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# final report

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## National Agriculture & Climate Change Action Plan: Implementation Programme

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# National Agriculture & Climate Change Action Plan: Implementation Programme

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### **Executive Summary**

The emerging importance of climate change and greenhouse gas mitigation identified the value of including greenhouse gas best management practices as a key component in a survey of environmental stewardship by Australian farmers. Through a project funded under the National Agriculture Climate Change Action Plan, Meat and Livestock Australia developed a set of questions to enable livestock producers participating in the Landleader survey to rank themselves according to practices that contribute to greenhouse gas mitigation.

The 2008 Landleader project (Landleader 2008) successfully engaged 11 priority regional natural resource management bodies across Australia to collect information on the environmental and livestock management practices of 362 broadacre graziers. The project was a joint initiative of Australian Wool Innovation (AWI) and Meat & Livestock Australia (MLA) and was funded under the Australian Government's EMS Pathways to Sustainable Agriculture Program. The objective of Landleader 2008 was to capture best practice data from Australian broadacre farmers to enable documentation of current environmental management practices and to provide direction for land managers to continuously improve their environmental performance.

MLA's strategic plan identifies the need to continuously monitor and improve the capacity of the red meat industry to promote environmental stewardship as a contribution to long term production and profitability and to responsible natural resource management. Demonstrating good environmental stewardship is important as it plays a role in maintaining access to natural resources, influencing consumer opinion and promoting markets.

The specific questions on management for greenhouse gas mitigation developed in this NACCAP project were an important addition to the Landleader survey and enhanced its potential to capture relevant best practice data from Australian broadacre farmers. The first objective for MLA in undertaking the Landleader 2008 survey in collaboration with Australian Wool Innovation (AWI) was to benchmark the red meat industry's current environmental impact. This in turn provides a basis for tracking future change in impact and providing a record of environmental stewardship of the industry. The second objective was to raise awareness of best management practices and provide direction for land managers to continuously improve their environmental practices. Both objectives were enhanced by inclusion of a greenhouse gas module.

A key aspect of Landleader 2008 was the regionalisation of the data collection process, achieved by working closely with a sample of natural resource management (NRM) bodies to test the robustness and validity of using farm practice data to report on regional NRM targets. Ten NRM bodies and one producer group cooperated in the distribution of the Landleader surveys and provided an initial evaluation of this process. These groups will be involved in discussions with MLA and AWI on maintenance and potential future roll-out of the Landleader project. An independent evaluation of the implementation and value of Landleader 2008 for the regional groups was undertaken. The greenhouse gas questions enabled Natural Resource Management (NRM) regional groups to monitor practices relevant to emissions management within their catchment boundaries and enabled the industry to raise awareness of best management practices for greenhouse gas mitigation and to develop a trial 'baseline' for monitoring practices that affect future greenhouse gas intensity.

CMAs participating in the survey reported favourably on the development and inclusion of a module on greenhouse gas emissions best practice in the Landleader survey because of the emerging focus on the need for all industries in Australia to demonstrate response to the threat of climate change. The Australian Government released a Green Paper on the proposed Carbon Pollution Reduction Scheme in July 2006. While the Government's preferred position is that agriculture not be covered by an Emissions Trading Scheme until at least 2015, there is a possibility that complementary measures could be used to encourage management practices that produce a greenhouse gas reduction benefit. By

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raising awareness amongst red meat producers through a voluntary survey format, Landleader 2008 can contribute to preparing producers for future greenhouse gas strategies.

The independent evaluation saw an encouraging future for Landleader, with a generally positive view from the NRM bodies involved, 90% of participating landholders being prepared to be involved again, there being potential for landholder practice change, and NRM body respondents saying they would be interested in distributing Landleader in the future.

## 1. Introduction

### 1.1 Background

In September 2007, the Australian Government under its EMS Pathways to Sustainable Agriculture program contracted Meat & Livestock Australia (MLA) and Australian Wool Innovation (AWI) to deliver a best management practice survey program, Landleader.

AWI and MLA collaborated successfully on the Wool Pathways Project, Stage 1, (the Landleader project) from November 2005 to August 2007 as part of the Department of Agriculture, Fisheries and Forestry's (DAFF) "Pathways to Industry Environmental Management Systems Program". The initial trials showed that accessing data from broadacre producers on their environmental and livestock management practices could be successfully achieved using paper based, web based and telephone survey techniques.

Through the 2007/08 Landleader project (Landleader 2008), MLA sought to build on the work undertaken in the pilot project as well as to begin to look at the relationship between farm practices and catchment targets. Protecting the environment is a key responsibility for the red meat industry and a vital part of maintaining ongoing sustainability and productivity for Australia's producers. MLA also recognises the importance of understanding, accurately reporting and, where needed, improving the performance in environmental sustainability for the red meat industry. MLA has invested over \$6 million in research and development projects to address a range of issues relating to environmental sustainability. This amount includes \$2 million commencing in the 2008/09 financial year that has been specifically allocated for climate change projects. These activities will help producers and processors meet the challenges of meeting government and consumer expectations for environmental responsibility.

The red meat industry is custodian of a significant proportion of the continental land mass and plays a vital role in managing Australia's natural resources. MLA's Strategic Plan 2007 – 2011 recognises the role of responsible management of those natural resources in sustainability and the importance of documenting its environmental credentials. Demonstrating responsible environmental stewardship is important as it can play a role in maintaining access to natural resources, influencing consumer opinion and promoting markets.

### 1.2 Objectives

The objective of the *Benchmarking Greenhouse Gas Management Practices* project was to develop a suite of greenhouse gas Best Management Practices (BMPs) suitable for the livestock industry and to incorporate questions relating to these practices in the Landleader survey.

The BMPs developed for the livestock industry in this initial survey are consistent with recommendations for best practice in the Department of Climate Change draft *Farming for the next generation – guidelines for managing greenhouse gas emissions* and the Victorian Department of Sustainability and Environment recommendations for agricultural practices to reduce greenhouse gas emissions. They cover the areas of:

- 1 Optimise livestock feed quality and digestibility [ to reduce methane emissions from the rumen]
- 2 Maximise livestock production efficiency [to improve rumen function and reduce methane emissions]
- 3 Maximise nitrogen cycle efficiency [by managing fertiliser application and livestock waste in grazing systems to minimise nitrous oxide emissions]

4 Reduce fossil fuel consumption [maximising energy efficiency on farm to reduce greenhouse gas emissions]

### 1.3 Method

The following activities were undertaken to achieve the objectives of the *Benchmarking Greenhouse Gas Management Practices* project, being required to be consistent with the objectives of the broader Landleader project:

1. An alliance was formed between AWI, MLA, 10 regional NRM bodies and one producer group (Enviromeat). Under this alliance AWI and MLA took the lead role in the coordination, refinement and production of the Landleader survey while the NRM bodies were responsible for the distribution and promotion of the Landleader survey to land managers. All participating organisations will have access to the aggregated data collected under the survey. The alliance was built around collaboration and data sharing.
2. The Landleader survey was adjusted based on experience gained in the “Pathways to Industry Environmental Management Systems Program” and on the objective to include a specific Greenhouse Gas Emissions module development of which was supported separately under National Agriculture Climate Change Action Plan (NACCAP) funds. Initial plans were to align the survey with selected catchment targets, however the higher than expected participation rate of NRM bodies made this impractical.
3. A part-time Landleader project officer was employed to work with the NRM bodies and others, to refine the Landleader survey and to coordinate activities with the participating NRM bodies. A part-time officer was also engaged to investigate the potential for development of an auditable Quality Assurance module to be developed as part of the initial Landleader proposal. This component of the proposal did not proceed for reasons described in the Landleader Final Report but the evaluation will contribute to informing the development of a future staged Environmental Stewardship framework and the possible role for Landleader in that framework.

## 2. Achievements

### 2.1 Awareness raising

The Landleader project aimed to assist land managers to become involved in environmental stewardship as a first step in raising awareness and engagement. The Landleader survey approach of capturing environmental and livestock management practices is a process that could form a strong entry point for broadacre graziers to progress to an accredited Quality Assurance or EMS program.

At the beginning of Landleader 2008, feedback was sought from past participants. Of the returns received, 25% of respondents said they had followed up on some of the information sources provided and 75% asked to again be included in the 2008 Landleader survey. While it would be premature to use these figures to report any general trends, it is fair to say that across a small trial Landleader was well regarded and prompted a positive response from land managers.

In early 2008 MLA and AWI launched the Making More from Sheep project which brings together significant information to support producers better manage their sheep enterprises. A strong link between Landleader and Making More from Sheep has been developed to guide land managers towards best practice management for long term sustainability. In a similar way, the survey can be linked to ongoing extension activities under MLA’s More Beef from Pastures program which was developed for beef production in the southern states and Grazing Land Management program developed as part of the EDGENetwork for Northern Australia. These programs will provide red meat producers with the knowledge and confidence to improve adoption of sustainable management

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practices and it is anticipated that this will be reflected in ongoing surveys using the Landleader questionnaire and database. The personalised Landleader report for producers has the capacity to be further regionalised and refined in line with educational material and information sources of the NRM bodies, so allowing regionally specific issues to be addressed as part of a move towards encouraging greater environmental stewardship.

Information gathered under the Landleader survey, including from the greenhouse as emissions questions, is stored in the Landleader database and provides information on the current management practices of broadacre grazing industries. This information is considered to be an initial baseline from which to measure and report ongoing improvement across the industries. The benchmarking and expansion of participation in the greenhouse gas module will be used to monitor emissions management performance through an ongoing survey process. MLA will use this information to report to markets and along the production line, both the immediate situation with regards to current practices and the trends observed in changes to practice over time. The data will also be assessed for their value in supporting on-going monitoring and evaluation of the environmental outcomes of MLA's Environment programs and the need for new or expanded R&D programs and communication packages. MLA is evaluating its environment program on the basis of influencing adoption of practices that lead to improved environmental outcomes, and no area is of more immediate relevance than greenhouse gas emissions management. The Landleader survey information will potentially add value to results from broader ABARE surveys in reporting the success of investment for environmental outcomes.

Sample size at the catchment level was a serious limitation on interpretation of data for NRM bodies. Despite the concerns over sample size, data were considered by regional groups to be accurate, and NRM bodies reported they would use the data for planning, promotion and comparison with data obtained in other ways. It will be critical for Landleader to achieve high participation rates in the future if a rollout of the program is to be successful but this is always going to be a difficulty for a voluntary survey.

In summary a range of beneficial outcomes were initiated and/or developed under the Landleader project. These include:

- A national database of broadacre farm practices which will provide industry leaders with improved data to demonstrate the environmental and livestock management credentials of the grazing industry;
- The introduction of best practices associated with the management of greenhouse gas emissions in broadacre grazing industries;
- The establishment of a custom built data collection tool (survey) and database which captures and stores information on the grazing industries and monitors environmental best management practice change over time;
- Engagement of 362 land managers in the process of monitoring environmental stewardship and a core group of land managers willing to participate in the Landleader program into the future;
- Enhanced working relationships between the industry bodies, AWI and MLA, and the 11 participating NRM bodies, which is a key element to see that policy is converted to strategy, goals and deliverables;
- Broad market awareness of the Landleader program; and
- Increased recognition of MLA's focus on environmental sustainability as complementary to, and embedded in, programs promoting productivity in the red meat industry.

MLA's development of a set of greenhouse gas Best Management Practices (BMPs) suitable for the livestock industry provided a significant enhancement of Landleader 2008. The set of four questions which was developed to enable livestock producers to identify practices that contributed to greenhouse gas mitigation. These questions also enable NRM groups to monitor practices within their catchment boundaries and enabled the industry to both raise awareness of best management practices for greenhouse gas mitigation and to trial benchmarking of future greenhouse gas intensity. The BMPs developed for the livestock industry in this initial survey are consistent with more detailed set of

recommendations for best practice in the Department of Climate Change draft “Farming for the next generation – guidelines for managing greenhouse gas emissions” and the Victorian Department of Sustainability and Environment recommendations for agricultural practices to reduce greenhouse gas emissions. They cover the areas:

1. Optimise livestock feed quality and digestibility (to reduce methane emissions from the rumen);
2. Maximise livestock production efficiency (to improve rumen function and reduce methane emissions);
3. Maximise nitrogen cycle efficiency (by managing fertiliser application and livestock waste in grazing systems to minimise nitrous oxide emissions); and
4. Reduce fossil fuel consumption (and maximising energy efficiency on farm to reduce greenhouse gas emissions).

These areas were considered the most important and practical for self-assessment. However if the survey is able to be supported in an ongoing way, additional questions could be developed to reflect other priorities within the draft “Farming for the next generation – guidelines for managing greenhouse gas emissions” document or to target ‘gaps’.

Of Australia’s total greenhouse gas emissions in 2005, approximately 16 per cent was due to agriculture and of this livestock emissions made up 71 percent. MLA is aware of the responsibilities of livestock producers to contribute to Australia’s greenhouse gas mitigation objectives and takes seriously its responsibilities to support broad acre grazing with reliable and accurate information on climate change and management practices that reduce emissions or increase carbon dioxide sequestration. The value of collecting the additional data for the greenhouse gas module extends beyond the program itself and supports and compliments other natural resource programs within MLA such as Grain and Graze, Making More from Sheep and More Beef from Pastures.

