoring the upper Macquarie River to identify the impacts of stock and how woolgrowers can improve management of their riverbanks. Particular consideration is being given to weeds, a significant problem along rivers in wool growing areas, and various aspects of weed control. Careful grazing and replanting is being used to allow native species to regenerate and improve the stability of streambanks, reduce erosion, provide shade and shelter for stock, and improve instream health.
OPTIMISING WOOL PRODUCTION AND PROFITABILITY IN THE MID-NORTH RIPARIAN AREAS
Project: MCB1 Location: South Australia

Local Project Coordinator
Kylie Nicholls
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Overview
Rivers and their adjacent riparian areas in much of the Mid-North of SA were once prime grazing country, typified by native grasslands and fresh water. These areas are now showing increasing signs of stress and degradation, including rising river salinity and reduced pasture productivity.

The aim of this project is to assist wool producers in the Mid-North region of SA to determine the most cost-effective way to manage riparian frontages, optimising profit and production, while also improving the condition of pastures and native vegetation, channel banks, and the creek environment.

This project is measuring the effectiveness of alternative stock management and other rehabilitation methods that aim to improve pasture and wool quality from riparian areas. It is quantifying as far as possible the costs and benefits of these methods, and providing practical guidance to wool producers on how to implement them to improve both production and environmental outcomes.

DEVELOPMENT OF LAND, WATER & WOOL RIVER GUIDES
Project: MCG4 Location: High rainfall and sheep wheat zones of Southern Australia

Project Leader
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This project will result in two LW/W River guides – one for woolgrowers in the high rainfall zone and the other for those in the sheep wheat zone. They are being developed as a resource to assist the wool industry and woolgrowers improve the productive use and environmental management of creeks, streams and associated riparian lands.

The first step to developing the guides was to work with woolgrowers to identify the management issues they considered most important in relation to water courses and riparian areas. Research findings from a 12-year national research program (supported through Land & Water Australia) investigating how riparian areas function were also taken into consideration as part of this first step. The information is now being brought together in the guides and being practically applied through the Land Water & Wool Rivers and Water Quality regional projects.

For each of the issues identified by woolgrowers, general scientific principles for achieving the relevant management objective will be provided. The guides will then list practical steps that can be taken by woolgrowers to implement those principles, as well as giving case studies of woolgrowers who have successfully achieved the management objective. An easy-to-use assessment tool will also be included in the guides so that woolgrowers can work out the condition of their riparian area.

By using these guides, individual woolgrowers will be able to prioritise management issues and objectives of importance to them, and apply them in a way that matches their property, enterprise and the resources available to gain both productive and environmental outcomes on-farm.
FURTHER INFORMATION

Rivers and Water Quality is developing new information products containing further information on the program and its projects.

These include:
- Tasmanian wool – natural landscapes, natural fibres (Product number PF 030 527)
- Preventing erosion to maximise wool production (Product number PF 030 530)
- Improving water quality to benefit wool production (Product number PF 030 529)
- A series of issues-based postcards developed by the Tasmanian project
- Grassland Matters – newsletter (Contact Kylie Nicholls ph: 08 8842 3275)
- Rivers and Water Quality section of the Land, Water & Wool website: www.landwaterwool.gov.au

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Other resources

* Land & Water Australia Rivers Program: www.rivers.gov.au
With the introduction of native vegetation and biodiversity targets both nationally and across many catchments, and increasing community concern and expectations about environmental management, there is now even greater awareness about the importance of natural resource management (NRM) within the wool industry. Encouragingly, more than 55 percent of woolgrowers who have native vegetation on their farm have already implemented NRM practices.

The Native Vegetation and Biodiversity Sub-program of Land, Water & Wool is exploring ways of managing landscapes so as to maintain enterprise profitability while meeting natural resource management objectives. It is achieving this by working closely with woolgrowers, drawing on the research already undertaken through the Native Vegetation R&D Program managed by Land & Water Australia and undertaking new research on the links between wool production and biodiversity.

