Environmental Management Systems Implementation in Agriculture
Identifying and overcoming the barriers

A briefing paper for the Rural Industries Research and Development Corporation
by Thea Mech

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Foreword

This final report presents the findings of a RIRDC-funded research project on a range of voluntary approaches to environmental and quality management for application to agriculture and allied rural industries. The report focuses primarily on a range of voluntary (non-legislated) approaches to environmental management in agricultural and rural industries, the development of which is being driven by sustainability and globalisation imperatives. These voluntary approaches to environmental management in agriculture (voluntary environmental management arrangements, or VEMAs) are undertaken for the purposes of environmental and quality assurance, food safety and animal welfare. Interest in diverse VEMAs is gathering momentum in Australia and overseas. This research sheds light on international developments in a rapidly evolving area that holds much promise for agriculture and rural industries.

This project was funded from RIRDC core funds which are provided by the Australian Government.

This report is an addition to RIRDC’s diverse range of over 1500 research publications, forms part of the Environment and Farm Management R&D program, which aims to support innovation in agriculture and the use of frontier technology to meet market demand for accredited sustainable production.

Most of our publications are available for viewing, downloading or purchasing online through our website:

- purchases at www.rirdc.gov.au/eshop

Peter O’Brien
Managing Director
Rural Industries Research and Development Corporation
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Abbreviations

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<tr>
<td>BFA</td>
<td>Biological Farmers of Australia</td>
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<td>BMP</td>
<td>best management practice</td>
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<td>CAC</td>
<td>command and control</td>
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<td>CEC</td>
<td>Commission of European Communities</td>
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<td>CSIRO</td>
<td>Commonwealth Scientific and Industrial Research Organisation</td>
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<td>DAFF</td>
<td>Department of Agriculture Fisheries and Forestry - Australia</td>
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<tr>
<td>EMS</td>
<td>environmental management system</td>
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<tr>
<td>EMSIWG</td>
<td>Environmental Management Systems Implementation Working Group</td>
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<td>EMSWG</td>
<td>Environmental Management Systems Working Group</td>
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<tr>
<td>EU</td>
<td>European Union</td>
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<td>EUREP-GAP</td>
<td>Euro-Retailer Produce Working Group - Good Agricultural Practice</td>
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<td>FAO</td>
<td>Food and Agriculture Organization of the United Nations</td>
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<td>FFCS</td>
<td>Finnish Forestry Certification Scheme</td>
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<td>FSC</td>
<td>Forest Stewardship Council</td>
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<tr>
<td>HACCP</td>
<td>Hazard Analysis and Critical Control Point</td>
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<tr>
<td>ICM</td>
<td>integrated catchment management or integrated crop management</td>
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<tr>
<td>IEEP</td>
<td>Institute for European Environmental Policy</td>
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<tr>
<td>IWRC</td>
<td>Iowa Waste Reduction Center, University of Northern Iowa</td>
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<tr>
<td>IFP</td>
<td>Integrated Fruit Production</td>
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<td>ISO</td>
<td>International Organization for Standardization</td>
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<td>MSC</td>
<td>Marine Stewardship Council</td>
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<tr>
<td>NFU</td>
<td>National Farmers’ Union</td>
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<td>NHT</td>
<td>Natural Heritage Trust</td>
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<td>NRM</td>
<td>natural resource management</td>
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</table>
NRMMC  Natural Resource Management Ministerial Council
OECD  Organisation for Economic Cooperation and Development
QA  quality assurance
QMS  Quality Management System
RIRDC  Rural Industries Research and Development Corporation
SMEs  small and medium enterprises
SQF  Safe Quality Food
SQF 1000 and SQF 2000 are quality and food safety codes developed by Agriculture Western Australia
VEMA  voluntary environmental management arrangement
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Executive summary

Environmental management systems (EMS) implementation in Australian agriculture is being driven by industry and government co-investments. However, barriers to EMS uptake in agriculture exist, and the purpose of this Briefing Paper is to identify these barriers, along with some possible ways of overcoming them.