NRM bodies coordinate and fund many natural resource projects at the catchment level and have targets for a range of environmental outcomes, which for many includes greenhouse gas considerations. The value of the greenhouse gas module in Landleader for CMAs will be assessed following the final independent evaluation of the participating NRM bodies is complete in late May 2008.

As well as specific questions in the Landleader survey, producers were asked to identify environmental issues of concern for their property or in their business. Several respondents listed climate change or greenhouse gas emissions amongst the top three issues. The independent evaluation of the Landleader project recommended that future surveys highlight the emerging importance of climate change and greenhouse gas mitigation through information on practices that contribute to the industry and individual contributions to emissions reduction.

### **2.2 Built or strengthened linkages**

MLA’s work with NRM bodies and CMAs in the past has been predominantly on projects that focus on natural resource management outcomes from improved pasture management. Landleader is important as a project in which MLA has partnered with another industry group and approached the NRM bodies with a focus more broadly on the monitoring of natural resource management activities and practices. Through the Landleader project MLA has increased the NRM bodies understanding of the importance it places on sustainable natural resource management and it is anticipated this heightened awareness will help to build new and stronger partnerships in the future, including with respect to management practices for greenhouse gas outcomes.

MLA has built sound working relationships with 10 priority NRM bodies and one producer group during the course of the Landleader program. These relationships have been based on a shared interest in the environmental sustainability of the grazing industries and the need to continually improve the management of the natural resources across the catchments they represent. The partnership presents an opportunity to secure information for reporting and policy decisions for all organisations involved



while avoiding duplication in data collection. The partnership also recognised the different capabilities the organisations can bring to the partnership. From an operational point of view, MLA is able to provide experience in project coordination and capacity for national reporting. This coordination also provides an opportunity for some degree of comparative analysis between the NRM bodies and hence the opportunity to share experiences and learn from one another. It will be some time before we are able to ascertain if the NRM groups do take the opportunity to share information and further improve their effectiveness. The NRM groups provide access to regional networks and on-ground knowledge of relevant land managers to secure a greater uptake of the program. It is also envisaged that in the future the NRM groups will help regionalise the survey to enable some degree of reporting against catchment targets and will have input into the information sources provided in the customised reports.

These relationships were built through a process of engagement that involved AWI and MLA approaching the NRM bodies with a proposal that provided benefit to all organisations. The Landleader proposal was well received as it was seen to be an activity where all participants gained something of value. For AWI, MLA and the NRM bodies it was information which leads to a better understanding of where the grazing community currently stands, and for the individual participant it was a report on their performance and information which gave them an opportunity for future improvement and for monitoring progress against individual goals. MLA will use the understanding of producer needs and priority concerns to strengthen its environmental research and communication activities.

Initial contact with the NRM bodies was made through their CEO or General Manager. In some cases this person remained the principle contact for the Landleader project and in other cases a staff member was allocated the job of coordinating the project through their organisation. Not surprisingly, the coordination role was most successful where the person coordinating the process for their organisation took ownership, had a detailed understanding of what the project was trying to achieve and was able to enlist additional support from within their organisation. These types of relationships will be important in providing information on greenhouse gas emissions management with producers, many of whom see potential threats arising from emerging government climate change policies.

One of the most critical aspects of the Landleader project was the interface between the NRM body and the individual participant. In seeking to partner with NRM bodies, MLA hoped to capitalise on a close relationship of the NRM body with land managers within its catchment. Initial results from the analysis show this to be quite successful. A full analysis of the return rate of surveys will provide more information. One of the difficulties in this approach was the slippage of timeframes in the survey distribution process due to competing priorities within the NRM bodies and seasonal activities of land managers across such a wide geographic distribution. In the future consideration needs to be given to providing a longer time for the distribution and return of the survey that better reflects the planning cycle of the NRM bodies and the seasonal agricultural activities of land managers.

### **Participating NRM groups**

Nine of the groups who participated in Landleader 2008 were self selecting from a larger group of 31 NRM bodies invited to participate, while 2 groups (Glenrac and Enviromeat) approached the Landleader Project Officer asking to be involved. The selection of this wider group of 31 was based on the geographic location of the broadacre grazing industry across Australia. Each of the 31 NRM bodies was deemed to have a significant number of broadacre graziers in their catchment. A full list of the 31 NRM bodies is included in Appendix 1.

Many of NRM bodies who did not participate in Landleader expressed a strong interest to be kept informed of the project's progress and to be considered as possible participants in the future. Each of these organisations has a greater awareness of the project and its objectives and will be informed of the outcomes of the 2008 survey.

The following organisations participated in Landleader 2008:

- South West NRM, Queensland
- Desert Channels, Queensland
- West Gippsland Catchment Management Authority, Victoria
- Enviromeat, Victoria
- Western Catchment Management Authority, NSW
- Glenrac, NSW
- Murrumbidgee Catchment Management Authority, NSW
- Lachlan Catchment Management Authority, NSW
- NRM South, Tasmania
- Northern and Yorke NRM, South Australia
- Avon Catchment Council, Western Australia

### **Reporting of contributions to catchment targets**

Landleader specifically sets out to provide a national system to capture and demonstrate the incremental improvements producers are making via on-farm practice change. Landleader 2008 has laid the foundation for industry and land managers to be able to report their contribution to catchment targets, and the inclusion of a greenhouse module is an important component of that reporting capacity. Landleader focuses on current practices which in many cases NRM bodies use as a surrogate to measure contributions to the achievement of catchment targets. A key factor in the refinement of Landleader for future years is to achieve greater alignment between the Landleader survey questions and regional catchment targets, including greenhouse gas emissions targets. This will provide not only direct reporting of activities for the NRM bodies, but also the ability to undertake trend analysis at a catchment level.

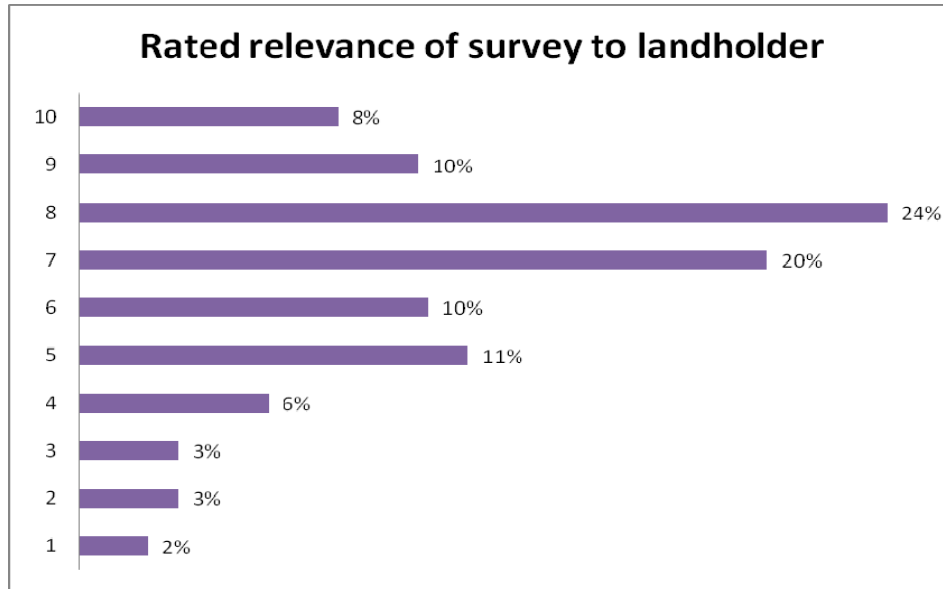
Preliminary discussions with the NRM bodies have considered how the alignment with catchment targets can be achieved without losing the benefits of having a national survey and without making the survey too onerous for a participant to complete. Worthwhile ideas include the development of a base survey with regionally specific supplements and alternate delivery methods such as web-based surveys which allow streamlining of questions. This issue will be discussed in far greater detail with the NRM bodies when they have had the opportunity to review the aggregated data for their catchments in late June.

### **2.3 Increased uptake**

The Landleader project was specifically designed to assist graziers identify environmental best management practices and to report change in management practice to information seekers such as NRM bodies. Over 350 surveys were returned and each participant who provided contact details received via email or post or both a customised report which benchmarks them against industry best practice and highlights opportunities for improving the productivity and profitability of their business. Participants could identify an area of their management that they would like to change and this provides important information for MLA's strategic planning for the environment program. It would be desirable to follow up with producers on the appropriateness of the greenhouse gas questions for their businesses.

In general the best management practices used in Landleader have been aligned with the current industry standards adopted by AWI and MLA. It is recognised that these standards may change over time to reflect improving technology, knowledge, information, community values or government policies. As Landleader is further developed and longer term partnerships are formed with groups such as NRM bodies it is envisaged that these standards may be modified or enhanced with information and knowledge brought to project by the various partners. The real benefits of Landleader will be measurable in future years when land managers are able to re-survey themselves and consider their practice changes over time.

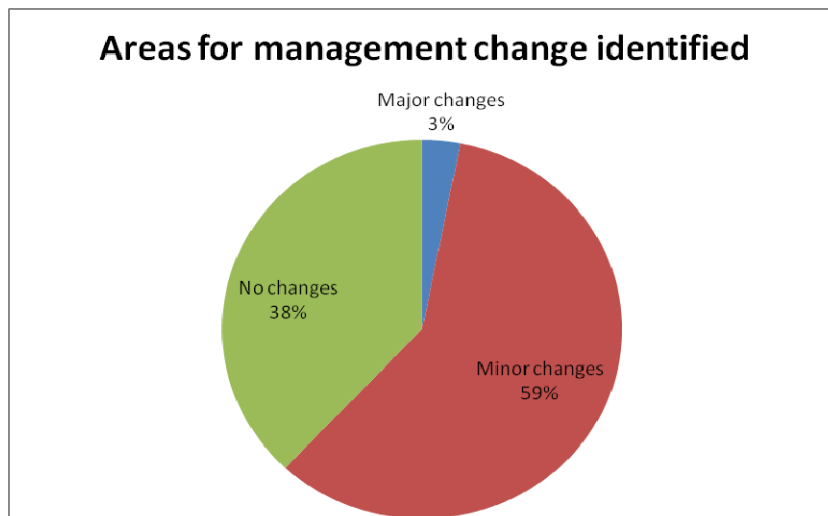
To highlight the need for further development of Landleader and the need for education programs to assist land managers understand the benefits the figure below reflects the data on producer rating of relevance from the Robert's Evaluation Report (see Landleader report)



**Relevance of survey to participants, where 1 is irrelevant and 10 is very relevant**

clearly demonstrates that most landholders felt that the Landleader 2008 survey was highly relevant to their business. More than 40% of respondents rated the relevance to their business as 8 or above out of ten (where ten is very relevant), and more than 60% rated it as 7 or above out of ten. However, 25% rated the survey as 5 or less, and the average rating overall was 6.6.

The independent evaluation by Roberts showed that more than 60% of landholders who responded to a question on management change identified either major or minor changes they would like to make to their management as a result of completing Landleader 2008. Follow up questioning is needed to determine whether any of the management changes related to greenhouse gas emissions management or quantify how many of these respondents actually followed through and initiated practice changes.



### **Landholder identified areas for management changes post Landleader completion**

That 40% of respondents identified either no or minor changes to their management could be a combination of three factors:

- These producers believe their practice is at, or close to, industry best standards
- These producers do not know where their practice stands in relation to industry best practice and therefore are unaware of changes which may be necessary
- These producers know already what changes they wish to make and Landleader did not assist in identifying them.

A more interesting picture of the ability of the survey to encourage change would be established if landholders were interviewed after receiving the feedback provided post-Landleader survey completion. It would be expected, due to social pressure, that when compared to demonstrated industry best practice, those who identified a low rating in their management practices would be more likely to identify potential management changes. (Roberts Evaluation, September 2008)

It is envisaged that the aggregated results of Landleader 2008 will provide a first step in assisting NRM bodies to prioritise and target resources for improved natural resource management within their catchments. Where the number of respondents in a catchment is small, caution has been recommended in drawing conclusions from the current survey and the small size of the survey is one of the shortcomings in Landleader 2008.

### **3. Results and future pathways**

A summary of the results of the 2008 survey for the greenhouse gas emissions module are presented below in relation to the specific issues surveyed:

1. Optimise livestock feed quality and digestibility.

38% of respondents scored 3.0 and above out of a maximum score of 4.0.

2. Maximize livestock production efficiency.

22% of respondents scored above 2.0 out of a maximum score of 2.0.

3. Maximize nitrogen cycling efficiency.

13% of respondents scored 3.0 and above out of a maximum score of 4.0.

4. Reduce fossil fuel consumption.

40% of respondents scored above 2.0 out of a maximum score of 3.0.

Additional comments on the greenhouse gas module:

- Given this is a new issue for many property managers, the relatively low scores under this heading are not surprising but they do highlight the need for education and extension programs.
- Ongoing provision of up-to-date, scientifically sound information and policy interpretation is critical to enable producers and the industry to respond to the new demands in a way that records industry performance.

Management practices for Greenhouse Gas emissions management are an important component of environmental BMP and this component of the Landleader survey will likely be expanded in the future to

include broader aspects of land-based emissions management. It is recognised that environmental stewardship programs need to be further refined so that they can play a credible role in the broadacre grazing industry. However, initial results from the evaluation of Landleader 2008 indicate that there is a place for an introductory level, voluntary environmental stewardship program such as Landleader.

