Australian Government
Rural Industries Research and Development Corporation

# National Inventory of Environmental Management Systems in Australian Agriculture

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by Philippa Rowland

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# Foreword

Australian rural industries confront an array of ever-changing challenges. These include maintaining the resilience of production systems in the face of highly variable and unreliable weather, consumer concern about the methods of production and public scrutiny of land management practices, accompanied by ever more stringent environmental regulations and increasingly competitive export and domestic markets for produce.

The ability to meet these challenges is the outcome of a myriad of individual land management decisions, throwing into sharp focus the urgency and central importance of ensuring that land managers are equipped with the best information and adaptive management tools available. This is especially so with the growing recognition of the potential impacts of climate change.

Since 1999, the Rural Industries Research and Development Corporation (RIRDC) has supported the development and implementation of Environmental Management Systems (EMSs) as one valuable tool to provide land managers with the information and tools they need to help meet the challenges.

An inventory of activity on EMS in Australian Agriculture was initially undertaken to provide the Independent Panel of the Pathways to Industry EMS Program with an overview of the status of EMS in Australian agriculture, documenting the many activities taking place across industries and regions up to 2005. This report was commissioned by the RIRDC as a follow up report providing an update on the status of EMS and related environmental stewardship projects in Australia; however, he report also includes a review of selected international EMS activity. The report will be of interest to all involved in EMS, and help decision makers assess Australian EMS programmes.

The research has shown that much valuable work has been carried out under EMS, and that much can be achieved in the future, particularly if data can be provided at a scale and in a format useful for on ground management decisions. The research has also shown that rather than an envisaged national EMS based on the ISO 14001 international standard, many approaches are being adopted as EMS in Australia. This highlights the need to keep as a priority, establishing mechanisms for improved coordination and communication across and between groups working on environmental management. This can be best achieved by developing a voluntary but more internationally credible national certification system of EMS in Australia.

The report is an addition to RIRDC's diverse range of over 1800 research publications, forms part of our Environment and Farm Management R&D program, which aims to foster agri-industry systems that have sufficient diversity, flexibility and robustness to be resilient and respond to challenges and opportunities.

Most of our publications are available for viewing, downloading or purchasing online through our website www.rirdc.gov.au.

**Peter O'Brien**
Managing Director
Rural Industries Research and Development Corporation

# Acknowledgments

Most of the source material for this report was gathered by phoning contacts in various regions and industries. It draws substantially on recent RIRDC projects carried out by Nelson Quinn and Tony Gleeson. An original report was developed in a similar fashion, building on George Wilson's 2001 report to the Department of Agriculture, Forest and Fisheries (DAFF) on EMS R&D, proceedings of the EMS in Agriculture Conference Series (1999, 2001 and 2003), the EMS Navigator website, and reports on the National EMS Pilot Projects and the Pathways to Industry EMS Program.

I thank all who contributed information at short notice, with particular acknowledgment to Horticulture Australia Ltd, Jane Muller, GrowCom and Peter Deuter for the data on horticulture projects, Adam Knapp for Seafood Australia fisheries projects, Cameron Allan from MLA and Nigel Long frm the SA Farmers' Federation. Many thanks also to Genevieve Carruthers, NSW Department of Primary Industries for helpful material and contacts.

This report is dedicated to Desmond and Eleanor, who bore the brunt of my preoccupation despite their tender ages, to John who offered support from a distance, my mother who encouraged and the memory of my late father who inspired me to keep going under duress.

# Abbreviations and Glossary

See Appendix 1. for a detailed list of Abbreviations used in this document.

| | |
|---|---|
| *Adaptive management* | A systematic process for continually improving management policies and practices by learning from the outcomes of previously employed policies and practices. Specifically, it is the integration of design, management, and monitoring to systematically test assumptions in order to adapt and learn. |
| *Adaptation* | 'Adjustment in natural or human systems in response to climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities' or more simply, 'Adaptation is about reducing the risks posed by climate change to people's lives and livelihoods. |
| *BMP* | Best management practices are procedures and management guidelines. BMPs can be at local, regional or national levels and can be static or periodically updated. They may provide targets for an EMS. Monitoring and assessment are needed to determine their effectiveness. |
| *COP* | Codes of Practice are developed and adopted by an industry and promoted amongst industry members. They may incorporate BMPs and may have specific performance indicators. |
| *ESD* | Ecologically sustainable development is the improvement of the quality of life, now and in the future, including all environmental, social and economic components. |
| *EMS* | Environmental management system is a generic term used to describe any systematic management approach used by an enterprise or an organisation to manage its impacts on the environment. |
| *EUREPGAP* | European Good Agricultural Practice Protocol, an initiative of the Euro-Retailer Produce Working Group (EUREP) to develop standards and procedures for good agricultural practice (GAP). |
| *FMS* | Farm management systems developed as a concept in Queensland based on EMS but with wider application in areas such as quality assurance, farm productivity, and work place health and safety. FMS set out to position Queensland's intensive industries to develop and implement a comprehensive voluntary approach to rural land management. |
| *HACCP* | Hazard analysis critical control point is the internationally recognised method of managing food safety risks and a critical component of any food safety plan. Managed by the Codex Alimentarius Commission and often referred to as Codex HACCP. |
| *ISO* | International Organisation for Standardisation committees have developed internationally accepted standards to guide the development of quality management (ISO 9000 series) and environmental management (ISO 14000 series, including ISO 14001, the international EMS standard and ISO 14026, the international standard for eco-labelling). |
| *JASANZ* | The Joint Accreditation System of Australia and New Zealand is the government-sponsored joint accreditation authority for Australia and New Zealand. |
| *NRM* | Natural resource management is the management of the natural resource base (land, soil, vegetation etc.) in a manner that maintains and safeguards value for future generations |
| *PMP (old)* | Property management planning assists land managers to manage the personal, physical and financial aspects of a farm business through a Property Management Plan. The National PMP Campaign aimed to increase landholder self-reliance and knowledge in relation to risk management and drought preparedness based on whole farm planning |
| *PMP (new)* | whole farm business plans with potential to simplify and make more efficient farm business in relation to planning, regulation, legal, NRM requirements and access to resources, include environmental and business management components and can integrate EMS, QA schemes, Occupational Health & Safety, biosecurity and animal welfare. |
| *QA* | Quality assurance programs designed to ensure that the quality of end products consistently meets customer requirements. QA systems are usually developed and adopted by industries or individuals. They may be compatible with or certified to ISO 9000. |
| *SI* | Sustainability indicators are a practical set of measures that enable decision-makers to evaluate how well a process or activity (such as agriculture, forestry and fishing) is contributing to ESD. In order to be meaningful, indicators need to be expressed within a framework that states the objectives that society is seeking to achieve |

# Contents

# Executive Summary

### *What the report is about*

This report was commissioned by the Rural Industries Research and Development Corporation as an update on the original background document developed for the Independent Panel of the Pathways to Industry EMS programme in 2005. It draws together a status report of EMS activity underway in 2006 around Australia across industries and regions.

### *Who is the report targeted at?*

The report is for government bodies responsible for policy development and programme management of EMS activities, and those who have been involved in the programmes. This report is a snapshot in 2006 capturing most of the EMS activity in Australia, and highlighting the international context. It provides an opportunity for reflection on the ground covered to date and will help decision makers assess Australian EMS programmes.

### *Background*

An EMS is a systematic approach to continuously improve business management to achieve efficiencies and better environmental outcomes. The adoption of formal EMS in Australian agriculture is relatively new, commencing after the first National Conference on EMS in Ballina, NSW in 1999, which RIRDC supported.

A State/Commonwealth working party developed a National Framework for EMS in Australian Agriculture in 2002 in order to promote consistency and coordination across a growing number of voluntary community and industry activities. The **National Framework for EMS**, was based on the international standard for EMSs, the ISO 14001, and was endorsed by the Natural Resource Management Ministerial Council (NRMMC 2002 and 2003), which oversees its use in supporting and coordinating the voluntary adoption of EMS in Australian agriculture.

Much of the Australian Government natural resource management (NRM) funding over the past decade came from the National Action Plan for Salinity and Water Quality (NAP) and the Natural Heritage Trust (NHT). A small proportion of the budget allocated for NRM was allocated to promoting various trials and pilots on EMS and related approaches to environmental stewardship. An initial inventory of activity on EMS in Australian Agriculture was undertaken to provide the Independent Panel of the Pathways to Industry EMS Program with an overview of the status of EMS in Australian agriculture, documenting the many activities taking place across industries and regions up to 2005.

### *Aims/objectives*

The main objective of this report was to prepare a National Inventory of Environmental Management in Australian Agriculture in 2006. The report contains an overview of the key factors driving the need to improve environmental management practices and selected international EMS activity to provide the broader context in which these Australian EMS efforts are taking place, and to help evaluate these efforts.

### *Methods used*

Contacts involved in EMS projects in various regions and industries were phoned. Supplementary questions were asked to link on farm action to climate change and broader regional or catchment targets. The report also drew substantially on recent RIRDC EMS projects.

### *Results/key findings*

Much valuable work has been carried out under EMS, but a critical analysis of the Pathways to Industry EMS program reveals many projects are dealing with codes of practice, self assessment guidelines or other individual schemes without meeting basic requirements for a systems approach. Nevertheless, there are several outstanding examples of agricultural projects where the rigour of the international standard ISO 14001 has been successfully married to flexible and practical approaches to managing information for landholders at the catchment scale. Examples are the Australian Landcare Management System (ALMS), the Western Australian BestFarms project and the GippsBeef Lamb and Beef project.

Major gaps remain in the provision of data at a scale and in a format useful for on ground management decisions. A number of different tools have been developed for assisting landholders to document their EMS, notably myEMS developed by the ALMS project and the eFARMER developed by the Victorian North-EastCMA.

On the international front, national schemes for the certification, or at least the recognition, of sustainable agricultural practices are well advanced in Canada, England and Europe, with recent moves to develop an ASEAN wide standard for Good Agricultural Practices.

Ecosystem health and resilience are fundamental to our ability to withstand the shocks of change and our capacity to adapt to changing situations, such as climate change, global markets or oil depletion. Australian rural industries may soon need to demonstrate their environmental credentials to interested third parties and the community, by providing documented evidence to NRM agencies for investment and support or to consumers and international markets in order to maintain or improve market access.

### *Implications for relevant stakeholders*

In this environment, establishing mechanisms for improved coordination and communication across and between groups working on environmental management remains a priority. Despite substantial activity on environmental management, there remains a lack of consistency in the approaches used across Australia.

There is still an opportunity to move towards a national approach to environmental certification of land management in Australia by building on common ground to facilitate agreement on a national core set of principles and elements as a basis for a voluntary but internationally credible national certification system. Underpinning this with a national information management system linked across states and regions would provide a real basis for long term adaptive management.

Consensus among quite diverse groups brought together under the auspices of two national roundtables run by Australia 21 is that this can be best assured by a voluntary national EMS certification system that will have national and international credibility. Australia 21 has made a call for a national approach to environmental certification of land management in Australia. The outcomes of an Australia 21 round table on the topic received a positive hearing at the highest level within the NRM Ministerial Council; however this status report reveals that the national coordination has not occurred.

### *Recommendations*

This review has revealed the need for priority investments and actions:

- to develop a coherent, but less complex, approach to the national certification of environmental management processes in Australian Agriculture, preferably aligned to the international standard ISO 14001

- to establish administrative mechanisms for improved coordination and communication across and between groups working on environmental management systems

- to develop information management tools that provide data at a scale and in a format useful for on ground management decisions.

# Introduction and Methodology

Water and fire, under the dual influence of climate and human activity, are the two major forces that have shaped Australian ecology over time. We are now facing a period in which these forces, driven by human-induced climate change, will undoubtedly influence the viability of agriculture in this country. This highlights the need to maintain the resilience of productive ecosystems to maintain the capacity of farming systems and farming communities to bounce back when conditions are favourable.

Australian farmers are dynamic, resilient and adaptable, rising to the challenge of managing farming systems under highly variable climatic conditions, declining terms of trade, complex trade rules and growing legislative and community pressures for sound environmental management. If predictions about climate change are realised, they will need to continue to be so, as it seems Australian agriculture may face some tough times ahead. Our ability to maintain the key elements of our rural ecosystems in a functional and resilient state will largely determine how we weather the changes.

Resilience in landscape is the outcome of a myriad of individual land management decisions, throwing into sharp focus the urgency and central importance of ensuring that land managers are equipped with the best information and adaptive management tools available.

Government funding over the past decade has concentrated on integrated natural resource management (NRM) through the National Action Plan for Salinity and Water Quality (NAP) and the Natural Heritage Trust (NHT). A small proportion of the overall budget allocated for NRM has been allocated to promoting various trials and pilots on environmental management systems (EMS) and related approaches to environmental stewardship.

A State/Commonwealth working party developed a National Framework for EMS in Australian Agriculture in 2002 in order to promote consistency and coordination across a growing number of voluntary community and industry activities. It developed a number of key principles to provide a backbone for Australian developments. The National Framework for EMS, was based on the international standard for EMSs, the ISO 14001, and was endorsed by the Natural Resource Management Ministerial Council (NRMMC 2002 and 2003), which now oversees its use in supporting and coordinating the voluntary adoption of EMS in Australian agriculture.

Much valuable work has since been carried out under EMS, but a critical analysis of the federally funded Pathways to Industry EMS program reveals many projects are in fact dealing with codes of practice, self assessment guidelines or other individual schemes without meeting basic requirements for a systems approach. Since the initiation of this report (July 2005), a call was made for a national approach to environmental certification of land management in Australia. The outcomes of an Australia 21 round table on the topic received a positive hearing at the highest level within the NRM Ministerial Council; however the national coordination has not occurred.

On the international front, national schemes for the certification, or at least the recognition, of sustainable agricultural practices are well advanced in Canada, England and Europe, with recent moves to develop an ASEAN wide standard for Good Agricultural Practices. Australian rural industries may soon need to demonstrate their environmental credentials to interested third parties and the community, by providing documented evidence to NRM agencies for investment and support or to consumers and international markets in order to maintain or improve market access. Californian companies, governments and non-profit organisations are using a regional approach to EMS to reduce greenhouse emissions.

The ongoing challenge in Australia is finding a collaborative way through the currently fragmented investments in these fields. Lack of leadership has led to a lack of consistency and a lack of national coordination. These deficiencies in turn may lead to a potential lack of credibility and recognition, both domestically and internationally. More importantly, we may be missing opportunities to

streamline exchange of information across industries and scales, providing landholders with valuable data relevant at the local level.

Establishing mechanisms for improved coordination and communication across and between groups working on environmental management remains a priority. Serious gaps remain in the provision of data at a scale and in a format useful for on ground management decisions. A number of different tools have been developed for assisting landholders document their EMS; notably myEMS developed by the ALMS project and the eFARMER developed by the Victorian North-EastCMA

The new environmental stewardship program shows a renewed focus on good land management, although the program would benefit more landholders if it is not restricted to measures of national significance under the EPBC Act.

## Methodology and Report

The National Inventory of Environmental Management in Agriculture was updated by phoning contacts involved in EMS projects in various regions and industries. It drew substantially on recent RIRDC EMS projects.

From this study, it is clear that the greatest long term challenge now facing agriculture in this country is climate change and the associated urgent need for integrated policies on adaptation. The focus on linking on farm action to broader regional or catchment targets continues, with several cross sectoral approaches being further developed and progress being made in the national framework for monitoring and evaluation.

During the phone interviews, I asked respondents:

1. What progress has been made in providing tangible links between the aspirational targets set at the regional and catchment scale and the practical information needs at the farm and paddock scale?

2. What move was there to develop adaptation policies, strategies and support systems for climate change in your region/industry, or is it business as usual in managing climate variability?

These questions helped to shape the structure of the report which represents a partial snapshot of current activity, providing an opportunity for reflection on the ground covered to date. My recommendations are largely drawn from key points gleaned from discussions with a range of highly dedicated professionals working to improve environmental management in their respective fields. However, I take full responsibility for the views taken in his publication.

The report summarises the programmes and policy positions of a selection of the major participants in EMS and related natural resource management programmes. They are provided in alphabetical order within broad industry sectors, with information on research and development corporations followed by other industry funded programs, Commonwealth and self-funded pilots (Chapters 4 to 7).

An effort has been made to set the broader context within which these Australian efforts are taking place, with inclusion of the drivers of improved environmental management in Australia (Chapter 2), transition in approaches to environmental management in Australia (Chapter 3) and a brief international section (Chapter 8).

To show the increasing importance of environmental management and stewardship, Chapter 2 of the report describes the drivers for improved environmental management in Australia. These include:

- climate change

- sustainability

- catchment and regional plans
- information management
- supply chains, ecolabelling, environmental labelling and regional branding
- Australian companies, financial instituions and risk management.

The intrenational material includes snapshots of activity taking place in selected countries and international agencies, from Elders' Corporate Social Responsibility agenda to the Sustainable Agriculture Initiative being driven by the United Nations Environment Program. Developments overseas helped reinforce the findings from the Australian research, which are discussed in Chapter 9 and helped formulate the conclusions, which are outlined in Chapter 10.

Contacts made during the previous project WLC-1A were revisited and their assistance sought to update the entries in the report. A decision was made to drop the lengthy tables containing contacts for each individual activity taking place for projects date rapidly. However synthesis material on the various federally funded EMS pilots and Pathways projects is provided in Appendices 2, 3 and 4. The rest of the information is incorporated in the body of the text under the relevant heading for industries and regions and States. A list of personal communication is provided in Appendix 6. Supplementary material has been drawn from websites, press releases, articles and other publications in cases where I was unable to contact the relevant person or felt that information required updating.

An extensive but not exhaustive bibliography is attached. This is not a reference list as not all are mentioned in the text. However their inclusion reveals more than anything the range and scope of diverse thinking on this topic of environmental management in Australian agriculture.

# 2. Drivers for improved environmental management

The most common reasons for seeking recognition through EMS and environmental stewardship programmes remain to secure access to resources, to meet regulatory requirements, and to ensure ongoing access to markets. Increasingly important additional reasons are the ability to improve land managers capacity for maintaining their natural resource base in a viable productive state.

## Climate Change and Agriculture

Climate change will undoubtedly affect Australian agriculture over the next few decades, driven by the action of greenhouse gases already accumulated in the atmosphere. Australian farmers are already well practised in adapting to the most variable climate of any production area in the world. Improvements in farming systems and technology have mirrored climate trends to date, but whether this will continue in the future remains uncertain and provides a challenge for adaptation and planning. Future climate trends may expose farming systems to conditions not experienced before (BRS 2006), changing the scale and significance of climate risk and appropriate response strategies. It is timely therefore to consider what might be appropriate adaptation strategies for our regions and industries.

The National Agriculture Climate Change Action Plan 2006-2009 is an agreement by Australian governments to develop a coordinated framework for climate change policy in agriculture, focusing on four key areas – adaptation, mitigation, research and development and awareness (NACCAP 2006). Both NACCAP and the Agriculture and Food Policy Reference Group (2006) report, *Creating our Future: Agriculture and Food Policy for the Next Generation*, recommend integrating climate adaptation into natural resource management programmes through a risk management approach. The National Climate Change Adaptation Programme was launched by the Federal Government in September 2006, to start preparing Australian governments, vulnerable industries and communities for the unavoidable consequences of climate change. Priority areas of focus include a national assessment of the risks of climate change, development of tools and methods, and research to fill major knowledge gaps. See http://www.greenhouse.gov.au/impacts/publications/pubs/nccap.pdf.

A recent vulnerability assessment carried out by the Bureau of Resource Sciences considered the effects that climate change may have upon sustainable development of agriculture, specifically investigating the vulnerability, resilience and adaptive capacity of sectors and regions and identifying information needed to increase industry resilience and improve risk management (BRS 2007). Two important recommendations were to:

- develop a *DIY Climate Change Wizard tool* to enable farmers to explore for themselves some of the implications that climate change may have for their circumstances

- establish a *Clearing House for Climate Information for Agriculture Network* to formalise communication channels and tailor scientific output to meet local decision-making, sponsoring web-based sharing of good ideas on adapting to climate change from Australia and overseas.

There is no doubt that governments need to encourage and facilitate the wise use of resources to remain productive and economically viable in the near future and to pass on functional ecosystems to future generations. Farmers and land managers will need to make decisions that increase resilience, allow for adaptation and seek multiple benefits of mitigating greenhouse gases. They may need support to discuss adaptive management strategies that look into breeding and investment decisions and the potential of minimising the potential impacts of ongoing drought. There may need to be transition strategies for diversifying different types of agricultural production in the future.

The Natural Resource Management Ministerial Council (NRMMC, November 2006) saw the benefit of linking adaptation and climate change with environmental management systems mentioned as part as the solution. However, issues arise given the lack of consistency about what is being termed EMS, where the benefit arises from disciplined and streamlined management of information. Two national roundtables (Australia 21 2006 and 2007) also foreshadowed the vital importance of resilience and concluded that the integration of ecosystems services into natural resource management policies is critical to delivering more sustainable land use and maintaining adaptive capacity when production systems are under pressure.

Promoting sound adaptive management practices is a wise investment given the growing demand for drought relief under exceptional circumstances and recent media reports suggesting water shortages may threaten the long term survival of permanent plantings in the Murray Darling Basin. Rice has not been grown in the Murrumbidgee Irrigation Area for a second consecutive year. Farmers across SE Queensland are reportedly too hard pressed with questions of daily survival to be much interested in long term continuous improvement cycles. Impacts are beginning to be felt by the general public with increasing prices of basic staples such as bread, milk, fruit and vegetables.

In a significant move, an Agriculture Alliance on Climate Change formed in August 2007 to promote the need for governments to invest properly in sustainable rural agricultural industries and rural communities. Agforce in Queensland, the South Australian Farmers' Federation, the Country Women's Association, the Australian Conservation Foundation, Visy, Westpac Agribusiness and the Climate Institute recognised the significant gains to be made from working collaboratively to address climate change and build a clean energy economy for Australia. The Alliance is commissioning research to investigate how rural communities can create climate change resilient communities and prosper from harvesting clean energy and farming carbon (*Pers. comm.. Dr Nigel Long, SAFF, September 2007*, ref. AACC 2007).

The November 2006 NRMMC meeting also discussed the potential for developing emission intensity benchmarks in agriculture and associated environmental management systems as a creative and innovative means of delivering multiple benefits under the agreed Plan for Collaborative Action on Climate Change. The agreed actions include a process for 'identifying the steps and processes for incorporating adaptation to climate change into existing EMS approaches'.

This approach is already being taken in California where the Sustainable Silicon Valley (SSV) project is using regional application of EMS to foster best practice in reducing greenhouse emissions across a wide spectrum of industries, regions and governments. SSV facilitates strategies to reduce $CO_2$emissions through increased energy/fuel efficiency, and the use of renewable energy sources. In April 2007, the International Standards Organisation ISO launched ISO 14065:2007, a new addition to its toolbox of standards for addressing climate change and supporting emissions trading schemes. See http://www.iso.org/iso/pressrelease.htm?refid=Ref1054.

In Australia carbon payments, flagged under carbon trading/emission schemes and already underway to some extent under Carbon$mart, TreeSmart and Greening Australia's BreathEasy programme, can go some way towards changing on farm behaviour. However, there are concerns in some quarters that climate change may skew funding to carbon sequestration projects at the expense of other long-term issues such as biodiversity. The Grains Council of Australia has also sounded a note of caution about the potential for carbon sequestration in grain production (GCA, 2007). Nevertheless, soil carbon is a major sink to be managed for the long term and there is great potential for achieving multiple benefits from wise investment in this area.

## Sustainability

Natural Resource Management (NRM) work in Australia over the past five years has focussed on identifying tangible milestones and setting targets deemed necessary for achieving improvements required to maintain and preserve the productive capacity of the natural resource base. It is important

not to lose sight of the reasons behind all this activity. What are the desired outcomes of regional sustainability programs? Evaluation of progress is important but is sometimes difficult to carry out. The pathway between management actions and achieving improved sustainability has been clearer in industries such as forestry, where extensive negotiation has led to the development of internationally agreed criteria and indicators for ecologically sustainable forest management (e.g. the Montreal Process). This enables foresters to report against a set of common indicators. Forestry used ISO 14001 as the basis to work towards achieving Montreal Process criteria.

There has been considerable discussion about achieving triple bottom line outcomes (environmental, socail and financial performance) – documenting and sharing the results of the various EMS trials and pilots taking place around Australia will be an important reality check. Valuable work has been carried out on the links between EMS and biodiversity, including work carried out by DPI Victoria with Commonwealth support and earlier Tasmanian work with the Nature's Choice project with onion growers in the south-west. The business community also sees the potential benefits of linking EMS approaches with biodiversity. Environmental non-government organisations (NGOs) in Australia have been quick to point out the deficiencies of EMS if deployed as a stand-alone process standard. The Australian Conservation Foundation and the Worldwide Fund for Nature consistently identify the need to produce tangible environmental benefits on the ground. Achieving outcomes requires both adequate environmental information and setting of adequate environmental standards or industry/community benchmarks.

## Catchment/Regional Plans

From a practical perspective, the key constraint facing the NRM process is the gap between proposed standards and targets being set at the catchment or regional scale and the on-ground actions required to meet them. It remains difficult to translate end-of-valley targets into tangible on farm targets that a landholder can work towards within a given timeframe. The general trends are there, however, what is needed are standardised means of gathering data on the current status and on management actions so that benchmarks can be developed and progress measured and communicated to a range of stakeholders. EMS is one of a suite of tools that may have real potential to be useful in this regard, as a highly structured and consistent means of moving information around.

Increasingly the projects funded through the various EMS Pilots and Pathways programmes focussed on between on ground action and achieving regional and catchment targets. The majority of INRM plans and Investment Strategies under the National Action Plan for Salinity and Water Quality and the revised Natural Heritage Trust did not originally consider EMS as a tool to enhance information flows and links between on-farm and catchment scale objectives and actions. Many investment plans are issues based and don't necessarily look at tools and strategies for achieving their stated outcomes. However, the provision of EMS training materials developed for regional facilitators was a significant step forwards in addressing a lack of familiarity about whether and how EMS might help achieve the aims of various investments in NRM.

The explicit connection between EMS-related projects and catchment objectives and targets as set out in the integrated natural resource management (INRM) plans and was given a boost when the Pathways to Sustainable Agriculture programme funded projects specifically to engage on the issue. Of the eight projects funded, five were in Victoria,two in Queensland and one in New South Wales.

Progress has since been made to develop links between catchment plans and on-ground actions, although there is still truth in the conclusions made by URS (2005), namely that reporting of outcomes against Catchment and NRM targets are not well aligned across scales. Most targets identified in catchment plans are not implementable by farm management actions without further information, training or public sector funds. Sub-catchment targets are usually at a finer scale and more readily implementable by farmers.

Where EMS has been picked up within a region, it is often due to an interested individual or group. For example, some regions are looking to sell produce on the basis of clean green image (e.g. King Island and Kangaroo Island). However, as yet there are no links between marketing claims and investment in NRM (i.e. no use is being made of NRM investment in forging a green image for production systems). Markets tend to demand various specific performance outcomes (e.g. low residues), not that producers are systematically improving their NRM.

In conclusion, it appears that there is a lack of cross-recognition and collaboration between the significant government investment in regional planning and current efforts to promote business management tools such as EMS. The capacity building required to successfully address strategic planning will have to go well beyond issues-based planning if landscape scale change is to be achieved. Another evident need is for simple and applicable on-farm targets that clearly relate to catchment and NRM plans/processes, whether for salinity, water quality or biodiversity outcomes.

## Information Management

One of the fundamental tools for environmental and resource management is the knowledge of the extent, condition and value of resources being managed. There is a great need for more efficient ways to manage the information and data collected by landholders and agencies at the farm and catchment scale. The National Land and Water Resources Audit, funded by the Natural Heritage Trust to assess the state of Australia's natural resources, is one of a number of national level resources that could be improved to make the data contained within them more accessible and relevant to landholders.

The AVC partnership project between the North Central Catchment Management Authority, the Department of Primary Industries (DPI) and the Australian Landcare Management Systems (ALMS) was based on the recognition that delivery of EMS is more successful with the use of locally relevant production and environmental monitoring tools. Major achievements included delivery of a suite of 16 environmental and production monitoring tools and a working prototype of eFARMER. This web-based system offers an opportunity to provide spatial information to landholders to make them more aware of impacts beyond the farm. It is also an innovative way to measure progress towards catchment targets, ultimately making Catchment Managamenet Authority (CMA) monitoring and reporting processes more effective.

Major recommendations regarding the future development and implementation of tools (monitoring and spatial information systems) for natural resource management included:

- providing benefits or incentives where data collection has a public benefit - landholders will not collect environmental information for its own sake
- national promotion of monitoring tools, emphasising them as stand-alone educational products
- consideration to funding adaptation of monitoring tools for different agro-climatic zones
- provide additional support to facilitate roll-out of spatial information management systems - note that eFarmer is now being trialed and evaluated across 4 CMA regions with land managers
- assess whether there is interest from other states for sharing spatial data and providing such to land managers. If so, then DAFF can provide useful input as to the considerations needed to develop such systems based on the guidelines developed in this project.