The primary objective of the Native Vegetation and Biodiversity Sub-program is to develop, test and promote options for integrating wool production and the protection, management and restoration of native vegetation and its associated biodiversity.

Native Vegetation and Biodiversity, which is managing more than $2.3 million of research, and in kind contributions from partners over five years, has five regional projects in the high rainfall and sheep-cereal zones. Within these projects, more than 70 families with commercial woolgrowing enterprises are now directly involved with research projects on their properties, while a further 2750 woolgrowers are indirectly involved.

In order to deliver the research results to a larger group of woolgrowers, projects are working closely with wool initiatives such as 8x5 in Tasmania and BestWool 2010 in Victoria.

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Managing Native Vegetation and Biodiversity National Research Sites

Native Vegetation and Biodiversity has five major research sites in the high rainfall and sheep-wheat zones.

PROFITABLE, BIODIVERSE WOOL PRODUCTIONS SYSTEMS

Project: UNE43 Location: New South Wales

Project Leader
Associate Professor Nick Reid
University of New England
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Overview
A significant number of the world's premium fine woolgrowers operate on New South Wales' Northern Tablelands, which covers 2.5 million hectares and carries two million sheep. Over 1000 woolgrowers operate in the region, with granite, trap and basalt soil types and predominantly summer rainfall.

Profitable, biodiverse wool productions systems focuses on productive management of native vegetation - an increasing priority for the region's woolgrowers. The project aims to develop solutions to natural resource management issues such as native tree dieback, unpalatable invasive weeds, gully erosion, compromised riparian vegetation and water quality, vertebrate pests and a decline in biodiversity, all of which have the potential to impact on farm productivity and profitability.

By documenting and assessing results achieved on the project sites, practical guidelines will be developed for other Tablelands woolgrowers wanting to manage vegetation and its associated biodiversity in a way that is compatible with wool production.

Biodiversity conservation integrated into sustainable grazing systems

Project: UTA12 Location: Tasmania

Project Leader
Professor Jamie Kirkpatrick
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Overview
The Tasmanian Midlands is well known for producing some of the world's most prestigious wool. Not so well known is the fact that the wool-producing enterprises in the region are substantially based on native vegetation that can be of high conservation significance.

The Tasmanian regional project, Biodiversity conservation integrated into sustainable grazing systems, is looking at how woolgrowers currently manage their native vegetation for conservation and production purposes on-farm. This includes working with woolgrowers to conduct grazing trials on native pastures, survey on-farm biodiversity throughout the Midlands region and develop key performance indicators for environmental best practice.

One of the main priorities of the project is to learn about the economic and ecological value of native vegetation from local woolgrowers and research sites.

FARM BUSINESSES, WOOL PRODUCTION AND BIODIVERSITY

Project: DAV39 Location: Victoria

Project Leader
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Overview
A recent survey of 1500 woolgrowers commissioned by Land, Water & Wool, found that more than half of Victoria's woolgrowers have remnant native vegetation on their land. Many Victorian woolgrowers already manage their native pastures.
and vegetation to provide shelter and shade for stock, retain ground cover and reduce erosion, and improve the general health of their land.

The Victorian-based Farm businesses, wool production and biodiversity project is identifying productive, practical solutions for native vegetation management, incorporating the commercial aspects of wool growing.

The project is focusing on nine commercial wool properties across three regions of central Victoria – Ararat Hills, Maryborough-Lexton and Springhurst. Detailed property reports are being developed that identify production/conservation options, based on farmer’s goals over a 10-15 year time frame. A range of management options that can achieve both profitability and biodiversity gains, and are applicable to other farms, have now been identified. Identifying ways to improve the condition of native vegetation on farms is also a focus of this project.

MANAGING NATIVE PASTURES IN SOUTH AUSTRALIA FOR IMPROVED ANIMAL PRODUCTION AND BIODIVERSITY

Project: GRS 1 Location: South Australia

Project Officer
Kylie Nicholls
Native Vegetation and Biodiversity SA Project Officer, Land, Water & Wool
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Overview
Traditionally, native pastures in the hill areas of the Mid North of South Australia are continuously grazed at the same time each year (usually from the autumn break in May until harvest in December) to fit in with the cropping program. Over time, this has reduced the population of native perennial grasses and produced pastures dominated by undesirable annual grasses such as wild oats and barley grass.