Several barriers to environmental management systems (EMS) implementation and certification in agriculture are identified. These are posed by presently elusive marketplace benefits from EMS implementation in agriculture, the paucity of environmental information for use in farm EMSs, the costs of EMS implementation and certification, including the transaction costs of acquiring or generating new environmental information, as well as the costs of being audited. Another barrier is posed by the fact that most farms are micro, and in some cases small, business enterprises and, as such, at a disadvantage if compared to medium and larger businesses that may enjoy economies of scale, access to greater financial resources and scope for skills specialisation regarding environmental management matters. Finally, a barrier to the uptake of voluntary environmental initiatives arises because farms are embedded in rural economies undergoing structural change that imposes a variety of pressures on farmers and the decisions they make, and that decreases the likelihood of EMS implementation being seen as a priority, when elusive market benefits, unclear information and the costs of compliance already present hurdles. Some ways of overcoming the barriers to EMS implementation are explored.

Ultimately, the success of EMS in agriculture depends on how farmers in diverse agricultural industries embrace it. Given the existence of significant barriers to EMS in agriculture, whether or not farmers chose to embrace it depends in large measure on how government assists in overcoming those hurdles. Although EMS in agriculture holds enormous promise, the premature view of EMS as an environmental management panacea is cautioned. Just as orthodox regulation has limitations, so too does EMS. The very fact of its voluntariness means that high participation rates cannot be guaranteed. Indeed, high participation rates would not necessarily be synonymous with good environmental performance or outcomes, especially so in the absence of farm-relevant and production-oriented environmental information for use in an EMS.

In making agri-environmental policy choices, governments would be wise to consider their best options for fostering widespread and long-term improvement in environmental management in agriculture. Making wise policy choices now, is likely to prove decisive in laying the foundations for resilient future agricultural systems.
Introduction

Environmental management systems (EMS) implementation in Australian agriculture is being driven by industry and government co-investments. However, barriers to EMS uptake in agriculture exist, and the purpose of this Briefing Paper is to identify these barriers, along with some possible ways of overcoming them.

The growing interest by Australian Federal and State Governments to explore the potential that EMS has to offer agriculture in terms of delivering environmental and marketplace outcomes has resulted in the National Framework for EMS in Agriculture (EMSWG, 2002; and EMSWG, 2001), the National EMS Implementation Plan (EMSIWG, 2003), as well as the $8.5 million National EMS Pilot Program (www.daff.gov.au). This program involves 15 pilot projects in a range of primary industries across Australia (Box 1, overleaf). Outside the bounds of the National EMS Pilot Program, agri-food companies, family farm businesses and various rural industry groups are also engaged in EMS development, some to the point of full ISO14001 certification (www.aemsaustralia.com.au).

The growing interest in voluntary (that is to say non-legislated) EMS in agriculture in Australia, reflects the rising use of both:

- EMS, and other voluntary approaches, to environmental management around the world, particularly in non-agricultural sectors (Gunningham and Sinclair, 2002; Gunningham et al, 1999; and ISO, 2000); and

- standards-based environmental certification and labelling schemes, albeit typically other than EMS1, in agriculture (Mech and Young, 2001; and Toyne et al, 2004).

The rising use of EMS, particularly in non-agricultural sectors around the world, contrasts with the tardiness of EMS to establish a foothold in agriculture.1 This, together with the rising use in agriculture of standards-based environmental labelling and certification schemes typically other than EMS, begs the question why this is so, and suggests the existence of barriers to EMS implementation in rural industries. Owing to the current levels of genuine interest, enthusiasm and, not least, dollar investment in EMS in agriculture, it is worth exploring these barriers and ways to overcome them.

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1 While examples of EMS (ISO 14001) certified farms exist, to date their numbers have been very limited, with only about one per cent of all ISO 14001 certifications being issued to agriculture and fishing enterprises at the end of 2000. (ISO, 2000).
Box 1: The National EMS Pilot Program in Australian agriculture

In April 2003, the Commonwealth Government launched an $8.5 million EMS National Pilot Program that involves 15 pilot projects across Australia funded through the Natural Heritage Trust (NHT). The stated objective of this national program is to:

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

The EMS Pilot Projects themselves intend to:

- build on current government, industry and landholder interest in a systems approach to environmental management;
- enhance the capacity of Australian rural industries to establish and maintain sustainable production systems;
- help prepare producers meet growing consumer demand for agricultural products to be produced in a sustainable way.