## Supply chains, ecolabelling, environmental labelling and regional branding

Chang and Kristiansen (2006) concluded that Australia may have had a 'clean and green' image in some markets, but in the future, concrete proof of environmental and quality credentials will be required to satisfy increasingly better-informed and more demanding customers. More resources will need to be directed to the development and adoption of integrated, credible and well-defined environmental management and quality assurance systems if Australia is to compete effectively in export markets, especially in the longer term.

Industries and regions are interested in identifying how best to reap financial rewards in the marketplace for any increase in time and money expended on documenting and providing evidence of improved environmental management. In other words, how can producers gain some benefit and consumer support for their efforts? EMS has been put forward by some as a means of capturing and documenting internationally credible evidence to underpin future marketing efforts.

While there is growing evidence that EMS adoption can lead to efficiency gains or savings in other areas, having an EMS in place as an individual producer may do little to provide immediate financial benefit from the market place, as price premiums for environmentally friendly products are far from guaranteed. Some enterprises have achieved preferred supplier status into a niche market.For example, Abbotsleigh Citrus gained entry into a lucrative Japanese market partially on the basis of its environmental credentials. However, for all landholders producing bulk commodities such as grain or meat, there is a need to somehow deliver the message of environmental superiority along the supply chain. There may also be a need to combine product with other producers in order to obtain sufficient quantity of commodities to warrant undertaking the exercise. In several instances, this kind of supply chain driven change is already becoming evident from market pull.

Examples include demand from certified processors to source certified inputs (e.g. of feed) and the vendor declaration requirements already in place for the meat industry and for fruit and vegetable producers selling into supermarkets. While the environment is not yet an integral component of such requirements in Australia, the appearance of the EUREPGAP (Euro-Retailers Produce Working Group good agricultural practice) guidelines for producers are an indication that environmental issues are on the horizon as potential non-tariff trade barriers in international trade. The influence of EUREPGAP has been felt most strongly in the horticultural industries, but will spread as protocols for meat and grain become compulsory for access to European supermarkets. While EUREPGAP does not mandate the use of EMS, it does request that either a quality assurance (QA) or EMS programme be used to achieve its requirements, and specifically mentions both ISO 9000 and 14001. It is worth noting the EUREPGAP major and minor ‘musts’ – not all elements must be addressed to meet the requirements.

The Good Environmental Choice Label is an Australian environmental labelling programme which indicates the environmental performance of a product from a whole of product life perspective for consumer goods. The label is awarded to products that meet voluntary environmental performance standards which have been created and assessed in conformance to international environmental labelling standards. The programme is internationally recognised and growing in demand and awareness throughout different industries. The Australian Environmental Labelling Association Inc. is a non-profit organisation dedicated to servicing the Australian market with an independent, credible environmental labelling system to international best practice standards, including an independent ecolabelling certification scheme established under the guidance of the ISO 14 020 series of international standards (ISO 14 024) for a range of products on the Australian market (Johnson 2002).

GECA is the Australian verification office, and has mutual recognition arrangements with the national ecolabelling programmes of Korea, Taiwan, China, United States and Thailand. It is a member of the Global Ecolabelling Network (GEN), see http://www.aela.org.au/homefront.htm.

## Australian Companies, financial institutions and risk management

Corporate social responsibility (CSR) is a term used for the demand for more open and accountable business practices, where stand-alone environmental principles are becoming part of a wider appreciation of corporate obligations on social issues. EMS developments in the corporate arena are increasingly drawn into a wider debate about the incorporation of social parameters into measurements of company performance (Woodward and Clyde, 2000). The World Business Council of Sustainable Development, an international conglomerate of business interests based in Switzerland with a membership of over 120 companies worldwide, is a key proponent. Elders and other Australian companies have a voluntary commitment to CSR and environmental sustainability, driven through the triple bottom line framework of Environmental, Social and Economic Performance.

Elders has become a major sponsor of sustainable agricultural practices through the Elders Landcare Farming Partnership (see http://www.landcareonline.com/page.asp?pID=127 ) as part of its voluntary commitment to accountability for the company's social, environmental and economic impact on the local and global community. The partnership focuses on supporting a range of initiatives to help increase the rate of adoption of Landcare farming practices. In conjunction with Landcare Australia, Elders is supporting the Australian Landcare Management System, Horticulture Australia, Australian Wool Innovation, Meat and Livestock Australia, and the Grains Council of Australia to run projects on EMS or similar best management practice programmes that help farmers manage their property in a more sustainable way.

Faced with increased exposure to liability issues, the financial services sector in many countries has begun to investigate the links between environmental risk and financial risk. Scrutiny of the environmental performance of business by lending and insurance companies is likely to increase as environmental performance reporting improves and pressure from shareholders for environmental accountability intensifies. This is being translated into an increased push for good environmental governance as a crucial component of a license to operate. Sustainable land management is a significant factor in the agricultural sector.

In Australia, some discussion occurred in the Commonwealth's Rural Finance Forum. In Western Australia, Nind (1999) explored whether EMS adoption held potential for improving land values. There were some early moves towards developing a sustainability index for the Australian financial sector (Dibley, 1999), but progress has been slow.

# 3. Transition in approaches to environmental management in Australia

The Federal Government, through the Natural Heritage Trust has supported a large number of organisations, across all agricultural sectors, to explore the benefits of EMS. The fundamental questions being explored have been “can EMS lead to improvements in natural resource management in commercial enterprises and is EMS a potentially valuable marketing tool for Australian products”?

The Government has co-funded individual groups (e.g. GippsBeef, ALMS), State Farming Organisations (e.g. WAFF, VFF, TFGA) and industry organisations (dairy, horticulture, grains, seafood, wine, cotton etc). Each of these projects has taken a different approach to environmental management depending on what they think is right for their group, industry or market. In reality, much that has been funded under the banner of EMS is not consistent with the international standard ISO 14001. The range includes:

- complete EMS programmes with rigorous management processes that may be ISO14001 compliant and even achieve certification in cases where it is deemed worthwhile
- awareness and training programmes such as Tasmania’s FarmSat and Dairy’s DairySat, which allows farmers to identify environmental assurance issues relevant to their enterprise
- environmental stewardship programmes like Landleader (including livestock stewardship) and the grains industry survey, focused on promoting improving environmental practices in their industry.

It is instructive to reflect that as Federal EMS grants reached Farmer Federations in the various States, it coincided with the rise in a change in terminology. One element in the apparent transition from EMS approaches to the development of "Property Management Systems" and “Farm Management Systems” is the interest by jurisdictions to develop approaches for systematic management systems relevant both at the farm level and more widely at regional level. Another is the desire to simplify the approach and increase industry ownership of the process.

Given the emergence of many and varied approaches to improving environmental management, how do we support the development of consistent standards across regions (catchments, authorities etc). As early as 2005, the URS report on the EMS Pilot Programme noted “Environmental QA, environmental performance auditing and EMS arrangements are not integrated. Trialing is essential but various schemes are not compatible at the detail level and as they become entrenched they form a set of incompatible schemes generating a plethora of different ecolabels from which it will be hard to derive collective market value or collective environmental reporting benefits” (URS, 2005).

## Environment Management Systems

A new EMS Association, the Environment Management Systems Association was established to foster EMS practices and give the discipline currency and credibility in Australia. It aims to bring together years of work and networks in EMS. Sponsored by CGU, inaugural awards have been established to recognise the good work being done by Australian farmers and small businesses in using environmental management for profit and sustainability, with winners to be announced at the 2nd National EMS Forum in Newcastle, May 2008.

## Property Management Systems

A property management system (PMS) is an umbrella term for voluntary planning, monitoring and reporting processes at the enterprise scale, using a systematic approach. This approach is based on a *Plan, Do, Check, Review* continuous improvement cycle, consistent with international standards for QA, occupational health and safety (OH&S), food safety, and environmental management systems. The PMS focuses industry effort at the property scale, but will be consistent with broader objectives at industry, landscape, catchment/regional, state and national scales.

## Farm Management Systems

A farm management system is “a voluntary, structured, step-by-step approach to managing agricultural businesses, that can be used by primary producers to identify and manage the risks which may occur as a result of their enterprise”. The Queensland Government is developing a framework for the accreditation of Farm Management System (FMS) programmes that are capable of verifying that landholders are meeting certain regulatory requirements for farm-level planning. The FMS Programme is being used as a common term to draw together and describe the various programmes that help QFF members organisations implement an FMS in their business. An enterprise’s FMS may be implemented through a single programme or a number of individual programmes It seems these FMS programmes are linked together principally by a systematic approach to managing risks.

# 4. Collaborative Catchment-based Programmes

## Catchment Management Authorities

The latest round of Federal funding for EMS through the Pathways to Sustainable Agriculture Programme distributed funds under the Regional Leadership stream to eight regional NRM bodies. Five of these were Victorian Catchment Management Authorities (CMAs). There were two Queensland projects, one to promote regional NRM support for industry developed Farm FMS and the other to continue the development of an integrated 'environmental, natural resource and productivity management system' for a sugar co-operative in Mackay. The final project funded the Northern Rivers CMA in NSW to use an "EMS approach to build partnerships to deliver sustainable agriculture in northern NSW", also to fund the BestFarms project described below.

## Australian Landcare Management Systems

Elders is a major sponsor of ALMS through the ALMS/myEMS Landcare Farming Project. The project is part of the Elders Landcare Farming Partnership, which was launched in Canberra in September 2006 to promote and encourage uptake of environmentally sustainable practices on Australian farms. In this significant development, Elders is sponsoring ALMS as a voluntary certified whole-of-farm catchment linked EMS. The purpose is to extend the adoption of ALMS using the software product myEMS. The purpose of the ALMS/myEMS project is to improve land management in ways that recognise all participating landholders and support organisations. The objectives of the ALMS/myEMS Landcare Farming project are to:

- promote a voluntary Australian land management certification system
- build and maintain ALMS participation
- provide services to ALMS participants
- demonstrate ALMS benefits.

ALMS is a whole-of-farm, catchment-linked and externally-audited environmental management system requiring all three categories of participating landholders (Eucalyptus, Banksia and Grevillia) to comply with internationally recognised management processes codified in the ISO 14001 standards and to provide support for biodiversity conservation. Banksia and Grevillia certifications require landholders also to exchange information with the relevant catchment authority. Grevillea membership requires landholders to have acquired ISO 14001 certification. Different accreditation requirements apply to auditors undertaking audits for the different ALMS membership categories. Auditors undertake a certification audit at the time of application by a landholder to an ALMS membership category and compliance audits apply thereafter.

Over 60 ALMS land management plans externally-audited ALMS environmental management systems have been certified in South Australia, Victoria and Queensland. ALMS gate signs and certificates are now being distributed with a positive response even to this very modest form of recognition. The ALMS Pilot involved landholders in the Eastern Hills and Murray Plains in South Australia and in the North Central Catchment Management Region of Victoria. Forty-nine landholders participated in the pilot with 32 landholders (65 per cent) achieving ALMS Eucalyptus certification. A further ten landholders beyond the ALMS Pilot have achieved ALMS Eucalyptus certification and, before the end of July 2006, an additional thirty landholders were audited against the requirements for ALMS Eucalyptus certification. ALMS is used to:

- enable landholders to participate in a national whole of farm system for improving environmental management, and hence business management
    - the national and whole of farm features enhance the potential for recognition (capture of benefits) of improved environmental management from communities, consumers and from government
- enable landholders to benefit from the design work that led to ALMS, including the identification of the essential features of ALMS, the development of eligibility criteria and of auditing requirements for ALMS membership, and the development of processes and tools to assist implementation and auditing
    - the essential features of ALMS include compliance with the ISO 14001 standards, catchment-linked, requiring continuous support for biodiversity conservation, across enterprises whole of farm, external auditing and building on the Landcare culture
- facilitate the use of myEMS, a web-based software tool for use in the development, maintenance and auditing of EMS through the alliance of ALMS and myEMS Pty Ltd.

The “Green Dollar forum” convened by the ALMS Group in Canberra canvassed ways to enable greater recognition of the environmental achievements of landholders. Invited speakers included Hans Joehr, Corporate Head of Agriculture at Nestle and President of the Global Sustainable Agriculture Initiative; Gonzalo Jordan, Director of Agribusiness, Fundacion Region, Chile and Mick Keogh, Executive Director, Australian Farm Institute, who strongly put the case for differentiating agricultural products in whatever way possible, including through using environmental attributes in marketing. The Forum was sponsored by Elders, HiFert, National Industry Food Strategy Ltd and the Rural Industries Research and Development Corporation.

## BestFarms, Western Australia

One of the original EMS pilots, the BestFarms project subsequently received funding from South West Catchments Council (SWCC) to extend BestFarms from the Blackwood Basin region to the whole of the south west of Western Australia. In 2007-08, funding was extended to enable BestFarms to deliver workshops to the low and medium rainfall areas of the south west. Climate change is one of the aspects being addressed in SWCC's investment plan. In the Blackwood Basin Group and the BestFarms EMS, addressing climate change issues through resource use efficiency, carbon use efficiency and air quality has had a positive response from participants in terms of uptake.

BestFarms is a catchment based EMS, ensuring that catchment targets are reflected in the templates so awareness is raised and participants can consciously address catchment scale targets at the property level. Participant surveys show that training workshops have increased participants’ awareness of catchment targets. The results of the BestFarms Monitoring Kits distributed to participants show that landholders are doing on-ground actions that work towards meeting catchment goals. The programme provides information and advice as well as supporting a broad network of industry, NRM and relevant contacts to ensure that landholders can access all the information they need, whether it be from a local or catchment scale. New research results and industry practices are passed to landholders through BestFarms networks and the quarterly newsletter.

There are currently two BestFarms trainers and four facilitators involved in the project with about 120 participants and a further 60 expected by June 08. 25 BestFarms Monitoring Kits have been delivered to landholders with in the southwest of WA, with a further 80 in production. Regular monitoring workshops and field days support landholders in the implementation and monitoring of their EMS.

Best Farms has been contracted by Northern Rivers Catchment Management Authority in NSW to deliver BestFarms workshops to 90 landholders in their catchment. Project officers in NSW will be

trained to deliver the workshops and carry out support facilitation to ensure that the BestFarms EMS standards are maintained.

BestFarms is compliant with ISO14001, although certification to the international standard is not required for participation. The BestFarms website, media releases, farm gate signs and promotional displays and events are used to recognise the achievements of participants and to promote the project. BestFarms isn't promoted as an 'ecolabel' on food packaging, though one certified participant Errol & Irma Seymour (the Organic Fine Food Company) have labelled products with the BestFarms logo.

The BestFarms group recently won the Australian Business Award for Environmental Responsibility 2007. They plan to move towards self sufficiency in funding rather than being reliant on funding from government bodies and are currently reviewing their marketing and business plan. http://www.bestfarms.com.au/ *(Pers. comm.. Kirsten Martin, BestFarms Coordinator, September 2007).*

## Broadacre Industries

In 2006, the Grains Council of Australia (GCA); Meat & Livestock Australia (MLA); and Australian Wool Innovation (AWI) were jointly funded by the Federal Government's Natural Heritage Trust to investigate the value of, and possible requirements for, environmental stewardship in the Australian broadacre agriculture industry. The project aim was to develop a single integrated approach to enable producers to demonstrate their environmental credentials. Market research showed how the broadacre industries can best report environmental performance to regulators and others. Information requirements were considered, both electronic recording systems that allow farmers to readily report environmental stewardship and farm practices and the potential for electronically capturing existing information. The theory is that "Farmers should be able to 'enter once' yet 'report as needed'", allowing transfer of information, tailoring of reporting, collection of data directly from paddock management or farm accounting software packages, measure trends over time; and assess their performance against Current Recommended Practice (CRP's)".

Consumers are becoming more concerned about a range of ethical and environmental issues, particularly in areas which affect their health and well-being. Equally and perhaps more strongly, retailers and brand manufacturers are increasingly seeking assurance that the products they source are produced in an environmentally sound and ethical manner. Producers need to know if there is market advantages for wool, meat or grain produced in accordance with some environmental standard (e.g. the European eco-label for textile products). The specific and diverse nature of supply chains and consumer requirements for wool, meat and grains, requires each industry to assess market drivers in their own way. AWI in conjunction with the Queensland Department of Primary Industry has commissioned market research to help determine if viable opportunities exist for Australian "ethical-wool" in both "environmentally positioned" and "main stream" retail markets. Grains will undertake a similar survey of the main grain marketers and buyers for the potential of market signals for environmentally assured grain.

Victoria leads the "EMS in broad-acre grains and meat industries project". This project will pilot EMS with one hundred farmers in three catchments and provide methodology to link on-farm EMS with catchment priorities, through collaboration with the ALMS group. This project will be conducted over three years as a partnership between the North Central, North East and Glenelg Hopkins CMAs, the Department of Primary Industry, the Department of Sustainability and the Environment and the Victorian Farmers Federation. A comprehensive review of eight EMS and precursor EMS products (from Victoria, NSW, WA and Queensland) has led to a new ISO14001 compliant EMS manual which will form the basis of on-farm testing with farmers in the three CMA regions. It will be used as the 'top tier' EMS for new national grains and meat industry EMS projects (co-funded by Grains Research & Development Corporation and Meat & Livestock Australia respectively). For the new projects, lower level introductory approaches to EMS will be developed, in recognition of the insufficient market drivers for EMS uptake by the majority of farmers. The project is showing that partnerships

between states, catchments, government agencies, industry funding bodies and farmer organisations provide a strong basis for developing a co-ordinated approach to EMS in broad-acre industries on a national basis.

The broadacre industries are exploring the possibility of capturing existing information electronically to enable farmers to demonstrate their environmental stewardship in an easy manner. This may:

- enable easy transfer of information between producers, industry groups and information seekers
- allow for tailoring the mix of information depending on audience needs
- allow producers to measure trends over time
- allow producers to assess their performance against Current Recommended Practice (CRP's)
- enable data collection direct from paddock management or farm accounting software packages
- allow broadacre farmers to 'enter once' yet 'report as needed', avoiding the need for re-entry of information and the additional cost of duplication, but enabling them to extract the relevant information to show their environmental management status.

The broad range of audiences whose requirements need to be clearly understood in relation to broadacre environmental stewardship include Federal, State and Local Governments; Regional bodies and Catchment Management Authorities; lobby groups; banks; real estate agents; political parties; farmers and the general community. Knowledge of such requirements is crucial to:

- provide the broadacre industries with a better understanding of "the value" of an environmental stewardship programme for farmers, their customers and the community in general
- to help assist in the subsequent design of a single data collection and analytical resource (the system) for Broadacre producers.

A market research company was appointed to report in September 2007. A market advantage is also a strong driver for demonstrating environmental stewardship by farmers(*Pers. comm.. Alan Umbers, Grains Council of Australia, August 2007*).

# 5. EMS Activity by Industry Sectors

## Plant-based broad-acre industries

### Cotton

The cotton industry has obtained funding from each round of the EMS Pilot and Pathways programmes. Work on environmental management in the cotton industry began in the early 1990s with a significant long-term collaborative research programme into minimising the impact of cotton pesticides on the riverine environment. This led to the Cotton Best Management Practices (BMP) programme, which initially continued the focus on chemical management. In 2004, over 95% of Australia's cotton growers had been introduced to BMP. Each cotton grower receives a BMP Manual works through it to develop action plans to overcome identified areas of risk. Some examples of BMP include: safe chemical storage and handling, reduced chemical usage, minimising erosion, minimising storm impacts, Integrated Pest Management (IPM), good communication with neighbours, spray operators and advisers, and minimising impact to sensitive areas like rivers or houses.

The Cotton Best Management Practices Programme has evolved into a more comprehensive Farm Management System (FMS). Initially CRDC funded work into enhancing the BMP Manual into an EMS and investigating the development of further BMP Manual modules. Cotton Australia and CRDC then received National EMS Pilot funding to develop a comprehensive Land and Water Module and assess the Cotton BMP Programme's effectiveness in an EMS form, across three growing regions in Qld and NSW. The Cotton industry received funding in Round 1 of the Pathways to Industry EMS Programme to enhance the BMP Programme and improve adoption. Pathways to Sustainable Agriculture funding has recently been obtained.

Future funding for environmental work under the Cotton BMP banner appears to be assured, perhaps given the significant investment the cotton industry has made into the programme and its level of recognition across the industry.

### Grains

The Grains Industry Environmental Management Systems Project aimed to provide grain producers with access to a simple system to demonstrate their environmental assurance as required, and to track and report improvements in environmental performance by the industry over time. The approach taken is that modern grain production systems used by farmers today are more environmentally sustainable than those used in the late 1970's. Producers were provided with the ability to record normal farming activities and practices within a straightforward reporting system, using paddock records to produce environmental performance reports. Between 2000-2003, the Grains Research and Development Corporation (GRDC) invested in three EMS projects (Western, Northern and Southern regions) in which EMS was developed and trialled with farmers in four agro-ecological zones. The GRDC and the grains industry recognised pressure for the grains industry to be 'EMS ready', so the industry is prepared to respond should there be sufficient market drivers or market access issues, given the continued degradation of the natural resource base in most cropping areas.

GRDC invested in a national project to prepare the Australian grains industry for Environmental Management Systems, compatible with ISO 14001 but enabling either incorporation of QA or stand-alone QA schemes to operate separately, as driven by market requirements. A lower level Environmental Management Guide is being developed to increase farmer environmental awareness, containing only components of self-assessment, simple environmental monitoring and a simple action plan (similar to the Ontario Environmental Farm Plans) tailored to address major environmental issues in agro-ecological zones. A five-tiered framework was proposed for delivery of environmental

management and awareness raising for the Australian grains industry, building on existing grains industry delivery mechanisms (e.g. Topcrop, Farming Systems groups, private and public extension services).

### *Grains Council of Australia – Grains Pathways to EMS Project of 2005-2007*

The Grains Industry Environmental Stewardship project (Umbers, 2006) chose to concentrate on the farm environment and on-farm activities as the key area under the influence of grain farmers, while recognising the flow on and contributory effects on the off-farm environment. The scientific literature was analysed for the best science to derive the linkages between farming practices and their environmental effects.

The project then focussed on aspects of the environment of greatest relevance to both production and ecosystem management. These were:

- Soil matters (erosion, structure, carbon),
- Water matters (erosion, deep drainage, salinity, efficiency of rain water use),
- Nutrient matters (nitrogen and phosphorus use efficiency and balances of these nutrients available for loss, runoff or leaching),
- Energy matters (soil carbon, nitrogen use efficiency, fuel use and linking these to GHG emissions risk / profile), and
- Native vegetation matters (amount of remnant or native vegetation on a property, area revegetated, protected for regrowth).

The project identified farming practices with greatest impacts on the environment, found a means of establishing benchmarks for the desirable level of adoption and enabling comparisons within the local area. A system was developed for farmers to record the levels of best practice adoption on their farms and for reporting back to farmers how their practices compare against benchmarks and the levels of their peers. A method of reporting these levels of practices and their environmental impacts to NRM bodies in a seamless and easy manner allowed these reports to be integrated with NRM targets. It was designed to be a self-supporting system - when more producers adopt desirable practice, the benchmark is automatically raised.

Identification of the Best or Desired Practices for the industry were rigorously identified by agencies such as CSIRO Plant Industry, all State DPI's and in partnership with private industry and farmers, then further refined and regionalised by development and testing work carried out by farming groups across Australia. A comprehensive review of the science and evidence for the linkages between grain practices and environmental impacts is available from the project website (http://www.farmingpractices.com.au/ScientificPaper.pdf).

The extent of the benefits of best practices across the areas of productivity, risk and environmental impacts have been identified in partnership with farming groups, researchers and farmers across the grain production areas of Australia. From the viewpoint of this EMS Project, continuing collaborative work with such groups will further promote the practices within these groups and in the regions where they operate. We can now identify not only the environmental desirability of these practices, but by virtue of their production and risk minimisation benefits can more effectively promote these on a broad benefit basis.

A farmer will receive an individual report showing their improvement compared to both the benchmark andinitial data set to determine their imporovement (their initial data set becomes their personal basic benchmark) and also whether they are keeping up with overall improvements in their area. This also allows NRM authorities to can determine how an area is improving over time for

particular practices which have environmental impacts. The aim is to produce measured trend lines allowing identification of practices needing more attention. Benchmarks will be generated from data amalgamation per area, and a report will show the new benchmark plus the percentage change from the originating benchmark of 2001.

As the benchmarks are prepared on a practice-by-practice basis, and the practice is identified for its environmental impact or impacts. This will allow farmers, farm groups and monitoring bodies to easily identify areas requiring attention. As more farmers in the region or area adopt a practice, so the benchmark will increase or decrease. Farming groups will form effective partners for the first stage of testing and refining the system. A more coordinated national system is planned for a more substantial survey and reporting programme, possibly beyond the scope of this project. (*Pers. comm.. Alan Umbers, Grains Council of Australia* and Manager of the Grains Council / GRDC 'Farming Practices for Sustainability' project *12th July 2007*).

### *Grain industry adaptation to climate change*

Martin Blumenthal, GRDC, addressed the Greenhouse 2005 Conference in Melbourne on how the grain industry needs to adapt to climate change, noting that increased $CO_2$ is likely to benefit crop production through improved water use efficiency and increased photosynthesis, and that small increases in minimum temperature have already had some positive effects for grain production with fewer frosts. There is a distinct possibility that by 2070 there will be shifts in where livestock and grain production predominate with pastoralism returning to the drier margins of the wheat belt and cropping becoming more prevalent in the high rainfall zone. In effect a return to the industry landscape of 1900. Climate change is not the only externality the industry and individual growers need to adapt to it. There is the continuing cost price squeeze and the likely shift in demand for grain for protein to grain for energy for animals and engines.

Australian grain growers have proved to be highly adaptable. In Martin's view, what they need is:

- more accurate prediction of likely changes so individuals and the industry can adapt sensibly
- a systematic approach to adaptation
- guidance on what adaptation is required
- analysis of likely infrastructure needs of the grains industry.

(*Pers. comm.. Martin Blumenthal, GRDC 24th July 2007*)

## Rice

The Pathways to Industry EMS programme was seen to have generated some very positive cross-links between industries and facilitated some common learning on the benefits of the EMS approach. The Ricegrowers' Association of Australia has most recently received funding from the Department of Agriculture Forestry and Fisheries through the Pathways to Sustainable Agriculture programme. Over the next 12 months under this programme, the rice industry will continue to grow participation in the programme and build stronger links with regional catchment bodies and other industries.

The Ricegrowers' Association of Australia received National EMS Pilot funding to further develop and implement the Rice Industry's Champions Programme in rice growing regions in NSW and Victoria. The project involved 240 farmers in three trial groups, with the results applicable to the remainder of the industry, and transferable to other industries. The rice industry also received funding under Round Two of the Pathways to Industry Programme to roll out phase 3 of the Environmental Champions Programme, a broad-based environmental policy and implementation programme with a view to engaging all growers and local communities in environmental stewardship. The Environmental

Champions programme is a five level achievement programme: basic industry standards, planning; putting plans into action; eco-efficiency; regional sustainability. It contains a component of Environmental Management Systems, but in addition, the Champions programme sets the bar for industry standards in environmental performance.

The Australian rice industry environmental policy was developed in conjunction with rice growers, local community, government agencies, irrigation companies and peak conservation Non Government Organisations (NGO's). This sets out the levels of commitment to change and understanding of the environment and the need to integrate it into better farming and business practices. Key sub-programmes focus on restoration of biodiversity, reduction of greenhouse gases, research into healthy rivers and landscapes, and an improvement in all aspects of storage and manufacturing and marketing of rice products.

The rice industry worked with the Australian Greenhouse office to develop the greenhouse pathway in their Champions programme, carrying out methane trials and trialling a scorecard for the greenhouse footprint of the industry.This is still under refinement using figures translocated from the northern hemisphere), but they are now at the stage of ground-truthing the tool.

The Rice Best Management Practice incorporates water use efficiency, research and development and rice breeding; however, there will be no rice grown this year, with production down to 10% of normal levels due to the lack of water in the irrigation districts. The period is being used as a planning base, with cluster groups of farmers still meeting to talk through issues. By June 2007, 25% of the industry was voluntarily involved in the programme - largely spread by word-of-mouth. Of the on-farm businesses involved, 75% are at level 1, and 25% are at level 2 moving through into level 3. The industry is still developing the higher levels, which will include protocols for carbon trading and biodiversity credits. Rice Growers Australia will not be a carbon trader *per se*, but sees its role as helping industry engagement in the broader system as it develops.

*The rice industry still perceives a disjunction between the on-farm and catchment scale, and considers that relevant catchment information is still quite difficult to access, as CMAs have been in embryonic form over the past three years. A coordinated approach will assist progress towards meeting goals and aims of the broader catchment plans. The rice industry feels that it has got its fundamental principles right, setting up a programme that has high levels of internal trust amongst members (*Pers. comm.. Louise Adcock, 18th July 2007 and Janelle McGufficke, 10th August 2007, Rice Growers Association of Australia*).*

## Sugar

CANEGROWERS have just launched the second Public Environment Report for the sugarcane industry. The Australian sugarcane industry has developed a Farm Management System (FMS) framework following a sugar industry workshop on EMS held in Townsville in July 2003. The workshop was supported by the Sustainable Industries Division of the Environmental Protection Agency and attended by representatives of CANEGROWERS, CSR Sugar Ltd, Bureau of Sugar Experiment Stations and Sugar Research and Development Corporation.