Managing native pastures in South Australia for improved animal production and biodiversity is to help woolgrowers conserve and improve native pasture biodiversity by rotational grazing and to lift profits through increased production. Specifically the research aims to evaluate the effect of grazing management of native pastures on sheep productivity, farm financial returns and ecosystem function of native pastures.

A range of plant and soil measurements are being taken including pasture growth rates, change in native and annual pasture species, species diversity, water use efficiency, water infiltration rates and soil biological activity to provide valuable data to woolgrowers and researchers in relation to the impacts of the new grazing regime.

INTEGRATING PADDOCK AND CATCHMENT PLANNING: A WOOLGROWER DRIVEN APPROACH TO SUSTAINABLE LANDSCAPE MANAGEMENT

Project: USQ5 Location: Queensland

Project Leader
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Overview
Over the past 10 years the Traprock Association, a proactive group of fine woolgrowers from the high country of south-east Queensland, has established a voluntary quality assurance system for wool production and marketing. The group is now linking wool production to integrated farm management and landscape planning and has developed a detailed property mapping and planning program to identify biodiversity assets.

Integrating paddock and catchment planning: a woolgrower driven approach to sustainable landscape management is a relative newcomer to the Native Vegetation and Biodiversity Sub-program, having started in April 2004.

The project will follow three phases resulting in: improved woolgrower capacity to assess land use and use of integrated scientific information from property to catchment level; more effective wool industry input into regional planning objectives; and a Toolkit for monitoring and reporting productivity and biodiversity for profitable and ecologically sustainable wool production.
Managing Native Vegetation and Biodiversity

FURTHER INFORMATION

*Native Vegetation and Biodiversity* has a number of emerging products containing further information on the Sub-program and its projects.

These include:

- Making more from your native pastures (Product number PF030477)
- Profitable wool production and improved native vegetation – a healthy marriage in Victoria (Product number PF030478)
- What do native vegetation, wool quality and healthy profits have in common in the Northern Tablelands of NSW (Product number PF030479)
- Our reputation for quality wool in the Northern Midlands rides on the sheep’s back – and on the health of our native vegetation (Product Number PF030480)
- Revealing the secrets for profitable, productive pastures in the Mid-North (Product number PF040787).
- Integrating paddock and catchment planning – a wool producer-driven approach to sustainable landscape management (Product number PF040731)
- Productive Resource Management for Woolgrowers (Product number PK040727)
- Productive Native Pastures in the High and Medium Rainfall Zones (Product number PX030509)
- Woolgrowers in the high rainfall and sheep-wheat zone – protecting and improving biodiversity on farm (Product number PX030510)
- Insights – Case Studies of Woolgrowers Productively Managing Native Vegetation for Profit and Sustainability
- Native Vegetation and Biodiversity section of the Land, Water & Wool website: www.landwaterwool.gov.au

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Improved climate forecasts enabling stocking rates to be better matched to feed availability is a priority for the long-term sustainability and productivity of Australia's wool industry. Currently, scepticism about the accuracy of seasonal forecasts is the main reason why some woolgrowers don't react to unfavourable predictions.

The Managing Climate Variability sub-program focuses on better adaptation of existing information as opposed to generic climate science research. The program aims to work with woolgrowers in the pastoral zone in particular to make more effective use of improved seasonal climate forecasts in grazing management decisions.

Specifically, the objective of Managing Climate Variability is to rapidly increase wool producer awareness and use of seasonal forecasts, initially in priority, drought-prone regions, contributing to sustainable grazing management.

Managing Climate Variability is investing $540,000 in research over five years. Six projects have been established nationally as part of this sub-program, which has ongoing, direct contact with more than 1000 producers through newsletters, on-line resources, local workshops and grower groups.