### **Future pathways and partnerships**

Market research indicates that industry needs to collect data on practices and practice change to be able to demonstrate to both the market and community their current environmental and livestock management practices and how they are seeking to improve them. MLA has initiated discussions with conservation groups, industry councils and government agencies with responsibility for resource management (e.g. through leasehold land strategies) with the objective of developing a staged environmental stewardship program that is effective and acceptable to major stakeholders in natural resource management.

Landleader's future success will depend on the formation of strategic partnerships across industry, with individual land managers and along the production chain to national and international markets. It will be important to ensure that coverage is 'national' as far as possible, noting that Landleader 2008 did not include any northern Australian producers. Particularly for extensive beef production environmental issues and practices that affect greenhouse gas emissions differ regionally. These linkages would be facilitated if incentives could be provided for environmental stewardship. The Landleader 2008 and the *Benchmarking Greenhouse Gas Management Practices* projects provided an opportunity to begin the formation of these partnerships in 2008, but to realise the potential of Landleader the partnerships need to be maintained and strengthened. The project officer has followed up in-person with each of the NRM bodies

Partnerships across industries are required to ensure participation in Landleader results in on-ground practice change at a scale sufficient to impact on catchment targets and extensive enough to collect reliable data for national and international reporting. This is particularly true for Greenhouse Gas emissions management. Participation is critical but farmers have many reporting obligations and management commitments. Participation is more likely to increase where land managers see value in the program through incentives or market advantage but will be encouraged by the involvement of industry groups that have established a supportive, credible and reliable relationship over an extended period of time. These groups may include grains, wool and meat industry Research and Development Corporations, NRM groups, farming organisations and extension officers in government primary industry agencies. These partnerships need to provide land managers with access to relevant training and related regional market-based incentives. The relevance and value placed on the customised Landleader report by land managers will also play an important role in encouraging ongoing participation.

### **Industry incentives or market drivers**

Clear financial incentives or market drivers are still absent for the uptake of environmental accreditation or labelling for the grazing industries. However, for the greenhouse gas emissions module there is a likelihood that there will in future be an incentive through the Australian Carbon Pollution Reduction Scheme. Incentives may come through coverage of agriculture in an emissions trading scheme or less directly through complementary measures that recognise good practice for emissions reduction. Subject to resources it is hoped to further develop this module during the coming year and include it in planned voluntary surveys.

**Appendix 1 – Greenhouse emissions module of the Landleader survey**

**Landleader: Best Practice for a better future**

**Australian Grazing Industry Stewardship Questionnaire 2008.**

**Questionnaire Section 10.0 Greenhouse Emissions**

Agriculture is one of the largest greenhouse gas emitters in Australia. Greenhouse gases are emitted in the form of methane, nitrous oxide and carbon dioxide from everyday agricultural practices such as using electricity and fuel, applying fertilisers and grazing livestock.

**Q.10.1** Which of the following practices do you use to optimise livestock feed quality and digestibility? *(Please tick, multi response)*

- Always ensure adequate feed to maximise production efficiency
- Actively select and improve pastures to increase pasture digestibility (species composition, legume composition)
- Actively manage pastures to improve pasture digestibility (high leaf to shoot ratio)
- Use dietary supplements to cover nutrient gaps when grazing lower quality feed
- None of the above  Not applicable

**Q.10.2** Which of the following practices do you use to maximise livestock production efficiency? *(Please tick, multi response)*

- Actively select against unproductive animals
- Improve rumen function by using rumen modifiers (e.g. Rumensin) or feed additives (e.g. Tanins)
- None of the above  Not applicable

**Q.10.3** Which of the following practices do you use to maximise nitrogen cycling efficiency? *(Please tick, multi response)*

- Minimise stock camping to improve nitrogen redistribution across paddocks
- Manage soil structure to improve water infiltration
- Optimise nitrogen applications based on soil tests and anticipated plant growth
- Split nitrogen applications to minimise leaching and volatilisation
- None of the above  Not applicable

**Q.10.4** Which of the following practices do you undertake to reduce fossil fuel consumption *(Please tick, multi response)*

- Consider energy efficiency (fuel consumption) when selecting new plant or equipment
- Purchase plant and equipment which can run on alternative fuels (solar, biofuels,

natural gas)

- Match plant and equipment to the task to reduce fuel consumption
- None of the above  Not applicable

## **Appendix 2 - NRM Bodies invited to participate in Landleader 2008**

### **New South Wales**

Murray Catchment Management Authority  
Murrumbidgee Catchment Management Authority  
Southern Rivers Catchment Management Authority  
Lachlan Catchment Management Authority  
Central West Catchment Management Authority  
Namoi Catchment Management Authority  
Lower Murray Darling Catchment Management Authority  
Western Catchment Management Authority

### **Queensland**

South West NRM  
Desert Channels Queensland  
Queensland Murray Darling Committee

### **South Australia**

South Australia Murray Darling Basin NRM  
South East NRM  
South Australia Arid Lands NRM  
Eyre Peninsula NRM  
Northern Yorke NRM  
Adelaide and Mount Lofty Ranges NRM

### **Tasmania**

NRM North  
NRM South

### **Victoria**

Glenelg Hopkins Catchment Management Authority  
Corangamite Catchment Management Authority  
West Gippsland Catchment Management Authority  
Goulburn Broken Catchment Management Authority  
North Central Catchment Management Authority  
Wimmera Catchment Management Authority  
Mallee Catchment Management Authority  
North East Catchment Management Authority

### **Western Australia**

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Avon Catchment Council  
South West Catchment Council  
Northern Agricultural Catchment Council  
South Coast NRM Inc



**Appendix 3 - Landleader survey 2008**



It only takes an  
hour of your time  
to support your  
industry and help  
your business

Australian Grazing Industry Stewardship Questionnaire 2008.  
Please return to AWI by 14th April, 2008.



**Landleader**

Best practice for a better future



It only takes an hour of your time to support your industry and help your business

## Australian Grazing Industry Stewardship Questionnaire



**Landleader**  
Best practice for a better future

### Is this just another survey? Definitely not!

Australian agriculture's environmental and livestock management practices are increasingly being scrutinised by consumers and the community. Without being able to demonstrate our environmental standards and sound livestock management practices we risk losing consumer confidence, market share and financial returns.

By spending approximately one hour of your time completing this Landleader questionnaire, you will be providing AWI, MLA and your local catchment with the information they need to start objectively demonstrating the environmental and animal welfare credentials of your industry.

Importantly, this information is what markets, government and community groups are now asking for.

### So, what is Landleader?

The Landleader program allows land managers to assess their current environmental management practices against recognised industry standards and to track improvements over time. This is done through structured data collection tools and educational information developed specifically for the program.

The program looks at the following key areas, identified as important by a range of organisations involved in the wool and red meat industries:

- Sustainable management of natural resources (soil, water and vegetation);
- Stock management; and
- Chemical use on farm

A key attribute of the data collection process is that it is simple to complete and can be done quickly (we estimate about an hour).

### What do you get out of it?

Information gathered in the Landleader questionnaire will be used in two ways:

1. To report nationally and internationally on the environmental and livestock management performance of the broadacre wool and red meat industry
2. To provide you with a customised report that compares your practices to industry best practice. This may assist you to improve your business over time

**No individual information gathered in this questionnaire will be released to anyone other than you.** The Landleader database is completely secure and only aggregated data will be released.

**For your own, and your industry's future prosperity, please complete this questionnaire as accurately as possible.**



It only takes an hour of your time to support your industry and help your business

## Australian Grazing Industry Stewardship Questionnaire

Please answer all questions with a **dark blue** or **black** pen.

### My details

Please provide an electronic version of my report.

My email address: \_\_\_\_\_

Please provide a paper version of my report

First name: \_\_\_\_\_

Surname: \_\_\_\_\_

Property/Street/Road \_\_\_\_\_

PO Box: \_\_\_\_\_

Town: \_\_\_\_\_

State: \_\_\_\_\_

Postcode: \_\_\_\_\_

### How to submit your questionnaire

*Please enclose your questionnaire in the reply paid envelope provided or send to:*

**Landleader Program, c/o AWI, GPO Box 4177, Sydney NSW 2001**

### Privacy Protocols

No individual information gathered in this questionnaire will be released. The Landleader database is completely secure and only aggregated data will be publicly released.

To be able to provide a report back to you after you complete this questionnaire we need your contact details and preferred method of reporting. Personal information will be otherwise dealt with in accordance with MLA's and AWI's privacy policies which can be obtained directly from our websites [www.mla.com.au](http://www.mla.com.au) or [www.wool.com.au](http://www.wool.com.au)



### Please note

1. The questions have been formed so as to provide an unbiased report back to land managers. Please note that they are not designed to indicate a range from poor practice to best practice.
2. Not all questions relate to best practice. For several areas there is no "one" best practice that is appropriate, but a range of practices that will vary depending on region, pasture base, stock classes, time of year etc.
3. Some questions may not be relevant to you. Answer only those that are applicable.
4. Please answer your questions from the basis of the 2006/07 financial year (except for cropping details which can be recorded as cropping year 2007).

## Australian Grazing Industry Stewardship Questionnaire

Please answer all questions with a **dark blue** or **black** pen.

### General Farm Data

General Farm Data enables us to identify the region you are operating in, your usual climatic conditions and some key characteristics of your operation (e.g. stock type, property size etc). We also ask some questions about your planning process and what some of your longer term goals are.

**Q1.1** Do you own, lease or share farm more than one property?

Yes  Please use a separate form for each property that is managed differently or is located in a different postcode

No  Please continue

**Q1.2** What is the **Postcode** of the property reported on in this questionnaire?

Postcode

**Q1.3** In what NRM (Natural Resource Management) region or CMA (Catchment Management Authority) region is the property located.

Catchment/region Name  Don't know

**Q1.4** Do you seek technical or financial assistance from this CMA or regional NRM authority?

Yes  No  Don't know

**Q1.5** What is the **total area** of the surveyed property, including any unused land managed as part of this property? *(Please answer in either Hectares or Acres)*

Ha **OR**  Ac

**Q1.6** What is the total **Arable Area** of your property?

\* Arable - land that is capable of being farmed (or grazed) in a productive way

Ha **OR**  Ac

**Q1.7** What is the **average annual rainfall** on your property?

*(Please answer in either Millimetres or Inches)*

Millimetres  mm **OR** Inches  Inches

**Q1.8** What was the **total rainfall** recorded on your property in the 2006/2007 financial year?

Millimetres  mm **OR** Inches  Inches

**Q1.9** How many **breeding cows** and **other cattle** do you run on your property in an average year?

Breeder cows  Head Calves  Head Other cattle  Head

**Q1.10** How many **breeding ewes** and **other sheep** do you run on your property in an average year?

Breeder ewes  Head Lambs  Head Other sheep  Head

General Farm Data *cont...*

## Questionnaire Section 1.0

**Q1.11** Is your property accredited for any of the following?

An **organic farm**?

Yes  No  Don't know

A **biodynamic farm**?

Yes  No  Don't know

A **quality assurance scheme** (e.g. Cattlecare)?

Yes  No  Don't know

An **Environmental Management System**?

Yes  No  Don't know

**Q1.12** Is there any other unique aspect of your management you would like to include?

Please specify

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**Q1.13** Does your physical farm plan/map include:

*(Please tick multi response)*

- Areas of different soil type
- Areas for different land uses (e.g. native pastures, degraded areas, native vegetation and drainage lines)
- Areas that identify limitations to pasture growth and productivity (e.g. Water logging)
- No plan



# Questionnaire

# 1.0

## Australian Grazing Industry Stewardship Questionnaire

Please answer all questions with a **dark blue** or **black** pen.

### General Farm Data *cont...*

### Questionnaire Section 1.0

**Q1.14** Which of the following **natural resource** management **practices** do you undertake and **record** on your **farm**? *(Please tick, multi response)*

- Establish photo reference points
- Tree and shrub establishment survival rates
- Conduct bird surveys
- Water quality testing
- Soil testing
- Monitor pasture composition changes
- Pest animal counts
- Groundwater levels (piezometers)
- Plant tissue measurements
- Other

**Q1.15** Please specify Other?

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**Cropping Data**
**Questionnaire Section 2.0**

We are only seeking a response to a few key questions on cropping. The wool and meat industries have been working closely with the grains industry (that has a similar questionnaire to this but with a greater focus on cropping practices). Please remember to answer these questions for the **2007 cropping year**.

**Q2.1 Did you undertake any cropping activities in 2007** (please tick)?

Yes  No

If no, please go to section 3

**Q2.2 In the cropping year of 2007**, what area of your property was under cropping?  
 (Please answer in either Hectares or Acres)

Ha OR  Ac

**Q2.3 How much of this cropping area** was managed using the following **cultivation** practices?  
 (Please answer in either Hectares or Acres and ensure figures add up to total area cropped.)

No Tillage (One pass, direct drill with disks or knife points)

Ha OR  Ac

Minimum Tillage (One pass, direct drill, full cut)

Ha OR  Ac

Conventional Tillage (more than two cultivations prior to sowing)

Ha OR  Ac

Other (pasture cropping, wide row cropping etc)

Ha OR  Ac

**Q2.4 Please specify Other?**

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# Questionnaire

# 2.0

## Australian Grazing Industry Stewardship Questionnaire

Please answer all questions with a **dark blue** or **black** pen.