The FMS Standard for sugarcane production built on the existing programmes that have identified and promote best management practices (BMPs). These include COMPASS (COMbining Profitability and Sustainability in Sugar) self-assessment programme, the sugar industry Code of Practice for Sustainable Cane Growing, BMPs for tillage, crop residue management, drainage (including acid sulphate soil management and Fish Habitat Code of Practice encompassing tidal drainage), pest management, nutrition, varieties, irrigation (through Rural Water Use Efficiency Initiative and related R&D) and SRDC's 'Cane Farming to Improve Water Quality' workshop guidelines. This may include EMS, but is deliberately not branded just as being an environmental programme.

COMPASS is the central platform of the sugar industry's FMS. COMPASS is a simple and practical self-assessment workbook (based on the Farm*A*Syst Programme from the University of Wisconsin) that allows canegrowers to rank their current farming practices against the Code in ten areas. The areas assessed are fertilisers, irrigation, drainage and pesticide use, soil health and conservation, riparian management, planting and harvesting, integrated pest management and business planning. The industry recognises that the Code needs revision to incorporate sections on vegetation, pest and trash management and the results of a review into water use efficiency.

SRDC has funded various best management practice projects over the years; these now include an integrated approach to identifying what is both environment and financial best practice. A *trial FMS project* is planned for the Burdekin. Funding was secured under the NAPSWQ programme, including $300,000 over three years (*Pers. comm.. Diana Dawson, March 2004*).

The development of the sugar FMS was aligned with the Sugar Reform Process that required implementation of improved environmental management practices. Best Management Practices have been developed and continue to be developed for the sugar industry through grower-participative R&D. Documented guidelines are available for many on-farm activities and promoted through farm advisory services (BSES and mill-area productivity services) including grower groups. An enormous amount of information exists as a result of R&D conducted by CRC Sustainable Sugar, CSIRO, Sugar Yield Decline Joint Venture, and SRDC. The Sugar Industry Guidance Group's independent environmental audit was released in 2004. This provided a baseline against which to monitor progress in FMS adoption and recommendations that can be used within FMS.

# Horticultural industries

## Horticulture Australia Ltd

### *Horticulture Australia Ltd on drought, water security and climate change*

Peter Deuter, QDPI Principal Horticulturalist identified the lack of climate science understanding that addresses the lead-time and season requirements of the horticultural industry. He has produced a valuable scoping study (Deuter 2006) that includes a list of management tools currently available to agriculture for managing climate change and climate variability. He believes that the horticultural industry and individual growers will 'need to develop both pre-emptive and reactive adaptation strategies to successfully adapt to increasing temperatures and subsequent climate changes. Adaptive strategies are needed to manage adverse environmental conditions, in addition to developing and implementing improved production/management practices to increase efficiency and productivity and meet supply chain needs'.

Future water issues for horticulture as identified by HAL's Manager, Environment at a Drought Session HAL Industry Forum include:

- reliability of water –allocations and water rights changes
- food security –lower availability due to drought
- more uncertainty of water supplies as a result of climate change
- alternative water supplies -water recycling
- quality of water
- urban competition for water resources
- social community changes –impact on rural communities unknown.

(*Pers. comm.. Alison Turnbull, Project Manager, Environment, May 2007 and Peter Deuter, Queensland Department of Primary Industries and Fisheries, September 2007*).

## Horticulture Code of Conduct

The Horticulture Code of Conduct is an Australia-wide mandatory code that was introduced by the Federal Department of Agriculture, Fisheries and Forestry on 14 May 2007. The purpose of the Horticulture Code is to regulate trading of horticulture produce in the horticulture produce industry, encouraging greater clarity and commercial transparency in trade transactions between growers and wholesale traders (traders) by clarifying the responsibilities and obligations of each.

### *Horticulture for Tomorrow*

Australian horticultural industries, facilitated by Horticulture Australia Ltd (HAL), have a national initiative known as Horticulture for Tomorrow which is part of a five-year environmental vision for horticulture, developed in collaboration with the industry, that "By 2010, Australian Horticulture will have embraced a systematic approach to environmental management that underpins the economic, social and environmental sustainability of the industry." Horticulture for Tomorrow includes:

- pilot projects investigating the potential to enhance partnerships between horticulture growers and industry groups with catchment authorities or regional NRM groups
- the development of a national strategic plan for NRM strategy, which has scoped the relevant NRM issues for horticulture and suggested ways in which industry organisations and growers can proactively address them at farm, catchment, industry, supply chain and market scales
  - a draft strategy has been circulated for industry consultation and is being finalised
- a national guideline for environmental assurance in the Australian horticulture industry funded by NHT through the Australian Government's Pathways to Industry Environmental Management Systems (EMS) Programme, this was driven by:
  - a growing industry interest in demonstrating to communities and customers the use of environmentally responsible practices in horticultural enterprises
  - added impetus was provided by the small proportion of horticultural producers who are required to achieve environmental certification of product exported to European and British markets (e.g. through schemes such as Natures Choice or EurepGAP) - there was an expectation within the industry that these demands would continue to grow in international markets and would eventually be required on domestic markets
  - the push by the Commonwealth Government to encourage uptake of EMS by agricultural industries
  - a concern that a confusing multitude of programmes and initiatives for environmental management would be generated within the industry.

National guidelines for environmental assurance in Australian horticulture were launched in mid-2006. Draft guidelines prepared by a national technical steering committee were tested in a number of industry consultation sessions, workshops and a series of on-farm trials in all states.

The guidelines contain information on nutrient management, with the objectives to maintain the productive capacity of the soil without detriment to the environment, and to effectively manage nutrient inputs to meet crop requirements and soil characteristics. Suggested practices include:

- selecting nutrient types and amounts, with knowledge of the nutrient availability in the soil/substrate through undertaking soil tests and considering sap or leaf testing during the growth of the crop

- nutrient budgeting, with recommended training (e.g. Fertcare) to learn to estimate the quantity and type of fertiliser to use, or to use the services of a soil consultant or agronomist to ensure responsible nutrient application

- accurate application of fertilisers, choice of equipment and application method

- monitoring and recording of soil test results and corresponding fertiliser recommendations and applications, and machinery calibration and maintenance.

## Freshcare Code of Practice

Freshcare is the national, industry-owned, on-farm food safety programme for the fresh produce industry. It was developed in response to requests from growers, wholesalers, packers, and processors for a food safety programme that met the requirements of both retailers and food safety legislation. The Freshcare Code of Practice is based on the international standard for Hazard Analysis and Critical Control Points process (HACCP). Certification to the Freshcare code by an accredited auditor provides independent verification that a recognised and rigorous food safety programme is followed by the enterprise.

The Code of Practice for the *On-Farm Food Safety Programme* for Fresh Produce covers many issues in relation to food safety, including the following pertaining to fertiliser management:

- fertilisers and soil additives shall be stored, applied and disposed of in a manner that does not pose a risk to either direct contamination of produce or indirect contamination of produce/packaging through the water supply or wind erosion

- a record shall be kept of all fertilisers and soil additives used; including: date of application; product used; supplier of product; rate of application; method of application; a description of the treated area (e.g. crop, location and size/tree numbers); the name of the person applying the product; for treated organic materials, date and method of treatment prior to application should also be recorded.

All participants in the (food safety) Freshcare Programme are required to complete an approved training course to ensure a full understanding of the Freshcare Code of Practice and the requirements for its implementation on-farm. There is work to develop an environmental module for Freshcare, which already has quite good market penetration in the horticultural sector. The Freshcare Code already has modules for food safety, occupational health and safety – now moving down the track to develop an ethical and environmental code. There is reasonable recognition of the food safety modules.

Freshcare is expanding to provide growers with optional environmental certification. A Code of Practice for *Environmental Assurance* has been prepared based on the national guidelines prepared through the Horticulture for Tomorrow initiative. A Freschare Environmental Code of Practice has been developed, addressing similar issues in relation to fertiliser management but with more detail and a stronger focus on environmental outcomes. The Code has elements to address fertilisers and soil additives, water management, and land and soil management. Steps required to ensure compliance with the fertiliser and soil additives element include:

- mapping of fertiliser storage

- soil/leaf/sap testing and records kept

- crop nutrition strategy based on testing
- records of fertliliser use (date of application, product used, supplier, rate, method etc.)
- hydroponic nutrient solution monitoring records
- appropriately maintained equipment.

The auditing process for the Code, released in August 2006, has been trialled via Horticulture for Tomorrow national environmental assurance farm trials. A certification system for the environmental component, developed with Freshcare's auditing partners soon afterward, is now in operation.

## GrowCom

### *Growcom Farm Management System (FMS)*

Growcom FMS will be the first integrated system developed for horticulture in Australia, embedding NRM outcomes into a production framework to ensure broader uptake. Demonstrating sustainability requires initial benchmarking of current practice. Over time it will be critical to quantify (where possible) the links between good practice and NRM outcomes to ensure that accurate advice is given to growers. Programmes like Growcom FMS can identify areas where growers can improve and provide advice and support with respect to what actions can be taken. Incentives are also important to facilitate practice change in NRM activities where there is no production benefit. Growcom FMS can also be used to capture data about growers' current and ongoing practices to identify if there have been changes, and these can be cross-referenced against the information about the level of expected NRM outcome. An IT survey of growers will gain insight into appropriate FMS delivery platforms.

Growcom's Land and Water team facilitates horticultural producers to manage land and water assets to ensure sustainable natural resource management. There are four major components of the programme:

- water for Profit focuses on improving water use efficiency, soil health and nutrient management, with related modules developed for the Growcom FMS
  - the nutrition module forms the backbone of a nutrient management project in the Tully region to reduce nutrient inputs into the Great Barrier Reef (see REEF section below)
- natural resource networks building partnerships with regional NRM bodies to provide an industry perspective to regional groups and ensure industry responds to NRM priorities – this is proving valuable for regional groups such as the Burdekin Dry Tropics, Mackay-Whitsunday, Burnett-Mary and the Condamine Alliance
- farm Management Systems assists holistic management of enterprises within a risk based framework. FMS is a primary mechanism for facilitating uptake of good agricultural practice (often referred to as BMP) and integrating activities for on-ground delivery
- land and water policy provides a reasoned contribution from the horticultural sector on key natural resource management issues such as the Reef Water Quality Protection Plan.

(Pers. comm.. Jane Muller and Rachel Mackenzie, GrowCom, Queensland, 27th July 2007).

### *Growcom Farm Management System Initiative*

Growcom is coordinating the development and delivery of the Fruit and Vegetable FMS Initiative. The seed funding for the Initiative has been through the Queensland Rural Water Use Efficiency Initiative (Department of Natural Resources, Mines and Water) with additional investment leveraged from a

range of sources, including the Natural Heritage Trust and the National Action Plan for Salinity and Water Quality.

As the majority of fruit and vegetable businesses have third party certified food safety and quality assurance systems in place, the FMS process is being designed to use these systems as a basis on which to build additional management elements. In reef catchments, the key priority in the FMS process will be the implementation of management practices and processes that minimise sediment and nutrient movement from the farm.

Growcom is developing an FMS support service to assist growers to design and implement their own FMS. The support service will include a team of regionally based facilitators and an FMS resource kit. This resource kit includes:

- information, templates and decision support tools for property planning, risk assessment, priority setting, action planning, documenting management procedures, record keeping, monitoring and internal reviews

- material to cover farm management issues such as environmental risks, natural resources, food safety, quality assurance, workplace health and safety, quarantine, climate variability, community relations, and business planning

- information and recommended practices for environmental management drawn from the Farmcare Code of Practice (currently being updated) and current recommended practices for irrigation management from the Water for Profit programme (within the Rural Water Use Efficiency Initiative). These include advice on fertiliser management, fertigation techniques and practices to minimise off-site movement of nutrients.

Formal links are being developed between Growcom and the EnviroVeg and Freshcare programmes. It is intended that the FMS Initiative incorporate the resources and recommendations of these programmes. This will allow growers to use their FMS as the documentation required to achieve certification to the Freshcare Environmental Code or the EnviroVeg Environmental Assurance process.

Through an Eco-efficiency Agreement between Growcom and the Australian Government Department of the Environment and Heritage, Growcom appointed a full time regional facilitator for the FMS Initiative in Far North Queensland. This facilitator developed an innovative approach to locating and designing farm run-off detention systems as a core component of an FMS. The run-off detention designs are generated from property plans based on extremely detailed contour mapping that support the development of highly accurate digital terrain models for the property. The detention system both:

- slows the rate that water runs off the property to match the run-off rate that would occur from the land if it was naturally vegetated

- drops the fine sediments out of the run-off water.

Growcom has applied for additional funding for a nutrient management project in the Wet Tropics nutrient management zone.

### *Farmcare Code*

The *Farmcare Code of Practice for Sustainable Fruit and Vegetable Production in Queensland* (Farmcare Code) was developed through a joint Growcom (then Queensland Fruit and Vegetable Growers) and Horticulture Australia Limited (HAL, then Horticulture Research and Development Corporation project. The code is recognised under the *Environmental Protection Act* 1994. The code was launched in 1998 and distributed to all fruit and vegetable growers in Queensland. The code provides the foundation for the environmental management component of the FMS initiative and was

also extensively referenced in the development of national resources such as the national environmental assurance guidelines and EnviroVeg.

The Farmcare Code provides growers with guidance on efficient and careful use of natural resources, particularly water and soils, and minimising environmental impacts related to horticultural land use, particularly run-off of sediments, fertilisers and pesticides into waterways. It has been heavily promoted in the industry and incorporated into property and business planning programmes and industry environmental management training courses. The update will not be in the form of a compliance code but rather a set of process approaches and tools for solving problems to serve as a guidance tool for solutions. The code was is a valuable resource and wasupdated and made available mid 2007.

## EnviroVeg

The EnviroVeg Programme commenced in March 2001 to address community concerns about the environmental performance of vegetable growers. Initially trialled in Victoria, it has expanded into a national programme under the auspices of AUSVEG—the peak body for the Australian vegetable industry. EnviroVeg is a voluntary programme that includes a self-assessment tool to help growers compare current farming practices with industry recommendations and standards to improve environmental performances. The programme includes topics on water management, soil management, and nutrient management, among others. Each section outlines the principles and practices that should be followed to reduce potential environmental impacts.

The self-assessment manual and self-assessment checklist has been reviewed and significantly updated, including the incorporation of a property planning component and alignment with the national environmental assurance guidelines.

Involvement in the EnviroVeg programme encourages growers to undertake EnviroVeg training, work through the self-assessment and action planning manual, complete an annual self-assessment checklist and take steps to improve environmental management on farm. A certification process is currently being investigated, to be known as EnviroVeg Environmental Assurance.

To date there has been limited uptake of the EnviroVeg programme in Queensland; however, with the launch of the second edition of the self-assessment manual and a renewed partnership with Growcom, the Queensland fruit and vegetable industry body and the Queensland FMS initiative, membership and involvement is expected to increase.

## Australian Wine Industry

Australian Wine Industry Stewardship (AWIS) provides a framework to allow the industry to concisely and conclusively demonstrate that WINE AUSTRALIA is an environmentally-responsible brand. The AWIS pilot was conducted in the 2005/2006 growing season and involved 5 wine companies across 6 regions and 470 growers. Pilot companies distributed a one-page AWIS spray diary insert to growers in company spray diaries, seeking information about individual growers' environmental stewardship activities. This information then allows the company to provide assurances to customers and consumers further along the wine supply chain, and also to identify training needs and potential performance improvements amongst their growers.

Companies are being pressured by major retailers, investment houses, government and non-government organisations to provide a level of environmental assurance for their products. In turn, the wine company then needs to obtain these assurances from their own suppliers, including grapegrowers. Participation in the AWIS pilot far exceeded that included in the original AWIS project proposal. Five companies and 453 growers took part, and the overall feedback has been positive. The most telling aspect of this is that all companies that participated in the pilot will continue to participate in AWIS in the 2006/07 growing season. The focus has now shifted to engage additional companies to adopt the

AWIS spray diary insert for future growing seasons. As at 30 June 2006, companies representing 55% of Australia's wine grape crush and 3000 growers have committed to AWIS for the 2006/2007 growing season.

For Wine Industry Environmental Management Case Studies see http://www.wfa.org.au/awis5.htm

### *Horticulture Case Study – Pacific Coast Eco Bananas*

Pacific Coast Eco Bananas received endorsement by the Great Barrier Reef Research Foundation for accomplishing ISO14001 and Eco Growing Protocol certification. Under the agreement, a percentage of sales are passed to the Foundation to support its activities toward the conservation, preservation and wise use of the world's reefs. The endorsement of the Great Barrier Reef Research Foundation provided an environmental seal of approval and the credibility that is crucial in the early stages of marketing the wax-tipped eco-bananas.

The 2006 *Rural Sustainability Award* in the inaugural Environmental Protection Agency Sustainable Industries Awards was won by Pacific Coast Eco Bananas from Mourilyan near Innisfail, producers of the famous 'red tip' bananas. The Award, sponsored by Queensland Farmers' Federation and judged by a panel of industry representatives, was awarded for innovation in sustainable agribusiness. Despite Cyclone Larry, Pacific Coast Eco Bananas won an award for its environmentally-sustainable farming system that relies on the interaction of plants, weeds and insects instead of artificial fertilisers. Pacific Coast Eco Banana founders Frank and Dianne Sciacca found the award a much-needed boost as they rebuild business in the wake of Cyclone Larry, which extensively damaged many banana farms in the area.

The past twelve months has seen Growers following the Pacific Coast Eco Banana growing protocol to meet the standard of the Pacific Coast Eco banana. They have also implemented an Environmental Management System (ISO 14001), carrying out an environmental impact assessment on their farming production systems and addressed any subsequent impacts. The EMS has also been used as the tool to document, monitor and measure the eco protocol outcomes and progress.

*Contact Great Barrier Reef Research Foundation Managing Director David Windsor (07 3211 8890), Frank and Dianne Sciacca (07 4064 2452) or Foundation media liaison Robert Dark (0417 623 156).*

### *Processing tomatoes*

The Grow Sustainably programme was developed with support from Unilever and Horticulture Australia, for the tomato industry in Australia to develop a process for the assessment of the sustainability of existing practices associated with processing tomatoes. Within the context of Unilever's 10 sustainability clusters, indices and associated field methods were developed and applied to 5 pilot farms representing the diversity of operations and activities currently found in the Australian industry. Assistance is required to promote and customise outcomes and outputs of the Grow Sustainably programme across mixed horticultural production enterprises, ie Stone/pome fruit and intensive raw crop industry sectors in Northern Victoria, etc. The Grow Sustainably programme has developed an internet self assurance programme enabling growers to review and benchmark themselves against established sustainability standards (e.g. Eurepgap). Recently a pesticide risk assessment tool called PROMPT has been integrated with an online spray diary to assist farmers and industry sectors understand and better manage pesticide use and associated risks (see: www.growsustainably.com ). Unilever and Nestle plan to facilitate development of the Sustainable Agriculture Initiative (SAI) amongst food processing companies in Australia (see www.saiplatform.org).

# Extensive animal industries

## Landleader

Landleader is a voluntary programme being trialled by Australian Wool Innovation (AWI) and Meat & Livestock Australia (MLA), using Federal Pathways to Industry EMS funding. The project aims to identify and promote the environmental and livestock stewardship credentials of the wool and red meat industries, in a proactive move aimed at strengthening their reputation, based on significant research and feedback from local and overseas markets about what customers and other opinion leaders, including government departments, require and consider important in terms of the grazing sector's environmental performance.

Landleader set out to augment on-farm planning aspects of EMS by providing a national system to demonstrate the incremental improvements producers are making via on-farm practice change. Landleader is an industry survey gathering crucial data about on-farm environmental practices from up to 1,300 livestock producers demonstrating environmental and livestock stewardship, using recognised best practices, supported by AWI and MLA's national Best Management Practice (BMP) extension programmes. Participants are to receive useful, relevant feedback after completing the questionnaire on their environmental and livestock practices, via a confidential and customised report that enables them to see how their practices compare to industry best practice. Producers will also be able to track improvements on their own property over time.

AWI and MLA believe that a variety of approaches are required to fill the needs of an extremely diverse set of agricultural producers across Australia. Landleader was developed in a genuine attempt to raise the awareness of best environmental and livestock management practices while also providing a mechanism to promote the credentials of their industries to the market and broader community.

During July 2007, the Landleader project was trialled primarily in the southern parts of Australia, with a national rollout planned for later in the year, incorporating northern and rangeland producers to provide a more complete Australian picture. AWI and MLA called on producers to voluntarily complete a survey either online via the website www.landleader.com.au, or via a Trial Coordinator, Clare Hamilton on 02 6379 1359 (Pers comm, Malcolm Sedgewick -MLA, Ian Rogan - AWI ).

## Meat and Livestock Australia

MLA has developed a procedures manual based on ISO 14001 for EMS in the grazing industry. MLA trials on the development of EMS for pastoral enterprises were successfully completed with four groups of producers, GippsBeef in Victoria, the Northern Australian Pastoral Company (NAPCo), the Western Downs group and the YNot Beef Group in Central West Queensland.

SAI Global Insurance, in Brisbane and Sydney, carried out pre-certification audits and found that three of the four groups reached the point of certification to the international standard ISO 14001, although none sought certification for cost reasons. GippsBeef is continuing EMS work through a National EMS pilot project. NAPCo successfully obtained ISO 14001 certification for their feedlot, but as yet has not certified any of its properties supplying this feedlot. Progress will continue step by step. The Western Downs Queensland group reached the point of certification; while the YNot Beef Group developed a basic EMS then gave it away.

The MLA launched its Livestock Production Assurance (LPA) Scheme in mid 2004. Motivation for developing this scheme came from a recognised need to back up claims of being "clean and green", e.g. in the Japanese market. LPA Stage 1 provides a halfway house between the National Vendor Declaration Scheme and Cattlecare (presently only adopted by approximately 10% of cattle producers). Stage 2 requires adoption of more complex systems, such as Cattlecare or EMS.

LPA builds on weighbridge certificates required by the compulsory vendor declaration scheme but will provide additional information and full assurances of compliance with food safety requirements. The aim was for approximately 100,000 cattle to be covered by the LPA. There were no environmental requirements within LPA, but MLA is keen to introduce an optional environmental module and is canvassing industry views on how and when this should occur.

MLA Supply Chain work commenced with a trial on introducing EMS into the supply chain in 1998/1999. The trial was carried out in conjunction with Australian Country Choice (ACC). The first step was the certification of a meat processing plant in Brisbane to ISO 14001. In the second stage an ACC feedlot in the Brisbane Valley achieved ISO 14001 certification in June 2003. The current stage of the process involves increasing the on-farm component of the EMS on three farms and supplying both the feedlot and the abattoirs.

Rockdale Beef has carried out a process to develop an integrated supply chain certified to ISO 14001. Most enterprises trading under the Rockdale label are already certified to ISO 9000 and are moving across to incorporate environmental elements (*Pers. comm.. from Peter Loneragan 19 February 2004 Stephen DeMartin 19 February 2004 Steve Banney 20 February 2004*). MLA received Pathways to Industry EMS Round Two funding to consult with industry on the development of an EMS module for the Livestock Production Assurance Scheme. During 2006-07, MLA developed and road tested two regionally-specific, voluntary environmental modules for Livestock Production Assurance. (MLA Annual Report 06-07)

## Gippsland Beef and Lamb EMS

The Gippsland EMS project began in 2003 as part of a DAFF EMS pilot in a partnership between Gippsland Natural producers, DAFF, DPI, West Gippsland CMA, MLA and landholders. A Stage 3 EMS (full ISO 14001 compliant EMS with a third party audit) was delivered to 60 beef and sheep producers (27 went to 3rd party audit). The aim was to explore the value of an EMS as:

- a management tool
- a means of achieving positive NRM outcomes
- a marketing tool.

Gipps Beef Group is a good example of group EMS development leading to market premium and advantage. This group uses ISO 14001, but does not maintain certification, relying instead on third-party audits and peer audits to maintain rigour and credibility. The project was delivered by a small, committed team from the Gippsland Natural beef producer's alliance. The team was keen to develop a 'whole farm and catchment' approach to help farmers minimise the environmental impacts of meat production, make good business and environmental decisions and produce a quality product.

Of Gippsland's lamb and beef producers, 60 were involved and all had a strong interest in caring for the environment. A rigorous training programme included workshops, individual farm visits and farm review days, which gave participants the tools to implement the Gippsland EMS on their own properties. Eight new participants trained to enter the system in 2006, and there was interest for two new groups in 2007.

The system used by the participant producers and the Gippsland EMS Head Office has now been externally audited 4 times by an SAI Global environmental auditor for compliance with ISO 14001 (3 times as part of Gippsland EMS pilot and once as part of MLA pilot). The auditing process has been invaluable in helping the project team to continually improve the systems, processes and understanding of ISO 14001. The auditor has been impressed with the consistently high level of achievement, understanding, documentation and enthusiasm demonstrated by the project team and participants in the project.

The project team also developed a new brand - “Enviromeat” - underpinned by the Gippsland EMS. The project team worked closely with the West Gippsland CMA to ensure that the product aligned with regional environmental goals. Sold at a premium to conventional meat, Enviromeat provides a further incentive for producers to implement the EMS.

On-farm EMS implementation has had many positive environmental outcomes, for farmers and the general community. Farmers who had not taken the EMS through to external auditing have also reported an improvement in the way they manage their environmental assets, such as fencing off remnant vegetation and managing chemicals to minimise any contamination risk.

In summary, the project team found that:

- EMS has significant potential and value as a management tool, provided there is adequate flexibility to suit different stakeholder needs and drivers
- EMS has significant potential and value as a means of achieving positive natural resource management, particularly in its ability to focus producers’ awareness on their role within their catchment
- Positive natural resource management can also be achieved using key EMS elements (rather than requiring compliance with ISO 14001)
- However, the success of either approach will depend on adequate support, training and incentives for producers from government, industry and catchment agencies, and a perception that improved NRM is producer-driven
- EMS has potential and value as a marketing tool, but requires a significant investment of time and capital to create a market for an EMS product.

(*Pers. comm.. Jenny O’Sullivan, Gippsland EMS producers Group, representing Gippsland EMS and Enviromeat, June 2007*).

## Sheep and wool

Land and Water Australia (LWA) and Australian Wool Innovation collaborated in the recently completed "Land, Water and Wool" natural resource management programme, which combined wool industry investment and LWA expertise to deliver R&D outputs in a form useful to commercial wool production. The project was designed to improve natural resource management outcomes for wool production. Major programme areas are: Sustainable Grazing on Saline Land; Managing Native Vegetation; Rivers; Climate; Benchmarking; Future Wool Scenario Planning; Pastoral production (sheep); and Delivery. EMS is not part of the initiative.

AWI in conjunction with MLA is developing a best practice manual for sheep and wool producers. The manual covers all the key profit drivers for wool production and provides a one stop shop for the latest information on sheep and wool production. The wool industry is also currently working with the meat and grains industries to identify and address the priority environmental and ethical issues affecting our industries through the development of a common broadacre Environmental Assurance Programme. Jointly funded by DAFF, the Environmental Assurance Programme will provide a way for wool producers and the wool industry to demonstrate environmental and animal welfare standards to domestic and international markets (*Pers. comm.. Lu Hogan August July 2007*).

In 2006, Australian Wool Innovation Limited (AWI) collaborated with Queensland Department of Primary Industries and Fisheries to commission The Woolmark Company (TWC) to undertake market research in Western Europe, Japan and the USA to determine the potential customer requirements and demand for ‘ethical Merino wool’. Ethical wool products are defined as those made from fibre grown

in an environmentally sustainable manner and according to recognised animal welfare, human rights and social justice standards.

Australian Wool Innovation received funding through the most recent Pathways to Sustainable Agriculture programme for a Wool Pathways Project, consolidating earlier work and creating improved communication channels across industry members. The research has fed into the AWI Wool Pathways Project, which is establishing a framework and standards for an industry-wide system of accounting for chemical residue, animal welfare and the environmental credibility of Australian Merino wool. The system is expected to be rolled out in mid-2007 after modules to test standards are finalised and an intensive on-farm trial programme has been completed (*Pers. comm.. Ian Rogan AWI*).

### *Traprock Wool*

Traprock group consists of 50-70 growers, with its own QA system in place for its high quality, fine micron wool. Traprock Wool Association was formed in 1991 following the collapse of the wool floor-price scheme, with members from the traprock region of SE QLD through to NE NSW. The intent was to develop a market for Traprock wools. The group has been proactive in the introduction of a QA scheme (Total Quality Management) for wool harvesting. The aim is to develop and implement an EMS on sheep properties that belong to the Traprock producer group. The group is not seeking certification to the ISO 14001 standard at the outset but aiming to be in a position to move towards cluster certification for member producers at the end of the project, following an internal audit.