The EMS Pilot Projects represent a diverse range of industries, regions, partnerships and natural resource management issues. They include the:

- Gippsland Beef and Lamb EMS Pilot Project (Gippsland Natural Pty Ltd);
- Bega Cheese Dairy Farmers’ EMS Pilot Project (Bega Cheese Cooperative Ltd);
- Innovation and Integration Project for EMS in the Central Australian Pastoral Industry (Centralian Land Management Association);
- Dairy Farmers and Processors Partnership for EMS Implementation (NSW Agriculture);
- Linking On-farm EMS with Catchment Targets, a Farmer-Catchment-Government Partnership Project in Victoria (North Central Catchment Management Authority);
- Building Brand King Island - an EMS Pilot Project (King Island Natural Resource Management Group);
- On-farm EMS and Environmental Labeling in the Pastoral Industries (Department of Primary Industries, Queensland);
- Mount Lofty Ranges Watershed EMS Pilot Project (Apple and Pear Growers Association of South Australia, Adelaide Hills Wine Region, and the Cherry Growers of SA);
- Rice Environmental Champions Program - an Innovative Mechanism for Change (Ricegrowers’ Association of Australia);
- Seafood EMS Framework (Seafood Service Australia);
- Practical Application and Benefit Testing of EMS in Broad-acre Farming (Mingenew-Irwin Group);
- Blackwood EMS Pilot Project on Combining Profitability and Sustainability (Blackwood Basin Group);
- Murray Environmental Management Systems Group (Native Dog Landcare Group);
- Australian Landcare Management System EMS Pilot Trial (Australian Landcare Management Systems Ltd);
- Development of the Cotton Best Management Practice Program into a Comprehensive EMS (Cotton Australia and the Cotton Research and Development Corporation)

Source: www.daff.gov.au
The potential of EMS in agriculture

Industry and government interest and investment in EMS in agriculture reflects the search by diverse stakeholder groups for innovative ways of addressing environmental issues in agriculture. This search for new management tools and policy instruments represents a departure from the command-and-control (CAC) approaches of orthodox government programs and regulation. The new agenda stresses the potential of industry to take the lead in developing solutions, often in partnership with other stakeholders including public agencies and community organisations.

In contemporary Australian agri-environmental policy, EMS for agriculture is presented as delivering the following benefits that are often cited in the context of EMS’s application within non-agricultural sectors and industries. These benefits include the potential of EMS in agriculture to:

- combine BMPs and CoPs for environmental management, and integrate other environmental standards to achieve efficiencies and cost savings;
- integrate QA, food safety & animal welfare;
- help achieve compliance, and even go ‘beyond compliance’;
- provide surrogate regulation, where none exists;
- be widely applicable to different types of farms (corporate farms, family farms) in different agricultural subsectors, and along supply chains; and
- be recognised in international markets.

Growing interest in diverse voluntary environmental management arrangements (VEMAs)² in agriculture mirrors the fact that on-the-ground activities, research inquiry, and policy development in this area are gathering momentum across sectors and around the globe. Internationally, this rising interest is illustrated by increasing use of voluntary approaches to achieving environmental goals in a range of industries. According to the OECD (1999):

- in the European Union (EU), over 300 environmental agreements have been negotiated;
- in Japan, some 30,000 local pollution control agreements have been negotiated; and
- in the USA, the federal government surveyed over 40 voluntary programmes that it manages.

Other indicators of increasing use and acceptance of voluntary approaches to environmental management are that, since the origin of the ISO14000 series of environmental management standards in 1996, the number of certificates awarded to firms in diverse industry sectors has grown to 22,897 worldwide (ISO, 2000). Also, the number of corporations voluntarily engaging in environmental performance reporting has grown. Similarly, growing interest in quality, food safety and animal welfare practices, and their emerging mainstream acceptance, indicates the likelihood of increasingly prominent roles of these voluntary arrangements in the future. (Mech and Young, 2001; and Mech, Lowe and Cole, 2003).

² VEMA is an umbrella term embracing many very different types of arrangements including EMS, as well as various production protocols that may be part of environmental certification schemes and environmental labelling initiatives. VEMAs are given deeper treatment in Mech and Young (2001).
Identifying the barriers to EMS implementation in agriculture

While examples of ISO 14001 certified farms exist, to date their numbers have been very limited. For example, only about one per cent of all ISO 14001 certificates issued at the end of 2000, were in agriculture and fishing. The tardiness of EMS certification to establish a foothold in agriculture, coupled with the rising use in agriculture of standards-based voluntary environmental management arrangements (VEMAs) typically other than EMS, indicates the present weakness of the marketplace in driving the adoption of the ISO 14001 standard by farm businesses, and also points to the existence of other barriers to EMS implementation in agriculture.