### Cropping Data *cont...*

### Questionnaire Section 2.0

**Q2.5** A number of **stubble management practices** are common amongst cereal farmers. How much of your stubble did you manage using the following practices? *(Please answer in either Hectares or Acres)*

No treatment – sown into a standing stubble

<input type="text"/>	Ha	OR	<input type="text"/>	Ac
----------------------	----	----	----------------------	----

Grazing only

<input type="text"/>	Ha	OR	<input type="text"/>	Ac
----------------------	----	----	----------------------	----

Grazing, then stubble removed but not burnt (mown, baled)

<input type="text"/>	Ha	OR	<input type="text"/>	Ac
----------------------	----	----	----------------------	----

Stubble removed but not burnt (mown, baled)

<input type="text"/>	Ha	OR	<input type="text"/>	Ac
----------------------	----	----	----------------------	----

Grazing, then light stubble removal and burnt (windrowed, header rows burnt)

<input type="text"/>	Ha	OR	<input type="text"/>	Ac
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Grazing, then heavy stubble removal (hot burn)

<input type="text"/>	Ha	OR	<input type="text"/>	Ac
----------------------	----	----	----------------------	----

Heavy stubble removal (hot burn)

<input type="text"/>	Ha	OR	<input type="text"/>	Ac
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Other

**Q2.6** Please specify Other?

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**Pasture Data**
**Questionnaire Section 3.0**

This section seeks to identify what sort of pastures you have on your property and how they are managed. For the purposes of this questionnaire the following definitions are used:

- Perennial species are plants that live for two or more years
- Annual species are plants that usually germinate, flower and die in one year
- "Introduced pastures" are those that have been sown, broadcast or deliberately introduced into your system. They may include Perennial rye grass, Phalaris, Cocksfoot, Lucerne, Buffel grass etc
- "Native and naturalised pastures" are those that have plant species native to Australia and/or species that have been introduced into Australia and have spread without being deliberately sown. They may include Wallaby grass, Microlaena, Red grass, Kangaroo grass, Mitchell grass, Salt bush, Wiregrass, Barley grass, Vulpia, Haresfoot clover, Paspalum.

**Q3.1** Approximately what percentage of your property falls into the following **pasture classifications**? (Please ensure all figures add up to 100%)

Introduced perennial pasture species	<input type="text"/>	%
Introduced annual pasture species	<input type="text"/>	%
A mixture of introduced perennial and annual pasture species	<input type="text"/>	%
Native and naturalised pastures	<input type="text"/>	%
A mixture of introduced, native and naturalised pastures	<input type="text"/>	%
Other?	<input type="text"/>	%

**Q3.2** Please specify Other?

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**Q3.3** Do you assess your pastures for species composition and quality?

Yes  No  Sometimes

**Q3.4** Do you **adjust** stocking rates to **protect native** and naturalised **pasture** composition?

Yes  No  Sometimes

**Q3.5** Do you **adjust** stocking rates to **protect introduced pasture species**?

Yes  No  Sometimes

**Q3.6** In **what year** did you last undertake any pasture renovation/manipulation?

 year

Please answer all questions with a **dark blue** or **black** pen.

### Pasture Data *cont...*

### Questionnaire Section 3.0

**Q3.7** Which of the following **grazing regimes** best describes your **predominant pasture management practice**?

- |   |   |
|---|---|
| <input type="checkbox"/> Set stocking       | <input type="checkbox"/> Rotational grazing based on time           |
| <input type="checkbox"/> Cell grazing       | <input type="checkbox"/> Rotational grazing based on pasture growth |
| <input type="checkbox"/> Rotational grazing | <input type="checkbox"/> Other                                      |

**Q3.8** Please specify Other?

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**Q3.9** What **weeds** do you actively **manage** on your property?

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> All weeds               | <input type="checkbox"/> Noxious weeds only      | <input type="checkbox"/> No weed control |
| <input type="checkbox"/> Selective problem weeds | <input type="checkbox"/> Selective noxious weeds | <input type="checkbox"/> Not applicable  |

**Q3.10** What **pests** do you actively **manage** on your property?

- |  |   |  |
|--|---|--|
| <input type="checkbox"/> All insect pests              | <input type="checkbox"/> All feral animal pests       | <input type="checkbox"/> No pest control         |
| <input type="checkbox"/> Selective insect pests        | <input type="checkbox"/> Selective feral animal pests | <input type="checkbox"/> All native animal pests |
| <input type="checkbox"/> Selective native animal pests | <input type="checkbox"/> Not applicable               | <input type="checkbox"/> Other                   |

**Q3.11** Please specify Other?

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**Q3.12** Do you use any **integrated pest management strategies** to manage problem pests on your property?

- Yes  No  Sometimes  Don't know

**Q3.13** Do you use any **integrated weed management strategies** to manage problem weeds on your property?

- Yes  No  Sometimes  Don't know

**Soil & Fertiliser Management****Questionnaire Section 4.0**

This section seeks to understand the soils on your property and how you manage them. We are interested in your management practices not your knowledge of scientific terminology or measurement. The questions are general in nature as we understand that soil and tissue tests can vary greatly and equally there is a huge variation in fertiliser types.

**Q4.1** How many **hectares** of your property do you manage according to the different types of soil?  
*(Please answer in either Hectares or Acres)*

Ha **OR**  Ac

**Q4.2** Do you apply fertiliser or other soil ameliorants (e.g. lime, gypsum, rock phosphate, chicken manure) to your paddocks?

Yes  No  Sometimes

Confidential

Please answer all questions with a **dark blue** or **black** pen.

### Soil & Fertiliser Management *cont.*

### Questionnaire Section 4.0

**Q4.3** If you applied **phosphorus fertiliser**, on average how many units of P did you apply per Hectare (or acre). *Note: see P conversion table below*

	Units of P/Ha	OR	Units of P/Ac
Crops (2007 cropping year)			
Pasture (2006/07 financial year)			
Did not apply phosphorus in 2006/07			
Do not know			

		Superphosphate (9% P) Kg/Ha						
		40	60	80	100	120	140	160
Units of P (Kg/Ha)	3.6	5.4	7.2	9	10.8	12.6	14.4	
		Double super (16% P) Kg/Ha						
		40	60	80	100	120	140	160
Units of P (Kg/Ha)	6.4	9.6	12.8	16	19.2	22.4	25.6	
		Granuloc 15, Starter 15, Hifert, Pivot 15 (13%P) Kg/Ha						
		40	60	80	100	120	140	160
Units of P (Kg/Ha)	5.2	7.8	10.4	13	15.6	18.2	20.8	
		DAP, Starter NP (20% P) Kg/Ha						
		40	60	80	100	120	140	160
Units of P (Kg/Ha)	8	12	16	20	24	28	32	
		MAP (21.9% P) Kg/Ha						
		40	60	80	100	120	140	160
Units of P (Kg/Ha)		8.8	13.2	17.6	22	26.4	30.8	35.2

Soil & Fertiliser Management *cont.*

## Questionnaire Section 4.0

**Q4.4** How do you make **decisions** about applying fertiliser or other soil ameliorants (e.g. lime, gypsum, rock phosphate, chicken manure) to your paddocks? *(Please tick, multiple response)*

- |  |   |
|--|---|
| <input type="checkbox"/> Based on paddock performance            | <input type="checkbox"/> Based on soil tests                |
| <input type="checkbox"/> Using nutrient budgets                  | <input type="checkbox"/> Based on agronomists advice        |
| <input type="checkbox"/> Based on pasture growth and composition | <input type="checkbox"/> Based on decision support programs |
| <input type="checkbox"/> Based on plant tissue tests             | <input type="checkbox"/> Not applicable                     |
| <input type="checkbox"/> Based on soil microbiology              | <input type="checkbox"/> Other                              |

**Q4.5** Please specify Other?

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**Q4.6** What **pH tests** do you undertake to monitor the **soil acidity** on your property?

- Surface pH test     
  Sub-soil pH tests     
  None

**Q4.7** Do you **consciously** maintain **ground cover** to manage run-off?

- Yes     
  No     
  Sometimes

**Q4.8** Do you use any type of pasture mass measurement tool or set benchmarks to manage your groundcover?

- Yes     
  No     
  Sometimes

**Q4.9** Does your property have any areas affected by **salinity**?

- Yes     
  No     
  Don't know

**Q4.10** What area does this **salinity** cover? *(Please answer in either Hectares or Acres)*

Ha     
 OR     
  Ac



Please answer all questions with a **dark blue** or **black** pen.

### Soil & Fertiliser Management *cont...*

### Questionnaire Section 4.0

**Q4.11** Which, if any, of the following methods do you use specifically to **manage salinity**.

**Control stock access** (total exclusion, or restricted access)

Ha    **OR**     Ac

**Revegetation of saline areas or discharge sites** (where groundwater moves to the surface)

Ha    **OR**     Ac

**Interception plantings of trees or other high water use perennials in recharge areas**  
(where water leaks into groundwater)

Ha    **OR**     Ac

**Increased water use efficiency on cropped lands** (eg. alley farming, intercropping)

Ha    **OR**     Ac

**Engineering solutions** (eg sub-surface drainage, banks and other earthworks)  
(Answer using kilometres)

kms



## Native Vegetation

## Questionnaire Section 5.0

In this section we are interested in the native vegetation on your property from an environmental rather than a production point of view. There may appear to be some overlap in questions between this and other sections, but we ask you complete this section as fully as you can.

**Native vegetation is defined** as any trees (shrubs, saplings and scrub), understory plants, native grasslands and wetland plants.

**Q5.1** Do you have **native vegetation** on your property?

Yes     No     Don't know

**Q5.2** How many **hectares of** native vegetation do you have on your property that fall into the following classifications? *(Please answer in either Hectares or Acres)*

Native vegetation (eg bush)

Ha    OR     Ac

Native vegetation (e.g. bush) **where stock access is controlled** (eg fencing)

Ha    OR     Ac

Native vegetation (e.g. bush) **that is never grazed**

Ha    OR     Ac

Not applicable

**Q5.3** Do you have a plan for your property that considers the retention, restoration and revegetation of native vegetation?

Yes     No     Partially     Not applicable

**Q5.4** Do you actively **control weeds** in your **native vegetation**?

Yes     No     Sometimes




**Rivers & Water (Riparian) Management**
**Questionnaire Section 6.0**

**Riparian areas** are the land which adjoins rivers, creek and streams. They have a significant impact on the health of these waterways, and are also often very productive pieces of land.

We have defined **watercourses**, for the purpose of this questionnaire to include creeks and streams that flow intermittently, usually after an average rainfall event. We have not included drainage lines or waterways on plains country that carry water only in extremely high rainfall events.

**Gullies** are defined as drainage lines. They may have been eroded by surface water run off over time and may now be stabilised with vegetation or still eroding

- Q.6.1** Approximately how many **kilometres** of rivers, creeks or watercourses do you have on your property? *(Please answer in kilometres, do not include gullies)*

 kms

 Not applicable

- Q.6.2** How many **kilometres** of these rivers, creeks or watercourses are **managed in the following way?** *(Please answer in kilometres, do not include gullies)*

Stock have complete access at all times

 kms

River, creek or stream is fenced into a riparian paddock which is managed specifically to protect the waterway

 kms

River, creek or stream is fenced as part of whole farm management and stock have controlled access

 kms

- Q.6.3** How many **kilometres** of these rivers, creeks or watercourses have you **revegetated** with native species using the following **methods?** *(Please answer in kilometres)*

Natural regeneration (e.g. exclude or controlled grazing)

 kms

Planting tube stock or seedlings

 kms

Direct seeding (for riparian areas only)

 kms

Please answer all questions with a **dark blue** or **black** pen.

### Rivers & Water (Riparian) Management *cont.*

### Questionnaire Section 6.0

**Q.6.4** How often do you **assess the condition** (riparian health) of the rivers, creeks and watercourses on your property?

Regularly       Sometimes       Never       Not applicable

**Q.6.5** Approximately how many **kilometres** of gullies do you have on your property?  
*(Please answer in kilometres)*

Please answer only for those gullies that you regard as significant, whether stabilised or active.

kms

**Q.6.6** How many **kilometres** of these gullies are eroding or becoming more degraded?  
*(Please answer in kilometres)*

Please answer only for those gullies that you regard as significant.

kms

**Q.6.7** How many **wetlands** do you have on your property?

Wetlands are where water forms pools or flows that last long enough for plants and animals to base a significant part of their year or life-span around their existence. They do not include farm dams.

Number

**Q.6.8** How many **hectares** do these **wetlands** cover? *(Please answer in either Hectares or Acres)*

Ha      OR       Ac

**Q.6.9** How many hectares of **wetlands** do you **control livestock access** to?

Please answer only for those wetland areas that you actively restrict or exclude livestock from?

Ha

**Q.6.10** Do you have **plans** to improve the control of livestock accessing riparian or **wetland** areas (i.e. additional fencing, stock gates, ramps)?

Yes       No  
 Don't know       Not applicable



Your environmental issues

Questionnaire Section 7.0

In this section we are interested in environmental issues that are having a negative impact (if any) on your property and how you are managing them.

Q.7.1 What do you consider to be the **top 3 environmental issues** that you are facing on your property, and the % of the property they affect? *(Please answer in order of importance)*

Number 1 \_\_\_\_\_  
% affected: \_\_\_\_\_

Number 2 \_\_\_\_\_  
% affected: \_\_\_\_\_

Number 3 \_\_\_\_\_  
% affected: \_\_\_\_\_

Q.7.2 Please specify the main strategies you use, or intend to use, to manage these environmental issues.