Traprock Wool received funding from Australian Wool Innovation to carry out a joint project with the University of Southern Queensland to identify key indicators for productivity and biodiversity (using focal species counts). The Traprock is an important area for bird life as it is at the intersection of three climatic zones and thus important in the migratory bird paths. High numbers of indicator species of birds, ants and frogs were found and Traprock landholders are keen to find NRM solutions that provide good biodiversity values and improve production levels and current grazing management practices. The development and adoption of the Traprock Integrated Management System will ensure NRM changes are effectively managed and future requirements are addressed.

EMS templates have been developed for the sheep and the cattle enterprises in the district, with work underway to develop one for mixed growers with fruit orchards. There are plans to develop a community database that will facilitate tracking the group's implementation of actions identified within the EMS. Four producers are ready to pilot the project, which is expected to last several years (*Pers. comm.. Clive Smith, Traprock Wool, March 2006, (61) 7 4685 7151 and Margaret Smith (61) 7 46857151 or president@traprockwool.com*).

## Grain and Graze

Grain and Graze is an initiative of the major dryland farming Research and Development Corporations (RDCs; GRDC, MLA and AWI) and LWA. It has conducted a Scoping Study that concluded that an integrated, whole-of-farm, systems based R&D programme would be welcomed by leading producers and researchers as a most appropriate means to develop new sustainable farming systems for the wheat-sheep belt and high rainfall zones of Australia. The research and development corporations have asked for a Business Plan to be prepared before making final decisions about whether to proceed with the initiative as a collective. If the four RDCs proceed with a joint farming systems programme it will provide potential to efficiently and effectively advance management issues.

Grain and Graze will conclude in June 2008 (see www.grainandgraze.com.au). Five regions covering 270 sites and with over 60 partners were involved with Catchment Management Authorities engaged in each region, under coordinator Richard Price (richard.price@kiri-ganai.com.au). These regional initiatives bring investment together from R&D Corporations, Farming Systems Groups, State agencies and regional/catchment bodies. The programme aims to deliver a 10% increase in mixed farm

productivity; improved, or at least stable, condition for the natural resources on mixed farms, in line with regional or catchment targets; and more confident and knowledgeable mixed farmers. The dual goal of Grain and Graze was to have 700 producers making changes that increase business profit by 10% while addressing an NRM issue defined as a priority by the local CMA.

### Sustainable Grazing Systems

Sustainable Grazing Systems (SGS) was established by MLA and partners in 1996 to address the issues of declining productivity and sustainability in the grazing systems of the high rainfall zone of southern Australia. The SGS programme was an initiative of MLA with the support of Land and Water Australia, NSW Agriculture, NRE Victoria, DAFWA, MDBC and the University of Melbourne and was supported by other agencies, sponsors and producers across the high rainfall zone of Australia. SGS successfully combined researchers, producers and extension agents into a partnership to improve the productivity, profitability and sustainability of high rainfall grazing systems. The programme involved more than 100 on-farm research sites and PROGRAZEÂ®, a grazing management course focused on achieving sustainable improvement in livestock and pasture production. The $30 million programme stimulated massive changes in grazing management practices by producers in the high rainfall zone of southern Australia. A recent report wraps up six years of research and development that tackled environmental problems such as salinity, soil acidity and weeds. SGS has now been completed and a project EverGraze operates in the southern high rain fall zone. EverGraze has just been expanded to include Australian Wool Innovation (AWI) and has an on farm goal of 3500 producers in southern Australia making changes to more profitable and sustainable systems – a dual goal of product and NRM(see also http://www.crcsalinity.com/programs/index.php?disptype=projects&id=7; *Pers. comm.. Cameron Allen, Meat and Livestock Australia, July 2007*).

## Intensive animal industries

### Dairy

Dairy Australia is committed to the Environmental Management Systems process through the roll out of its industry EMS tool, DairySAT (Dairy Self Assessment Tool). Over 1000 dairy farmers took part in the Dairy Australia "Dairying for Tomorrow: On the Ground EMS project" during 2005 -2007. All participating farmers completed the industry environmental self- assessment tool, DairySAT as part of the project. Over 80% of these farmers have implemented or are committed to implementing natural resource management (NRM) action plans. Outcomes for farmers have included:

- incentive funding for identified NRM priorities, eg effluent system upgrades, installation of laneways, nutrient mapping, waterway fencing and water troughs
- increased access to relevant technical support, either one on one or through workshops and group discussion
- improved understanding of the environmental issues on their farm.

Co-funding leveraged through the project has included $1m in cash and $2m in kind contributions. Through the funding provided by this project, all regions have been able to pilot NRM on-farm change programmes.

Some of these include:

- WestVic Focus Farms, which trialled regional focus farms as a mechanism for accelerating the rate of best practice NRM on dairy farms

- Farmer Targets for Change, DIDCO, which validated the Farmer Targets for Change workshop series in the Namoi CMA region. A different location from its origins in the Hunter Central Rivers CMA region

- Water and Nutrient Management, DairyTas, which Supported and tested on farm environmental management tools

- Darling Downs Young Farmers BizLink Project aimed at encouraging younger farmers to incorporate natural resource management into business planning

- GippsDairy - Linking Farm Management Targets with Catchment Condition Targets, which Piloted the Dairying Better'n'Better programme to test its validity in another state.

### *Where to next with Dairy Industry Environmental Management Systems?*

The completion of the Dairying for Tomorrow - On the Ground project does not signal the end of Dairy Australia's support for EMS. It was important seed funding that has established the impetus. At the regional level, industry EMS programmes are well supported by CMA, National Landcare and Natural Heritage Trust Programme funding. Indications to date suggest funding for programmes targeting 500- 600 farmers will be available in 2007-2008.

Dairy Australia has received additional funding for 2007-2008 to continue the project with a stronger focus on service providers and milk companies. Milk companies are increasing their level of involvement and interest in industry NRM programmes and are likely to be a key delivery platform in the future. For example, Murray Goulburn, Burra, Norco, Warrnambool Cheese and Butter, Bega and Parmalat are actively involved in the delivery and coordination of industry EMS programmes.

Dairy Australia is looking to expand DairySAT with additional material on managing climate risk and mitigating greenhouse emissions. Their perspective sees the importance of engaging dairy farmers at a systems level to encourage them to think about how they might manage climate shocks in the future. Dairy Australia has been working with AGO to look at thresholds for change where the industry is most vulnerable. The aim will be to begin by developing a simple climate document by region, so that dairy farmers can find out information relevant to their area. A second step may be to move into regional workshops, carrying out some modelling and scenario planning and aiming to engage dairy farmers in identifying strategic management options for their farm and their region.

The dairy approach is to incorporate the environment as part of general business management, engaging industry members in capacity building exercises to develop skills and understanding. The message from dairy farmers on EMS has largely been one of, not more paperwork, not another reporting requirement. At the farm scale, this has reconfirmed the industry position of beginning with an easy entry path via the Dairy Self Assessment Tool (DairySAT) as the nationally recognised first step on the platform to developing EMS in the dairy industry.

### *Other Dairy Industry NRM Projects*

At the industry level, EMS is one of a raft of projects under Dairying for Tomorrow, a major industry initiative managed by Dairy Australia. Other priority research and development areas are:

- water (availability and efficient use of water as well as the quality of water leaving farms)

- nutrients and soil (focus on nutrient losses of nitrogen and phosphate) and

- climate (managing climate risk and greenhouse gas mitigation).

Key projects include:

- Accounting for nutrients
  - a national nutrient accounting framework which is based on nutrient mapping, nutrient budgeting and assessment of nutrient loss pathways
- Sustainable Dairy Catchments
  - Sustainable Catchments programme is about helping farmers understand how farming and the environment interact
  - it emphasises that 'best practice' on farms can depend on the farmers objective and the nature of the local environment.

Collaborators include community and environmental groups, natural resource managers, researchers and farmers. The research relies on farmers being active partners; they are a critical part of both the research and 'practice change' efforts:

- Climate adaptation and mitigation, which will build broad awareness throughout the dairy industry of the nature and degree to which a dairy farming region/system is exposed to climate risk; either adversely or beneficially and the range of practical strategies available for proactively anticipating and adapting to these changes, specific activities include:
  - regional climate change information sheets
  - a region by region assessment of the likely impacts from a range of climate change and/or water availability scenarios
  - building confidence and resilience from a social perspective, in conjunction with analysis of farming system resilience
  - scenario analysis and foresighting - addressing the uncertainty associated with the extent of climate change and industry impact by using scenario planning/foresighting to explore the implications for a range of futures
- Sub-surface drip irrigation, whcich will assess the practical and economic feasibility of subsurface drip irrigation (SSD) on dairy farms
  - it will develop material about SSD irrigation on dairy farms for irrigators, irrigation service providers, and irrigation extension and policy programmes.

(Pers. comm.. Catherine Phelps, Program Manager NRM, Dairy Australia, 10th August 2007).

## Poultry

### *Poultry Cooperative Research Corporation*

The Poultry Cooperative Research Corporation has an environment programme, investigating improved management of poultry welfare and the environmental impact of poultry production. One aim is to objectively review the use of environmental management systems to drive change in the industry and improve environmental performance (see www.poultrycrc.com.au).

### Eggs (RIRDC)

The Australian Egg Corporation Ltd (AECL) received Round 2 Pathways to Industry EMS funds to implement a stepped project towards environmental assurance. AECL recently obtained Pathways to Sustainable Agriculture funds to further develop Sustainable Environmental Assurance for the

Australian Egg industry. This project involves managing production practices in the egg industry in a way that ensures environmental sustainability. AECL will identify critical operating regulations and consult with State regulatory authorities to ensure they are all understood, implemented and, where possible, exceeded. A whole-of-industry environmental code of practice was established, along with an expanded National Egg Quality Assurance Programme. Implementing the project will involve environmental training using specially developed tools. The Australian Government invested $372,050 in the project between 2004-05 and 2006-07.

AECL already had a voluntary national QA programme in place, which it promoted strongly. Industry recognises the need to demonstrate that their producers are operating to good standards, with Salmonella monitoring included as a health imperative. The aim was to add environmental issues to its national generic quality assurance (QA) programme that covers food safety, welfare, biosecurity and product labelling. The egg industry code of practice for managing the environmental includes improving bird welfare and bird performance and optimising the environmental and social impact of egg production (*Pers. comm.. Dr Irene Gorman, Australian Egg Corporation Limited,2006*

## Chicken Meat

The Australian Chicken Growers' Council (ACGC) received Round 2 Pathways to Industry EMS funds to roll out an EMS training package nationally. ACGC will carry out a national roll out of an industry-developed and recognised EMS training package, as well as developing and implementing an EMS certification/auditing system for the industry. The ACGC will promote the training package throughout the industry and tailor it so it meets the particular needs of different States. It will also link with catchment bodies, community groups and research and development organisations. The training will cover implementing the chicken meat industry EMS guidelines, certification/auditing systems for farms, and on-farm auditing of EMS once they are developed.

Environmentally speaking, the industry is undergoing a process of restructuring and is steadily moving its intensive production to larger, slightly more remote properties in order to gain efficiencies and also better manage its environmental impacts on neighbours and local communities. The industry has become increasingly aware of its responsibilities in many areas and due to the concentrated nature of its production, has to view the industry holistically. Therefore, it constantly reviews and upgrades in the areas of food safety, animal welfare, biosecurity and environment.

Through the Rural Industries Research and Development Corporation, ACGC and the ACMF developed a Draft Manual of Good Environmental Practice for the Chicken Meat Industry in 2001. Work has now progressed to the point that a generic Chicken Meat Industry training is ready for general release to growers. This package will be adapted for each state according to its particular situation. In this industry, EMS are being viewed as an important part of "farm management systems" that incorporate the earlier aspects of food safety, welfare and OHS in an holistic view. (*Contact: Gary Sansom, Australian Chicken Growers Council, 07 3837 4749, gary@qff.org.au*).

## Pigs

Australian Pork Ltd (APL) is the peak industry body for the pork industry conducting its Research and Development, Marketing and Policy activities. APL considers that intensive pork production has the potential to be among the most ecologically sustainable agricultural industries in Australia due to its natural advantages including: a small foot print; controlled waste management; and the potential to beneficially reuse agricultural by-products from a host of industries.

In August 2004, APL launched the National Environmental Guidelines for Piggeries. The guidelines provide an agreed framework for responsible environmental management of piggeries across the country. In 2007 APL initiated a new round of consultation with stakeholders to gain consensus on modifications for a new edition of the National Guidelines released in 2008/2009.

APL participated in the Federal Government's *Pathways to EMS* programme along with approximately 30% of the pork industry as measured by production. A number of EMS tools were developed including the Environmental Management Plan template, EMS standards and the *EnviroCheck* assessment for risk identification and determining conformance with the *National Guidelines*. These are supported by environmental training programmes.

APL appreciates that climate change will present substantial challenges to the Australian pork industry and indeed humanity. As a consequence, APL has devoted substantial effort to the issue and related topics in recent years both through its role as a research and development (R&D) funding body and as the peak advocacy body for the industry. Pork is already a "low carbon" protein source due to pig's high feed conversion ratio, by-production utilisation, and lack of enteric methane emissions. Hence, APL's research has focused on production and waste management systems that mitigate emissions or enable the utilisation of biogas as a renewable energy source. APL is currently working with key pork producers and the Federal Government's Methane to Market in an Agriculture programme to commercialise novel biogas capture and utilisation technologies nationally (*Pers. comm.. Bruce Edgerton, Australian Pork, July 2007*).

## Organic Industry

The National Standards for Organic and Biodynamic Produce are compliant with International Federation of Organic Agricultural Movements (IFOAM) standards, the EU organic standards and the Japanese organic standards. IFOAM has its own internationally recognised accreditation body, the IOAS (International Organic Accreditation Service), a member of the International Accreditation Federation (IAF).

The latest National Standard for Organic Certification (available on the AQIS website) came into force on January 1st 2004, after a 12 month implementation phase. Chapter 3.3 on Landscape Management and Biodiversity requires that farmers wishing to obtain organic certification must have an organic farm plan that sets out management actions for biodiversity, land wetlands, riparian zones, plus 5% of set-aside land for native vegetation (as non-productive, non-intensively grazed) to be achieved within 5 years of conversion. Standards for soil management are described in 3.4 while specific standards for water use and management are included in 3.5.

There have been some moves by the organic industry to seek "equivalence" with EMS. However, some serious gap analysis is required between the two systems and research into the potential for developing a framework for mutual recognition of common elements. Some of the procedures necessary to comply with organic standards are common to EMS certification. There are also potential parallels in marketing, product differentiation and product segregation, thus the organic industry can be instructive to the development of EMS (*Pers. comm.. Andre Leu and Liz Clay, Organic Federation of Australia, 10th July 2007*).

## Fisheries

Seafood industry businesses and organisations are setting up EMSs to improve – and demonstrate – good environmental performance and thus secure continued access to the natural resources upon which fisheries and aquaculture depend. In the process, they are increasing their profits and improving their relations with the community. There is a recognition that the future of the fishing industry increasingly depends on the industry's capacity to demonstrate its sustainable, responsible use of these resources.

A wide range of EMS-related projects have been taking place in the Australian seafood industry. Much of the work has been underpinned by a comprehensive approach to sustainability promoted through the development of a national framework for ecologically sustainable development (Chesson et al., 1998). EMS is widely promoted as a valuable tool for achieving improved sustainability.

A key driver in the fishing industries is the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) which requires export fisheries to be certified as 'ecologically sustainable'. Fisheries participate in the National ESD reference panel and continue work on ESD performance indicators (ecological, social, and economic). Market drivers include growing interest in eco-labels, such as those certified by the Marine Stewardship Council.

Five years ago, the notion that the Australian seafood industry would become a world leader in environmental management systems would have been considered far-fetched. Today, the industry's EMS leadership is widely acknowledged throughout the world and Australia. This achievement is testament to the inspiration and untiring effort of Seafood Services Australia Ltd staff and directors and the many people who have contributed their expertise and time to making EMS work. Prominent among them are the members of the six pilot groups who, by trial and error, showed the way ahead for seafood industry innovators. They have demystified EMS and have provided easily understood models specifically for the seafood industry.

The Fisheries Research and Development Corporation has built on long standing research and development investment in environmental management. Timely investment by the Australian Government, starting in 2003 with some $1.65 million of Natural Heritage Trust funding allocated through industry partnerships programmes (*EMS National Pilot and Pathways to Industry EMS)* led to the recent successful outcomes of the six pilot projects. The seafood industry, in turn, invested $3 million in-kind in these later two programmes.

Through these initiatives, lessons learnt by the seafood industry are being transmitted to other Australian primary industries, further increasing their effectiveness. It is highly satisfying that these collaborations between the Australian Government and industry enhance the future profitability and sustainability of primary industries and have been so successful.

Seafood Services Australia (SSA) has numerous *Seafood EMS Resources* for industry members including:

- Seafood EMS Chooser to choose the right environmental management system
- Seafood EMS Self-assessment and Training Manual to develop your EMS and put it into practice
- Seafood EMS Worksheets to help you to work through each EMS step
- Seafood EMS CD-ROM, an interactive programme that helps integrate goals for the environment, food safety and quality, OH&S, profitability and community relations into day-to-day business
- Seafood EMS Assessor's Guide which can be used by an EMS Assessor to judge your skills and knowledge against the EMS units of competency in the National Seafood Industry Training Package
- Seafood EMS Communication Kit so EMS achievements are recognised by the community
- Seafood EMS website (www.seafoodems.com.au) to bring new EMS resources and ideas
- Seafood EMS Recipes for Success which shares experiences of people in the Seafood EMS pilot groups
- Walking the Talk, Seafood EMS Case Studies which gives you more information if you need it
- Engagement of Stakeholders Studywhich helps you to decide on the best strategies with stakeholders.

Other organisations leading the way include Ocean Watch Australia Ltd. Oceanwatch is an environmental, non-government organisation sponsored by the commercial seafood industry to represent the environmental interests of industry with respect to protecting and restoring fish habitats, improving water quality and promoting sustainable fisheries. Oceanwatch's vision is to achieve sustainability in the seafood industry by improving aquatic habitats and commercial fishing activities, working with government, industry and the community through activism, education and advice.

SeaNet is an environmental fisheries extension programme to the Australian seafood industry. Through partnerships with fishers, researchers and managers, SeaNet facilitates the development and adoption of fishing gear, technology and methods aimed at minimising the catch of non-target species (by-catch) and improving the ecological sustainability of fishing (*Pers. comm.. Adam Knapp, Seafood Services Australia, 29th July 2007*).

## Forestry

### *Australian Forest Certification Scheme*

In August 2007, Standards Australia awarded full standard status to the Australian Forestry Standard, following an extensive three year review. The bar has been raised from the 2003 interim standard, with improvements to the 2007 Australian Forestry Standard including:

- broad-scale conversion of native forest to plantation or non-vegetation cover not allowed
- wider restrictions in the use of chemicals
- indigenous, social, economic and environmental factors recognised in forest management plans
- recognition that forests are part of wider array of land users within a catchment
- more comprehensive definitions of the forty requirements under nine criteria.

The Australian Forest Certification Scheme (AFCS) comprises the Australian Forestry Standard (AFS), the Chain of Custody Standard, JAS-ANZ accreditation programmes for both standards and accredited certification to the standards by independent, third-party certification bodies. The Australian Forestry Standard incorporates a criterion with a management systems approach based on an ISO 14001 EMS for independently certifying Australian forest management against a set of agreed criteria and requirements for sustainable forest management. The key aim is to be able to evaluate forest management performance against a set of social, economic, cultural and ecological sustainability criteria and requirements and use the continual improvement process provided by a systems approach to move towards ecologically sustainable forest management.

The Forest and Wood Products Research and Development Corporation (FWPRDC) has supported the development of the Australian Forestry Standard, recognising it as an appropriate national standard for the industry to use both domestically and in international markets. The Forestry Stewardship Council (FSC) also has interim standards delivered through FSC accredited certification bodies. Two independent studies (in 2002 and 2007) available on the FWPRDC website, compare the AFS with the FSC's principles and criteria (see http://www.fwprdc.org.au/menu.asp?id=36&lstReports=17 )

The Australian Forestry Standard has international recognition. The AFCS was endorsed in 2004 under the mutual recognition framework of the Programme for the Endorsement of Forest Certification schemes (PEFC) following an extensive evaluation process against the technical requirements of the PEFC. This stringent evaluation process assures the international acceptance of the AFCS in Australia's key wood and timber markets. Work will probably commence soon to establish a consumer brand for wood certified to the AFS. Australia is working with Japan and China and seeking to spread the PEFC through Asia and the sub-continent. Further information on the AFCS can be found at

www.forestrystandard.org.au (*Pers. comm.. Mark Edward , Australian Forest Stewardship Program, July 2006, updated from website*).

Deforestation is now the second greatest cause of greenhouse gas emissions after the burning of fossil fuels. In a Federal Government's High Level Meeting on Forests and Climate Change (July 2007), representatives from over 60 countries met in Sydney to discuss tactics on how to curtail deforestation in developing countries.

The **Standing Committee for Forestry** recommended that each State and Territory Forestry agency adopt ISO 14001 certified EMS. An EMS Sub-Committee formed to act as a network has facilitated the exchange of assistance and guidance between agencies. This network has no formal administrative function, but helps each agency learn from the experiences of the others. The networking is largely carried out via phone calls through the year, with an annual field trip associated with a meeting. Membership of the sub-committee is drawn from those individuals who have responsibility for developing the EMS within their agency. Of the seven State/Territory agencies, three have already achieved ISO 1400 certification. All agencies are working towards ISO 14001 certification, and most are also seeking additional certification to either the Australian Forestry Standard or the Forest Stewardship Council standards (*Pers. comm.. Steve Shaw, State Forests NSW, Chair EMS Sub-Committee, August 2006*).

The **Forestry and Wood Products Research Development Corporation** (FWPRDC) has not supported R&D on the development of EMS in forestry per se although through the Wood and Paper Industry Strategy it has supported R&D on sustainable forest management criteria and indicators. Nevertheless, by now most of the larger forestry enterprises in Australia have developed their own EMS and EMS is quite advanced in the forest sector in both public and private organisations. Most government forest agencies are now certified to ISO 14001 along with major companies such as Gunns (*Pers comm Glen Kile FWPRDC*).

**Forest Management Systems Network** exchanges information about progress on EMS and forest management certification implementation within the agencies jurisdictions. Of the seven State/Territory agencies, five have already achieved ISO 1400 certification. Most are also seeking certification to either the Australian Forestry Standard or the Forest Stewardship Council standards.

### *Greening Australia Ltd*

Greening Australia (GA) has an ambitious vision towards making Australia the first carbon neutral continent on the planet. The National Carbon Project ‘Breathe Easy’ provides an opportunity to work at the landscape scale, gain incentives from carbon offsets and help to achieve the transformations at the scale required to make a difference. It is a deliberate evolution towards working with communities and people willing to make change at the paddock scale.

Breathe Easy (www.breatheeasynow.com.au/html/index.php) has been set up to provide tips to people, industries and landholders on how to reduce their carbon emissions and then gain offsets. It is clear that its policy is reducing carbon emissions first then offsetting. Large companies can’t become carbon neutral overnight and they can’t reduce emissions to zero, so Breathe Easy is helping them achieve offsets to manage their carbon footprint.

GA is working with CMA’s to implement catchment management and regional investment strategies where possible. The Gondwana link is a showcase of this approach reconnecting 1000 km in the WA wheatbelt so that ecosystem function and biodiversity are restored and maintained.

GA is now integrated across Australia, with national databases for knowledge storage and exchange, and specific projects run from Canberra on natural resources. Private partnerships rather than traditional government funds are being used as a catalyst, so GA is not government funded. The GA audience is increasingly corporate business and land managers. This means working at the premium, expensive end of the carbon market, but buyers will know the benefits are restoring local provenance

vegetation managed for ecosystems function and biodiversity outcomes and that they are getting Kyoto compliant carbon offsets, and are not just 'planting trees' (*Pers. comm.. Christine Ellis, Greening Australia.25th July 2007cellis@greeningaustralia.org.au and CSIRO research on biodiversity benefits of NHT style vegetation enhancements* www.environment.gov.au/land/vegetation/benefits/index.html).

## Non Government Organisation (NGO) Involvement

### *Worldwide Fund for Nature*

World Wildlife Fund (WWF) participation in EMS and related initiatives in agriculture, includes the Australian Cotton BMP Program pilot (under the EMS National Pilot Program) that aims to develop a land and water module for the Cotton BMP; and the Murray Darling Basin Commission's Watermark - Environmental Stewardship Project. Through these and other initiatives WWF is seeking the development of voluntary initiatives in agriculture that contribute to broad scale improvement in environmental performance and practices in agriculture (*Pers. comm.. Andrew Rouse and Noel Ainsworth, World Wide Fund for Nature 07-3839 2677 nainsworth@wwf.org.au*).

### *Australian Conservation Foundation*

In June 2000, Southcorp entered into an alliance with the Australian Conservation Foundation (ACF) to focus on the issue of salinity and sustainable agriculture. ACF believes that businesses have a responsibility to ensure that their behaviour meets the community's expectations for a clean, healthy, productive and diverse environment for this and future generations. EMS is a tool that helps a business integrate environmental performance into its regular decision-making, but it does not necessarily deliver better performance. ACF's attitude to EMS is one of cautious optimism. "We know from experience that, in the right hands, good environmental wins *can* be achieved via an EMS but that it is only a very rough gauge of corporate sustainability" (Standards Australia - EMS and Getting on Track to Corporate Sustainability, *Pers. comm.. Corey Watts, Australian Conservation Foundation, (03) 9345 1123, c.watts@acfonline.org.au* http://www.southcorp.com.au/company/alliance.htm).

# 6. Environmental Management – State Trends

This section provides information on EMS Activity by State, incorporating activity by State governments and State Farmer Federations.

## National

National Farmer Federation (NFF's) Environmental Stewardship Program is fundamental to delivering sound, market-driven NRM to fund landholders in achieving environmental outcomes on their properties in line with community aspirations, via agreements between the landowner and the Government. 'Farmers: Australia's Environmental Stewards' won the Gold Award in the Public Affairs category for the NFF's campaign to see government and the community formally recognise farmers in going 'over and above their normal duty of care' in delivering environmental outcomes. Environmental Stewardship has been a NFF policy priority since 1998, but only secured widespread support over 2006-07 to be funded as a world-first under this year's Federal Budget (see www.farmersinfo.com.au/pages/news/newsdisplay.php?article=7090157).

On 6th December 2006, the NFF policy council voted to become part of the Australian Business Roundtable on Climate Change and joined calls for early action to tackle climate change, recognising the impact it will have on agriculture. Their timing coincided with the release of the State of the Environment report, which confirmed that Australia's greenhouse gas emissions are set to rise by 22 per cent by 2020. The report also confirms there has been five years of lower than average rainfall across most of eastern Australia and that Perth's water supply catchments are yielding half as much water as they did in the 70s.

**Table 1. Some state based activities (updated from Rowland *et al.* Australia 2 paper 2005)**

| Jurisdiction | Industry Name of program/ or policy | Type of activity |
|---|---|---|
| Queensland | Property Management Systems Initiative and Farm Management Systems | Government/industry MOU on accrediting FMS as meeting specific property level requirements. |
| Western Australia | Farming for the Future | Audit and Certification of sustainable agriculture |
| Victoria | EMS in Victorian Agriculture | Government/industry EMS partnership |
| New South Wales | Property Vegetation and Management Plans, Farm Plan, use of EMS amongst a range of industry groups and individual businesses, Environmental Services Scheme | Agreed plans to meet vegetation conservation aims, enhanced business planning skills + EMS on specific sites |
| South Australia | State NRM Plan under a new NRM Act, and the release of Environmental Legislation relevant to primary producers | Coordinated NRM planning, and provision of ready info on environmental regulations |
| Tasmania | Strategic Framework for Property Management Systems, FarmSat | Best Practice Management, self assessment |

## Victoria

Victoria is playing a strong role in the further development of environmental management and stewardship approaches in Australia, at the State and national level. Early establishment of an EMS Policy Group in Victoria, involving government and the Victorian Farmers Federation (VFF) helped coordinate EMS activity. Nevertheless, the list of projects and programs given below is another example of diversity in action.

*An Action Plan for Adoption of EMS in Victorian Agriculture*, June 2003, formed the basis for achieving widespread understanding and implementation of EMS underpinned by good science, communication, training and cooperation of stakeholders. All State agencies are now required to implement an EMS. The North East CMA stated at the ALMS Green Dollars Forum, Canberra, May 2, 2007 that the receipt of funds for on-ground works by farmers will be tied to the use of EMS in an initiative to be phased in over the next 5 years.