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Tab cover photograph courtesy: Robert Hassett, Queensland Department of Primary Industries and Fisheries

*Land, Water & Wool Best Practice Survey 2003

Land, Water & Wool Managing Climate Variability sub-program partners include:

[Logos of various partners]
Managing Climate Variability National Research Projects

Managing Climate Variability has six projects.

**IMPROVED SEASONAL FORECASTS FOR WOOL PRODUCERS IN WESTERN NEW SOUTH WALES**

Project: DAN16 Location: New South Wales

**Project Leader**
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**Overview**
The western pastoral zone of NSW covers the area bound by Walgett in the north, Balranald in the south, Broken Hill in the west and Nyngan in the east. Since 1879, five extended droughts have caught many graziers in the region unprepared, resulting in major stock losses and sometimes irreparable land degradation. But through *Improved Seasonal Forecasts for Wool Producers in Western NSW*, some 330 woolgrowers are being introduced to seasonal climate forecasts in the hope that by the time the next big dry comes around landholders will be armed with some degree of seasonal foresight.

The project has the joint objective of making woolgrowers more profitable by giving them the confidence to carry more stock through good seasons, while averting the land degradation caused by overstocking through drought periods.

An important aspect of the project is to develop seasonal forecasts for pasture growth rather than just rainfall. Using the AussieGRASS computer model, pasture growth is calculated across the variety of soil types based on daily rainfall records and other information, providing graziers with a figure they can use in their stocking rate decisions. The model shows how the pasture growth outlook for the season ahead compares with previous years.

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**IMPROVED SEASONAL FORECASTS FOR WOOL PRODUCERS IN THE WESTERN ZONE**

Project: QPI47 Location: Queensland

**Project Leader**
Janelle Park
Department of Primary Industries, Queensland
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**Overview**
The western pastoral zone of Queensland is home to up to 500 woolgrowing families and extends from Julia Creek in the north to the NSW border in the south, Boulia in the west and Roma in the east.

*Improved Seasonal Forecasts for Wool Producers in the Western Zone* aims to deliver accurate, region-specific seasonal forecasts to these growers up to six months ahead, enabling them to make productive and environmentally-sound management decisions based on potential rainfall. Initially the project team is testing the skill of three forecast systems, Average SOI, SOI Phases and 9-Phase SST, to predict rainfall or pasture growth for lead times ranging from zero to six months.

Ultimately the project aims to give growers a more useful forecast of summer rainfall, up to six months in advance so they can instigate management changes more in line with the seasonal outlook, boosting their long-term viability and productivity.

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**IMPROVED SEASONAL FORECASTS FOR WOOL PRODUCERS IN THE SOUTH AUSTRALIAN PASTORAL ZONE**

Project: SRD4 Location: South Australia

**Project Leader**
Melissa Rebbeck
South Australian Research and Development Institute
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**Overview**
The average rainfall for the 40 woolgrower families in the area stretching from north of Port Augusta to east of Burra is less than 350 millimetres and rainfall distribution is highly variable.
Managing Climate Variability

The aim of Improved Seasonal Forecasts for Wool Producers in the SA Pastoral Zone is to help growers more effectively use climate forecasts when making grazing management decisions for the season ahead.

Each month participants in the project are e-mailed a package of climate risk management tools and services, including average monthly rainfall, rainfall deciles and three-month predictions of pasture growth, tailored for their individual region and property. These tools and services are giving growers the ability to better identify the likely good seasons in advance to maximise their profits while better managing their risk and reducing their losses in below average seasons.

IMPROVED SEASONAL FORECASTS FOR WOOL PRODUCERS IN THE WESTERN AUSTRALIA SOUTHERN PASTORAL ZONE
Project: DAW41 Location: Western Australia

Project Leader
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Overview
With 70 percent of woolgrowers' income made in 30 percent of years (averaged over 10 years), woolgrowers need access to tailored, good quality, timely information that will better enable them to manage for climatic variability.

The purpose of Improved Seasonal Forecasts for Wool Producers in the WA Southern Pastoral Zone is to provide woolgrowers in the southern rangelands with the knowledge, tools and enthusiasm to manage climate variability within their businesses.