Number 1 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Number 2 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Number 3 \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Confidential

Please answer all questions with a **dark blue** or **black** pen.

### Livestock Management

### Questionnaire Section 8.0

In this section we want to know about your livestock management practices. We know that these will vary enormously depending on region, climatic conditions and type of stock. Consequently these questions are quite general.

**Q.8.1** Are you **aware** that a **Code of Practice** exists for all livestock producers that specifies best practice for **animal welfare**?

Yes  No

**Q.8.2** Which of the following **practices** do you do when managing your livestock?  
(Please tick, multi response)

Inspect livestock on a regular basis  Individually inspect sick or poor livestock  
 Monitor stock losses  Seek professional advice when death rates rise  
 Record stock losses  Other

**Q.8.3** Please specify Other?

\_\_\_\_\_  
\_\_\_\_\_

**Q.8.4** How do you determine the **condition** of your livestock? (Please tick, multi response)

By eye  Condition scoring method  Weighing animals

**Q.8.5** Do you set **condition score** targets for your **livestock**?

Yes  No  Sometimes

**Q.8.6** In times of poor pasture availability, how do you maintain **livestock condition**? (Please tick, multi response)

Wean early  Reduce stocking rates  
 Supplementary feed  Other

**Q.8.7** Please specify Other?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_


 Livestock Management *cont.*

## Questionnaire Section 8.0

**Q.8.8** Which of the following **influences** your decision to de-stock or hand feed livestock?  
 (Please tick, multi response)

- |  |  |  |
|--|--|--|
| <input type="checkbox"/> Condition score   | <input type="checkbox"/> Current stocking rate compared to carrying capacity |  |
| <input type="checkbox"/> Time of year      | <input type="checkbox"/> Intuition   | <input type="checkbox"/> Age of livestock  |
| <input type="checkbox"/> Market conditions | <input type="checkbox"/> Pregnancy status                                    | <input type="checkbox"/> Pasture condition |
| <input type="checkbox"/> Weather forecast  | <input type="checkbox"/> Rainfall recieved                                   | <input type="checkbox"/> Not applicable    |
| <input type="checkbox"/> Other             |  |  |

**Q.8.9** Please specify Other?

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**Q.8.10** When **managing water** for your livestock which of the following do you do?  
 (Please tick, multi response)

- |   |   |
|---|---|
| <input type="checkbox"/> Allow stock ad-lib access to water                     | <input type="checkbox"/> Check/test water quality for salt levels   |
| <input type="checkbox"/> Check stock water supply regularly                     | <input type="checkbox"/> Check/test water for turbidity (muddiness) |
| <input type="checkbox"/> Ensure stock are not without water for more than 48hrs |   |
| <input type="checkbox"/> Check/test for algae                                   |   |

**Q.8.11** Do your livestock have access to **shade and shelter in the paddock**?

- |                              |                             |                                    |   |
|------------------------------|-----------------------------|------------------------------------|---|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Sometimes | <input type="checkbox"/> Most of the time |
|------------------------------|-----------------------------|------------------------------------|---|

**Q.8.12** Does the risk or level of exposure to extreme weather conditions determine when you **lamb, calve or shear**?

- |                              |                             |                                    |   |
|------------------------------|-----------------------------|------------------------------------|---|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Sometimes | <input type="checkbox"/> Not applicable |
|------------------------------|-----------------------------|------------------------------------|---|

**Q.8.13** In what condition would you describe your stock **handling facilities** (especially in relation to being well maintained and conducive to good animal movement)?

- |                               |                               |                               |
|-------------------------------|-------------------------------|-------------------------------|
| <input type="checkbox"/> Good | <input type="checkbox"/> Fair | <input type="checkbox"/> Poor |
|-------------------------------|-------------------------------|-------------------------------|

**Q.8.14** When transporting livestock do you (or your carrier) use the MLA 'is it fit to load' guide

- |                              |                             |                                     |
|------------------------------|-----------------------------|-------------------------------------|
| <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Don't know |
|------------------------------|-----------------------------|-------------------------------------|



Please answer all questions with a **dark blue** or **black** pen.

### Livestock Management *cont...*

#### Sheep Specific Questions *(please go to Q8.23 if you do not run sheep)*

Q.8.15 When managing **lamb survival** which of the following do you do? *(Please tick, multi response)*

- Maintain ewes in condition score 3
- Limit stock movement during late pregnancy and following lambing
- Manage single-bearing and twin-bearing ewes separately (provide extra feed resources to twin-bearers)
- Provide adequate shelter for ewes at lambing
- Plan timing of lambing to maximise survival of new-born lambs
- Not applicable
- Other

Please specify Other?

\_\_\_\_\_

\_\_\_\_\_

Q.8.16 Do you **vaccinate lambs to protect** against clostridial diseases (eg pulpy kidney, black leg and tetanus)?

- Yes
- No
- Sometimes
- Not applicable

Q.8.17 Do you vaccinate **adult sheep to protect** against clostridial diseases (eg pulpy kidney, black leg and tetanus)?

- Yes
- No
- Sometimes
- Not applicable

Q.8.18 Do you **mules** lambs?

- Yes
- No
- Sometimes
- Not applicable

Q.8.19 How **often** do you **treat** sheep (jet or treat with other products) for **blowfly control**? *(Please tick, single response)*

- Never
- Only when fly waves appear
- At the same time each year
- Not applicable
- Rarely
- As many times as they need it
- Individuals on a needs basis
- Other


 Livestock Management *cont...*

## Questionnaire Section 8.0

 Q.8.20 Please specify Other?
 

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 Q.8.21 How **often** do you **drench** sheep for **worms**? *(Please tick, single response)*

- Once a year at the same time of year  
 More than once a year when they appear to need it  
 Once a year when they appear to need it  
 Only when faecal egg counts suggest it  
 More than once a year at the same times of the year each year  
 Not applicable  
 Other

 Q.8.22 Please specify Other?
 

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 Q.8.23 How **often** do you **treat** sheep (dip or treat with other products such as back-liners) for **lice control**? *(Please tick, single response)*

- |   |   |
|---|---|
| <input type="checkbox"/> Never                              | <input type="checkbox"/> Rarely   |
| <input type="checkbox"/> Annually off shears                | <input type="checkbox"/> Usually late in season, and only if they have lice |
| <input type="checkbox"/> Off shears, only if they have lice | <input type="checkbox"/> Not applicable                                     |

Q.8.24 When mulesing lambs, do you use a muleser accredited by the National Mulesing Accreditation Program?

- |                                     |   |
|-------------------------------------|---|
| <input type="checkbox"/> Yes        | <input type="checkbox"/> No             |
| <input type="checkbox"/> Don't know | <input type="checkbox"/> Not applicable |

Please answer all questions with a **dark blue** or **black** pen.

Livestock Management *cont...*

Questionnaire Section 8.0

### Cattle Specific Questions *(please go to Section 9.0 if you do not run cattle)*

**Q.8.25** Do you **vaccinate calves to protect** against clostridial diseases (eg pulpy kidney, black leg and tetanus etc) ?

Yes       No       Sometimes       Not applicable

**Q.8.26** Do you **vaccinate adult breeding cattle** to protect against clostridial diseases (eg pulpy kidney, black leg and tetanus etc)?

Yes       No       Sometimes       Not applicable

**Q.8.27** How often do you treat cattle (drench or pour-on) for worms?

- Once a year at the same time of year
- More than once a year when they appear to need it
- Once a year when they appear to need it
- Don't treat for worms
- More than once a year at the same times of the year each year
- Not applicable
- Other

**Q.8.28** Please specify Other?

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**Q.8.29** Do you treat cattle for lice?

Yes       No       Sometimes       Not applicable

**Q.8.30** Do you treat cattle for ticks?

Yes       No       Sometimes       Not applicable


**Chemical Use**
**Questionnaire Section 9.0**

Similar to livestock practices, we acknowledge that the need to use chemicals will vary enormously depending on region, climatic conditions, stock classes and individual producer preferences and marketing strategies. Consequently these questions are also quite general and are not all reflective of best practice. However, we are keen to get an understanding of the practices you use. Please answer the questions for all veterinary and agricultural chemicals you use on your property.

**Q.9.1** Which of the statements below best describes the overall approach to the **use of chemicals** and **chemical management** on your property? *(Please tick, multi response)*

- Never use chemicals
- Use chemicals as little as possible, because I prefer to minimise their use
- Use chemicals infrequently, because my management doesn't generally require them
- Use chemicals as part of an integrated pest management plan. (ie time shearing etc to minimise chemical requirements)
- Use chemicals quite often and I comply with label recommendations

**Q.9.2** Which of the following do you do when **handling** and **storing** your **chemicals**? *(Please tick, multi response)*

- |   |  |
|---|--|
| <input type="checkbox"/> Keep chemicals away from dwellings | <input type="checkbox"/> Check for changes in chemical OH&S laws           |
| <input type="checkbox"/> Store chemicals under lock & key   | <input type="checkbox"/> Have a specific chemical storage area or facility |
| <input type="checkbox"/> Ventilated chemical storage area   | <input type="checkbox"/> Have a 'Bunded' and sealed floor                  |
| <input type="checkbox"/> Keep material safety data sheets   | <input type="checkbox"/> Do not handle or store chemicals                  |
| <input type="checkbox"/> Not applicable                     |  |

**Q.9.3** Do you **document** the **purchase** of any **chemical** or **animal health** products?

- Yes       No       Sometimes       Not applicable

**Q.9.4** Do you **document** the **use** of **chemical** and **animal health** products?

- Yes       No       Sometimes       Not applicable

**Q.9.5** How often do you use **protective clothing** when using chemicals on your property? *(Please tick, multi response)*

- |   |  |
|---|--|
| <input type="checkbox"/> Never          | <input type="checkbox"/> Some of the time                  |
| <input type="checkbox"/> All the time   | <input type="checkbox"/> When the label specifies to do so |
| <input type="checkbox"/> Not applicable |  |

Please answer all questions with a **dark blue** or **black** pen.

### Chemical Use *cont...*

### Questionnaire Section 9.0

**Q.9.6** Which of the following **practices** do you undertake when **applying chemicals** to livestock?  
(Please tick, multi response)

- |  |  |
|--|--|
| <input type="checkbox"/> Use a quick and easy method       | <input type="checkbox"/> Apply chemicals carefully to minimise waste     |
| <input type="checkbox"/> Constrain animals appropriately   | <input type="checkbox"/> Calibrate application equipment for each job    |
| <input type="checkbox"/> Follow wool harvesting intervals  | <input type="checkbox"/> Follow withholding periods and export intervals |
| <input type="checkbox"/> Record treatment dates            | <input type="checkbox"/> Do not sell stock within withholding periods    |
| <input type="checkbox"/> Complete wool harvest declaration | <input type="checkbox"/> Do not sell wool within withholding periods     |
| <input type="checkbox"/> Not applicable                    |  |

**Q.9.7** Does your **property** comply with the requirements for the **European Union Eco Label**?

- Yes       No       Don't know       Not applicable

**Q.9.8** Do you ever **dispose** of surplus chemicals?

- Yes       No

**Q.9.9** Which of the following **practices** do you undertake when disposing of **surplus** chemicals?  
(Please tick, multi response)

- |   |  |
|---|--|
| <input type="checkbox"/> Avoid waterways, desirable vegetation and tree roots |  |
| <input type="checkbox"/> Rinse container and add rinse fluid to spray tank    |  |
| <input type="checkbox"/> Dispose of unwanted chemical on site                 | <input type="checkbox"/> Use ChemClear   |
| <input type="checkbox"/> Store in other containers                            | <input type="checkbox"/> Take to the tip |
| <input type="checkbox"/> Burn container with excess product                   | <input type="checkbox"/> Not applicable  |

**Q.9.10** Which of the following **practices** do you undertake when disposing of **empty chemical containers**? (Please tick, multi response)

- |   |  |
|---|--|
| <input type="checkbox"/> Use drumMuster       | <input type="checkbox"/> Take to the tip |
| <input type="checkbox"/> Store on farm        | <input type="checkbox"/> Clean and reuse |
| <input type="checkbox"/> Burn empty container | <input type="checkbox"/> Not applicable  |
| <input type="checkbox"/> Other                |  |

**Q.9.11** Please specify Other?

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**Q.9.12** Do you, or does anybody on your **property** currently have **certification in chemical management**?

- Yes       No       Don't know       Not applicable


**Greenhouse Emissions**
**Questionnaire Section 10.0**

Agriculture is one of the largest greenhouse gas emitters in Australia. Greenhouse gases are emitted in the form of methane, nitrous oxide and carbon dioxide from everyday agricultural practices such as using electricity and fuel, applying fertilisers and grazing livestock.