The Victorian Farmers' Federation feels EMS is good direction that will take time and it is in the long term interest of Victorian farmers to pursue EMS and related approaches to NRM and sustainability, rather than expect overnight change. The VFF 2003 Action Plan effectively became a Pathways to Industry EMS project that has just been completed (see below). The VFF 2001 position statement on EMS is still relevant:

- EMS should be implemented in an overall framework ensuring minimal duplication and a common approach across industries and catchments
- farmers should be encouraged to participate at the level they feel comfortable
- VFF should encourage participation by providing credibility to the program
- VFF should encourage a consistent approach by government, CMA's, industry groups and agribusiness
- farmers' should be encouraged to address environmental management objectives relevant to their region and industry
- EMS needs to be realistic and address real needs
- farmers must have ready access to relevant tools, advice and strategies (supplemented by financial incentives in some cases)
- Catchment Management Authorities must provide practical low cost techniques for measuring outcomes
- VFF should ensure that EMS is not used as quasi-regulation.

Californian Governor Arnold Schwarznegger recently signed a Memorandum of Understanding (MOU) with Victorian Premier focussed on climate change, and it is likely that the experience of the Sustainable Silicon Valley project (using EMS on a regional basis to address environmental issues, predominantly greenhouse gas emissions) will be drawn on to further the development of responsible environmental management. Governor Schwarzenegger has 'rediscovered' the Californian EPA program, and mandated that similar approaches are to be applied across California.

EMS will have a funded future in Victoria. Commonwealth funding from the Pathways to Sustainable Agriculture program provides interim funds before NHT3 is up and running, clear that at least some EMS projects will be funded. More involvement from CMAs and their equivalents is being sought.

Climate change in a nutshell – the Victorian Farmers Federation representative who currently holds the Chair of NFF's environment committee, supports climate change initiatives and early action. VFF has had links and discussions with greenhouse office on climate change for a while (*Pers. comm.. Greg Smith, Victorian Farmers Federation, August 2007 and DPI website* http://www.dpi.vic.gov.au/dpi/nrensr.nsf/LinkView/9568C9E45AFE6578CA256FC6001F7EDB61726F7A0F760A89CA256FC6001F02F8).

Major projects underway include:

**Streamline Property Management Systems** – funded for four years under the 'Provincial Rural Victoria Initiative' to provide farmers with better access to market and environmental drivers by linking on-farm activity to industry certification standards and NRM incentives. This project focuses on the institutional aspects of land-use planning processes and policy using PMS to reduce the regulatory burden on farmers/land managers, with PMS including both the environmental and business management components and integrating EMS, Quality Assurance schemes, Occupational Health & Safety, biosecurity and animal welfare.

**eFarmer - A web-based farm and catchment planning tool** – funded by Victorian and Commonwealth monies in collaboration with Victorian Catchment Management Authorities to trial the web-based application 'eFarmer' in 4 contrasting catchments across Victoria, utilising the valuable feedback from land managers and catchment planning staff.

**EMS – Connecting Farms to Catchments and Land Managers to Ecosystems** funded for four years by Victorian DPI Program to substantiate the ability of EMS to deliver natural resource management outcomes on farm and at the catchment scale in Victoria. The project aims to develop coordinate Victorian EMS efforts and evaluate the ability of EMS to achieve NRM catchment targets and to deliver EMS through appropriate pathways, including training of EMS facilitators. The project also allows regions to report on voluntary activities completed that contribute to natural resource management outcomes of the whole catchment.

**VFF-led, Co-operative Action on Environmental Awareness and EMS** – funded by the Victorian Farmers Federation (representing 23,000 farmers) to continue on the work funded by the Pathways to Industry EMS Program. The project will train and assist 4,000 farmers to achieve EMS stage 1 (self assessment of current environmental management on their farms); 2,000 farmers to achieve EMS stage 2 (development and commencement of action plans based on priority issues identified in stage 1); provide a 'farmer friendly' information service about environmental management legislation, develop methodology to relate regional catchment strategies to environmental management targets for farmers and establish a recognition system for farmers adopting a system of demonstrating environmental assurance.

**Gippsland EMS Environmental Best Management Practices -** In 2000-2001, the Victorian DPI in the Glenelg-Hopkins and Corangamite regions worked with local landholders to develop the Environmental Best Management Practices (EBMP) approach, which introduces and links farmers to the plan, do, check, review process used in the EMS cycle through self-assessment results and action planning targets. More than 700 landholders have participated to date, with 800 EBMP self-assessment and action planning workbooks sold to groups throughout Australia. In July 2005, DPI, Glenelg-Hopkins CMA and VFF joined forces to deliver a EBMP program over three years, assisting past participants to review their plans and receive technical support for on-farm works. It also enables 200 new properties to participate in EBMP during each year of the program, with a greater emphasis on follow-up support through on-farm days and the use of monitoring and assessment tools.

**Corangamite -** A joint program to implement the actions specified in fourteen Local Area Action Plans (LAAP) developed in 2004 with 200 landholders in the Corangamite Region. Over the next three years the National Landcare Program, Corangamite CMA and DPI will support the existing 14 LAAP and the development of five new LAAP to provide participants with the opportunity to implement

actions specified. The project links landholder learning and support needs, for practice change towards more sustainable production, identified in the previous project with the priority actions of the RCS and sub strategies and regionally available support / incentive programs to achieve on-ground practice change.

**Linking On-Farm EMS with Catchment Targets - A Farmer-Catchment-Government Partnership in Victoria –** funded by a partnership between three Catchment Management Authorities (North Central, North East and Glenelg Hopkins), DPI, DSE, the VFF and participating farmers. The project builds on the GRDC Riverina EMS Project and an EMS package tailored for dryland cropping/livestock farms, using EMS as a process tool and adult education to communicate principles of a sustainable farming system to farmers. There is a strong emphasis on incorporating environmental monitoring. The synergy and relevance between on-farm EMS and regional targets currently being developed in Regional Catchment Strategies will be tested on farms (with 9 farmer groups) in the 3 CMA regions.

**Mallee EMS –** initiated by the Mallee Catchment Management Authority to identify and target higher priority areas and activities under the Regional Catchment strategy, DPI regional services staff, with assistance of a community based steering committee, produced a Whole-farm-assessment and action-planning tool to improve environmental performance. The project has been specifically tailored to meet the requirements of dryland farmers in the Mallee and will support regional biodiversity protection and management priorities at a farm scale through the integration of dryland programs.

## North Central Catchment Management Authority

Dairy farmers in East Gippsland are involved in a project using eFARMER, as part of a regional CMA leadership program across 5 of 8 CMAs across Victoria (West Gippsland, North East, North Central, Glenelg Hopkins, and Corangmite).

A custom built eFarmer application was run for 12 months, and tested rigorously with farmer groups (60 people) in four regions of Victoria. Together the regions had 1-2 extension officers per group and a catchment planner – all testing usability of the application. Since then version 2 has been developed based on the feedback and a project using E farmer established.

The AVC project was a partnership between the North Central Catchment Management Authority, the Department of Primary Industries (DPI) and the Australian Landcare Management Systems (ALMS) group. The project was based on the recognition that delivery of EMS is more successful with the use of locally relevant production and environmental monitoring tools. Also, there is a great deal of information/data collected by landholders and agencies, requiring more efficient ways to manage this information at the farm and catchment scale.

Major project achievements included delivery of a suite of 16 environmental and production monitoring tools made available on the web (see www.dpi.vic.gov.au/science/ems) and all of the stages of development to produce a working prototype of eFARMER. This web-based system offers an exciting opportunity to provide spatial information to landholders to make them more aware of impacts beyond the farm. It is also an innovative way to measure progress towards catchment targets, ultimately making CMA monitoring and reporting processes more effective.

Some progress has been made with monitoring and evaluation, but it is still a challenge unless spatially collected and displayed Ground information on soils and vegetation data are available, it is hard to make a case that improvements are occurring.

Major recommendations regarding the future development and implementation of tools (monitoring and spatial information systems) for natural resource management are:

- benefits or incentives should be made available where data collection has a public benefit

  - landholders will not collect environmental information for its own sake

- promote monitoring tools to nationally, emphasising that the tools can be used as stand-alone educational products

- provide the monitoring tools web link to other State NRM agencies so they can use the tools into their own websites or provide weblinks to the DPI site

- DAFF needs to decide whether it will actively promote monitoring tools. If so, and if demand is created, consideration needs to be given to funding their adaptation for different agro-climatic zones

- provide additional support to Victoria to facilitate roll-out of spatial information management systems

  - note that eFarmer is now being trialed and evaluated across 4 CMA regions with land managers

  - assuming it is successful, a partnership approach with Victoria would be useful to encourage its full development

  - DAFF would also then have better access to resource condition information

- assess whether there is interest from other states for sharing spatial data and providing such to land managers

  - if so, DAFF can provide useful input as to the considerations needed to develop such systems based on the guidelines developed in this project.

*(Pers. comm.. Geoff Park, North Central CMA Victoria, July 2007).*

# Queensland

## Property management systems

Under its Property Management Systems Initiative (PSMI), the Queensland Department of Primary Industry and Fisheries (DPI&F) will allocate up to 20 officers over three years to promote the uptake of property management systems and related practices on farms throughout Queensland. A property management system (PMS) is an umbrella term for voluntary planning, monitoring and reporting processes at the enterprise scale, using a systematic approach. This approach is based on a *Plan, Do, Check, Review* continuous improvement cycle, which is also consistent with international standards for quality assurance (QA), occupational health and safety (OH&S), food safety, and environmental management systems (EMS). The PMSI focuses industry effort at the property scale, but will be consistent with broader objectives at industry, landscape, catchment/regional, state and national scales.

Primary producers can use this universal approach for a variety of purposes, including:

- strategic business planning and risk management

- increasing the profitability of their business

- demonstrating sustainability and environmental stewardship

- applying information and technologies sourced from industry best management practice (BMP) programs

- addressing the priorities of regional natural resource management bodies
- demonstrating compliance with market standards and regulatory requirements.

## Queensland's Blueprint for the Bush

The PMSI is part of the State Government's Blueprint for the Bush, a 10-year plan to build a sustainable, liveable and prosperous rural Queensland. It also assists the State Government meet its commitments under the memorandum of understanding with the Queensland Farmers' Federation (QFF) on farm management systems (FMS), and the Reef Water Quality Protection Plan.

*Blueprint for the Bush* began in February 2005 as a 10-year plan to build a strong rural Queensland of sustainable, liveable and prosperous communities. One fundamental leap forward was setting out concepts for managing extensive areas across Queensland and intensive enterprises under "One Plan", with the main aim of simplifying the pathway to understanding regulatory requirements at the property level and to reduce duplication. These days a basic property level plan produced by a landholder should, in theory, meet a range of requirements for different agencies. In practice, in Queensland as elsewhere, such laudable aims are easier said than done.

There is support for Integrated Area Wide management, including ownership of monitoring links to catchments. This approach has been successful in the Fitzroy Basin and there's been an effort to roll it out across a wider area of SW Queensland. First funding was complete at the end of June 2007. Learning from that project should be available soon after that, eg water use efficiency gains etc (*Pers. comm.. Bill Wilkinson in Emerald, Tel 07-4987 9308* william.wilkinson@nrm.qld.gov.au).

### OnePlan to make planning easier

A total of $3 million has been allocated to roll out OnePlan over the four years, including $640,000 in 2006–07. Its aim is to make it easier for rural landholders to prepare property management plans that are required by various government agencies. OnePlan is a framework that coordinates property planning. It provides Queensland landholders with a consistent approach to preparing property plans for vegetation management, land and water management, cultural heritage, environmental and wildlife management. OnePlan consists of a series of regulatory and voluntary modules, which are being developed in consultation with peak industry groups – QFF and its member organisations, AgForce, Greening Australia, representatives from the Regional Groups' Collective and the Australian Landcare Management System program. Combinations of these modules can be used by landholders to meet their specific regulatory needs or resource management issues.

The first modules were completed by the end of July 07, covering non-regulatory topics including:

- property details (NRMW)
- property plan base map (NRMW)
- property resource management for grazing enterprises (NRMW)
- property pest management (NRMW)
- financial and business considerations (QRAA)
- resource management concessional funding (QRAA).

Module information will be progressively made available in electronic form via the NRMW website, the Information Queensland Atlas project, and eventually the Government Gateway (www.qld.gov.au). Other modules expected to be introduced later include NRMW vegetation topics such as ongoing

vegetation management, material change of use and reconfiguration of lots as well as land and water management and land management plans. A wildlife management module will be developed by EPA, which is also preparing a site-based management topic with DPI&F, and cultural heritage guidelines with the Department of Natural Resource, Mining and Water (NRMW) (*Gary Sansom, President, Queensland Farmers' Federation*).

A *Queensland Climate Change Centre of Excellence* (QCCCE) was established in early 2007 and run as a specialist unit within the Department of Natural Resources and Water. The aim of the centre is to coordinate science and policy to assist Queensland to adapt to and mitigate climate change. In general, its role is to provide information and advice on the impacts of emissions on climate, and how climate change could affect the environment, water and energy sustainability, and future infrastructure, urban and regional planning. One of its first key activities is coordination of the State's *Climate Smart Adaptation* action plan.

QFF has been actively engaged with State and Federal agencies about adapting to climate change and increased climate variability. A key aspect of the QFF approach is the development of risk management decision tools for incorporation into Farm Management Systems. The development of such tools need to be based soundly on climate models that can capture regional, industry and short to medium term scenarios and this remains a priority for QFF in interaction with research bodies (*Pers. comm.. John Cherry, Chief Executive Officer, QFF 23rd July 07*).

Various industry groups (eg. the Traprock Wool Association and the EcoBanana 'Red tip" group) continue to operate outside the PMS/FMS framework. A number of Australian Landcare Managemetn System (ALMS) groups have also been established in Queensland. The Queensland Murray Darling Committee group has done a lot of work with farmers using ALMS to develop on-farm EMS. Queensland Murray Darling Basin Committee (QMDBC) is working alongside ALMS to promote the concept of a national certification system for agriculture. Queensland has also been engaged in the development of the Farm/Property Management Systems with strong support from the QFF to develop a range of 'accredited' PMS/FMS approaches amongst different industries. A difficulty created by this approach is the lack of consistency between the PMS/FMS approaches, compounded by little equivalence between the 'accreditation' processes (*Pers. comm.. Don Cowan and Don Bigby, Director Natural Resources Sciences 07-3896 9449/3896 9523*).

## South Australia

Property Management System (PMP) strategy in South Australia is implemented through the PMP approach that covers all of the elements of PMS/ EMS except the need for system improvement cycle. This strategy is promoted by Primary Industries and Resources SA (PIRSA) and Department of Water, Land and Biodiversity Conservation, largely through the Farmbiz program.

Considerable work is taking place within the wine industry, with many major players already using EMS in winery operations, slowly filtering down to vineyards. Prue Henschke is one of the key advocates. The Commonwealth "*Pathways to Industry Environmental Management Systems Program*" includes the *Australian Wine Industry Stewardship Program* with a large component in SA. Growers are currently trialing Spray Diary inserts as an environmental monitoring and recording process. Fruit producers and fishers are others in SA using EMS. However there is little PIRSA engagement in EMS support, other than provision of EMS auditing services to the pork industry.

South Australia has established the *Natural Resources Management Act 2004,* which lays the foundation for integrated, sustainable property and land management. Under the Act, the *State Natural Resources Management Plan 2006* seeks sustainable development through integrated approaches and management systems. Goal 2 of the Plan aims to establish "Prosperous communities and industries using and managing natural resources within ecologically sustainable limits". It recognises that "environmental management systems, property planning and land management agreements are tools that can be used to improve land management." Under Milestone 2.1 "by 2020 sustainable natural-

resources based industries will deliver multiple outcomes" and support strategy 2.1.4: "Develop and promote a range of tools for sustainable land management that suit the range of agribusinesses in South Australia, from family-run farms to large, vertically integrated industries." (see www.dwlbc.sa.gov.au/nrm/nrmplan/state_nrm_plan.html).

The South Australian *Native Vegetation Management Regulations 2003* were amended in February 2006 to provide, among other things, a new mechanism for landowners to be able to manage regrowth on their properties. The new regulation provides that landowners may clear native vegetation that has grown for more than 5 years (the previous limit) on land consistently used for agriculture, subject to the works being undertaken in accordance with a Management Plan prepared by the landowner and approved by the Native Vegetation Council.

The Native Vegetation Act requires the Council to ensure that a "*Significant Environmental Benefit*" is achieved where the Native Vegetation Council grants consent to the clearance of native vegetation. Depending on the property involved, that benefit may be established by the fencing, de-stocking and management of remnant bushland on the property, or encouraging natural regeneration within previously disturbed areas of native vegetation or the revegetation of cleared areas - in consultation with landowners.

Climate Change has emerged as a driver for property management systems. The South Australian *Climate Change and Greenhouse Emissions Reduction Act 2007* became law on 3 July 2007, the nation's first legislative targets to reduce greenhouse emissions. The SA Greenhouse Strategy and the Government Greenhouse Action Plan indicate the need for new management approaches to respond to new conditions, both to provide a defence against climatic threats and to position primary producers to take advantage of new opportunities presented by the environment and expected market repositioning.

Three Commonwealth-funded EMS Pilot Projects in SA are now completed:

- The Mount Lofty Ranges watershed EMS project (Apple & Pear Growers' Association of South Australia, Adelaide Hills Wine Region, Cherry Growers of SA)
- Seafood EMS framework (Seafood Services Australia)
- ALMS EMS Pilot Trial (Australian Landcare Management System Ltd).

Private consultants in SA currently provide services to landholders that reflect a holistic approach to managing business, social and environmental aspects of farm enterprise, incorporating aspects of Property Management Systems, EMS and PMP. There is also a growing interest in the trade-offs between regrowth management plans and resource access to land previously cleared (*Pers. comm.. Elliot Dwyer, Greg Cock, Primary Industries and Resources SA – 7th August 2006, Dr Nigel Long, South Australian Farmers' Federation 22nd September 2007*).

## Western Australia

Farming for the Future is a Department of Agriculture and Food initiative that is developing farm sustainability practice standards to assist industry meet demands to demonstrate sustainable practice. A self assessment tool based on current recommended practices has been made available to farmers. The Department is now working with industries and representatives of the supply chain to further refine this, and related tools, to meet their particular needs. An annual telephone survey conducted by the department asked the question: 'Have you used a Quality Assurance, Environmental Management System or Code of Practice to guide your management decisions?' In 2006, just over one-third (35%) of farmers undertook a formal assessment, which was marginally higher than the 31% in 2005 (Department of Agriculture and Food, 2006b). Surveys indicate that the farmer participation rate was nearly double for farms in high rainfall areas compared to those in lower rainfall areas. Further refinement of the question is needed to reflect more clearly the intent of this indicator (see Towards

Sustainability: State of the Environment Report Western Australia 2007, found at www.soe.wa.gov.au/report/towards-sustainability/agriculture.html.

Since 1998, the State of the Environment (SOE) report reports a substantial increase in participation in management systems that identify and manage the environmental impacts of the farm business and improve production efficiencies. Such approaches including environmental management systems, various industry codes of practice and relevant quality assurance systems include tools such as best management practices, the development of property management plans, hazard analysis and critical control points. While there are no long-term measures of the rate of involvement, recent surveys show that 35% of farmers in the surveyed sample participated in a systematic assessment of their management practices (Department of Agriculture and Food, 2006b).

In round 3 of the pathways project Western Australian Farmers Federation (WA Farmers Federation) was funded to carry out a Situation Analysis for Whole of Farm EMS. This project was designed to help boost industry sustainability and profitability, and improve links with research and development organisations, the NRM model and government. The WA Farmers Federation assessed current EMS models, engaged key stakeholders, evaluated opportunities and gauged community response to EMS. In the latest round of Pathways to Sustainable Agriculture Program, Curtin University has been awarded funds for a project entitled 'Improving Western Australia's Environmental Performance: a systems approach to sustainable farm practice'.

The Pastoralists and Graziers Association also received Pathways funding to extend EMS approaches to Western Australian pastoral land management. This builds on the 2003 investment in the Centralian Land Management Association (CLMA), which was established as a land management group in the Northern Territory 14 years ago. In this earlier project, the CLMA developed and implemented EMS on 15 cattle properties and assessed the system's value in terms of improved business and environmental outcomes. The pilot also identified EMS tools and approaches that are suited to pastoral enterprises in arid environments.

Previously the most active WA groups in EMS development have been the Best Farms group in the south-west (described earlier), and the Minginew Irwin groups (MIG). Both have used the ISO 14001 approach, and work in groups to take farmers through the EMS process. The MIG have ensured market access through their work, and have successfully integrated EMS and QA processes.

WA does not yet have a Climate Change Adaptation Strategy. However the recent WA SOE report recommends one is developed for agriculture in a partnership between relevant government and non-government organisations. This would include alternative farming systems that enable adaptation to climate change and promote sustainable industries and technologies that are profitable as well as environmentally beneficial, such as bio-fuels or carbon sequestration.

## New South Wales

Increased State agency involvement in environmental management is expected from all agencies. Energy, Water, and Waste Programs are being tightened and all agencies will be expected to contribute. The Government Energy Management Policy (GEMP) committed state-wide total energy consumption to a 25% reduction in the 2005/2006 period (based on 1995/1996) levels. Agencies must now purchase at least 6% accredited Green Power. Greenhouse gas emissions from fleet vehicles must be reduced by 20% by 2007/2008 (based on 2004/2005 performance).

NSW DPI will be further developing EMS, both internally and for external clients. Five research stations are currently trialling the ALMS approach to EMS with its associated software, myEMS, although station managers are finding it challenging to find the time for input into this system, highlighting the need for on-going support and resourcing.

NSW DPI continues to provide support for all farmers in NSW who wish to develop an EMS, via one full-time permanent staff member. Almost all past work on EMS has been funded by RDCs to work with industry groups. This source however has been substantially reduced, with DAFF limiting access to EMS Pathways funds to industry groups and community/catchment groups. NSW DPI has recently been working with insurance company CGU and the Department of Environment to develop a climate change 'environmental risk radar' for 5 industry groups. At CGU's request, this work is now being extended to cover all states and Territories. The work of NSW DPI in leading EMS research, development and extension is still highly regarded and seen as seminal for EMS development in Australia. (*Pers. comm.. Genevieve Carruthers, NSW Agriculture Environmental Systems Specialist, May 2007*).

The Natural Resources Commission (2005) of NSW developed a Standard for Quality Natural Resource Management, designed to be 'outcomes focussed' as a tool for improving NRM. It consists of 7 components, each with its mandatory 'required outcome' defining the quality of the nrm practice to be achieved, voluntary 'guidance' on how to achieve it and the 'evidence requirements' expected by an auditor to demonstrate the required outcome is being achieved. While generally applicable at state, regional, catchment, local and property levels, it is specifically the design and implementation of Catchment Action Plans by Catchment Management Authorities that must comply with this Standard (under the *Catchment Management Authorities Act 2003* and the *Natural Resources Commission Act 2003).*

Ridley, Paramore and Seymour (2006) used a group learning approach with 12 farmers to develop and test an EMS from the 'ground up' in the southern Riverina of NSW where major environmental problems included water logging, salinity and remnant vegetation decline. A self-assessment questionnaire on nine areas of farm management allowed farmers to identify areas for improvement. Monitoring tools were designed to assist in water and remnant vegetation management, enabling calculation of the amount of perennials needed in rotation to minimise leakage on farm, on a farm or paddock basis. Remnant vegetation tools allowed farmers to readily assess the condition and quality of existing remnants and identify management actions for improvement.

## Northern Territory

Landcare investments in the Northern Territory, under the Community Support component include:

- developing environmental management systems in the Victoria River district ($11,250, 2003-04)
  - introducing the concept of an EMS to local 'champions' through a seminar and training session
  - this will facilitate greater adoption of best management practices in the region
- best practice for sustainable land use in the Northern Territory ($118,333, 2004-05; $119,565, 2005-06; $119,565, 2006-07) -
  - increasing the Northern Territory horticultural industry's use of sustainable horticulture/agriculture practices by developing Best Practice Guidelines, for the region and industry
- progressing the grazing land management (GLM) movement ($97,640, 2007-08)
  - pastoralists in the NT will implement the Grazing Land Management (GLM) plans they designed during workshops
  - this project will ensure that current and future GLM graduates will continue to apply their property management plans and will culminate in a GLM Exchange—an opportunity for those involved in GLM to share experiences and showcase outcomes

- Northern Territory's seafood industry has developed Environmental Management Systems (EMS) for eight wildcatch fisheries (aquarium, demersal, finfish trawl, mud crab, offshore net and line, Spanish mackerel, timor reef and trepang fisheries)
  - the EMS include codes of conduct and practice, guidelines for interactions with protected species, risk assessments, objectives, strategies and performance indicators
  - participants in each of the fisheries have taken ownership of the process from day one
  - the Northern Territory Seafood council employed an environmental project officer to develop the code of practice and wider EMS.

## Tasmania

A Vision for a PMS Framework for Tasmania (TFGA 2007) was produced by TFGA as part of the FarmRIGHT project with funding support from the National Heritage Trust via the three Tasmanian regional Natural Resource Management bodies; NRM South, NRM North and Cradle Coast NRM. This is seen as a strategic Framework for Property Management Systems in Tasmania, supporting the voluntary adoption of property planning programs that provides a systematic approach to managing farming and other land use practices to maximise environmental values and farm profitability.

The TFGA's FarmRIGHT project is examining 'policy, structural and resourcing issues' to develop a State-wide framework for Property Management Systems (PMS). An interim set of PMS Framework Standards and Guidebook to support the PMS Framework have been developed and circulated for comment. An implementation plan has been developed for the next stage of the PMS Framework development. If successful the project would aim to increase the involvement of NRM Regions and industry organisations/companies in this approach.

Funded by the Natural Heritage Trust via the Department of Environment & Heritage, TFGA has also begun a 12 month *Communication Strategy for Tasmanian Farmers on Environmental Legislation,* to improve the effectiveness of communication on environmental management issues. The project will focus on developing an Environmental Legislation Guide for Farmers, minimizing 'red tape' on native vegetation and improving overall communication.

Market premiums still seem to be the major focus, but a growing pressure from export markets to address environmental and social issues is translating into on-farm action. Tasmanian producers, exporters and government were working cooperatively to develop an eco-label backed by an independent audit of agreed elements, but this has not progressed, although TFGA has discussions underway to investigate the potential of a sustainability food brand for Tasmania underpinned by PMS Framework Standards.

**FarmSAT – Environmental Practices Self Assessment for Tasmanian Agriculture:** TFGA applied for a project to the Pathways to Industry EMS Program to fund the roll-out of FarmSAT for a further 2-years. The project is run by the TFGA and managed by Tasmanian Quality Assured. FarmSAT is the AWIS tool for Tasmania and one aim of the project is to gauge interest in AWIS from all viticulturalists and wine makers in Tasmania. Liaison is underway with Dairy Tasmania regarding the delivery of DairySAT to participants in the DairyTAS effluent project. Work is underway to develop an interactive *Electronic* version of the *FarmSAT* tool.

Farmer groups have been using the principles of Best Practice Management to address environmental issues of sustainability. The project aims to assess the use of best practice principles to assess the sustainability of an agricultural system and develop environmental benchmarks. The Tasmanian Department of Primary Industries, Water and Environment received Natural Heritage Trust funding to develop a manual, entitled Six Steps to Better Farming Practices, addressing processes and practices for groups to address local environmental issues (Bond et al., 2003). This does not mention EMS per

se but incorporates many of the elements required. It is a manual for groups and facilitators, leading them through 6 step process (situation analysis, impact analysis, action design, acting and monitoring, assessment review, reflecting and adapting) and encouraging group action to tackle environmental problems (*Pers. comm.. Christine Kershaw, NRM Policy Officer (Property Planning), Tasmanian Farmers and Graziers Association, July 2007*, see www.dpiwe.tas.gov).

# 7. Federal Government EMS Support

The Australian Government is committed to 'assisting industry and farmers adopt more profitable and sustainable farming practices, improve environmental outcomes and demonstrate environmental stewardship'. A total of $24.1 million has been spent since 2003 ($8.5 million on 15 pilots in 2003, $11.7 million to 19 peak industry bodies, research and development corporations and state farming organisations under Pathways to Industry EMS program and another $3.9 recently committed to regional and industry leaders under the Pathways to Sustainable Agriculture program).

Senator Troeth, in a 2004 press release, stated the Pathways program was helping primary industries by "enabling industry-led initiatives in EMS or environmental assurance" and funding workshops to help industries "develop their own priorities and pathways toward adopting EMS; and more importantly, funding and support to help them implement those on the farm" (see http://www.psmaff.gov.au/releases/04/04035t.html).

A number of different approaches to "EMS" have been adopted across the Pilot and Pathways projects in response to different industry, catchment, regulatory and community priorities, either building from scratch or building on existing environmental or QA programs. Some of these different approaches include:

- commitment to developing a fully-fledged EMS consistent with ISO 14001 but not necessarily audited or certified to the international standard.
- invention of a 'partial EMS' whether or not the latter has either credibility or robustness
- Formalised staged approach, with recognition sought for achieving discrete stages or stepping stones (eg the tiered system promoted by the Grains Industry and GRDC)
- linking recognised catchment targets within on-farm EMS
- integration with other industry QA or environmental assurance programs, whether they are codes of practice, best management practices or self-assessment tools.