The project will build on the results of the forecasting program and will interact directly with woolgrowers to build their capacity to manage climatic risk. The overall objective is for a substantial proportion of woolgrowers in the region to make more informed use of seasonal forecasts, improving both their financial viability and their ability to manage grazing pressure on the rangelands.

IMPRESSED SEASONAL FORECASTS FOR WOOL PRODUCERS IN AUSTRALIA'S PASTORAL ZONE
Project: DAW41 Location: National

Project Leader
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Overview
Much of Australia's rangelands are characterised by extreme climate variability which represents a major challenge for woolgrowers. In order to maintain or increase productivity while minimising negative environmental impacts on the land, producers need access to reliable seasonal climate forecast (SCF) information at critical times for key management decisions.

The objective of Improved Seasonal Forecasts for Wool Producers in Australia's Pastoral Zone is to support and provide tools for the regional Managing Climate Variability Sup-program projects. It aims to make SCF products more relevant to producers and their advisors through pasture growth simulation and prediction using Aussie GRASS, a national spatial pasture growth program.

KNOWING EL NINO: THE INFLUENCES OF CLIMATE PERCEPTION OF LAND MANAGEMENT DECISIONS IN WESTERN NEW SOUTH WALES AND QUEENSLAND
Project: UTA13 Location: New South Wales and Queensland

Project Leader
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Overview
Knowing El Nino: The influences of Climate Perception of Land Management Decisions in Western NSW and QLD will detail use, uptake and needs of seasonal climate forecasts (SCFs) and related products among sheep graziers in three regions of western Queensland and western NSW. Approximately 90 detailed interviews will be conducted with graziers from Hillston, the Mitchell grass plains and Longreach.
These will examine how, when and why SCFs are used and the issues farmers with their accuracy, applicability, lead-time and use. Results will be analysed statistically and qualitatively.

Specifically, the project’s objectives are to:
1. Determine how climate forecasting information in the study areas is being utilised and applied by woolgrowers.
2. Investigate the climate forecast needs of these growers with regard to skill and accuracy, as well as preferred lead-time, delivery techniques and format.
3. Analyse the data obtained to assess impediments and opportunities pertinent to improved management of climate variability within these geographic areas.

FURTHER INFORMATION
Managing Climate Variability has a number of emerging products containing further information on the Sub-program and its projects.

These include:
- Improving seasonal forecasts for woolgrowers – a better climate for wool production (product number PF 040 736)
- Managing Climate Variability section of the Land, Water & Wool website: www.landwaterwool.gov.au

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Other resources:
Managing Climate Variability R&D Program
www.managingclimate.gov.au

Climag newsletter (see Managing Climate Variability R&D Program website)
Bureau of Meteorology
www.bom.gov.au

Climate Management Information for Rural Australia
www.longpaddock.qld.gov.au
There are approximately 2,000 woolgrowers in Australia's pastoral zone managing properties ranging from a few thousand to several hundred thousand hectares. The industry is currently recognising and responding to a wide range of issues including land degradation (it is estimated that 16 per cent of pastoral land is degraded to some degree), animal welfare, uncontrolled pests and weeds and the negative impact of these issues on native plants and animals.

The Managing Pastoral Country sub-program is working with woolgrowers to identify how pastoral country can be better managed to address these key environmental issues while maintaining productivity. The sub-program will utilise woolgrower experience to develop test and extend management approaches that deliver enhanced profitability, productivity and positive environmental outcomes.

Encouragingly, adoption of NRM practices among woolgrowers is already high with eighty-eight per cent saying they have undertaken NRM practices to manage their land profitably and sustainably.* In addition, sixty-one per cent of woolgrowers in the pastoral zone said they were interested in receiving assistance to develop a whole farm plan to incorporate NRM into their daily farm management.*

Managing Pastoral Country, which is receiving approximately $370,000 in funding over five years, is the most recent addition to the seven Land, Water & Wool Sub Programs. In 2004, five projects were approved in locations across Australia's pastoral zone, which is also the focus for the Managing Climate Variability sub-program.