**Q.10.1** Which of the following practices do you use to optimise livestock feed quality and digestibility? *(Please tick, multi response)*

- Always ensure adequate feed to maximise production efficiency
- Actively select and improve pastures to increase pasture digestibility (species composition, legume composition)
- Actively manage pastures to improve pasture digestibility (high leaf to shoot ratio)
- Use dietary supplements to cover nutrient gaps when grazing lower quality feed
- None of the above  Not applicable

**Q.10.2** Which of the following practices do you use to maximise livestock production efficiency? *(Please tick, multi response)*

- Actively select against unproductive animals
- Improve rumen function by using rumen modifiers (e.g. Rumensin) or feed additives (e.g. Tannins)
- None of the above  Not applicable

**Q.10.3** Which of the following practices do you use to maximise nitrogen cycling efficiency? *(Please tick, multi response)*

- Minimise stock camping to improve nitrogen redistribution across paddocks
- Manage soil structure to improve water infiltration
- Optimise nitrogen applications based on soil tests and anticipated plant growth
- Split nitrogen applications to minimise leaching and volatilisation
- None of the above  Not applicable

**Q.10.4** Which of the following practices do you undertake to reduce fossil fuel consumption? *(Please tick, multi response)*

- Consider energy efficiency (fuel consumption) when selecting new plant or equipment
- Purchase plant and equipment which can run on alternative fuels (solar, biofuels, natural gas)
- Match plant and equipment to the task to reduce fuel consumption
- None of the above  Not applicable

Please answer all questions with a **dark blue** or **black** pen.

### Other information about your enterprise

### Questionnaire Section 11.0

This last section of the questionnaire provides you with an opportunity to tell us about other important things on your farm in relation to your environmental or livestock management that have not been covered by the questionnaire questions. We are particularly interested to know about your future intentions

**Q.11.1** Please describe any **unique features** of your property or your management.

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**Q.11.2** Please describe the **main challenges** that you face in managing your property.

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**Q.11.3** Please describe any **future plans or developments** (especially in relation to environmental management practices) for your property or business.

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## Survey Feedback

## Survey Section 12.0

Australian Wool Innovation (AWI) and Meat and Livestock Australia (MLA) are interested in your feedback regarding the Landleader survey. This questionnaire is designed to obtain your feedback and will take about 2 minutes to complete. Your comments will be most valuable to further improve or refine Landleader. Your comments will be collated with those from other landholders and not appear on their own.

**Q.12.1** How did you hear about the Landleader survey (you may **tick**, more than one option)? From:

- |  |   |
|--|---|
| <input type="checkbox"/> An officer of a natural resource management Regional Body or Catchment Management Authority | <input type="checkbox"/> The television       |
| <input type="checkbox"/> The radio   | <input type="checkbox"/> A neighbour/friend   |
| <input type="checkbox"/> The newspaper   | <input type="checkbox"/> Previous participant |
| <input type="checkbox"/> Industry newsletter   |   |
| <input type="checkbox"/> Other (please specify)  |   |

**Q.12.2** Could you please rate the relevance of the questions in the Landleader survey to your business? Please give your answer on a scale of 1 to 10 where 1 = not relevant and 10 = very relevant. Please **tick**, one of the boxes.

- 1    2    3    4    5    6    7    8    9    10

**Q.12.3** As a result of completing the Landleader survey did you identify areas of your management that you would like to modify?

- Yes, some major changes    Yes, some minor changes    No

**Q.12.1** Would you be willing to re-assess yourself against the Landleader survey in one to two years' time? (Please **tick**, as many boxes as apply).

- Yes, to provide data for my industry    Yes, to help me assess my own management
- No, I would not be willing to complete the tool again
- Other (please explain) \_\_\_\_\_

Thank you for taking the time to complete this questionnaire. Your information is extremely valuable in helping the sheep and cattle industry to demonstrate how producers are improving their environmental and livestock management. Please ensure that you include your name and contact details if you would like to receive a Report back.

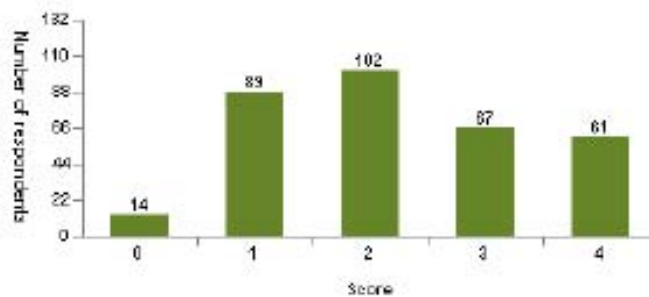


**Appendix 4 – Copy of Landleader Greenhouse Emissions module report**



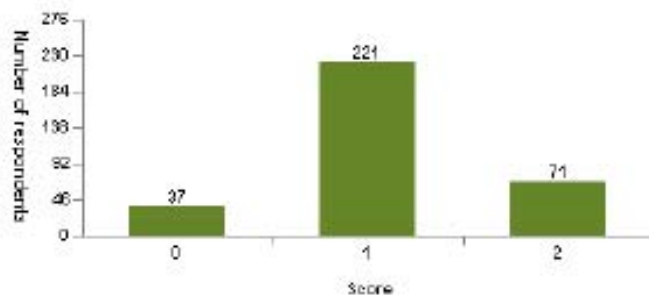
## Greenhouse Emissions

### 1. Optimise livestock feed quality and digestibility.



Maximum possible score: 4  
Total number of respondents: 333

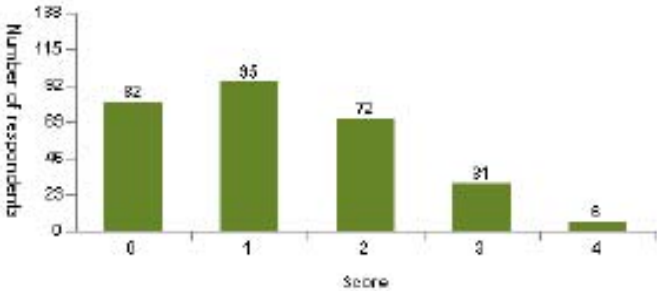
### 2. Maximise livestock production efficiency.



Maximum possible score: 2  
Total number of respondents: 329

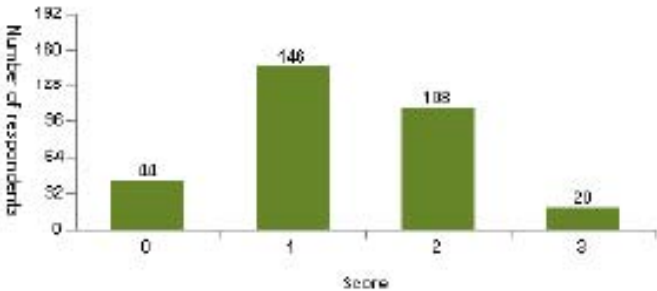


**3. Maximise nitrogen cycling efficiency.**



Maximum possible score: 4  
Total number of respondents: 288

**4. Reduce fossil fuel consumption.**



Maximum possible score: 3  
Total number of respondents: 318

**Appendix 5 – Example Individual Producer report**



04 Aug 2008

Survey ID: 0023

Dear Landleader Survey Respondent

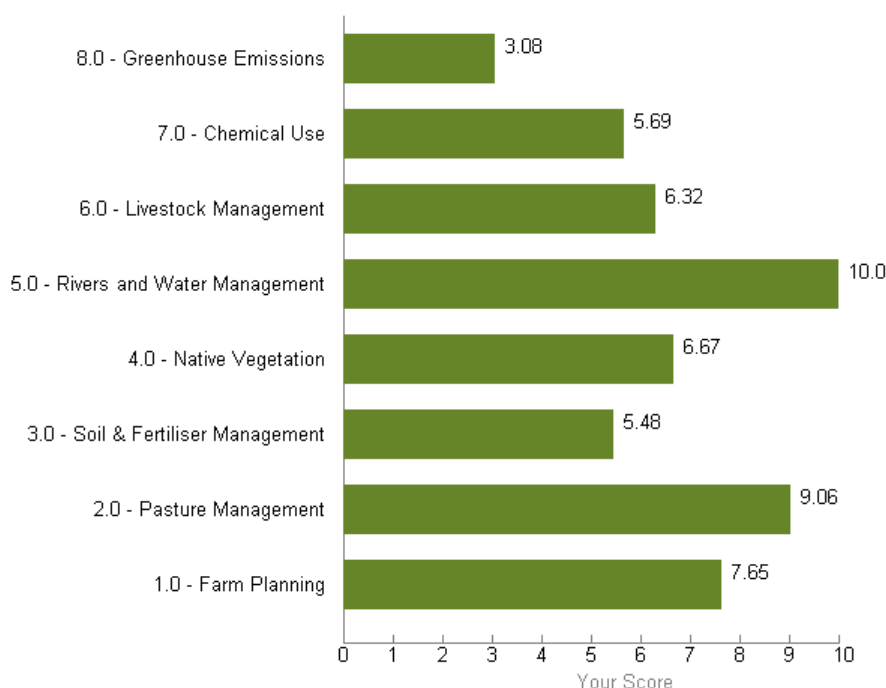
Thank you for participating in Landleader 2008, your response has been valuable in building a picture of broadacre grazing industry environmental and livestock management credentials.

This confidential report compares your practices to industry best practice as defined by Australian Wool Innovation (AWI) and Meat & Livestock Australia's (MLA) best practice packages, Making More From Sheep and More Beef from Pastures.

Not all the information you provided us with has been used in this report. Much of the information will be aggregated with that of other survey respondents and used to report more generally on the environmental and livestock management credentials of the broadacre wool and red meat industries. To protect your confidentiality no data will be reported against individual names or properties, only you will receive this land manager report.

This report looks at 8 priority areas covered in the survey. As a general rule, the higher your score the closer you are to achieving best practice while lower scores represent a greater opportunity for your business to make significant gains by examining new or improved practices that may enhance your environmental or livestock management. In some cases, a score of 0 may mean this priority area is not relevant to your business. Your score across these 8 areas is summarised below:

## Landleader Priorities





It is important to realise that this assessment is only indicative as many management practices are regionally specific and in some cases “trade-offs” between practices need to be made by a business. All best practices are considered to be of equal importance.

Most importantly, this report provides a list of useful resources to learn more about the environmental and livestock management practices promoted by AWI and MLA. If you would like any more information on Landleader please contact Clare Hamilton on 02 6379 1628 or by email [Landleader@woolinnovation.com](mailto:Landleader@woolinnovation.com)

Yours sincerely

Lu Hogan  
Program Manager  
Australian Wool Innovation

Michael Goldberg  
Program Manager  
Meat and Livestock Australia



## General Farm Data

The following table is a summary of your data. In future years, as the sample size increases, we will be able to provide a more meaningful comparison to other Landleader participants.

	Your Property
Total property area	1200.0 Ha
Total arable area	900.0 Ha
Average annual rainfall	1000.0 mm
Recorded rainfall for 2006/07	1000.0 mm
Average stocking rate	12.5 dse/Hectare
Your NRM / CMA Region	Northern Rivers CMA



## 1.0 Farm Planning



### Why is it important?

Planning is the process of analysing and planning a property's operations from a personal, physical and financial perspective with the ultimate goal of achieving sustainable and profitable production, conservation of resources and an attractive, enjoyable place to live.

When it comes to demonstrating environmental stewardship to markets or the Australian community, planning, monitoring and recording performance helps provide confidence.

This section is about assessing what you monitor on farm and your approach to physical planning. It does not consider personal or financial plans. It also identifies what current accreditation schemes you operate on your property.

Farm Accreditation:

EnvironmentalManagementSystem

Best Practices		Score
1	Prepare an inventory of your farm's natural assets and plan for continuous improvement (maximum possible score 3)	3.0
2	Seek technical or financial assistance from your CMA or regional NRM authority (maximum possible score 1)	1.0
3	Measure, manage and monitor your farm's natural resources (maximum possible score 13)	9.0
<b>Corrected Score out of 10 for this section</b>		7.65





## i

### For more information

#### Recommended

- Module 5 'Protect Your Farm's Natural Assets' from AWI and MLA's best practice package for sheep and wool - 'Making More From Sheep'
- Module 1 'Setting Directions' from MLA's best practice package for cattle - 'More Beef from Pastures'
- Regional NRM Authorities or Catchment Management Authorities (CMAs) are critical links for natural resource management and funding - if you know your local authority website, proceed straight to it, but for access to all regional NRM Authorities across Australia go to [www.nrm.gov.au/apps/projects/town-search.html](http://www.nrm.gov.au/apps/projects/town-search.html) which includes a map for easy navigation.

#### General

- Farming for the Future (1999). Physical Property Planning. Eds David Brouwer, Andrea Clowes and Bruce Thompson. NSW DPI (available for \$36 from CB Alexander College, Tocal, Paterson NSW 1800 025 520 or [www.tocal.nsw.edu.au](http://www.tocal.nsw.edu.au))
- Farming for the Future Self Assessment Tool - [www.agric.wa.gov.au](http://www.agric.wa.gov.au)
- FarmSAT - available from [www.tfga.com.au/pages/TFGAFarmSATProject.htm](http://www.tfga.com.au/pages/TFGAFarmSATProject.htm)
- Environmental Management in Agriculture [www.dse.vic.gov.au/dse](http://www.dse.vic.gov.au/dse)
- Victorian Environmental Management Systems [www.dpi.vic.gov.au/dpi](http://www.dpi.vic.gov.au/dpi)



## 2.0 Pasture Management



### Why is it important?

The productivity and profitability of many grazing enterprises can be greatly improved by increasing the amount of pasture utilised. The health and fertility of the soil and stage of growth at which pasture is grazed have a major effect on pasture growth and quality. Vigorous, healthy pastures are more likely to resist pest species attack and weed invasion.