## EMS Pathways to Sustainable Agriculture Program

In February 2007, the Hon. Sussan Ley MP, Parliamentary Secretary to the Minister for Agriculture, Fisheries and Forestry, announced funding of $3.9 million to establish partnerships with industry and regions to contribute to the following outcomes:

- increase the adoption of self-sustaining profitable and sustainable farming practices
- enhance sustainable agriculture and environmental outcomes
- enable producers to demonstrate environmental credentials to domestic and international markets.

The Australian Government is seeking partnerships with industries and associated research organisations, and NAP/NHT Regional bodies to develop their capacity to provide leadership and sustained support that will lead to the broad uptake of EMS approaches in Australian agriculture. Funding will be provided under two categories ($1million for regional leadership and $2.9million for industry leadership), generally capped at $300,000 per successful application (*Pers. comm.. Megan Scott: (02) 6272 4531 megan.scott@daff.gov.au*).

## Pathways to Industry EMS Program

The Pathways to Industry Environmental Management Systems (EMS) Program (see Appendix 3) was a partnership between industry and government to develop and implement EMS and / or Environmental Assurance to achieve three key outcomes:

- the adoption of profitable and sustainable farming practices
- improved natural resource management and environmental outcomes
- an ability to demonstrate environmental stewardship and responsible management of ecosystems to communities and markets (if needed).

### Pathways to Industry EMS program funding in rounds to date

In Round One, a total of $5.2 million was allocated to:

- Cotton Research and Development Corporation (cotton)
- Dairy Australia (dairy)
- Horticulture Australia Ltd (horticulture)
- Australian Pork Ltd (pork)
- Seafood Services Australia (seafood)
- Sugar Research and Development Corporation in partnership with Canegrowers (sugar).

In Round Two, a total of $3.5 million was allocated to:

- Australian Chicken Growers Council (chicken meat)
- Australian Egg Corporation Ltd (egg)
- Meat and Livestock Australia (red meat)
- Ricegrowers' Association of Australia (rice)
- Winemakers Federation of Australia (wine)
- Victorian Farmers Federation (VFF)
- WA Farmers (WAFarmers).

In Round Three, a total of $3 million was allocated to:

- Grains Council of Australia (grains)
- Meat and Livestock Australia (red meat)
- Queensland Farmers Federation (QFF)
- Tasmanian Farmers and Graziers Association (TFGA)
- Australian Wool Innovation (wool)

- Organics Federation Australia (organic)
- WAFarmers and the Pastoralist and Graziers Association of WA
- New South Wales Farmers Association (NSWFA).

In April 2003 the Australian Government launched an $8.5 million EMS National Pilot Program (see Appendix 4) involving 15 pilot projects across Australia. The pilots represented a diverse range of industries, regions, partnerships and natural resource management issues. The objective of the EMS National Pilot Program was to:

- develop and assess the value of EMS as a management tool to improve natural resource management, from the enterprise level up to the catchment scale
- assist industry competitiveness and production efficiency
- help primary producers meet emerging market demands for quality and environment assurance.

## Environmental Stewardship

Over four years, $50 million is available for Federal contracts with landholders who can provide environmental services on a cost-effective basis. These contracts will provide incentives through payments to selected farmers and other private land managers to achieve long-term environmental outcomes on their properties. The concept born in Department of Environment and Water Resources with discussions about how much conservation is actually required on public lands. The aim was conservation of land with high biodiversity and conservation value. One of the key issues was that there was little or no capacity to pay people for conservation outcomes over the long term that were over and above private interest – ie. conservation outcomes on private land that are in the public interest.

This led to a debate about what is in the public interest. It was decided to make funding available for projects targeting matters of National Environmental Significance under the *Environment Protection and Biodiversity Conservation Act 1999*. Contracts will be available for periods of up to 15 years, to allow for the time required by ecological processes to produce an outcome.

The focus on matters of national environmental significance begins with investment in:

- threatened ecosystems
- RAMSAR wetlands
- threatened ecological communities.

The second issue to clarify was what was the program going to pay people to do? The objective is to increase and improve the quality and extent of matters of national environmental significance. It was clear the aim was to pay people for outcomes in terms of improvements in quality and extent. The proposal suggests that outcomes could include landholder management actions, such as improved farming practices, fencing, weeding, changed grazing regimes and to pay towards the intrinsic cost of these changes.

Payments would be made for actions carried out over the life of the agreement between the Commonwealth and the land manager. People could be paid highly for placing a covenant over areas of asset managed. However, understandably many landholders are wary of placing land under covenant and losing access to their asset.

Agreement for targets is 15 year payment, with broad spectrum of funding available to match the cost of real work carried out on the ground. Funding arrangements were based on models used around the country in several places, including the Mount Lofty Ranges Market Based Instruments project and the Forestry Conservation Project in Tasmania.

Program managers are now figuring out how constraints can be written into the agreements, how to identify the specifics of each stewardship agreement. The Program is seen to address a policy gap in payments for long-term protection of high value environmental assets and complement the use of existing policy approaches such as regulation, grant programmes, setting aside land in national parks and reserves and voluntary conservation on private land through covenants and other mechanisms.

It will be a competitive grants program, with the capacity for neighbourhood bids for funding over a large combined area of land. The waitings have not yet been worked out, nor have the contingency plans, but there will be scope for, for example, vegetation corridors.

## Monitoring and Evaluation under the NAP

Monitoring and Evaluation Framework (M&E Framework) is being progressed through the joint teams (Department of Environment and Water Resources and Department of Agriculture, Forestry and Fisheries). Recent thinking is focussing more on demystifying the M&E Framework, making it more accessible and more meaningful to NRM managers, including landholders. The intention to closely link M&E to resource conditions has been tempered by recognition that many landscape changes are too complex and slow-moving for ready translation from on-ground action to immediate outcome at the landscape or regional scale.

This has resulted in a maturing of the program, while investment is still aimed at these broad targets, there is less expectation that investment in monitoring and evaluation will lead instantly to detailed pixels of information that can readily be aggregated into a national picture and information on program performance. There are indeed links between management actions and resource condition, but it is extremely difficult to show direct linkages in the short to medium term. Instead, intermediate outcomes and measures of program performance have become more important (including attitudinal and practice change, and aggregated management actions at the landscape level). There is still little or nothing in the system at the property level.

Monitoring is occurring on two levels:

- resource condition at the national level via NLWRA, including
  - audit one - bookcase ‘State of the Environment Report’
  - audit two – managing the national indicators & measurement methods (standardised methodologies of measurement) process, via national coordinating committees for all the biophysical matters for target (Biodiversity, riverine, aquatic environment etc) as well as socio-economic; and establishing inter-operable systems attempting to better manage data across scales and tiers of government
  - most resource condition monitoring is being undertaken by state agencies, with some being done by regions, research organisations, community groups etc
  - primarily, this resource condition monitoring identifies baselines, long term resource condition trends and provides the general context for where and how much investment is needed
- at a parallel program performance level, it has been recognised that monitoring resource condition is necessary (eg to show the depth of a particular NRM problem) but is insufficient for tracking changes in the short to medium term

- data collected on resource condition is thus useful for informing whether investment decisions are being made appropriately (eg on location), but not to identify whether the investments made are working in terms of addressing the problem.

The M&E framework and the Standards and Targets frameworks are being polished with an increased emphasis on the importance of good program logic, as well as raising the importance of socio-economic aspects. There is a trend towards focussing on assets rather than on threats and most importantly there is a renewed focus on intermediate outcomes via the 'most significant change' technique, in which landholders and land managers are being trained and encouraged to tell their own story of the 'most significant change' that they have seen during their involvement in the NRM and M&E programs. This level of information will feed into the 'performance story' approach to describing program performance, which reports on multiple lines of evidence for each level of the outcomes hierarchy. This is being led by Jessica Dart from Clear Horizons, an approach that shows promise for bringing out greater details and understanding of what has actually been happening on the ground. There is move to roll out this approach in all 56 NAP regions, getting regional bodies, NHT project managers, landholders and advisors up to speed with the process (*Pers. comm.. Jens Light, DAFF DEH Joint teams 15th May 2007*).

# 8. International initiatives

Many countries, particularly in Europe and North America, have been considering means to reassure increasingly nervous and discriminating domestic and international markets about the safety and quality of food and to improve the management of the environment and natural resources used in agriculture. While no countries are yet requiring imports to display evidence of environmentally sound production under an EMS, there is no doubt that the environment is emerging as a potential non-tariff trade barrier. A survey of Australia's major trading partners (US, Europe, the Middle East, Indonesia, Korea, Taiwan, Japan, Malaysia, India and China) showed that environmental concerns were emerging "over the horizon" (Department of Agriculture and Food Western Australia (DAFWA), 2000). Early demand for verification of the status of food exports claimed as organic resulted in Australian producers leading the world in the development of Australian organic standards, and subsequently Australia has significant input into the development of the international organic standards (see section 5). The following provides a brief snapshot of several key activities taking place in various countries and international agencies. National certification schemes for agriculture are under development in the United Kingdom, France and Canada. An industry/government conference in June 2005 called for a national foundation to promote agricultural environmental management systems (EMS) in the United States, while the Common Codex for Integrated Farming is proposed as a realistic way forward for Sustainable Agriculture in Europe.

## South-East Asia

Several countries in south east Asia have been promoting ISO 14001. This is most notable in Japan, Taiwan and South Korea but also evident in Thailand, Malaysia and, although it is predominantly non-agricultural firms seeking certification. Encouraged by government interest, Japanese export firms have embraced ISO 14001 as a key to competitive global positioning (Woodward-Clyde, 2000), leading to a push for EMS up the supply chain through procurement policies. The Taiwanese environment agency was developing a five year EMS plan in 2000, while the South Korean Ministry of the Environment developed an Environmentally Friendly Companies Initiative that required having an EMS in place. Leading Chinese companies have investigated the benefits of ISO 14001 certification, influenced by growing government expenditure on environmental infrastructure. The environment ministry in Indonesia considers EMS as one means of supplementing weak and inconsistent enforcement of environmental regulations (Gunningham and Sinclair, 1999 fromWoodward-Clyde, 2000).

### ASEAN standard for Good Agricultural Practices

A working group comprising of experts from Malaysia, Philippines, Singapore and Thailand is in the process of designing a suitable ***ASEAN wide standard for Good Agricultural Practices***. This standard will be based on current systems that have been shown to work well in ASEAN countries. The final product will be a generic ASEAN-GAP that considers regional and environmental factors such as climate, farming methods and social fabric. This generic GAP would be flexible and could apply to a number of situations and food crops. It will emphasise food safety issues particularly chemical usage and microbial contamination issues and will be a harmonized standard suitable for all ASEAN countries, serving as a tool for small to medium enterprises and governments to increase trade. A common standard in this area will assist the integration of the ASEAN economic community by improving the quality of ASEAN produce.

The 10 member countries of ASEAN have a commitment to increase the quality and marketability of their agricultural products including fresh fruit and vegetables, and many have begun to introduce rigid on-farm quality assurance schemes. The 10 member countries share common farming practices, weather patterns and common infrastructure, so have decided to develop a common standard to cover

the requirements for Good Agricultural Practice for the ASEAN region. A proposed ASEAN GAP will be designed to be suitable for all ASEAN member countries.

Some ASEAN member countries have recognised the need to develop formal systems, such as:

- Malaysia has introduced the Farm Accreditation Scheme of Malaysia (SALM) QA system
  - it is a certification programme by the Ministry of Agriculture to acknowledge the farms that practice the best practices in agriculture, environmental friendly and produce a quality, safe and edible products
  - farms on the scheme are required to keep records, will be inspected and evaluated based on the suitability of the farm, agricultural practice and the quality of the products
- The Philippines has a number of private companies involved in QA systems based on food safety and is in the process of implementing a Government backed system
- Singapore's approach differs in that it is concerned about the safety of produce coming into the country. It has developed a food safety QA system which it is currently implementing in Indonesia, a major supplier of produce to Singapore
- Thailand has introduced a similar system, the Q system.

These Quality Assurance systems cover many aspects of Good Agricultural Practice requirements. There is interest in an ASEAN-wide QA system based on food safety requirements. The standards sought by these countries would be at least as high as the systems that are in place at the moment. This project was developed under the ASEAN-Australia Development Co-operation program (AUSAID per ACIL) and involved QDPIF (Scott Ledger) and VDPI (Robert Premier; see www.aphnet.org/gap/ASEANgap.html).

## Canada

Canada has recently embarked on the national promotion of ***Environmental Farm Plans*** (EFP). The enhanced EFP program is being funded for five years through the Agricultural Policy Framework (APF), an agreement between the federal, provincial and territorial governments, to make Canada a world leader in environmentally safe food production. The APF is a comprehensive policy dealing with Business Risk Management, Renewal, Science and Innovation, Food Safety and Food Quality and Environment (see www.agr.gc.ca/cb/apf/index_e.php).

The EFP originated in Ontario, based on Farm*A*Syst, in 1992. In response to concerns about agriculture and the environment, a coalition of Ontario farmers' organisations released a policy statement, "Our Farm Environmental Agenda", recommending that every farm family develop an Environmental Farm Plan as part of the Food 2002 Program. The Canada-Ontario Farm Stewardship Program (COFSP) provides assistance to producers in implementing their EFP. The Canada-Ontario Environmental Farm Plan and COFSP Program receive $59 million, over five years, in federal funding for on-farm beneficial management practices. COFSP applications can only be made after successfully completion of an EFP. The program runs until March 31, 2008.

"Ontario farmers are very supportive of the Environmental Farm Plan program," said Geri Kamenz, chair of the Ontario Farm Environmental Coalition. "Over 70 percent of the farmers in the province have participated in this internationally recognized program since it began in 1992, investing over $100 million of their own money in farm environmental improvements."

"EFP is spurring positive environmental change on the agricultural landscape," said Frank Hoftyzer, President of the Ontario Soil & Crop Improvement Association. "Having 7,500 producers through the

program with peer reviewed and deemed appropriate action plans is a significant milestone that signals a clear commitment by Ontario producers to incorporate environmental beneficial management practices into their farm production plans." The Agricultural Policy Framework provides for, along with the educational component of EFP, an extensive cost-share program to fund projects at 30-50%, up to a maximum of $30,000 per farm business.

Environmental farm planning in Canada is a voluntary, confidential process. Producers attend a one-day workshop and use an EFP workbook to help conduct an environmental risk assessment of their farm operation; they then develop an action plan to mitigate any identified risks. This plan is submitted to a certified planner for a confidential peer review. Producers with completed and approved environmental farm plans are eligible to apply for financial incentives. Assistance is provided for actions such as manure storage, livestock fencing and watering, soil erosion control structures, strip cropping, fuel storage, dead stock composting, milk house waste management, hedgerows and riparian zone planting, and integrated pest management protocols for various vegetable and fruit crops. Farmers have voluntarily adopted Best Management Practices (BMPs) developed in cooperation with technical expertise from government and can receive funding when the BMPs are verified as complete.

Debates about having the EFP certified have struck strong resistance by farm leaders who demand to be shown financial benefits for the extensive cost involved. There is little interest or demonstrated market advantage to environmental certification. The Norfolk Fruit Packing Company implemented ISO 14001 to full certification level to meet Sainsbury's requirements and thus maintain market access. The Ontario Soil and Crop Improvement Association, which delivers EFP to farmers, supports a voluntary educational approach to ensure farmers understand the current standards and expectations of environmental legislation and best management practices. Over the past 15 years of EFP delivery, farmers identify on average, 20 action items in their EFP which require time and investment. Follow-up surveys suggest that after several years, farmers have addressed half of their original concerns but still have 10 yet to address, often at considerable time and cost (*Pers. comm.*. Harold Rudy *Executive Director Ontario Soil and Crop Improvement Association, July 2004, 519-826-4217 updated from websites September 2007* – e.g. see: www.brucestanton.ca/EN/4466/57761; www.ontariosoilcrop.org/cms/en/Programs/Programs.aspx?menuid=11 and www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1181579114202&lang=e).

## America

EMS and pollution prevention have been widely promoted in the United States, although the activity has largely taken place in the non-agricultural sector. The ***EMS Multi-State Working Group*** provides a highly innovative forum for progress on the EMS debate (see www.mswg.org). It encourages and promotes EMS adoption across all industries and States and draws in NGOs and industry groups. There is high level support for EMS, which is seen as a means of encouraging business to go beyond compliance with environmental regulations. US governments are keen to forge industry partnerships using EMS as a mechanism to bring incentives into the system. The ***National Environmental Achievement Track Program*** (US EPA) recognises and encourages 'top environmental performers' who have implemented high-quality EMS, consistently met their legal requirements and worked towards continuous improvement (www.epa.gov/performancetrack/). To further quantify the environmental benefits of conservation practices and Farm Bill programs, USDA developed the ***Conservation Effects Assessment Project*** (CEAP). The wetlands component (CEAP-Wetlands) is engaged in various activities such as to: "conduct regional investigations to quantify ecosystem services provided by wetlands and associated lands on agricultural landscapes" (www.whitehouse.gov/ceq/wetlands/2007/appendix-a.html ).

Wisconsin legislated a ***Green Tier Program*** (DNR Wisconsin (US), 2001), which was accepted and signed off in 2003, setting a series of environmental commitments that go beyond the regulatory requirements at the local, state and federal government levels. Green Tier is based on a collaborative system of contracts and charters crafted jointly by participating businesses and the DNR to streamline environmental requirements and encourage new environmental technologies. Major elements of the

program were developed in advisory committee meetings between 2000 and 2003. The three major tools promoted were environmental charters, environmental contracts and environmental management systems (see http://www.dnr.state.wi.us/org/caer/cea/environmental/).

The ***US Farm*A*Syst Program*** is a national program cooperatively supported by the USDA Cooperative State Research, Education and Extension Service (CSREES), USDA Natural Resources Conservation Service, and USEPA that has been running since 1991. Farm*A*Syst was a precursor to many self-assessment programs and provides worksheets And self-assessment tools on issues such as water quality, waste storage and nutrient management. Farm*A*Syst is a partnership between government agencies and private business that enables you to prevent pollution on farms, ranches, and in homes using confidential environmental assessments. Funding is provided through grants from the Initiative for Future Agriculture and Food Systems, CSREES, Section 406; USDA Natural Resources Conservation Service and the USEPA.

In May 2007, the Premier of ***Victoria signed a Memorandum of Understanding with Californian*** Governor Arnold Schwarzenegger to create practical links between the States in reducing greenhouse gas emissions and adapting to climate change. The MOU will allow California and Victoria to share expertise in climate change, develop emission trading schemes and carbon offsets.

***Sustainable Silicon Valley*** (SSV) is a multi-stakeholder collaborative initiative to produce significant environmental improvement and resource conservation in Silicon Valley through the development and implementation of a regional EMS. Jennifer Smith-Grubb, President of Sustainable Silicon Valley, presented a talk in Sydney on 24 January 2007 on how business, government and NGOs in California are using EMS tools to voluntarily reduce greenhouse gases and mitigate the affects of climate change. The results show improved energy efficiency, increased use of renewable energy sources and lower costs. This initiative came in response to the California energy crisis of 2000/2001, which affected industry, government, communities and families when industry deregulation led first to increasing energy prices, followed by a year of large-scale black outs across the state.

Using the EMS process on a regional basis allowed stakeholders to get involved in identifying and addressing targets, and to develop reporting and monitoring programs relevant to them. The project (www.sustainablesiliconvalley.org) is designed to move beyond the traditional command-and-control model of environmental regulation to collaboration and partnership. By focusing on the desired outcome, rather than compliance-driven standards, participants can choose the methods to reach that outcome that makes the most sense financially and technologically for each of them. Environmental benefits come from these outcomes, not the means used to achieve them.

## Europe

Farming practices and businesses in Europe will change considerably over the next few years. Reform of the European Union's Common Agricultural Policy (CAP), changing consumer preferences and a greater emphasis on the environment, particularly on diffusing water pollution, will all bring new challenges and opportunities for farmers. Improving the environmental and economic performance of farming is a key objective of the CAP reform. However the shift to market-led approaches will bring uncertainty for many, and will require a more robust approach to business planning for all farm businesses. Experience from other industrial sectors indicates that resource efficiency is one of the keys to successful business management. Evidence of where there is a strong relationship between good environmental management and economic performance in the agricultural sector will be essential to both farmers and policy-makers.

On 26 June 2003, European Union (EU) farm ministers adopted fundamental reforms that further ***integrate the environment into the Common Agricultural Policy*** (the CAP). Agricultural subsidies previously based on production will gradually be transformed into direct payments for agri-

environmental outcomes or so-called ‘Green Box’ measures. This means that under the CAP reforms there is provision for decoupling farm payments from the volume of production, linking them instead to compliance with standards that address environmental, social, animal welfare, worker safety and consumer concerns. Reducing direct payments has made more money available to farmers adopting environmental, quality or animal welfare programs. This trend in itself is significant as evidence of increasing pressure on agriculture to demonstrate good environmental governance. This may speed up the demand for more formal management systems on farms, with a greater demand for improved records and better communication. It may also herald a new era of non-tariff trade barriers, potentially of concern to Australian exporters (www.ec.europa.eu/agriculture/lisbon/index_en.htm and www.ec.europa.eu/agriculture/capreform/index_en.htm and www.defra.gov.uk/corporate/ministers/statements/dm070228.htm and Mech 2004).

The European Union’s integrated pollution prevention and control bureau has been developing official reference documents for best available techniques to improve the environmental profile of various enterprises. For example, EU guidance for intensive livestock farming, released in 2002, sets out animal welfare requirements and best practice for managing the manure chain and ammonia emissions, providing additional standards with which agriculture will be required to comply.

Europe has developed its own ***Eco-Management and Audit Scheme*** (EMAS), which is an EMS that requires measurable results of continual improvement, compliance with legal regulations and a publicly verified environmental report. The European regulation allows for an environmental ‘label of good management’ to be assigned by the EU to a pro-active organization that has implemented an EMS that meets these criteria. A 2001 revision of EMAS more closely aligns it with ISO 14001 and widens the scope of registration so any enterprise (including agriculture) can now apply for certification.

The ***European Initiative for Sustainable Development in Agriculture*** (EISA) founded in 2001 by an association of six European organisations: FARRE in France, FILL in Luxemburg, FNL in Germany, LEAF in U.K., Odling i Balans in Sweden and in Italy to promote Integrated Farm Management. EISA developed Integrated Crop Management (ICM) and Integrated Farming Systems (IFS) concepts. EISA recently put its Obligations for Integrated Farming (also known as the Common Codex for Integrated Farming, seewww.sustainable-agriculture.org/commoncodex_en.html), to the European Commission as a realistic way forward for Sustainable Agriculture in Europe (see www.sustainable-agriculture.org/).

The French considered the adoption of EMS for agriculture, but decided it was too complex and costly, opting instead for a rigorous ***national standard for Agriculture Raissonnee*** (‘rational agriculture’, known as integrated farming elsewhere in Europe), which grew out of work on the French equivalent of LEAF called FARRE. In France, a legal definition has been set for Agriculture Raissonee, with the French parliament adopted a new article of law on 2 May, 2001, giving Integrated Farming a legal basis (Article L-640-3 du Code Rural, Loi du 2/5/2001). An official "Code of Reference for Integrated Farming" has been adopted jointly by the French authorities, the major farmers' organisations and consumer and environmental groups. There are plans for adding further local standards for agriculture at the regional level to the national Code of Reference by 2004. French farmers who practice Integrated Farming can apply for "Integrated Farming certification", granted by officially authorized bodies after an audit carried out on the basis of the Code of Reference. This is the first official nationwide definition for Integrated Farming (see www.farre.org/versionAnglaise/anglais_home.htm or. www.farre.org/ )

Stichting Mileukeur is an ***Agri-Environmental Certification*** *Scheme in The Netherlands*, which is based on producers using a series of ‘yardsticks’ (e.g. for chemical use) that enable benchmarking between and within farmer groups. The Dutch support the use of market forces for sustainable development. The Centre for Agriculture and the Environment in Utrecht has done most of the work in developing these environmental yardsticks (see www.clm.nl) Tools have been developed to measure a variety of aspects of farm management, including pesticide use, effluent use, water, soil and

biodiversity. The largest supermarket chain in the Netherlands, Albert Heijn (a subsidiary of Royal Ahold) developed a “Earth and Values” program in 1990. This monitors cultivation practices for all fresh food products and by 1998, roughly 80% of the fruit and vegetables found in these supermarkets were produced under ICM practices (IATP, 1998).

## United Kingdom

In the United Kingdom, the ***British Farm Standard*** was launched in 2000 with the Red Tractor as its marketing logo (www.redtractor.org.uk/site/rt_home.php ) There has been some discussion of the potential of EMS by the UK National Farmers’ Union (Gilbert, 2002), but the current focus remains on code of practices and quality assurance schemes, in particular the Assured Produce Scheme that underpins the British Farm Standard. Work is underway to develop specific local environmental standards to underpin the currently unsubstantiated environmental claims. This will build on the considerable investment in integrated crop management and the LEAF scheme. Food safety, environmental and social issues and a range of regulations and Codes of Good Agricultural Practice are covered under the program. There are numerous sector-specific assurance programs that incorporate detailed standards and inspection systems relevant to the various standards are applied.

The UK Rural White Paper implementation plan released in December 2003 supported the ***Integrated Farm Management*** (IFM) approach and provided LEAF with a further three years funding to promote IFM to farmers and consumers (see www.leafuk.org/leaf/organisation/ifm.asp ).

***Environmental Stewardship*** is an agri-environment scheme which provides funding to farmers and other land managers in England who deliver effective environmental management on their land, building on the success of the Environmental Sensitive Areas scheme and the countryside Stewardship Scheme. Environmental Stewardship was approved by the EU in 2005 as part of the England Rural Development Programme. An agency Natural England launched on 2 October 2006, will deliver the Government's programme of financial incentives including Environmental Stewardship to farmers and land managers for the protection and enhancement of the natural environment. Cross compliance applied to all Environmental Stewardship agreements from 1 January 2007, meaning farmers have to be able to demonstrate they are keeping land in Good Agricultural and Environmental Condition (GAEC) and that they are complying with a number of specified legal requirements known as Statutory Management Requirements (SMRs).

The Agriculture and the Environment Research Unit at the University of Hertfordshire developed a computer software package called ***Environmental Management for Agriculture*** (EMA, see www.herts.ac.uk/aeru/ema/). This provides a comprehensive suite of tools, information and assessment routines designed to help the farming industry improve its environmental performance. The software is sold on a non-profit basis for the 'public good' to help develop a more sustainable agriculture. Lewis and Tzilivakis (2002) promote the use of integrated management systems such as EMS rather than the current proliferation of multiple different produce assurance schemes, but point out some of the barriers that prevent widespread uptake of technologies already available.

Two UK projects promoted EMS to business clients. Project FORGE (2002) was developed to help achieve a greater level of environmental awareness and engagement across the financial services sector. It aimed to provide guidance on environmental management and reporting and to encourage the consideration of the need for greater public accountability. The Acorn Trust was a not for profit organisation dedicated to helping make environmental performance control accessible and profitable for smaller businesses and their customers. Project Acorn (2002), completed in 2003, was a nation-wide project to help small and medium sized enterprises SMEs to develop their own environmental performance controls, built around the specific needs of their own business. It included a 6-step practical route for environmental performance of businesses, developed some free case studies of companies which used the Acorn method, and provided information on the British Standard BS8555, which forms the basis for environmental management systems in companies. BS 8555:2003 was a new British Standard: *Environmental management systems -- Guide to the phased implementation of an*

*environmental management system including the use of environmental performance evaluation* (see www.intute.ac.uk/socialsciences/cgi-bin/fullrecord.pl?handle=sosig1054729848-24832).

## International agencies and companies

The Food and Agriculture Organisation (FAO) has a Good Agricultural Practice (GAP) initiative, seen as one mechanism towards implementing the Sustainable Agriculture and Rural Development called for within Chapter 14 of Agenda 21 (FAO, 2002). It has initiated a report on "Codes of Good Farming Practice: Leading the Transition to Sustainable Agriculture" to present a strategy to establish good farming practices as a key element of FAO's promotion of sustainable agriculture. The document sets the baseline for FAO's future work. FAO believes that the agricultural sector currently lacks a unifying framework to guide debate and that a statement of clear principles of Good Agricultural Practice could provide the basis for concerted international and national action for developing sustainable agricultural production systems. The guiding principles for GAP are expected to serve as the basis for developing guidelines for production systems within specific agro-ecosystems. While this initiative does not mention EMS specifically, the proposed guidelines could inform national progress (see www.fao.org/wssd/SARD/documents/faogapen.doc or www.fao.org/prods/event.asp).

The Organisation for Economic Co-operation and Development (OECD) held an international workshop in 2002 Salsomaggiore, Italy on EMS and their potential as a management tool in regional development. While the focus was predominantly on small and medium enterprises other than agriculture, there was considerable interest in Australian papers presented on the national framework for EMS in Agriculture and voluntary environmental management arrangements. One of the benefits of considering EMS in the context of regional planning and development is the ability to use a common tool across different land uses and jurisdictions. Potentially this could lead to improved management of landscape issues, for example weed control across national parks, agricultural land, roadways and urban-rural boundaries.