Elusive marketplace benefits from on-farm EMS implementation

Linked environmental-marketplace benefits are, to date, proving elusive to find with EMS in agriculture. With respect to the weak, perhaps even largely absent, market drivers of EMS uptake by farm businesses, Wall et al (2001) observe that the benefits of ISO 14001 certification will be greater for firms marketing food products than for producers selling a bulk commodity far removed from final consumption. This observation, along with the fact that ISO 14001 certification may not be used for product labelling purposes, is pertinent to explaining the rising use in agriculture of standards-based VEMAs, typically other than ISO 14001.

Some examples of standards-based VEMAs that incorporate production-oriented standards and allow for product labelling, and that are currently more widely used by agriculture and rural industries, are discussed in Mech and Young (2001). These include Nature’s Choice code of practice for environmental management demanded by Tesco supermarket of its suppliers, the EUREP-GAP protocol for fresh fruit and vegetables, the Integrated Crop Management (ICM) standards under the UK’s National Farmers’ Union (NFU) Assured Produce Scheme, the Integrated Fruit Production (IFP) protocols for apples and pears, various Organic Standards, the Marine Stewardship Council’s (MSC) scheme, the Forest Stewardship Council (FSC) and the Finnish Forest Certification Scheme (FFCS).

3 At the end of December 2000, a total of 17,476 ISO 14001 certificates had been issued worldwide, of which 205 (1.2 per cent) were issued to agriculture and fishing enterprises. The industrial sectors attracting the highest number of certificates included, in descending order of importance, sectors producing: electrical and optical equipment; chemicals, chemical products and fibres; basic metal and fabricated metal products; machinery and equipment; and, construction (ISO, 2000).

4 Environmental standards may be placed into two main groups, according to Ure’s (1999) categorisation. First, organisation-oriented standards, also called process standards, specify management processes and procedures to be followed by an organization for the purposes of environmental management. Second, production-oriented standards may be product standards or performance standards. The former define specific features of a final product and may also define how that product must have been produced, whereas the latter specify acceptable or required levels of environmental performance. Performance standards may sometimes specify required environmental outcomes, and may relate to environmental externalities arising from production.

5 Other standards-based arrangements for agriculture and rural industries include voluntary arrangements designed for quality assurance, food safety and animal welfare purposes. These include Hazard Analysis Critical Control Point (HACCP) food safety assurance, the Safe Quality Food (SQF) initiative, the ISO 9000 series of standards for quality assurance (QA), three QA codes of practice for Australian agriculture, and the Model Codes of Practice for the Welfare of Animals (Mech and Young, 2001).
The environmental information barrier

Environmental information, including its availability to farmers and often its practical usefulness to farm management decision-making when available, presents a barrier to EMS implementation in agriculture. As a process standard for a management system, EMS provides a means for improving the way a firm manages its environmental impacts by demanding verifiable rigour in the way a firm manages its information, and uses that information in its management decisions. The supportive information used in an EMS includes information on existing legal and regulatory obligations, voluntary environmental Codes of Practice, Best Management Practice guidelines and standards, as well as information on environmental risk identification and assessment.

Indeed, the ISO 14001 standard’s accompanying guidelines, the ISO 14004 guidelines, clearly state that requirements of the ISO 14001 process standard include compliance with prevailing environmental legislation and regulations, as well as with “other requirements to which the organization subscribes, that are applicable to the environmental aspects of its activities, products or services” (Standards Australia, 1996). The ISO 14004 guidelines elaborate that these “other requirements” may include industry codes of practice, agreements with public authorities and non-regulatory guidelines, as well as international environmental guiding principles. In other words, a management system that aims to improve the way that environmental impacts are managed, i.e.: an EMS, will only work if the information that the system uses is in an available and usable form to enable the site level, or farm level in the case of agriculture, management of environmental impacts in question to be improved. Thus, the strength of the ‘E’ in EMS depends on the strength of the supportive information in the management system. Without it, EMS is weakly positioned to deliver what it potentially promises.

With specific reference to EMS in agriculture, the environmental information barrier is typified by a paucity of site-specific, that is to say farm-relevant, information on existing legal and regulatory obligations, voluntary environmental Codes of Practice, Best Management Practice guidelines and standards, as well as information on environmental risk identification and assessment. Quite simply, much supportive information required for a farm EMS may be lacking, or it may exist in formats such that its relevance to farm management decisions may not be readily apparent.