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Tab cover photograph courtesy: Robert Hassett, Queensland Department of Primary Industries and Fisheries

*Land, Water & Wool Best Practice Survey 2003

Land, Water & Wool Managing Pastoral Country sub-program partners include:
National Research Projects

Managing Pastoral Country has five national major research sites located in WA, SA, Queensland and NSW.

Informing the Decisions of Pastoral Woolgrowers for Country and Profit
Project: AMH3 Location: Western Australia

Project Leader
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Alexander Holm and Associates
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Overview
With the economic performance of the pastoral sheep industry under pressure and with environmental aspects more prominent, improved use of natural resources is essential to preserve future land use options and ensure optimum sheep productivity.

Informing the decisions of pastoral woolgrowers for country and profit aims to get stocking rates right in terms of impact on both environment and production. The focus will be on informing pastoral woolgrowers' decisions associated with less than average seasons since it is these decisions that have the greatest impact on natural resources and sheep performance.

Information products that are developed as part of the project will enable pastoralists to relate their decisions on stocking rates (i.e. whether to sell or not to sell) to resulting production and environmental penalties associated with that decision.

Project: CSE27 Location: northern South Australia

Project Leader
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Overview
Management of natural resources on rangeland wool-producing properties requires knowledge of the condition of the resources, the rate of use of those resources by stock and prediction about future climatic conditions. While stock numbers are usually well-known to managers and climatic conditions are well-studied, techniques and tools for managers to rapidly assess forage cover across large areas on their properties are lacking.

Wool producers with remote control: new tools for whole of property management is developing products from remote-sensed satellite sources that show ground cover in a format useful to producers. The products will supplement on-ground inspections and allow wool producers to analyse natural resources across their entire property at frequent intervals. Procedures to automate the customisations of satellite images so that they can be provided frequently at low cost are being explored, as are delivery systems and interface options.

The project is expected to give producers the ability to make more effective and timely decisions about stock and environmental management thereby being better able to sustain the natural resource base and livelihoods.

* Project approved as at April 2005, contract to be negotiated.

Delivering a Land Condition Framework for Grazing Land Management Education
Project: QP156 Location: Queensland

Project Leader
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Overview
Delivering a land condition framework for grazing land management education aims to enable sheep producers in the mulga zone and Mitchell grasslands of Western Queensland to be able to implement and monitor strategies for improved environmental management. This will be achieved through the adaptation and delivery of proven management tools that have been developed for the Queensland beef industry.

The tools will include land condition assessment criteria, forage budgeting and a sheep economics module. The project will also look at the rates of adoption of these tools.

The specific project objectives include:
• To produce, test and extend a land condition assessment tool for mulga and grasslands;
• To develop, test and extend a forage budgeting tool so that producers can more effectively manage grazing pressure;
• To link land condition targets to economic outcomes; and
• To test the uptake to tools by land holder groups and monitor the impact on decision making.

STOCKING RATE DECISION TOOLS FOR RANGELAND PASTORALISTS
Project: DAN23 Location: New South Wales

Project Leader
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Overview
Stocking rate decisions are fundamental to pastoral management. While graziers factor in many environmental issues into their stocking rate decisions, few effectively incorporate all of the information that is either routinely collected on properties (e.g. rainfall, paddock grazing histories) or could be easily acquired (e.g. resource condition, seasonal climate forecasts).

Overview
Queensland’s Mitchell grasslands represent 19 per cent of the state’s native pasture area supporting in excess of 10 per cent of the cattle herd and more than 40 per cent of the Merino sheep flock in Queensland.

During the 2001-04 drought, large areas of Mitchell grass tussocks died through what appears to be a combination of extended moisture stress and management. The most severely affected area is the central west – in the affected areas, tussock mortality is estimated to be as high as 90 per cent across entire properties. For these areas to recover, Mitchell grass density will have to increase through seedling recruitment. Research and extension activities will need to focus on these badly affected areas.