The World Bank's Global Environment Fund is dedicated to promoting global environmental protection within a framework of sustainable development. It provides a multilateral funding mechanism with a lending portfolio of over $2 million, largely focused on supporting the objectives of agreed global environmental conventions, tackling key issues such as biodiversity, climate change, ozone depletion and water. World Bank staff previously indicated some recognition of the benefits of agriculture adopting internationally accepted EMS (Heinze, 1999), but there is no formal policy to promote its use.

The United Nations Environment Program (UNEP) has commenced the development of an international Best Practices Network (BPN) for Sustainable Development. Significant value is expected from the proposed international "learning network" which will share information on policies and solutions to core problems of energy, water, transportation, urban development, and cultural diversity. One initial issue for consideration by the proposed BPN Network Steering Group is the manner in which EMS and performance indicators are being used. Australia was invited to present an overview of the issues facing sustainable agriculture to the first network meeting in Paris.

### Global Sustainable Agriculture Initiative

The Sustainable Agriculture Initiative Platform (SAI Platform) has been set up by the food industry to support the development of sustainable agriculture and communicate its message to all stakeholders of the food chain. The food industry felt the need to create the SAI Platform to enhance sustainable agriculture and to better cope with a 'range of issues'. An Australian Chapter of the Sustainable Agriculture Initiative Platform – members of which include some of the world's largest food companies – was launched in Sydney on 1 May 2007, with agribusiness Elders announced as the foundation member. The SAI Platform's overall aim is the development of sustainable agricultural practices worldwide. It defines sustainable agriculture as a productive, competitive and efficient way

to produce agricultural products, while at the same time protecting and improving the natural environment and social/economic conditions of local communities.

SAI Platform vision is that sustainable agriculture is the best solution to provide a sustainable supply of high-quality agricultural products in competitive conditions, meet the food and fibers needs of populations (with respect to safety, availability, affordability) and conserve and possibly improve natural resources. Sustainable agriculture is both a long term-goal and a continuous learning process. It should be able to support economically viable and responsible farming systems, which enable local communities to maintain their livelihood, safeguard their environment and improve their well-being.

SAI Platform supports sustainable agricultural practices that embody the following principles:

- **provide the base for ensured food safety** by producing high-quality agricultural products and by supporting innovations to improve their quality and safety

- **secure adequate food supplies** to meet current and future food demand, by producing high yielding and healthy crops and animals, while increasing efficiency and keeping resource and external input requirements as low as possible

- **protect and possibly improve the natural environment and resources**, by minimising any adverse effects from agricultural activities on soil, water, air and biodiversity, optimising the use of renewable resources and caring for animal welfare

- **support economically viable and responsible farming systems**, enabling local communities to protect and improve their livelihood, safeguard their environment and improve their well-being.

*(Pers comm contact Nick Kemp, 08 8425 4906 for SAI Platform and the Australian).*

## International retail directions

"Mega-retail chains in Europe and the US have all recently issues mandated for more stringent environmental performance. Wal-Mart, Tesco's, Sainsbury, Mark and Spencer and others have all focused recently on food miles, greenhouse gas emissions and climate change. Thee retailers have all declared their commitment to 'corporate social responsibility, in the same ways as Nestle and others, and are using similar approaches to meet their own internal environmental targets. They are therefore seeking suppliers to assist them to do this. For example, Tesco's will now label all products sold to allow shoppers to purchase based on decisions about carbon costs associated with products. All food products airfreighted into the UK will carry an aeroplane symbol.

Asda and Sainsbury have unveiled similar initiatives and Marks & Spencer unveiled a £200m environmental plan that included a pledge to become carbon neutral and send no waste to landfill by 2012. Tesco's plans unveiled included an offer to promote more efficient electrical products that use less energy at lower prices. The approach to food miles labelling will be increasingly critical for Australian exports, and in order to stay in the marketplace, Australian farmers will need to be able to validate any claims of being 'environmentally friendly' in a very robust way, that addresses all environmental issues, not just one or two" (*Pers. comm Genevieve Carruthers, NSW Agriculture Environmental Systems Specialist, May 2007*).
A Vermont-based group, ECOLOGIA, participated in the 4th plenary (held in Sydney, Australia, February 2007) of the ISO Working Group, which is creating a global standard on social responsibility for all organizations. ISO Global Social Responsibility Standard, 2005-2009 is a multi-year process creating guidelines to encourage environmentally and socially sustainable activities by local, national and multi-national organizations worldwide. The document, ISO 26000, is not being designed for formal certification, but as voluntary guidelines accessible to all kinds of organisations in every country, across the globe. Participants include representatives from industry, government, labour, consumer, NGO and consulting/academic organizations, from all continents and many different

countries. The process operates through consensus-based decision-making and gives numerous opportunities for different participants to raise, clarify and debate their viewpoints. This process is a part of the increasing global support for 'corporate social responsibility'. By including all kinds of organisations, not only businesses, is an example of the creation and deepening of global civil society institutions. And it is very much a "work in progress". (For more information, see a useful links page for environmental management www.ecologia.org/ems/links.html).

# 9. Findings/Discussion

The National Framework for Environmental Management Systems in Australian Agriculture was endorsed by the Natural Resource Management Ministerial Council (NRMMC 2002 and 2003), which now oversees its use in supporting and coordinating the voluntary adoption of EMS in Australian agriculture. The findings of Australia 21's report on environmental certification of agricultural land were similarly endorsed in October 2005 by Ministerial Councils on Natural Resource Management and Primary Industries. However, little appears to have happened to progress national coordination on the issue since then.

The Natural Resource Management Ministerial Council agenda of November 2006 included the planning of a framework for future natural resource management programmes. Within the discussion, the NRMMC supported 'property-level management systems, such as EMS, that link property-level actions to regional outcomes and help land managers improve the environmental and productive sustainability of their properties and demonstrate their environmental credentials to markets and the community'.

The NRMMC's uses the phrase "EMS Approaches (also known as Farm Management Systems and Property Management Systems)". It is important to note that these broad umbrella terms are not necessarily interchangeable as the calibre of the programs varies widely between self-assessment, best management practices, codes of practice and actual systems approaches.[1]

There was strong sense developed that EMS needed to be industry owned rather than government led. This laudable aim appears to have led to a degree of pragmatism in Federal EMS-related programs, with funding frequently directed to existing industry and regional programs rather than to promote a nationally consistent approach. We now have a plethora of environmental management schemes across many industries and regions.

At the catchment and regional level, there has been a considerable amount of effort put into large scale trials. There are several excellent examples of ISO consistent approaches that are flexible enough to meet the needs of multiple industries and flexible enough to ensure consistency with ISO 14001, within the context of meeting regional catchment goals for the region set by the NHT process. These include the Australian Landcare Management Systems (ALMS; in Queensland, South Australia and Victoria), GippsBeef and Lamb in Victoria, Australia' Best Farms project in WA (now expanding into NSW) and the suite of NRM Catchment work undertaken by various Victorian projects.

## Need for national system?

The real question comes down to how, when and whether these valuable but still little by little trials can be pulled together to guide a nationally coordinated effort. The key issue is providing for some level of national consistency and credibility while allowing enough flexibility and innovation to enable ownership at the local and industry level. A21 roundtable suggested one potential way forward might be through the development of a network with underlying principles.

Australia 21 believed there is a window of opportunity for Australia to develop a national approach to certification for the environmental stewardship of agriculture that is internationally credible and underpinned by a national information management system providing a real basis for long term adaptive management. A national system for certification of land management would provide a mechanism enabling recognition of improving land management and hence participating land managers could receive recognition of their environmental credentials (e.g. Gleeson, 2006 and Gleeson et al, 2006, Rowland et al., 2005).

The rise of the stewardship payment concept shows recognition of an urgent need to promote good NRM across landscapes. However, the benefit of the proposed environmental stewardship program will be limited by the decision to pay only for actions that address matters of national significance under the EPBC Act. This leaves out most of individual landholder NRM decisions that collectively influence/determine the health of our productive ecosystems.

The ultimate aim is to obtain multiple benefits from schemes, meeting the needs of landholders, rural communities and the nation as a whole. Integrated management systems are part of the solution. Ten or twenty integrated management systems will not be ten or twenty times as useful as one.

Ecosystem health and resilience are fundamental to our ability to withstand the shocks of change and our capacity to adapt to changing situations, such as climate change , global markets or oil depletion. Consensus among quite diverse groups brought together under the auspices of two national roundtables run by Australia 21 is that this can be best assured by a voluntary national EMS certification system that will have national and international credibility.

# 10. Conclusions and Recommendations

Australian farmers are both resilient and dynamic, rising to the challenge of managing farming systems under complex conditions and highly variable climatic conditions. If predictions about climate change are realised, they will need to continue to be so, as it seems Australian agriculture may face some tough times ahead. Our ability to maintain the key elements of our rural ecosystems in a functional and resilient state will largely determine how we weather the changes. There is renewed focus on good land management shown through the recently announced environmental stewardship program, although the scheme would have benefitted more individual landholders if it had not been decided to restrict the program to measures of national significance under the EPBC Act.

Have we missed the opportunity for Australia to move towards a national approach to environmental certification of land management? There may still be a way forward for agricultural certification in Australia, building on common ground and to facilitate agreement on a national core set of principles and elements that could provide the basis for a voluntary but internationally credible national certification system. Australian rural industries may soon need to demonstrate their environmental credentials to interested third parties and the community, by providing documented evidence to NRM agencies for investment and support or to consumers and international markets in order to maintain or improve market access.

An Australian framework for certification of sustainable land management should build on the enthusiasm, skills, interests and needs of Australia's landholders. The evolving national framework should seek to harmonize certification and working systems for the property manager and build on the interests and enthusiasm generated through the pilot activities in recent years. An underlying principle needs to be to reduce complexity."(Australia 21 www.rirdc.gov.au/reports/EFM/05-157.pdf )

Pragmatism misguided or not, appears to have driven the multiplicity of approaches fostered by Australian Government funding. This growing level of diversity and innovation may lead to confusion and frustration for producers and consumers alike unless there is a concerted effort to develop a consistent national approach.

Serious gaps remain in the provision of data at a scale and in a format useful for on ground management decisions. We cannot mobilise the commercial and other drivers for improving environmental outcomes unless we have systems like ALMS to credibly recognise those achievements. There is:

- the need to build on the environmental aspirations and capabilities of land managers rather than to impose external targets and best management practice systems
- the need for open, transparent and informed policy development to limit opportunities for sectoral lobbying to the disadvantage of most land managers and taxpayers
- the ongoing challenge of how to find a collaborative way through the fragmented and competitive environment created by EMS policy and funding arrangements
- the idea that such a certification system would be internationally credible and underpinned by a national information management system providing a real basis for long-term adaptive management.

## Recommendations

Recommendations are:

- develop a coherent, but less complex, approach to the national certification of environmental management processes in Australian Agriculture, preferrably aligned to the international standard ISO 14001

- establish administrative mechanisms for improved coordination and communication across and between groups working on environmental management systems

- develop information management tools that proviside data at a scale and in a format useful for on ground management decisions.

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# Appendices

## Appendix 1. Abbreviations

| | |
|---|---|
| ACIAR | Australian Centre for International Agricultural Research |
| ACGC | Australian Chicken Growers' Council |
| ACMF | Australian Chicken Meat Federation |
| AECL | Australian Egg Corporation Ltd |
| AFFA | Agriculture, Forestry and Fisheries Australia |
| AFS | Australian Forestry Standard |
| AGO | Australian Greenhouse Office |
| ALFA | The Australian Lot Feeders' Association |
| ALGA | Australian Local Government Association |
| ALMS | Australian Landcare Management System |
| APIQ | Australian Pig Industry Quality Program |
| APL | Australian Pork Limited |
| AWI | Australian Wool Innovation |
| BMP | Best Management Practices |
| BPN | Best Practices Network |
| CAP | Common Agricultural Policy |
| COMPASS | COMbining Profitability and Sustainability in Sugar |
| COP | Codes of Practice |
| CRC | Co-operative Research Centre |
| CRCV | Cooperative Research Centre for Viticulture |
| CRDC | Cotton Research and Development Corporation |
| CRP | current recommended practice |
| CSREES | Cooperative State Research, Education and Extension Service |
| CVAP | Climate Variability in Agriculture R&D Program |
| DAFF | Department of Agriculture, Forestry and Fisheries |
| DAFWA | Department of Agriculture and Food Western Australia |
| DEC | NSW Department of Environment and Conservation |
| DEFRA | UK Department of Environment, Food and Rural Affairs |
| DEH | Department of the Environment and Heritage |
| DNR | Department of Natural Resources (Wisconsin, USA) |
| DPI Vic | Department of Primary Industries Victoria |
| DRDC | Dairy Research and Development Corporation |
| EA&CS | Environmental Audit and Certification Systems |
| EEP | Environmental Farm Plans |
| EISA | European Initiative for Sustainable Development in Agriculture |
| EMA | Environmental Management for Agriculture |
| EMAS | Eco-Management and Audit Scheme |
| EMS | Environmental management system |
| EPP | Environmental Planning Principles |

| | |
|---|---|
| ESCAP | United Nations Economic and Social Commission for Asia and the Pacific |
| ESD | Ecologically sustainable development |
| EU | European Union |
| EUREPGAP | European Good Agricultural Practice Protocol |
| FARRE | Forum de l Agriculture Raisonnée Respectueuse de l Environment (France) |
| FFP | Farm Forestry Program |
| FILL | Fordergemeinschaft Integrierte Landbewirtschaftung Luxemburg (Luxembourg) |
| FNL | Fordermeinschaft Nachhaltige Landwirtschaft (Germany) |
| FMS | Farm Management System |
| FOA | The Food and Agriculture Organisation |
| FRDC | Fisheries Research and Development Corporation |
| FSC | Forest Stewardship Council (FSC) for sustainable forestry |
| FWPRDC | Forestry and Wood Products Research Development Corporation |
| GAP | Good Agricultural Practice |
| GEN | Global Ecolabelling Network |
| GRDC | Grains Research and Development Corporation |
| GWRDC | Grape and Wine Research and Development Corporation |
| HACCP | hzard analysis and critical control points |
| IATP | Institute for Agriculture and Policy |
| ICM | Integrated Crop Management |
| IFOAM | International Federation of Organic Agricultural Movements |
| IFS | Integrated Farming Systems |
| INEM | International Network for Environmental Management |
| INRM | integrated natural resource management |
| IPM | Integrated Pest Management |
| ISO | International Standards Organisation |
| JASANZ | Joint Accreditation System of Australia and New Zealand |
| JVAP | Joint Venture Agroforestry Program |
| LEAF | Linking Environment And Farming |
| LPA | Meat and Livestock Australia's Livestock Production Assurance |
| LWA | Land and Water Australia |
| MBIs | Market-based instruments |
| MDBC | Murray Darling Basin Commission |
| MESH | Movement for Ecologically Sustainable Horticulture |
| MSC | Marine Stewardship Council |
| NAP | National Action Plan for Salinity and Water Quality |
| NAPCo | Northern Australian Pastoral Company |
| NES | National Environmental Significance |
| NFF | National Farmers Federation |
| NFIS | National Food Industry Strategy |
| NGOs | non-government organisations |
| NHT | National Heritage Trust |
| NLWRA | National Land and Water Resources Audit |
| NRM | Natural Resource Management |

| | |
|---|---|
| NRMMC | National Resource Management Ministerial Council |
| OECD | Organisation for Economic Co-operation and Development |
| OFA | Organic Federation of Australia |
| OIE | International Office of Epizootics |
| PIRSA | Primary Industries and Resources South Australia |
| PMP | property management plans |
| QA | Quality Assurance |
| QFF | Queensland Farmers' Federation |
| QFVG | Queensland Fruit and Vegetable Growers |
| RDCs | Research and Development Corporations |
| RIRDC | Rural Industries Research and Development Corporation |
| ROCs | regional organisations of councils |
| SAFF | South Australian Farmers Federation |
| SAWBIA | South Australian Wine & Brandy Industry Association |
| SGS | Sustainable Grazing Systems |
| SI | Sustainability indicators |
| SIMS | Seafood Integrated Management System |
| SMEs | Small and medium enterprises |
| SRDC | Sugar Research and Development Corporation |
| STA | Supermarket to Asia Ltd |
| TBT | Technical Barriers to Trade |
| TQA | Tasmanian Quality Assured Inc. |
| UNEP | The United Nations Environment Program |
| USEPA | United States Environment Protection Agency |
| VFF | Victorian Farmers Federation |
| VERA | Viticare Environmental Risk Assessment Tool |
| Watermark-ESP | Watermark-Environmental Stewardship Program |
| WFP | whole farm plans |
| WFA | Winemakers Federation of Australia |
| WGCA | Winegrape Growers Council of Australia |
| WTO | World Trade Organisation |

# Appendix 2. Pathways to Sustainable Agriculture Program

## Announced by the Hon Sussan Ley MP on 13th June 2007

### *Industry Leadership*

| | |
|---|---|
| AUSVEG Limited | Building a cooperative partnership between Regional NRMs and the Vegetable Industry – a national approach. |
| Private Forestry Southern Queensland | Building on the capacity to extend uptake of EMS for private native forests in South East Queensland. |
| Pastoralists and Graziers Association | Extending EMS approaches to Western Australian pastoral land management. |
| Victorian Wine Industry Association | A coordinated approach to improving the Victorian wine industry's access to and uptake of Environmental Management Systems. |
| Australian Wool Innovation | Wool Pathways Project – consolidation and collaboration. |
| Australian Egg Corporation Limited | Sustainable Environmental Assurance for the Austrian Egg Industry. |
| Tasmanian Farmers and Graziers Association | Engaging Tasmanian Farmers in EMS for improved NRM outcomes. |
| Southern Rocklobster Limited | Enhanced Uptake of Southern Rocklobster Clean Green Environmental Management System. |
| Meat and Livestock Australia | Increasing the number of livestock producers demonstrating environmental stewardship. |
| Dairy Australia | Broadening the dairy industry Environmental Management Systems delivery base. |
| Curtin University of Technology | Improving Western Australia's Environmental Performance: a systems approach to sustainable farm practice. |
| Cotton Research and Development Corporation | Cotton, grains and beef: one farm, multiple enterprises, common indicators. |
| Ricegrower's Association of Australia | Environmental Champions Program: Engaging the 'Early Majority'. |
| Queensland Seafood Industry Association | Adoption of EMS in the Queensland Seafood Industry. |
| Apple and Pear Growers of South Australia | Establishment of Environmental Management Systems as a standard 'tool' to manage natural resources within the Mount Lofty Ranges Watershed. |

### *Regional Leadership*

| | |
|---|---|
| West Gippsland Catchment Management Authority | Gippsland's coordinated approach to sustainable agriculture into the future. |
| North East Catchment Management Authority | Sustainable Agriculture; Sustainable Catchments. |
| Northern Rivers Catchment Management Authority | Using an EMS approach to build partnerships to deliver sustainable agriculture in northern NSW. |
| Mackay Whitsunday NRM Incorporated | Continued development and implementation of an integrated environmental, natural resource and productivity management system for Mackay Sugar Co-operative Association producers in conjunction with Mackay Whitsunday NRM. |
| Glenelg Hopkins Catchment Management Authority | Strengthening community delivered EMS in Southwest Victoria. |
| Corangamite Catchment Management Authority | Extending a proven EMS program to different commodity in western Victoria |
| Wimmera Catchment Management Authority | Providing Pathways for Progressing EMS Adoption in the Wimmera. |
| South East Queensland Catchments | Regional NRM support of industry developed Farm Management Systems. |

## Appendix 3. Pathways to Industry EMS Program

| Industry Sector | Project Title | Description | Lead Organisation Partnerships and Location | Funding/ Timelines/ Status | Contact |
|---|---|---|---|---|---|
| Cotton | *Enhancing the Cotton Industry's BMP Program to improve adoption* | The cotton industry has had a well-developed environmental assurance best management practice (BMP) program in place since 1995. The three major activities proposed to build on and extend this program are:<br>• introducing a complete supply-chain BMP by:<br>– developing a training and communication package;<br>– developing additional BMP modules and supply chain protocols; and<br>– trialing and reviewing the new BMP modules and training package;<br>• testing a shipment of whole-chain BMP produce; and<br>• investigating the potential for introducing environmental labelling as a way of establishing a rewards system and encouraging increased participation in the program.<br>Stakeholders will be consulted throughout the project, particularly with regards to developing, reviewing and refining the training package; the new BMP modules; how best to report on the outcomes and deciding on the next directions for the cotton industry. | Cotton Research and Development Corporation and Australian Cotton Industry Council (CRDC and ACIC) | Pathways to Industry EMS Round One funding | Chaseley Ross Cotton Australia Ltd<br>07-3017 1340<br>chase@cottonaustralia.com.au |
| Farmer Federation | *Western Australia Situation Analysis for Whole of Farm EMS* | The WAFF project is looking to increase the sustainability, capacity and profitability of industry and increase the linkages between industry, research and development organisations, the NRM model and government. To help achieve this, the WAFF is funded to undertake a "situation analysis" for Western Australia, which will assess current EMS models, engage key stakeholders, evaluate opportunities and gauge community response to EMS. | Western Australia Farmer Federation (WAFF) | Pathways to Industry EMS Round Two | Ross Hardwick<br>WAFarmers 08-932 52937 Fax 9325 4197<br>Rosshardwick@waff.org.au |

| Industry Sector | Project Title | Description | Lead Organisation Partnerships and Location | Funding/ Timelines/ Status | Contact |
|---|---|---|---|---|---|
| Farmer Federation | *VFF-led Co-oper ative Action on Environmental Awareness and EMS* | This project seeks to increase farmer awareness of EMS and their environmental responsibilities, boost farmer self-esteem regarding environmental management and assist implementation of EMS beyond compliance with current regulations. This will be achieved by promoting environmental awareness of EMS throughout Victoria via VFF branch and Landcare group meetings. VFF will work with farm businesses to self-assess the environmental impacts and planning to achieve environmental outcomes. Appropriate targets for farmers and Landcare groups will be based upon regional catchment strategies and collected environmental data. VFF will also provide information on environmental management legislation, compile an ongoing record of proven EMS benefits and establish a recognition system for farmers successful in demonstrating environmental credentials. VFF will work closely with Victorian Departments of Primary Industries (DPI), Sustainability and Environment (DSE), R&D organisations and Catchment Management Authorities (CMAs). | Victorian Farmers Federation (VFF) | Pathways to Industry EMS Round Two funding | Greg Smith<br>0427 352 383<br>gsmith@vff.org.au |
| Fisheries - Seafood | *EMS Pathways for the Seafood Industry* | The seafood industry's goal is for EMS to be regarded as the key to its sustainable development. The project involves making industry members better aware of the aims and achievements of existing seafood EMS programs. Specifically, this involves:<br>• employing a full-time development coordinator to drive EMS in what is a relatively diffuse and diverse industry;<br>• developing a comprehensive communication and training package to encourage wider use of EMS;<br>• ensuring users reap the benefits of EMS by developing a standards and audit/accreditation process; and<br>• providing support to individual businesses through mentoring and workshops. | Seafood Services Australia (SSA) | Pathways to Industry EMS Round One funding | Jayne Gallagher<br>1300 130 32<br>jgallagher @seafoodservices. com.au |
| Horticulture | *Pathways to Environmental Assurance in the Australian* | The project involves bringing together a geographically and commercially diffuse industry, which is facing a mix of specialist and common challenges. This will involve: | Horticulture Australia Limited (HAL) | Pathways to Industry EMS Round One | Gerard McEvilly, Program Manager, Horticulture Australia Ltd |

| Industry Sector | Project Title | Description | Lead Organisation Partnerships and Location | Funding/ Timelines/ Status | Contact |
|---|---|---|---|---|---|
| | *Horticultural Sector* | • developing resource material to help horticulturalists implement environmental assurance initiatives;<br>• developing a framework to help farmers move towards the certification of good agricultural practices and piloting of them 'on-the-ground';<br>• developing guidelines for environmental assurance, a compliance and auditing checklist, as well as certification against an auditable code of environmental practices;<br>• working with 200 growers to trial the guidelines and checklists;<br>• reviewing existing industry programs; and<br>• communicating the results and outcomes via workshops and other informational sources. This will help avoid duplication and encourage greater use of environmental assurance within the industry and its extensive component groups. | | funding | 02-8295 2300 gerard.mcevilly@ horticulture.com.au |
| Horticulture -Grape and Wine | *Australian Wine Industry Stewardship (AWIS)* | The AWIS project seeks to optimise business operations to ensure the sustainable use of resources and by-products, as well as anticipate community and customer expectations on environmental performance. Through this project, the wine industry will measure and evaluate its performance in order to demonstrate its environmental stewardship. The project will follow a planning, production and adoption phase. These will include a review of customer market requirements and learnings from related international wine industry environmental projects. Grape growers and wine makers will be engaged via regional committees and provided with information packages that will assist businesses to achieve environmental targets. WFA will pilot the approach with one large and one small wine company. This will eventuate in a full-scale roll out across the industry via workshops. | Wine Federation of Australia (WFA) www.wfa.org.au | Pathways to Industry EMS Round Two funding | Amy Russell, Natural Resource Management Coordinator: phone 08 8222 9255, email amy@wfa.org.au |

| Industry Sector | Project Title | Description | Lead Organisation Partnerships and Location | Funding/ Timelines/ Status | Contact |
|---|---|---|---|---|---|
| Livestock | *Industry consultation for developing an EMS Module for the Red Meat Industry's Livestock Production Assurance Program* | Meat and Livestock Australia are seeking to develop resources to enable producers to implement an EMS module, attached to the Livestock Production Assurance program (LPA). Funding has been offered to the MLA to consult widely across the diverse industry regions and sectors of the red meat industry. In addition, the MLA will explore NRM issues and links with regional/catchment organisations, as well as considering recent EMS/environmental assurance initiatives in the meat, livestock and associated industries. | Meat and Livestock Australia (MLA) http:// www.mla.com.au | Pathways to Industry EMS Round Two | |
| Livestock - Dairy | *Dairying for Tomorrow – On the Ground* | The project aims to help farmers better understand their environmental situation; develop on-farm management plans and provide them with regionally based tools to help with planning and continuous improvement strategies. The project will extend the industry's existing natural resource management umbrella program – Dairying for Tomorrow – by:<br>• implementing and promoting DairySAT – an on-farm, self-assessment tool for environmental assurance – fully at the regional level;<br>• trialing the incorporation of environmental assurance techniques into BizLINK – the industry's business management and planning tool; and<br>• developing a best practice toolkit to help farmers make decisions concerning on-farm environmental assurance improvements. This will build on existing tool kits developed for the western and sub-tropical dairy regions and extend them Australia-wide. | Dairy Australia Limited and Australian Dairy Farmers Federation | Pathways to Industry EMS Round One funding | Peter Day, Resource Strategies 08-8278 9299 prday@bigpond.com |
| Livestock - Pig Industry | Developing an Environmental Management Program for the Pig Industry | The project involves developing and implementing an accredited EMS to help boost production while, at the same time, minimising the environmental impacts, improving natural resource management and making resource use more efficient by:<br>• expanding existing training programs;<br>• refining the EMS implementation guidelines; | Australian Pork Limited (APL) Across five states | Pathways to Industry EMS Round One funding | Jeya Jeyasingham 02-6285 2200 Jeyasigham@apl.au.com |

| Industry Sector | Project Title | Description | Lead Organisation Partnerships and Location | Funding/ Timelines/ Status | Contact |
|---|---|---|---|---|---|
| | | • establishing an auditing and accreditation process; and<br>• piloting the system in piggeries in five States to ensure on-ground success. Testing the EMS implementation guidelines and accreditation process in three to seven piggeries, with a coordinator in each State overseeing its adoption in other piggeries.<br>The feedback received from pilot participants and auditors will be used to refine the EMS implementation guidelines and accreditation process to ensure its relevance. | | | |

| Industry Sector | Project Title | Description | Lead Organisation Partnerships and Location | Funding/ Timelines/ Status | Contact |
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| Table | *Delivering an EMS for the Chicken Meat Industry* | This project seeks to raise the environmental awareness and increase the skills and knowledge of growers, which will promote the adoption of EMS on chicken meat farms beyond current regulation requirements. This includes a national roll out of an industry developed and recognised EMS training package nationally to a large percentage of growers as well as developing and implementing an EMS certification/auditing system for the industry. To achieve these outcomes the ACGA will publicise the National EMS Training Package to industry and tailor the package for each states. The ACGA will link with catchment bodies, community groups and R&D organisations. Trainers will be equipped to facilitate the uptake and implementation of the chicken meat industry EMS guidelines, certification/auditing systems for farms and on-farm auditing of EMS once developed. | Australian Chicken Growers Council Ltd (ACGC) | Pathways to Industry EMS Round Two funding | Laura Fell President ACGC 08-8383 0546 laurafell@bigpond.com |
| Poultry – Egg Industry | *Pathways to Environmental Assurance for the Egg Industry in Australia* | The Pathways to Environmental Assurance for the Egg Industry in Australia project seeks to manage egg production practices in such a way as to ensure environmental sustainability through a stepped project, including preservation of natural resources, as part of a holistic approach to ensure the industry's long term viability. To achieve these outcomes the AECL will identify critical operating regulations and consult with state regulatory authorities to ensure all regulations are understood, addressed and exceeded where possible. A whole-of-industry environmental code of practice will be established along with an expansion to the National Egg Quality Assurance Program. Implementation of the project will involve environmental training using specially developed tools following promotion to growers about the benefits of fulfilling environmental assurance. | Australian Egg Corporation Limited (AECL) | Pathways to Industry EMS Round Two | Irene Gorman R&D Manager 02-9409 6999 irene@aecl.org |
| Rice | *Ricegrowers'* Environmental Champions Program – Phase 3: Pathway to Industry Roll Out | The Environmental Champions Program's (ECP) vision is for all rice growers and others in the rice-growing region to participate in this change management and capacity building program. The aim is to extend the industry beyond compliance with current regulations to improve farming systems and associated business outcomes, ensuring measurable regional environmental improvements and leaving a healthy farm legacy. To achieve this, Ricegrowers' will partner with | Ricegrowers Association of Australia | Pathways to Industry EMS Round Two funding | Louise Adcock 02-6953 0456 ladcock@rga.org.au |

| Industry Sector | Project Title | Description | Lead Organisation Partnerships and Location | Funding/ Timelines/ Status | Contact |
|---|---|---|---|---|---|
| | | key industry, research and community organisations to form a steering committee. Three regional facilitators will be employed to assist growers through the five stages of the EPC using specially developed training materials. Particular attention will be given to stages three four and five of the project, which focus on putting environmental plans into on the ground action, enhancing biodiversity, improving farm eco-efficiency as well as fostering regional efforts towards catchment sustainability. | | | |
| Sugar | *Farm Management System Framework for the Sugarcane Industry* | The project involves developing and implementing a framework, based on a farm management system (FMS) developed in Queensland, to ensure industry can demonstrate its achievements in natural resource management in a coordinated, non-regulatory and consistent manner. Specifically, Canegrowers will:<br>• develop options for a sugar FMS standard and certification;<br>• develop a package of resources to help sugarcane growers in all regions implement the standard. This would include an interactive, web-based, legislation database; regional, natural resource risk assessment tools; a web-based list of best management practices and a generic guide to implementing FMS at the business level;<br>• undertake training and information transfer, focusing on better record-keeping and accounting by growers; and<br>• monitor and review the FMS framework. | Canegrowers Queensland | Pathways to Industry EMS Round One funding | Diana Dawson 07-3864 6444 diana_dawson@ canegrowers.com.au |

## Pathways to Industry EMS – Round Three project details

***The Western Australian Farmers Federation – Get industry 'EMS' ready – whole of farm environmental management system***

This project will help position WA's agricultural industries to effectively respond to emerging and potential market and legislative drivers for EMS. The Western Australian Farmers Federation and the Pastoralists and Graziers Association of Western Australia will establish a cross-industry, high-level framework and solid foundations to support progress toward adopting EMS in all the state's agricultural industries. This will include promoting the use of existing EMS/risk management tools, and identifying tools that will be applicable for broadacre industries, such as grains, red meat and wool. ($400,000 between 2005-06 and 2006-07).