Agriculture presents challenges for regulators, as the complex nature of farming’s environmental impacts does not always lend itself to traditional regulatory command-and-control (CAC) approaches. As regards voluntary environmental Codes of Practice in agriculture, Best Management Practice guidelines and standards, and environmental risk assessment tools, some notable examples already exist, while others are under development. However, there are a great many primary industry sectors where such codes, guidelines, standards and risk assessment tools remain to be developed, and where their development should be encouraged. This is especially germane to the Australian agricultural context, given the profile of EMS in the discourse of contemporary agri-environmental policy.

The cost of compliance barrier

The cost of full compliance against the ISO 14001 standard can be significant and, as such, poses a barrier to EMS implementation and certification in agriculture. No formal empirical studies have focused to date on the survey and analysis of the costs of compliance of EMS implementation and certification in agriculture. Clearly this is due in no small measure to the fact that EMS implementation and certification by farm businesses is at an embryonic stage the world over. However, anecdotal evidence points to relatively high cost outlays associated with implementing a farm EMS and getting it certified. This, coupled with currently elusive marketplace benefits associated with farm EMSs, either in terms of better market access or higher premiums, points to the low likelihood of widespread EMS implementation and certification in agriculture at the present time.
The costs of implementing and certifying a farm EMS may be thought of as having two key cost components. One cost component relates to the costs of acquiring environmental information relevant to farm management decision-making where it already exists. This may include, for example, information on existing legal and regulatory obligations, voluntary environmental Codes of Practice, Best Management Practice guidelines and standards, as well as available information on environmental risk identification and assessment. Where such information is lacking, there are costs associated with generating one’s own surrogate information for use in an EMS. The second cost component is the cost of being audited. As regards the role government in promoting EMS in agriculture, these two cost components have different implications. These are discussed below, in the context of overcoming the barriers to EMS adoption in agriculture.

The micro enterprise barrier

Although EMS was conceived for intended application across sectors and to all types of organisational structures ranging from micro, small and medium enterprises (SMEs) to large corporations, EMS has in practice tended to be implemented by larger businesses in non-agricultural sectors. The fact that the majority of farms are micro enterprises, presents a barrier to EMS implementation and certification. Indeed, the environmental information and cost-of-compliance barriers may be viewed as a function of the fact that the majority of farms are micro, and in some cases small, enterprises.

Agriculture is dominated by family farming business enterprises, which differ in some key respects from larger corporate farms, downstream agri-businesses, and firms in non-agricultural sectors. In contrast to smaller family farms, larger corporate farms, downstream agri-businesses and firms in non-agricultural sectors enjoy economies of scale and access to greater financial resources that increase the likelihood of employing dedicated staff, and/or consultants, with environmental management specialisations and expertise to address specific environmental issues. Such skills specialisation is likely to be absent on smaller family farms. For these reasons, with respect to the ease of access to information on legal environmental obligations, as well as to information on environmental risk, both of which are central to an EMS, family farmers are at a disadvantage. Furthermore, the ease of access to such information in agriculture is also likely to be hampered by the sheer remoteness of many farms. (Mech and Young, 2001).

The rural adjustment barrier

Farm sector performance is typically subject to fluctuating output prices, declining terms of trade, and the vagaries of the weather. In addition to these pressures, various rural adjustment processes exert additional pressures, not necessarily directly on farm performance, as do fluctuating prices, the cost-price squeeze, drought and other unpredictable weather patterns, but they act more broadly on rural communities, and their capacity for “social sustainability” (Barr, 2002).

Several social change processes taking place in rural Australia are outlined by Barr (2002). Amongst others, these include migration to urban areas, particularly by younger rural people, the rising average age of farmers, the decreasing attraction of farming as a career choice, and the rising pressure on farmers to provide multifunctional agricultural services. While these rural change processes are shared by other developed country agricultures and, as such, are by no

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6 Micro enterprises are defined as independent firms with fewer than 10 employees. Small enterprises are those with fewer than 50 employees and a turnover of less than Euro 7 million, or an annual balance sheet total not exceeding Euro 5 million. Small and medium enterprises, or SMEs, are those with fewer than 250 employees, with a turnover of less than Euro 40 million, or an annual balance sheet total not exceeding Euro 27 million (CEC, 1996; in Ammenberg et al, 2000).