The way a pasture is grazed has a major bearing on the species that survive and dominate. Grazing strategies can be developed to maintain desirable species and optimise growth rates.

In many situations, perennial species are more productive in grazing systems where adequate rest periods are provided between grazing events. Deep rooted perennial species stay green longer, using more water and producing feed over extended periods for livestock. Pasture composition and growth stage at grazing should be assessed to ensure the productive growth and survival of desirable species. The grazing needs of the pasture species you want to encourage should be matched with the grazing tactics you employ.

### Your scorecard for Pasture Management:

Best Practices		Score
1	Graze to keep the desirable species productive and dominant (maximum possible score 3)	3.0
2	Actively manage weed species (maximum possible score 5)	4.5
3	Actively manage pest species (maximum possible score 8)	7.0
<b>Corrected Score out of 10 for this section</b>		9.06



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### For more information

#### Recommended

- Module 7 'Grow More Pasture' from AWI and MLA's best practice package for sheep and wool - 'Making More From Sheep'
- Module 5 'Protect Your Farm's Natural Assets' from AWI and MLA's best practice package for sheep and wool - 'Making More From Sheep'
- Module 3 'Pasture Growth' from MLA's best practice package for cattle - 'More Beef from Pastures'
- Module 4 'Pasture Utilisation' from MLA's best practice package for cattle - 'More Beef from Pastures'

#### General

- Towards Sustainable Grazing - the professional producer's guide (2003) Edited by W. Mason, L. Warn and G. Cahill. Published by Meat & Livestock Australia. To order a copy, phone 1 800 023 100, or visit [www.mla.com.au/tsg](http://www.mla.com.au/tsg)
- The MLA Pasture Health Kit, available from MLA, Ph: 1 800 023 100 or visit [www.mla.com.au](http://www.mla.com.au) Meat and Livestock Australia (2002). SGS 'Tips and Tools' for making change series. A large number of titles are available covering: grazing management of native pastures, phalaris, perennial ryegrass, fescue, cocksfoot and kikuyu-based pastures. Series available from MLA Ph: 1 800 023 100 or visit [www.mla.com.au](http://www.mla.com.au)
- 'Quickchecks' - Healthy Land ... Healthy Wool Growing Businesses, developed through the Native Vegetation and Biodiversity sub program of the Land, Water and Wool Program ([www.landwaterwool.gov.au](http://www.landwaterwool.gov.au))
- Pasture Legumes for Temperate Farming Systems - The Ute Guide (\$35) ([www.wool.com.au/publications](http://www.wool.com.au/publications) or [www.grdc.com.au](http://www.grdc.com.au)). Helps you identify pasture legumes and select the cultivars best suited to your environment and farming system
- Prograze™ Profitable and Sustainable Grazing. A course which aims to develop pasture and livestock assessment skills. For details contact your local Department of Agriculture/Primary Industries.
- Attend a Grazing for Profit or Holistic Resource Management course. For Grazing for Profit Ph: 1 800 356 004 or go to [www.rcs.au.com](http://www.rcs.au.com) For Holistic Resource Management go to [www.holisticmanagement.org.au/educators.html](http://www.holisticmanagement.org.au/educators.html)
- 3D Weed Management publications are available for African Love Grass, Chilean Needle Grass, Patterson's Curse, thistles, Serrated Tussock, and Silver Leaf Nightshade, see [www.mla.com.au](http://www.mla.com.au) or [www.wool.com.au](http://www.wool.com.au)
- The Weed Management CRC website contains weed management publications for many weeds. [www.weeds.crc.org.au/publications/weed\\_man\\_guides.html](http://www.weeds.crc.org.au/publications/weed_man_guides.html)
- Best Practice Management Guide For Environmental Weeds [www.weeds.crc.org.au/documents/bpmgggeneral.pdf](http://www.weeds.crc.org.au/documents/bpmgggeneral.pdf)
- WEEDeck - identification cards for Australian weeds. Available from [www.weeds.org.au/weedeck.htm](http://www.weeds.org.au/weedeck.htm)
- For more information on Timerite and RLEM management go to [www.timerite.com.au](http://www.timerite.com.au)
- Integrated Pest Management - Southern Farming Systems website ([www.sfs.org.au](http://www.sfs.org.au)) or for more generic information, [www.goodbugs.org.au/news.htm](http://www.goodbugs.org.au/news.htm)



## 3.0 Soil & Fertiliser Management



### Why is it important?

The key principle of soil management is to optimise the use of your soil resources by making sure that you align the expectations you have of your soils with their productive capability. To do this you need to know what soil types you have and how to manage them appropriately. You also need to identify any difficult-to-manage areas such as drainage lines, areas prone to waterlogging, shallow soils, steep slopes and areas where salinity, acidity or sodicity may be a problem.

The most critical management tool to protect soils and improve soil health is to maintain high levels of groundcover. This is provided by litter, stubbles and plant material. The standard benchmark is a minimum of 70% groundcover at all times.

Soil and plant tissue tests help monitor nutrient levels and soil health on different areas of your property. These then guide decisions about fertiliser and other soil ameliorant applications.

### Your scorecard for Soil & Fertiliser Management:

Best Practices		Score
1	Manage according to soil capability (maximum possible score 1)	0.7
2	Build and maintain soil fertility (maximum possible score 9)	5.0
3	Test soils for indicators of soil health (maximum possible score 2)	1.0
4	Maintain groundcover to protect your soil and keep the 'soil bugs' healthy (maximum possible score 2)	1.0
<b>Corrected Score out of 10 for this section</b>		5.48



## i

### For more information

#### Recommended

- Module 6 'Healthy Soils' from AWI and MLA's best practice packages for sheep and wool - 'Making More From Sheep'
- Module 3 'Pasture Growth' from MLA's best practice package for cattle - 'More Beef from Pastures'
- The MLA Pasture Health Kit, available from [www.mla.com.au](http://www.mla.com.au)

#### General

- MLA provides 'Tips & Tools' fact sheets on pasture monitoring and simple tactics to increase earthworm numbers in soils. Download these from the 'Information Centre' section of the website [www.mla.com.au](http://www.mla.com.au)
- 'Soil Biology Basics' are individual fact sheets on soil biology and agriculture, and a great place to start [www.dpi.nsw.gov.au/aboutus/resources/factsheets/soil-biology-basics](http://www.dpi.nsw.gov.au/aboutus/resources/factsheets/soil-biology-basics)
- An interesting fact sheet about 'life in the soil' [www.ento.csiro.au/staffhome/gvadakattu.html](http://www.ento.csiro.au/staffhome/gvadakattu.html)
- A Potter Foundation funded site covering many aspects of soil health [www.soilhealth.com](http://www.soilhealth.com)
- The MLA EDGENetwork® program is coordinated nationally and has a range of courses to assist lamb and mutton producers.



# 4.0 Native Vegetation



## Why is it important?

In most regions, there are regulatory restrictions on the way native vegetation (pastures and bushland) can be managed. Vegetation clearing and the protection of rare and threatened species have particularly strong legislative control.

For the conservation of native vegetation and enhancement of biodiversity, there are two key elements that have over-riding importance. These are the extent (amount and degree) of connection between patches of native vegetation on your farm and its condition (species mix and health, and degree of freedom from exotic weeds).

There are 3 key principles (referred to as the 3 Rs) that indicate how native vegetation and biodiversity can be managed, protected and enhanced on grazing properties. These are Retain, Restore and Revegetate.

Overgrazing poses the greatest on-going threat to native vegetation. Many regional NRM authorities have funding available to assist with fencing of remnant and riparian areas so that grazing can be restricted to a level that supports vegetation health. If you have native / naturalised pastures on your farm, then active management is required if you want to keep them productive and to maintain their conservation values. Native pasture species are also less competitive at high levels of soil fertility. Low rates of fertiliser can profitably boost native pastures, but higher levels tend to destabilise the pasture by stimulating the more competitive, exotic annuals.

### Your scorecard for Native Vegetation:

Best Practices		Score
1	Have a plan for the retention, restoration and revegetation of native vegetation (maximum possible score 1)	1.0
2	Implement management practices that improve native vegetation (maximum possible score 3)	1.0
<b>Corrected Score out of 10 for this section</b>		6.67



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### For more information

#### Recommended

- Module 5 'Protect Your Farm's Natural Assets' from AWI and MLA's best practice packages for sheep and wool - 'Making More From Sheep'
- Towards Sustainable Grazing: the professional producers guide. Available from MLA [www.mla.com.au](http://www.mla.com.au)

#### General

- Grassland Flora - a field guide for the Southern Tablelands (NSW and ACT). D. Eddy, D. Mallinson, R. Rehwinkel and S. Sharp (1998).
- Langford, CM, Simpson, PC, Garden, DL, Eddy, DA, Keys MJ, Rehwinkel, R and Johnston, WH (2004) Managing native pastures for agriculture and conservation. NSW DPI.
- Land, Water & Wool has published a series of detailed case studies focusing on woolgrowers who are actively managing their properties for improved natural resource management [www.landwaterwool.gov.au/publications.asp?section=276](http://www.landwaterwool.gov.au/publications.asp?section=276)
- MLA Tips & Tools for a range of fact sheets on production and conservation topics [www.mla.com.au/TopicHierarchy/InformationCentre/TipsandTools/Default.htm](http://www.mla.com.au/TopicHierarchy/InformationCentre/TipsandTools/Default.htm)
- Quickchecks - a monitoring tool specifically for woolgrowers [www.landwaterwool.gov.au](http://www.landwaterwool.gov.au)
- Birds on Farms ([www.birdsaustralia.com.au](http://www.birdsaustralia.com.au))
- Exchange - a service provided by Greening Australia to link practical knowledge with research knowledge, and can provide you with the resources and contacts to help resolve your vegetation management challenges <http://live.greeningaustralia.org.au/GA/NAT/TipsAndTools/exchange/>
- Native pasture groups in each state - eg [www.stipa.com.au](http://www.stipa.com.au)
- Land For Wildlife schemes - these are state based so Google 'land for wildlife' to get the website for your state
- Land water and Wool - [www.landwaterwool.gov.au](http://www.landwaterwool.gov.au)



# 5.0 Rivers and Water Management



## Why is it important?

Well managed waterways and wetlands can improve water quality, increase water yield and increase the value of the waterways and surrounds for wildlife habitat - wins all round.

The first step in improving the value of waterways and wetlands is usually to restrict stock access so that vegetation can be retained, restored or re-established. This can be achieved by both specifically fencing and grazing a riparian area as an individual unit, and by using rotational grazing so that particular areas are managed to maintain or enhance their value.

There are many good reasons for excluding stock from riparian zones, including the damage they cause to riparian vegetation, the erosion they stimulate along the stream banks, the decline they cause in water quality through pugging and fouling.

Reticulated water supplies have many conservation and production advantages over direct stock access to riparian zones and water courses, including improved water quality and protection from soil erosion.

### Your scorecard for Rivers and Water Management:

Best Practices		Score
1	Implement management practices that improve waterways and water quality (maximum possible score 2)	2.0
2	Implement management that support healthy wetlands (maximum possible score 1)	1.0
<b>Corrected Score out of 10 for this section</b>		10.0





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### For more information

#### Recommended

- Module 5 'Protect Your Farm's Natural Assets' from AWI and MLA's best practice packages for sheep and wool - 'Making More From Sheep'
- Towards Sustainable Grazing: the professional producers guide. Available from [www.mla.com.au](http://www.mla.com.au)

#### General

- "Stock and Waterways: a manager's guide" available from [www.lwa.gov.au](http://www.lwa.gov.au)
- The Land Water Wool website has information and case studies from woolgrowers relating to riparian areas ([www.landwaterwool.gov.au/products/pb061114](http://www.landwaterwool.gov.au/products/pb061114))
- "Managing gullies on wool-producing farms" available from [www.landwaterwool.gov.au/products/pf061166](http://www.landwaterwool.gov.au/products/pf061166)
- Wool Industry River Management Guides for 1) High rainfall zones including tableland areas or 2) Sheep/wheat zones. Hard copy manuals available from [www.landwaterwool.gov.au](http://www.landwaterwool.gov.au), or downloadable from [www.rivers.gov.au/lww](http://www.rivers.gov.au/lww)
- MLA Tips & Tools for a range of fact sheets on production and conservation topics [www.mla.com.au/TopicHierarchy/InformationCentre/TipsandTools/Default.htm](http://www.mla.com.au/TopicHierarchy/InformationCentre/TipsandTools/Default.htm)
- Quickchecks - a monitoring tool specifically for woolgrowers [www.landwaterwool.gov.au](http://www.landwaterwool.gov.au)
- Land water and Wool - [www.landwaterwool.gov.au](http://www.landwaterwool.gov.au)



## 6.0 Livestock Management



### Why is it important?

Consideration of livestock management has always been an integral part of grazing systems in Australia. Livestock producers recognise that animals that are well cared for are also productive.

Increasingly, the welfare of farm animals is becoming an issue of public concern.

It is important that livestock producers are able to provide an assurance that their husbandry practices are necessary and meet acceptable standards of animal welfare.

State and Commonwealth governments are responsible for setting welfare standards and, with the RSPCA, for enforcing them. The focus on welfare of livestock may increase the likelihood of prosecution of producers which could impact on the image of the industry.

The internationally recognised guide to good animal welfare is the 'five freedoms':

1. Freedom from hunger, thirst and malnutrition;
2. Freedom from fear and distress;
3. Freedom from physical and thermal discomfort;
4. Freedom from pain, injury and disease; and
5. Freedom to express normal patterns of behaviour.