MITCHELL GRASS DEATH IN QUEENSLAND: EXTENT, ECONOMIC IMPACT AND POTENTIAL FOR RECOVERY
Project: MLA2 Location: Queensland

Project Leader
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Mitchell grass death in Queensland: extent, economic impact and potential for recovery seeks to:

- estimate the geographic extent of poor pasture condition, especially in relation to death, or ‘dieback’ of Mitchell grass plants;
- assess the impact of dieback on the profitability of enterprises;
- encourage and assist graziers to restore pastures to good condition; and
- begin to understand how to improve management during future droughts.

This project will be conducted by Queensland Department of Primary Industries and Fisheries and managed by Meat & Livestock Australia (MLA), with Australian Wool Innovation (AWI) (through Land & Water Australia as manager of Land Water & Wool) as a contributor.

FURTHER INFORMATION
Visit the Land Water & Wool website for background reports and other information:

- www.landwaterwool.gov.au
"What might the world look like in 2030 - and what are the implications of that for the Australian wool industry?"

This is a key question being addressed by the Land, Water & Wool Future Woolscapes sub-program, a long-term scenario planning (or “futuring”) exercise designed to identify and analyse the key global and industry issues likely to impact on the wool industry over the next 25 years.

Scenario planning is a tool to help organisations or industries think differently about the future and help deal with uncertainty. It is not about trying to predict the future, but rather developing a range of long-term alternative scenarios (or different “worlds”). These scenarios are then examined to identify and prioritise their strategic implications for the wool industry, especially as it relates to future research and development investment and implications for policy.

The Future Woolscapes sub-program further aims to stimulate debate about the opportunities and challenges that lie ahead.

The program involves working with woolgrowers and industry to consider how emerging global trends (such as population demographics, technological change, environmental, production and trade issues) may impact on the industry over the next 25 years.

At the completion of the Future Woolscapes sub-program, AWI and LWA will be given an analysis of the key trends and their potential implications, for use in longer term strategic planning processes. In addition, woolgrowers will have the opportunity to access authoritative information to look at some possible future threats and opportunities for the wool industry and what it may mean.

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Future Woolscapes National Research Projects

Important – these commissioned papers are not yet publicly available

The potential impact of climate change on woolgrowing in 2029 (CSIRO Sustainable Ecosystems) – A comprehensive review of the potential impact of climate change over the next 25 years on agriculture in general and the wool production industry in Australia in particular.

Social pressures likely to reshape Australia's woolgrowing industry over the next 25 years (Victorian Department of Primary Industries) – A review of how the demographics of the Australian wool industry (and rural Australia) may change over the next 25 years and what the implications of these changes may be in relation to where woolgrowing is undertaken and by whom. Issues such as labour availability, social expectations and information technology are also covered.

Land and animal management – 2029 (Mackinnon Project, University of Melbourne) – A comprehensive review of the potential land ownership, environmental regulation, labour, technology and animal welfare changes over the next 25 years and what may be the impact of these on the wool production industry in Australia.

Competitor trends in 2029 (PCI Group, UK) – A comprehensive review and prediction of raw material production, mill consumption and final demand for textile fibres (MMF, Cotton and Wool) over the next 25 years. The impact of changes to Processing Technologies, New Fibres, Genetic Modification, Recycling and Consumer Demand is also provided.

Project ‘Narelle’ – markets and consumer preferences to 2029 (Ian Ferguson & Associates) – A web-based review of how consumer markets and consumer preferences may change over the next 25 years. It examines these in three timeframes – to seven years, eight to 15 years and then 16 to 25 years. It also examines the potential opportunities and threats that may face the wool industry over this timeframe.

Project ‘Dolly’ – impacts of the new technologies (Ian Ferguson & Associates) – A web-based review of the potential opportunities from, and impact of, new and emerging technologies (biotechnology, nanotechnology, materials science, organic machines) on the wool industry and competitive fibre industries over the next 25 years.

The potential impact of biotechnology on the Australian sheep industry in 2029 (Prof. H Raadsma, University of Sydney) – A review of the potential opportunities from, and impact of, biotechnology on the sheep industry over the next 25 years. It deals with animal biotechnology only – not plants.