7 A vast body of literature exists on social change processes in rural areas in developed country agricultures. Gasson (1986), Larson and Mundlak (1997) and Redclift (1986) provide insights on some key issues.
means unique to Australia, Barr (2002) cautions that policy makers ignore rural adjustment processes at their peril. With rural adjustment processes mounting growing social and economic pressures on rural communities, the uptake of voluntary environmental initiatives is unlikely to be seen as a priority area by many farmers, particularly where elusive market benefits, high costs of participation and unclear information pose barriers to adoption.

**Overcoming the barriers**

**Overcoming the elusive marketplace benefits from on-farm EMS implementation**

To contribute to the future strengthening of presently elusive marketplace benefits from on-farm EMS implementation, both government and industry have roles in educating the wider community on environmental management in agriculture, and the application of EMS to agriculture. Importantly, because of the general confusion that often exists between EMS (ISO 14001) certification and environmental labelling, there is a case for raising public awareness about the differences. Essentially, the key to understanding these differences lies in understanding the standards or criteria that are audited in different environmental certification and labelling schemes. Standards determine the nature of the green claims that can be made in the event of a successful third party audit. Also, the nature of the audit, that is to say whether it is conducted internally or externally or both, and the nature and identity of the body or authority conducting external auditing and making labelling recommendations and decisions, convey different messages in the marketplace regarding the levels of certainty, even trustworthiness, associated with the environmental claims made. Thus, the nature of the standards and how these are audited determine the level of consumer confidence and marketplace recognition associated with different schemes.

A management system like EMS (a process standard) is unlikely to address the specific concerns of agri-food consumers alone in the absence of production-oriented (product and performance standards) environmental standards. This, along with the fact that, as a process standard, EMS itself cannot be used for product labelling purposes, helps explains the rise in use of standards-based VEMAs that incorporate production-oriented environmental standards and that can result in product labelling. These include, amongst others, diverse organic standards and their associated labelling schemes, as well as the Marine Stewardship Council (MSC) and Forest Stewardship Council (FSC) schemes. Also importantly, verifiable compliance against standards-based VEMAs that incorporate production-oriented environmental standards are increasingly being imposed upon agri-food suppliers by large retailers. For example, in 1999, the UK supermarket chain Sainsburys drew the EUREP-GAP General Regulations for Fresh Fruits and Vegetables to the attention of all of its overseas suppliers of fresh and frozen produce. It plans that all overseas suppliers will be verified as complying with the EUREP-GAP protocols by 2003. In the case of agri-food products, it is postulated that environmental labelling and/or certification schemes likely to be successful in linking environmental and marketplace benefits will be ones that include production-oriented environmental standards (product and performance standards) that address specific consumer concerns to enjoy market recognition. Although linked environmental-marketplace benefits are proving elusive to find with EMS in agriculture, this does not mean that such benefits will not accrue from environmental labelling, or certification, schemes of which EMS may be a component. Indeed, the organic standard of the Biological Farmers of Australia (BFA, 2001), the FSC and MSC schemes, and the EUREP-GAP protocols, all blend organisation-oriented (process) and production-oriented (product and performance) standards.

Also with regard to overcoming the presently elusive marketplace benefits from on-farm EMS implementation, there may be opportunities for governments to provide alternative benefits via regulatory relief incentives for farmers implementing EMS and demonstrating verifiable improvements in environmental outcomes and performance. Such incentives could include, for
example, rebates on natural resource management levies, or lower fees for licences, leases and registrations relating to environmental management.

**Overcoming the environmental information barrier**

The efficacy of an EMS in delivering environmental outcomes ultimately rests upon the environmental information that the system uses to enable the management of environmental impacts in question to be improved. It is for this reason that, at least in the short to medium term, a shift in policy emphasis is suggested away from promoting EMS in agriculture, towards the development of the environmental information that would enable EMS work effectively to improve environmental outcomes. To overcome the environmental information barrier to EMS implementation in agriculture, the development and dissemination of environmental information for use in farm EMSs merits attention. Notably, farm-relevant information on existing legal and regulatory environmental obligations should be available to farmers. Industry-specific and farm-relevant information on how to identify environmental risks, regardless of whether these risks are dealt with under existing legislation or voluntary codes, should be available to farmers, and where necessary developed. And, the “other requirements” referred to in the ISO 14004 guidelines, which include voluntary industry-specific and farm-relevant environmental Codes of Practice and Best Management Practice guidelines and standards, should exist, and where necessary be developed and made available to the intended users. Some Australian agricultural industries are working along these lines already. For example, cotton and viticulture provide good examples of industry-driven approaches to NRM, which generate farmer and grower awareness of EMS and, arguably more importantly, generate practical guidance on specific environmental matters that is incorporated into farm management practice.