***Grains Council of Australia (CGA) – Promoting EMS in the grains industry***

This project seeks to identify priority environmental issues affecting the industry, and promote the existing voluntary multi-level integrated EMS. It will help producers assess and manage environmental threats in specific agri-ecological zones, improve the natural resource base and enhance product sustainability. The Grains Council of Australia, with the Grains Research and Development Corporation, will expose all growers to the benefits and principles of EMS, and make EMS available to all farmers who wish to participate. ($500,000 between 2005-06 and 2006-07).

***Queensland Farmers' Federation (QFF) – Farm Management Systems framework and programs – implementation program***

Through its Farm Management System (FMS) at a farm level, the QFF seeks to achieve FMS Program recognition by key stakeholders. It will emphasise enhancing the Queensland horticulture and dairy FMS programs to strengthen the QFF FMS Framework. The project will enhance the ability of Queensland's agricultural industries to demonstrate their environmental credentials and contribute to regional NRM targets. ($500,000 between 2005-06 and 2006-07).

***Meat and Livestock Australia (MLA) – Development of an EMS module for the red meat industry's Livestock Production Assurance Program***

This project aims to create an EMS that enables red meat producers to prioritise environmental issues and use a systems-based approach to manage their natural resources. Meat and Livestock Australia will participate in a forum, consulting widely with the broad acre industries, to harmonise the administration of industry specific approaches to environmental management and undertake on-ground training activities. MLA's location in the Great Barrier Reef catchment will be advantageous in providing the industry with an opportunity to develop strong linkages with catchment-scale activities and demonstrable environmental outcomes. An EMS module under the industry's Livestock Production Assurance Program is proposed to enable producers to demonstrate environmental stewardship. ($387,000 between 2005-06 and 2006-07).

***Australian Wool Innovation – Developing a 'Current Recommended Practice' program for Australian wool to meet market needs for clean, green and ethically produced fibre***

This project seeks to have Australian wool recognised and valued by the global textile industry, consumers, market 'brands', retailers, demand chains and governments as a clean, green and ethically produced fibre. Australian Wool Innovation will develop Current Recommended Practice principles for wool production and processing, to build on existing state and wool producer frameworks. It will employ a full-time project management officer to deliver the project. ($600,000 in 2005-06 and 2006-07).

***Organic Federation of Australia - Organic Certification and EMS – the case for equivalence, organic certification – expanding the uptake of an equivalent EMS***

The Organic Federation of Australia will hold an industry-led workshop to establish EMS/environmental assurance goals, and develop a pathway to achieve them. The workshop will also provide an opportunity to examine ways to deliver EMS through other program mechanisms or industry channels. ($50,000 in the project in 2005-06).

***Tasmanian Farmers and Graziers Association – Environmental practices self assessment for Tasmanian agriculture***

This project will give producers the capacity to review the way they manage natural resources and access to further information and technical support to address environmental issues. The Tasmanian Farmers and Graziers Association is poised to roll out an achievable EMS program to advance knowledge and adoption of environmentally responsible farming practices, and demonstrate the quality of the practices to the community, markets and governments. The association will also develop a communications strategy to enhance links with other industries participating in EMS, and promote the EMS pathway throughout Tasmania. ($500,000 between 2005-06 and 2006-07).

***NSW Farmers' Association – Developing a landscape EMS model for NSW farms***

The NSW Farmers' Association will hold an industry-led workshop, in partnership with its members, to establish EMS/environmental assurance goals and develop a pathway to achieve them. The workshop will also provide an opportunity to examine ways to deliver EMS through other program mechanisms or industry channels. ($50,000 in 2005-06).

## Appendix 4. Summary of EMS National Pilot Program

| Industry Sector | Project Title | Description | Lead Organisation Partnerships and Location | Funding/ Timelines/ Status | Contact |
|---|---|---|---|---|---|
| All | ALMS EMS Pilot Trial | ALMS is a whole-of-farm, externally audited EMS that takes into account catchment-wide priorities and strategies. The pilot will be testing the best way to implement the ALMS process across regions with different industries, organisational capabilities and NRM priorities. The pilot will involve farming groups in Victoria and South Australia | *Australian Landcare Management System (ALMS) Ltd* | EMS National Pilot Program (NPP) | Tony Gleeson, ALMS Exec Officer 07 3844 2370 syncons@ozemail.com.au |
| Catchment | Linking on-farm EMS with catchment targets, a farmer-catchment-government partnership in Victoria | This pilot builds on the GRDC Riverina EMS project and involves a partnership of 3 catchment management authorities. The project is based on a 4-tiered EMS process, and will take farmers through to Tier 3, which is an ISO 14001 compliant EMS without 3rd party auditing. The pilot will link EMS actions with catchment targets and outcomes, and develop practical on-farm monitoring tools to help assess environmental outcomes | *North Central Catchment Management Authority* | EMS National Pilot Program (NPP) | Geoff Park, Biodiversity Manager, North Central Catchment Management Authority, PO Box 18, Huntly Vic 3551 |
| Catchment | Blackwood EMS pilot – 'Combining profitability and sustainability' | The Blackwood Basin Group is a West Australian community-managed Landcare organisation. The pilot is testing an EMS for environmental management of the Blackwood Basin. The EMS links on-farm actions with catchment NRM targets. As part of the pilot, a 'master plan' will be developed (based on HACCP – Hazard Analysis Critical Control Points) as a template for developing farm EMS. | *Blackwood Basin Group* | EMS National Pilot Program (NPP) | Saan Ecker saane@westnet.com.au or Lynda Coote lyndac@westnet.com.au 08 9765 1555 |
| Cotton | Development and assessment of Cotton BMP Program into a comprehensive EMS through the development of a Land and Water Module | The cotton pilot will expand the industry's current BMP Program by including key natural resource issues through the development and implementation of a comprehensive Land and Water Module. The Cotton BMP Program is a voluntary risk assessment program based on a process of continuous improvement using a 'plan-do-check-review' management cycle and an external audit component. The pilot will be run across 3 growing regions in QLD and NSW. | *Cotton Australia and Cotton Research and Development Corporation* | EMS National Pilot Program (NPP) | Chaseley Ross 07 3844 7307 chase@ cottonaustralia.com.au |
| Fisheries - Seafood | Seafood EMS framework | A Seafood EMS framework (Green Chooser) based on the principle of continuous improvement has been developed for the seafood industry. This pilot will test the effectiveness of the framework across fishing | *Seafood Services Australia* | EMS National Pilot Program (NPP) | Jayne Gallagher jaynegallagher@seafoodservices.com.au |

| Industry Sector | Project Title | Description | Lead Organisation Partnerships and Location | Funding/ Timelines/ Status | Contact |
|---|---|---|---|---|---|
| | | and aquaculture enterprises as a management tool for achieving environmental, social and economic goals for the industry. The pilot also aims to develop an industry guide on EMS implementation, identifying the critical factors for success. | | | 1300 130321 |
| Grain | Widespread adoption, ensuring practical application and testing benefits of EMS in broad-acre farming | In Western Australia 60 members of the grower driven Mingenew-Irwin Group will implement an EMS which was been developed specifically for broadacre businesses and with local environmental issues in mind. As part of the project EMS and QA will be better integrated, particularly in the areas of monitoring, record keeping, training and communications. To ensure the use of EMS on farm, practical and realistic auditing services will be developed and innovative technologies will be introduced to allow better environmental outcomes. Finally the project will assess the marketability of on-farm environmental efforts by selling Mingenew-Irwin-branded 'eco' grain products | *Mingenew-Irwin Group* | EMS National Pilot Program (NPP) | Cameron Weeks weeks@wn.com.au 08 9964 2974 Rachel Bagshaw r.bagshaw@ westnet.com.au 08 9927 1128 |
| Grain/Livestock | Murray Environmental Management Systems Group | In partnership with landholders in three diverse groups in the NSW Murray catchment, this pilot is expanding the application of an EMS developed for grains and meat industries to dryland and irrigated industries. The pilot will also determine whether EMS can help industry increase its competitiveness and production efficiency, and meet changing market demands for quality and environmental assurance | *Native Dog Landcare Group* | EMS National Pilot Program (NPP) | Glen Martin 03-5876 2236 gmartin1@iinet.au |
| Horticulture – Apple, Pear, Cheery, Grape and Wine | The Mount Lofty Ranges Watershed EMS project | The Mt Lofty pilot aims to develop and test the capacity of EMS to deliver NRM outcomes for primary industries and other catchment outcomes by implementing EMS on at least 30 enterprises within the highly sensitive Mt Lofty Ranges water protection area. The pilot will evaluate how the system can help producers meet growing environmental demands from the market and the community, and contribute to NRM outcomes on a catchment scale. Issues identified through the EMS process will be used to develop and implement property-level activities and guidelines for participating growers. | *Apple and Pear Growers Association of South Australia, Adelaide Hills Wine Region, Cherry Growers of SA)* | EMS National Pilot Program (NPP) | Trevor Ranford, Apple and Peargrowers aplnpear @ozemail.com.au 08 8349 4556 |

| Industry Sector | Project Title | Description | Lead Organisation Partnerships and Location | Funding/ Timelines/ Status | Contact |
|---|---|---|---|---|---|
| Livestock – Beef and Dairy | Building King Island Brand – an EMS pilot project | This pilot is testing the EMS process as a way to integrate business management practices and NRM issues into a property-based system for monitoring and improving practices. The EMS will be used in a marketing strategy to underpin the existing King Island brand name. The project will involve beef and dairy industries at both producer and processor levels. | *King Island Natural Resource management Group* | EMS National Pilot Program (NPP) | Debbi Delaney, Michael McGowan 03-6262 1709 ems@kingisland.net.au |
| Livestock – Beef and LAmb | Gippsland Beef and Lamb EMS | The Gippsland project will expand the work began under the MLA EMS pilot, extending the program to a wider group of beef and lamb producers, as well producers drawn from Landcare groups. The project will explore the capacity of EMS to encourage greater cooperation between producers and Landcare members in delivering regional NRM outcomes. | *Gippsland Natural Pty Ltd* | EMS National Pilot Program (NPP) | Julie Williams julie.williams @dpi.vic.gov.au 03-5624 2285 |
| Livestock - Dairy | Bega Cheese Dairy Farmers' EMS Pilot Program | The Bega pilot is testing EMS through the supply chain. A group of 20 dairy farmers will implement an ISO 14001 compliant EMS and test its effectiveness in managing production efficiencies and environmental outcomes against predetermined key performance indicators. The pilot will also include a Life Cycle Analysis of the Bega Cheese supply chain. The Bega Cheese factory will also implement an ISO compliant EMS. | *Bega Cheese Cooperative Ltd* | EMS National Pilot Program (NPP) | Ken Garner 02-6491 7777 ken.garner @begacheese.com.au |
| Livestock - Dairy | Developing dairy farmer and processor partnerships for EMS implementation | NSW Agriculture are testing the effectiveness of EMS as a business management tool to help dairy farmers manage their business and natural resources, and address catchment goals. The pilot will run across 4 dairying regions in NSW, QLD and VIC, and builds on linkages between farmers and processors. Where appropriate, common monitoring and recording methods and formats will be developed. | *NSW Agriculture* | EMS National Pilot Program (NPP) | Genevieve Carruthers 02 6626 1237 genevieve.carruthers @agric.nsw.gov.au |
| Livestock pastoral | On-Farm EMS and environmental labelling in the pastoral industries | This pilot will develop, implement and evaluate on-farm EMS for pastoral properties in Queensland. The pilot will also investigate the use of EMS to underpin product labelling and marketing of pastoral products. The implemented EMS will range from a baseline EMS to an ISO 14001 certified EMS. Catchment NRM priorities will also be identified within EMS development. | *Department of Primary Industries, QLD* | EMS National Pilot Program (NPP) | Lester Pahl 07 4688 1302 lester.pahl @dpi.qld.gov.au |

| Industry Sector | Project Title | Description | Lead Organisation Partnerships and Location | Funding/ Timelines/ Status | Contact |
|---|---|---|---|---|---|
| Rice | Rice Environmental Champions Program– an innovative mechanism for change | This pilot is trailing the rice industry's Environmental Champions Program – a tiered industry accreditation program based on EMS principles. The pilot will operate across rice growing regions in NSW and Victoria. 240 farmers will be involved in the project, with results applicable to the remainder of the industry, and transferable to other industries, particularly those reliant on irrigation. | *Rice Growers Association of Australia* | EMS National Pilot Program (NPP) | Louise Adcock ladcock@rga.org.au 02 6953 0456 |
| Sugar | Innovation and Integration: EMS in the central Australian pastoral industry | The CLMA is a producer-owned land management group in the Northern Territory. 15 pastoral stations will develop and implement EMS on their properties to test the value and practicality of EMS for achieving improved business management and resource management outcomes in Central Australia. The pilot will also create links between property-level EMS and NRM plans, and identify tools and approaches best suited to enterprises in arid environments. | *Centralian Land Management Association (CLMA)* | EMS National Pilot Program (NPP) | Dr Dionne Walsh. Ems@clma.com.au 08 8953 4230 |

## Appendix 5. Useful Websites

| Name of program/activities/ projects | Website |
|---|---|
| AgriQuality | http://www.agriquality.co.nz/index.cfm?cookieCheck=1 |
| Australian Eco Bananas, Pacific Coast Eco Bananas | http://www.eco-banana.com.au/ |
| Australian Garden Centre Accreditation Scheme | www.ngia.com.au |
| Australian Landcare Management Systems (ALMS) | www.alms.org.au |
| Australian Olive EMS framework | www.rirdc.gov.au |
| Australian Pork Industry Quality Program (APIQ) | www.apl.au.com/ |
| Australian Pork Ltd. EMS Pilots Environmentally Sustainable Piggeries Program | www.apl.au.com/ |
| Australian Wine Industry Eco-efficiency Agreement | http://www.wfa.org.au |
| Australian Wine Industry State of the Environment Report | http://www.wineaustralia.com/Default.aspx?p=98 |
| Banrock Station (in association with Landcare Australia) | www.banrockstation.com |
| Bookmark Biosphere | www.deh.gov.au/parks/biosphere/reserves/book.html |
| BRL Hardy EMS program | http://www.brlhardy.com.au/ |
| Canadian Ontario Environmental Farm Plans (EFP) | Agricultural Policy Framework - www.agr.gc.ca/cb/apf/index_e.php |
| Cotton Best Management Practices Manuals | www.cottonaustralia.com.au/LI_envbmp.html |
| Cotton Research and Development Corporation | www.crdc.com.au/ |
| Australian Cotton Growers' Research Association Inc | www.csd.net.au/acgra/ |
| Dairying For Tomorrow | www.dairyingfortomorrow.com/ |
| Dairy Australia - dairy industry services company replacing Australian Dairy Corporation (ADC) and Dairy Research and Development Corporation (DRDC). | www.dairy.com.au/ |
| Developing EMS for Grain Farms | www.agric.nsw.gov.au |
| Eco-efficiency Agreements (DEH) | www.deh.gov.au/industry/corporate/eecp/agreements/index.html |
| Eco-Management and Audit Scheme (EMAS) | www.europa.eu.int/comm/environment/emas |
| Eco-Rewards™ | www.eco-rewards.com |
| EMS for Farmcare Code of Practice | www.nfis.com.au/dmdocuments/sustinit.pdf |
| EMS Incentive Program (EMSIP) | www.centrelink.gov.au |
| EMS Standards - ISO 14001 | http://www.jas-anz.com.au/showpage.php for Australia; http://www.iso.org/iso/en/ISOOnline.openerpage for ISO |
| Environ-Mark® Supply Chain Management | www.enviro-mark.com (select New Zealand) |
| Environmental Choice Australia | www.aela.org.au |
| Environmental Performance Indicators and Yardsticks | www.clm.nl |
| EnviroVeg Project: How to demonstrate good environmental performance: a practical mechanism for vegetable growers | www.nfis.com.au/dmdocuments/sustinit.pdf |
| European Initiative for Sustainable Development in Agriculture (EISA) | www.sustainable-agriculture.org/start.html |
| Euro-Retailers Produce Working Group - Good Agricultural Practice EUREP GAP | www.eurep.org |
| US Agricultural EMS website | http://www.uwex.edu/AgEMS/ |
| US Farm*A*Syst Program | http://www.uwex.edu/farmasyst/ |

| Name of program/activities/ projects | Website |
|---|---|
| Food and Agriculture Organisation (FAO) - Investigation of Good Farming Standards | http://www.fao.org/prods/GAP/gapindex_en.htm |
| French Code of Reference for Integrated Farming | http://www.farre.org/versionAnglaise/anglais_home.htm |
| Global Reporting Initiative | http://www.globalreporting.org/index.asp |
| Go Mark Foods Farm Sustainability Assessment and Benchmark | www.gomarkfoods.com.au |
| Grains Research and Development Corporation | www.grdc.gov.au |
| Grape and Wine Research and Development Corporation | www.gwrdc.com.au |
| Cooperative Research Centre for Viticulture | www.crcv.com.au/ |
| SA Wine and Brandy Industry Association Inc | http://www.winesa.asn.au |
| Southcorp | www.southcorp.com.au |
| Green Globe 21 | http://www.greenglobe.org/ (www.greenglobe21.com) |
| Green Tick | www.greentick.co.nz |
| Greenhouse*A*Syst | http://www.ipm.msu.edu/GreenhseAgents.htm |
| Grow Sustainably™ | www.growsustainably.com |
| Guidelines to implement EUREP GAP for Australian Fresh Fruit and Vegetable Producers August 2004 | www.affa.gov.au/eurepgap |
| Horticulture for Tomorrow | www.horticulturefortomorrow.com.au/ project_background.html |
| Implementation of an environmental management system for processing tomatoes | www.growsustainably.com |
| Integrated Crop Management (ICM) and Integrated Farming Systems (IFS) | http://www.fao.org/prods/PP17501/EISA.htm |
| ISO 14001 in Action' | www.enviroaction.com.au |
| ISOFarm IMS (ISOFarm Management System) | http://www.isofarm.com/ |
| Kiwi Green (EUREP -GAP) program | www.zespri.com |
| Land Management Society “Farm Monitoring Kit” | http://www.lmsinfo.com (doesn't work) |
| Linking Environment and Farming LEAF | www.leafuk.org/LEAF |
| "Little Red Tractor" Scheme - British Farm Standard | www.littleredtractor.org.uk |
| MLA’s Livestock Production Assurance | www.mla.com.au |
| Michigan Agriculture Environmental Assurance Program (MAEAP) | http://www.michiganfarmbureau.com/ |
| Mingenew Irwin EMS package | www.mingenew-irwin.asn.au |
| Mount Lofty Ranges watershed EMS project | http://www.mtloftyems.com.au/Project%20Overview.php |
| Movement for Ecologically Sustainable Horticulture (MESH) | Page not currently available |
| National Agriculture Compliance Assistance Centre | http://www.epa.gov/agriculture/ |
| National Association of Sustainable Agriculture Australia (NASAA) Organic Standards | www.nasaa.com.au |
| National EMS for the Meat Chicken Industry | www.rirdc.gov.au/reports/CME/03-038sum.html |
| National Food Industry Strategy. Sustainability Program. | http://www.nfis.com.au/dmdocuments/sustprogbriefs.pdf |
| National EMS Pilot projects | www.daff.gov.au |
| National Land and Water Resources Audit | www.nlwra.gov.au/ |
| United States National Organic Program | http://www.ams.usda.gov/nop/NOP/standards.html |
| National Standards for Organic and biodynamic produce | http://www.ofa.org.au/papers/2005 Draft NATIONAL STANDARD.doc |

| Name of program/activities/ projects | Website |
|---|---|
| Nursery Industry Accreditation Scheme | www.ngia.com.au/niasa/index.html |
| Nursery Industry EMS framework | http://www.ngia.com.au/your_industry/your_industry_ngia.asp#step8 |
| NZ Fresh Produce Approved Supplier | www.vegfed.co.nz (http://www.vegetables.co.nz/about/default.cfm) |
| Olive EMS | www.rirdc.gov.au |
| Olives and Environment Protection Seminar | www.olivessouthaustralia.com.au |
| Organic Farming Scheme (UK) | http://www.defra.gov.uk/erdp/schemes/ofs/default.htm |
| Organic Standards Version 6 (Australia) | http://www.australianorganic.com.au/pages/standardsandmarketaccess.htm |
| Pesticide Action Network - Sustainable Agriculture Program | http://www.pan-international.org/index.html |
| New Zealand Project Green™ | www.projectgreen.co.nz |
| Rice Growers Association of Australia Environmental Champions Program | http://www.rga.org.au/environment/champions.asp |
| Sugar RDC | www.srdc.gov.au/ |
| CANEGROWERS | www.canegrowers.com.au/ |
| Queensland Fruit and Vegetable Growers (QFVG) Sustainability Benchmarking Project | www.qfvg.org.au / |
| Rural Environment Protection Scheme | http://www.teagasc.ie/advisory/environment.htm#RuralEnvironmentProtectionScheme |
| Smithfield Foods EMS for Swine Production Operations | www.smithfieldfoods.com/Enviro/EMS/ |
| Southcorp EMS | www.southcorp.com.au/company/environment.htm |
| State of the Environment Australia (SOE reporting) | http://www.deh.gov.au/soe/ |
| Sustainable Cocoa Program | www.chocolateandcocoa.org/default.asp |
| Sustainable Winegrowing New Zealand (SWNZ) | www.nzwine.com |
| Tesco's Natures Choice | www.tesco.com |
| The Living Wine Group | www.livingwine.org.nz |
| The Natural Step | members.ozemail.com.au/~natstep/ |
| Victorian Farmers Federation EMS Guidelines. | www.vff.org.au |
| Viticare Environmental Risk Assessment Tool (VERA) | www.crcv.com.au/publications/EMS/Environmental%20Management%20Systems/CRCV%20Environment.pdf |
| CRC Viticulture *Framework for a Wine and Grape Industry Approach to Environmental Management.* | http://www.crcv.com.au/publications/EMS/ |
| WA Environmental Best Practice guidelines for WA Nursery Industry | http://agspsrv34.agric.wa.gov.au/agency/Pubns/miscpubs/Mp02_2002/guidelinesNurseryInd.pdf |
| Watermark Environmental Stewardship Program (ESP) | http://www.mdbc.gov.au/subs/stand_sites/watermark/Watermark_Environmental_Stewardship_I2116.html |
| Wegman's IPM program | www.wegmans.com/health/fyfga/integratedPestManagement.asp |
| Wild Farm Alliance | http://www.wildfarmalliance.org/about/index.htm |
| Winemakers' Environmental Management Kit | http://www.epa.vic.gov.au/Business_Sustainability/Wineems/Welcome/Index.shtml. |
| Woolworths Quality Assurance (WQA) | www.woolworths.com.au |

# Appendix 6. Personal Communication

## Personal Communication

Adam Knapp, Seafood Services Australia, 29th July 2007

Alan Umbers, Grains Council of Australia, 12th July 2007

Alison Turnbull, Project Manager, Environment, 22nd November 2006

Andre Leu, Liz Clay, Organic Federation of Australia, 10th July 2007

Andrew Rouse, Noel Ainsworth, World Wide Fund for Nature

Bruce Edgerton, Australian Pork, July 2007

Cameron Allen, Meat and Livestock Australia, July 2007

Catherine Phelps, Program Manager NRM, Dairy Australia, 10th August 2007

Christine Ellis, Greening Australia.25th July 2007, cellis@greeningaustralia.org.au

Christine Kershaw, NRM Policy Officer (Property Planning), Tasmanian Farmers and Graziers Association, July 2007

Corey Watts, Australian Conservation Foundation, November 2006

Don Cowan, Don Bigby, Director Natural Resources Sciences

Dr Irene Gorman, Australian Egg Corporation Limited, 2006

Elliot Dwyer, Greg Cock, Primary Industries and Resources SA – 7th August 2006

Gary Sansom, Australian Chicken Growers Council

Genevieve Carruthers, NSW Agriculture Environmental Systems Specialist, May 2007

Geoff Park, North Central CMA Victoria, July 2007

Greg Smith, Victorian Farmers Federation, August 2007

Harold Rudy, Executive Director Ontario Soil and Crop Improvement Association

Jane Muller, Rachel Mackenzie, GrowCom, Queensland, 27th July 2007

Jens Light, Joint teams, DAFF DEH, 15th May 2007

John Cherry, Chief Executive Officer, QFF 23rd July 07

Kirsten Martin, BestFarms Coordinator, September 2007

Louise Adcock, 18th July 2007, and Janelle McGufficke, 10th August 2007, Rice Growers Association of Australia

Malcolm Sedgewick Meat and Livestock Australia, Ian Rogan AWI General Manager

Mark Edwards, Australian Forest Stewardship Program, July 2006

Martin Blumenthal, GRDC, 24th July 2007

Megan Scott, (02) 6272 4531, megan.scott@daff.gov.au

Peter Deuter, Queensland Department of Primary Industries and Fisheries, September 2007

Virginia Perkins, Department of Agriculture, Fisheries and Forestry, 6th July 2007

# National Inventory of Environmental Management Systems in Australian Agriculture

RIRDC Publication No. 09/054

Australian rural industries confront an array of ever-changing challenges. These include maintaining the resilience of production systems in the face of highly variable and unreliable weather, consumer concern about the methods of production and public scrutiny of land management practices, accompanied by ever more stringent environmental regulations and increasingly competitive export and domestic markets for produce.

Since 1999, the Rural Industries Research and Development Corporation (RIRDC) has supported the development and implementation of Environmental Management Systems (EMSs) to provide land managers with the information and tools they need to help meet the challenges.

This report was commissioned by RIRDC as a follow up to one prepared in 2005, providing an update on the status of EMS and related environmental stewardship projects in Australia. The report also includes a review of selected international EMS activity.

The Rural Industries Research and Development Corporation manages and funds priority research and translates results into practical outcomes for industry.

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