Accelerated growth of food exports from Australia: a feasibility study commissioned by the Australian Fresh Food Alliance (Dr L Ward) – A review of the feasibility study for the Australian Fresh Food Alliance and an examination of the implications for the wool industry

Will woolgrowing be a viable business in 2029? – a review of price and productivity trends (Holmes Sackett & Associates) – A comprehensive assessment of the past and future Terms of Trade for Australian wool production and insights as to what productivity improvements will be required by woolgrowers to be competitive over the next 25 years.
The most comprehensive national survey of woolgrowers’ attitudes toward on-farm environmental practices, commissioned through the Land, Water & Wool Benchmarking sub-program, has revealed a strong focus on managing natural resources.

The Benchmarking sub-program initiated the ‘Best Practice Survey’, which revealed Australian woolgrowers’ attitudes to natural resource management, highlighting their current practices and needs for information and support.

The research shows Australian woolgrowers strongly consider themselves as custodians of the land – they want to do something about improving the health of the soil, water and native vegetation on their farm.

Woolgrowers interviewed in the survey listed benefits from careful management of their natural resources, which ranged from improving water quality and increasing shelter and stock feed to biodiversity gains such as providing wildlife corridors, and controlling erosion and salinity.

The in-depth interviews conducted as part of the survey also revealed that growers strongly believe improved natural resource management results in productivity, profitability and sustainability gains.

The Benchmarking sub-program aims to:

• Create awareness of Land, Water & Wool and inform woolgrowers, government, agencies and industry about woolgrowers’ attitudes, actions and perceptions about natural resource management and their current practices; and
• Establish benchmarks for woolgrower attitudes and awareness levels, which can be measured again at the completion of the five-year program.

The findings from the ‘Best Practice Survey’ establish benchmarks for natural resource management issues of most importance to woolgrowers and ensure the program’s investment priorities are relevant to the wool industry.

Other key findings included:

• Stakeholders in the wool industry strongly believe natural resource management results in productivity, profitability and sustainability gains – good natural resource management can significantly improve their business’ bottom line and doesn’t necessarily come at a cost.
• Ninety-one per cent of woolgrowers were either doing something about natural resource management now or had taken some action already.
• Woolgrowers who have already undertaken natural resource management changes in the past are more likely to adopt changes in the future.
• Ninety-three per cent of woolgrowers are confident about their knowledge of natural resource management but almost half would like more information or support to help them manage it on their farm.

• Information needs vary between States but in particular there is demand for assistance to develop whole farm plans, native vegetation and salinity management information and financial support.

RATINGS OF NATURAL RESOURCE MANAGEMENT IMPORTANCE

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<th>Rating</th>
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<tr>
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<tr>
<td>Fairly Important</td>
<td>45%</td>
</tr>
<tr>
<td>Not too Important</td>
<td>8%</td>
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</tbody>
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Base: All respondents (n=1500)

Woolgrowers’ desire to know more about NRM is a strong endorsement of the Land, Water & Wool initiative and its aims to provide growers with viable, practical and beneficial natural resource management solutions.

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FURTHER INFORMATION
Download the Benchmarking sub-program Best Practice Survey summary.
Visit www.landwaterwool.gov.au
For further information on Land, Water & Wool and its research initiatives visit our website www.landwaterwool.com.au or contact the relevant Sub-program co-ordinator:

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Stay informed

Land, Water & Wool publishes a number of natural resource management information materials for the wool industry including newsletters, fact sheets and technical resources. If you would like to join our mailing list and be kept up-to-date with regard to recent publications, please complete in full the below form.

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I am most interested in receiving information about the following Land, Water & Wool research initiatives (please tick):

- Sustainable Grazing on Saline Lands
- Native Vegetation and Biodiversity
- Managing Pastoral Country
- Rivers and Water Quality
- Managing Climate Variability
- Future Woolscapes

Which best describes you (please tick):

- woolgrower
- wool industry technical advisor
- policy advisor
- education institution
- NRM specialist
- researcher
- media
- other

Fax to Land, Water & Wool: 02 6263 6099

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