To facilitate the uptake of EMS in agriculture, government, in partnership with industry, has a role in supporting the development and provision of supportive information. It is imperative that such information be made easily and widely available to farmers, that it be practically useful to their farm management decision-making and, crucially, that farmers be involved in the development of such information. Indeed, drawing on OECD (1999), the provision of good supportive environmental information, such as that contained in codes of practice and guidelines for environmental management, is recommended as component of voluntary approaches to environmental management. Thus, regardless of whether a farmer would ultimately choose to use either an informal or a fully certified EMS to integrate environmental information contained in diverse BMPs, codes of practice, guidelines, standards, and risk assessment tools, the development of environmental information that is accessible and practically useful to on-farm decision-making should be encouraged.

There are opportunities for governments to commit resources to the development of environmental guidelines, targets and standards for different agricultural and rural industries. Some information already exists in various catchment, regional, national and international environmental objectives and targets. However, this information is sometimes generic in nature, and there may be a need to ensure that it has practical applicability at the farm-level. In this regard, an important role of government could be to foster the formation of partnerships between stakeholder groups,8 to provide an interface for translating technical knowledge and community concerns relating to environmental management, into production-oriented environmental guidelines and standards applicable at the farm-level.

A specific way in which governments could support EMS in agriculture would be to make information on legal and regulatory obligations relating to environmental management and protection readily available. For example, information relating to existing NRM and environmental regulations and legislation relevant to Australian agriculture and rural industries

8 Relevant stakeholder groups may include industry and peak industry bodies, research organisations, public agencies and community and environmental groups.
could be compiled, periodically updated and made available free-of-charge. The explicit purpose of such a user-friendly ‘Guide to Environmental Regulation for Agriculture and the Rural Industries in Australia’ would be to provide information needed by operators in agricultural and allied rural industries to comply with state and federal regulations relating to NRM and environmental protection. It is suggested that there is an opportunity for such a publication to be co-sponsored by Federal and State government agencies responsible for administering NRM, environmental protection and regional planning legislation applicable to agriculture and the rural industries. Such a guide could be structured along the lines of the ‘Handbook of Environmental Regulations for Agribusiness’ produced by the Iowa Waste Reduction Center of the University of Northern Iowa (IWRC, 2000). Alternatively, an Australian guide to environmental regulation for the primary industries could draw on the ‘Manual of Environmental Policy’ produced by the Institute for European Environmental Policy (IEEP) for guidance on appropriate presentation. This manual appraises its users on developments in European legislation and in the corresponding UK implementing legislation, and analyses and evaluates the implications of over 500 European Community (EC) Directives and Regulations (IEEP, 2000, 1999, 1998 1997, 1996). It provides an authoritative source of information on rapidly changing developments in EC environmental regulation relating to, amongst other things, the management of water, waste, air, harmful substances, wildlife and the countryside. Also, the manual lists all adopted EU environmental legislation, plus summaries of proposed environmental legislation and the details of environmental proposals under development. (Mech and Young, 2001).

Overcoming the cost of compliance barrier

With regard to overcoming the cost of compliance barrier, implications for the role of government arise from the notion that the costs associated with implementing and certifying EMS may be thought of as having two cost elements. One cost component relates to the transaction costs of acquiring environmental information where it exists, or generating it anew where it doesn’t, and the second relates to other implementation costs including those of auditing.

With respect to the first cost element, the possible role of government in supporting the development and dissemination of environmental information, thereby decreasing the transaction costs of acquiring or generating it, can be seen as a public good provision role with information being equally available to all choosing to use it. Importantly, production-oriented and farm-relevant environmental information would benefit those farmers choosing to implement EMS, and also those choosing to improve their environmental management outside the context of a management system. Also importantly, once developed, information may be improved upon and adapted as new knowledge becomes available.