These 'five freedoms' are an integral part of the industry best practices in relation to livestock management.



## Your scorecard for Livestock Management:

Best Practices		Score
<b>1</b>	Maintain your livestock in appropriate body condition to achieve production targets and minimize health problems (maximum possible score 7)	6.0
<b>2</b>	Manage sporadic outbreaks of disease (maximum possible score 6)	1.0
<b>3</b>	Meet animal wellbeing requirements (maximum possible score 10)	6.0
<b>Sheep specific practices</b>		
<b>4</b>	Manage ewes and lambs to improve survival rates (maximum possible score 5)	2.0
<b>5</b>	Implement a preventative sheep health management program (maximum possible score 2)	2.0
<b>6</b>	Monitor your flock for disease and health problems and take corrective action where needed (maximum possible score 3)	3.0
<b>Cattle specific practices</b>		
<b>7</b>	Implement a preventative cattle health management program (maximum possible score 2)	2.0
<b>8</b>	Monitor your herd for disease and health problems and take corrective action where needed (maximum possible score 3)	2.0
<b>Corrected Score out of 10 for this section</b>		6.32



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### For more information

#### Recommended

- Module 10 'Wean More Lambs' from AWI and MLA's best practice packages for sheep and wool - 'Making More From Sheep'
- Module 11 'Healthy and Contented Sheep' from AWI and MLA's best practice packages for sheep and wool - 'Making More from Sheep'
- Module 7 'Herd health and welfare' from MLA's best practice package for cattle - 'More Beef from Pastures'

#### General

- Codes of accepted farming practice for the welfare of sheep, saleyards and transport are available from all state government offices and departments of primary industries websites.
- Livestock transport Fit to load Guide [www.mla.com.au/TopicHierarchy/InformationCentre/AnimalHealthandWelfare/Animalwelfare/Transport+guide.htm](http://www.mla.com.au/TopicHierarchy/InformationCentre/AnimalHealthandWelfare/Animalwelfare/Transport+guide.htm)
- NSW Department of Primary Industries Feed Cost Calculator [www.agric.nsw.gov.au/reader/choosing-feeds/dai201b.htm](http://www.agric.nsw.gov.au/reader/choosing-feeds/dai201b.htm)
- Sheep CRC Feedlot Calculator Tool uses production, economic and feeding scenarios to calculate if feed lotting sheep is profitable. [www.sheepcrc.org.au/index.php?id=301](http://www.sheepcrc.org.au/index.php?id=301)
- Sheep CRC Lamb Growth Rate Predictor Tool [www.sheepcrc.org.au/index.php?id=300](http://www.sheepcrc.org.au/index.php?id=300)
- Lifetime Wool - Tools for Management; [www.lifetimewool.com.au/index.aspx](http://www.lifetimewool.com.au/index.aspx)
- Planning for Profit - A practical guide to assist woolgrowers recover from drought. AWI Publication, September 2003 Phone 1800 070 099
- 'Wean More Lambs' Workshop MLA EDGENetwork course [www.mla.com.au](http://www.mla.com.au)
- Stock Water - a system for calculating farm water supply, quality and reliability [www.wool.com.au/attachments/Wool\\_production/Natural\\_resources/AWI\\_Stock\\_water\\_Oct06.pdf](http://www.wool.com.au/attachments/Wool_production/Natural_resources/AWI_Stock_water_Oct06.pdf)
- WormBoss is a web-based tool to help sheep and wool growers manage worms in sheep [www.wormboss.com.au](http://www.wormboss.com.au)
- Integrated parasite management - sheep. Information on regional programs is available on the AWI website [www.wool.com.au/ipm](http://www.wool.com.au/ipm)
- AWI information on shearing shed and yard design [www.wool.com.au](http://www.wool.com.au)
- NSW DPI stock handling course: Stock Safe - safe, responsible livestock handling This course aims to improve safe handling skills of stock on farm, reduce the risk of injury to those working with livestock, and raise awareness of animal wellbeing as an issue of public concern [www.dpi.nsw.gov.au/agriculture/profarm/courses/livestock/stocksafe](http://www.dpi.nsw.gov.au/agriculture/profarm/courses/livestock/stocksafe)
- Low stress stock handling course [www.lss.net.au/training.htm](http://www.lss.net.au/training.htm)



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## 7.0 Chemical Use



### Why is it important?

Best practice chemical use is about cost-effective weed and pest control, as well as the highest standards of environmental protection, human safety and quality of final product, wool and meat.

By following best practices associated with chemical use on farm you will minimise the risks associated with chemical use and allow wool and meat producers to take full advantage of the 'clean, green' image of the Australian broadacre industry.

Best practices include:

- Minimising chemical use;
- Chemical storage and recording;
- Chemical preparation and application;
- Protecting meat quality;
- Protecting wool quality;
- Managing occupational health and safety (sheep rehandling);
- Protecting the farm environment; and
- Undertaking training in chemical management.

### Your scorecard for Chemical Use:

Best Practices		Score
1	Purchase, handle and store chemicals safely and securely (maximum possible score 9)	2.0
2	Use appropriate and calibrated equipment, protective clothing and recognize withholding periods (maximum possible score 11.5)	9.5
3	Safely dispose of unwanted chemicals and containers (maximum possible score 4)	2.0
4	Undergo chemical training and certification (if applicable) (maximum possible score 1)	1.0
<b>Corrected Score out of 10 for this section</b>		5.69



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### For more information

#### Recommended

- Module 2 & 3 'Market Focused Wool Production', 'Market Focused Lamb & Sheepmeat Production' from AWI and MLA's best practice packages for sheep and wool - 'Making More From Sheep'
- Module 8 'Meeting market specifications' from MLA's best practice package for cattle - 'More Beef from Pastures'
- Wool Pathways 'Pesticide use and residues' module - BMP supplement. This includes guidelines on producing wool compliant with the EU-Ecolabel. At present, only the European Union has published environmental standards for chemical contaminants. These may start to affect the wool market from late 2007. It is expected that environmental standards similar to those of the EU will gradually become a feature of other export destinations. This module is currently under development.

#### General

Types of material	Internet	Phone
Chemicals regulations and advice - Queensland	<a href="http://www.dpi.qld.gov.au/health">www.dpi.qld.gov.au/health</a>	Department of Primary Industries and Fisheries 132523
Chemicals regulations and advice - NSW	<a href="http://www.agric.nsw.gov.au/reader/chemicals">www.agric.nsw.gov.au/reader/chemicals</a>	Department of Primary Industries 02 6391 3100
Chemicals regulations and advice - Victoria	<a href="http://www.dpi.vic.gov.au">www.dpi.vic.gov.au</a>	Department of Primary Industries 136186
Chemicals regulations and advice - Tasmania	<a href="http://www.dpiw.tas.gov.au">www.dpiw.tas.gov.au</a>	Department of Primary Industries and Water 1300 368 550
Chemicals regulations and advice - SA	<a href="http://www.pir.sa.gov.au">www.pir.sa.gov.au</a>	Primary Industries and Resources 08 8207 7900
Code of Practice for the Use of Agricultural and Veterinary Chemicals - WA	<a href="http://www.agric.wa.gov.au">www.agric.wa.gov.au</a>	Department of Agriculture and Food 08 9368 3333
Poisons Information Centres in each state - advice in case of accidental poisoning		Poisons Information Centre 131126 (same number all states)

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## General continued

Template for record keeping from MLA's Livestock Production Assurance program	<a href="http://www.mla.com.au">www.mla.com.au</a>	MLA 02 9299 5155
Template for record keeping from the Australian Wool Exchange Code of Practice for the Preparation of Australian Wool Clips	<a href="http://www.awex.com.au">www.awex.com.au</a>	AWEX 02 9428 6100
PUBCRIS searchable database of all registered sheep health products and their labels	<a href="http://services.apvma.gov.au">http://services.apvma.gov.au</a>	Australian Pesticides and Veterinary Medicines Authority (APVMA) 02 6210 4700
Coopers 'Lice Advice' manual	<a href="http://www.spah.co.nz">www.spah.co.nz</a>	
Current list of withholding periods (WHIs) and estimated slaughter intervals (ESIs)	<a href="http://www.apvma.gov.au/residues/ESI.shtml">www.apvma.gov.au/residues/ESI.shtml</a>	Australian Pesticides and Veterinary Medicines Authority (APVMA) 02 6210 4700
Information on the National Vendor Declaration	<a href="http://www.mla.com.au">www.mla.com.au</a>	MLA 02 9463 9333
Information on drumMUSTER	<a href="http://www.drummuster.com.au">www.drummuster.com.au</a>	drumMUSTER 02 6230 6712
Information on ChemClear	<a href="http://www.chemclear.com.au">www.chemclear.com.au</a>	ChemClear 1800 008 182
Fact Sheet: 'Guidelines for producing European (EU) eco-label, low or nil residue wool'	<a href="http://www.agric.wa.gov.au">www.agric.wa.gov.au</a>	Department of Agriculture and Food WA 08 9368 3333
EU Eco-label web site	<a href="http://ec.europa.eu/environment/ecolabel/index_en.htm">http://ec.europa.eu/environment/ecolabel/index_en.htm</a>	
PUBCRIS searchable database of all registered sheep health products and their labels	<a href="http://services.apvma.gov.au/PubcrisWebClient/welcome.do">http://services.apvma.gov.au/PubcrisWebClient/welcome.do</a>	Australian Pesticides and Veterinary Medicines Authority (APVMA) 02 6210 4700
Wool residue testing service at CSIRO Textile and Fibre Technology (can be organised through the Australian Wool Testing Authority)	CSIRO <a href="http://www.csiro.au/csiro/content/standard/ps1s5.html">www.csiro.au/csiro/content/standard/ps1s5.html</a> or AWTA <a href="http://www.awta.com.au">www.awta.com.au</a>	CSIRO 03 5246 4000 or AWTA 03 9371 4100
Australian Wool Exchange Code of Practice for the Preparation of Australian Wool Clips (2006 revision) - Section 3.1, 'Eliminating contamination risk' and Section 16, 'The woolclasser's specification'	<a href="http://www.awex.com.au">www.awex.com.au</a>	AWEX 02 9428 6100





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# 8.0 Greenhouse Emissions



## Why is it important?

Our climate has become warmer and more extreme and there is a general consensus in the scientific community that greenhouse gas emissions are a contributing factor:

Agricultural activities, including the production of livestock, are contributors to greenhouse pollution. Production of livestock is in itself a contributor to greenhouse pollution. When livestock eat, their food is digested via a fermentation process which releases methane. These emissions are contributing to global warming.

Protecting the environment is a key responsibility for the wool and red meat industries and is vital to maintaining their ongoing sustainability.

As well as assisting the wool and red meat industries to adapt to a changing climate, we are investigating how to lower livestock gas emissions. The success of this research will lead to more efficient production practices with more wool and meat produced from less feed and reduced greenhouse gases.

Best Practices		Score
1	Optimise livestock feed quality and digestibility (maximum possible score 4)	1.0
2	Maximise livestock production efficiency (maximum possible score 2)	1.0
3	Maximise nitrogen cycling efficiency (maximum possible score 4)	1.0
4	Reduce fossil fuel consumption (maximum possible score 3)	1.0
<b>Corrected Score out of 10 for this section</b>		3.08



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### For more information

#### Recommended

- MLA Research and Development and information on Climate Change  
<http://www.mla.com.au/TopicHierarchy/InformationCentre/Environment/Default.htm>
- Australia's national greenhouse accounts  
<http://www.greenhouse.gov.au/inventory/index.html>
- Australian government programs for climate change and agriculture  
<http://www.greenhouse.gov.au/agriculture/index.html>
- CSIRO climate adaptation flagship  
<http://www.csiro.au/org/ClimateAdaptationFlagship.html>
- Victorian Greenhouse in Agriculture program providing information particularly relevant to greenhouse emissions from agriculture  
<http://www.greenhouse.unimelb.edu.au/gia.htm>
- The National Climate Change Research Strategy for Primary Industries  
<http://www.greenhouse.unimelb.edu.au/gia.htm>
- Managing Climate Variability Program helping primary producers manage climate risk  
<http://managingclimate.gov.au/>
- National Agriculture and Climate Change Action Plan  
<http://www.daff.gov.au/natural-resources/climate>
- Australian Bureau of Meteorology provides information on weather and climate including climate averages, seasonal outlooks and climate change  
<http://www.bom.gov.au/climate/>
- Rural Industries Research and Development Corporation - Climate Change and Climate Variability  
<http://www.rirdc.gov.au/programs/ccv.html>
- Department of Climate Change - Agriculture Impacts and Adaptation  
<http://www.greenhouse.gov.au/agriculture/impacts.html>
- Victoria Department of Primary Industries - Climate Change  
[http://www.dpi.vic.gov.au/dpi/vro/vrosite.nsf/pages/climate\\_change](http://www.dpi.vic.gov.au/dpi/vro/vrosite.nsf/pages/climate_change)

**Thank you again for supporting Landleader 2008. If you would like to provide any feedback on this report, its format and usefulness, please contact Clare Hamilton on 02 6379 1628 or email [Landleader@woolinnovation.com](mailto:Landleader@woolinnovation.com)**



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**Australian Government**  
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Fisheries and Forestry**