With respect to the second cost element, however, government’s role in directly supporting, effectively subsidising, a private individual’s auditing costs can be seen as both a private and public good provision role, with supported private individuals benefiting, along with the wider community benefiting from improved environmental management. However, attention is drawn to the potential downside of short-term direct support, namely the possible failure of individuals to continue with the activity they were supported to do, once that support is withdrawn. In

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9 This handbook contains regulatory information on waste management and pollution prevention that is specific to different agribusiness sectors. The handbook presents information on regulations that apply to different operations, how operators can comply and how they can get more help and information.

10 “Environmental policy in the UK is now inextricably linked with that of the European Community (EC). In the last thirty years, the EC has developed comprehensive policy measures across a extensive range of environmental issues. This has been done in response to the growing recognition of the value of co-ordinated action to solve common problems, and to ensure that the single market in Europe is based on common environmental standards. The EC is now the world leader in environmental legislation and an understanding of these policies and their effects on a UK practice is essential for anyone who is interested in or affected by environmental policy” (IEEP, 2000).
making agri-environmental policy choices, governments should consider the appropriateness of their roles in public and private goods provision, as well as the most cost-efficient options for fostering widespread and long-term improvement in environmental management in agriculture.

**Overcoming the micro enterprise barrier**

Some good industry-driven approaches to environmental management in agriculture currently under development illustrate the raising of EMS awareness amongst farmers and growers and, arguably more importantly, how practical guidance on specific environmental matters may be generated and incorporated into farm management practice. For example, the ‘Framework for a Wine and Grape Industry Approach to Environmental Management’ (Baker, 2001) represents that industry’s environmental management approach as a series of increasingly sophisticated options. These options are introduced via a tiered approach beginning quite simply with the identification of a grower’s environmental aspects and impacts. Consecutive options include environmental risk assessment, the implementation of a self-declared EMS, its subsequent auditing by second or third parties, culminating in an independently certified EMS.\(^{11}\) Importantly, the wine and grape industry’s framework emphasises possible entry at, and progression to, any point. Indeed, as regards full certification, this is by no means automatically encouraged or assumed as an end-point. Rather, the framework’s stance is that if growers are confident they have reached a tier that meets their business needs, and if neighbours and other relevant stakeholders, say local councils, are satisfied with the environmental practices and performance being conducted, and do not demand independent confirmation of this, then full ISO14001 certification is likely to be an unnecessary expense. This is seen as helping overcome the micro enterprise barrier by understanding and respecting the business needs of growers while at the same time encouraging them to incorporate environmental considerations, albeit incrementally, into management practices.

In a similar vein, the Australian cotton industry has developed an environmental programme, the Best Management Practice (BMP) programme. It was recently recommended by A & A Williams Pty Ltd (2001) that the BMP programme be developed into a programme consistent with, and capable of certification to, ISO 14001, covering the management of pesticides, water, soil and nutrients, vegetation, fuel and waste, and energy conservation. It was further recommended that best management practices and principles be developed for each of these items to assist growers in addressing their on-farm environmental priorities. A core of ‘non-negotiable’ practices and principles was suggested in order to achieve a consistent focus and minimum level of environmental performance throughout the industry. Such an approach, if followed through, would help overcome the micro enterprise barrier, and indeed the environmental information and cost of compliance barriers, by generating guidance material on farm-relevant environmental BMPs that could, if deemed necessary, be incorporated into an EMS capable of certification.

Finally, while no formal studies have analysed the costs of implementing a farm EMS and getting it certified, the experiences of small and medium enterprises (SMEs) and, importantly micro enterprises, in non-agricultural sectors provide some insights for agriculture, a sector dominated by micro enterprises. For example, Ammenberg *et al* (2000) report that joint EMS and group certification can represent a cost effective route for SMEs to achieve ISO 14001 by reducing the costs of certification. Indeed, this is an approach currently being trialed by groups of Australian beef producers.

\(^{11}\) The top tier represents the independent certification of the product along the lines of the MSC scheme. While this does not presently exist for grape and wine products, the framework - at least conceptually - suggests an implicit aspiration towards such a goal eventually.
Overcoming the rural adjustment barrier

Of all the barriers to EMS implementation in agriculture identified, the rural adjustment barrier exercises the mind the most when it comes to suggesting ways of overcoming it. The rural adjustment and change processes experienced in developed country agricultures are a complex function of the advanced stage of socio-economic development of high-income countries. For this reason, attention should be focused upon overcoming the barriers discussed above.

Final words

Ultimately, the success of EMS in agriculture depends on how farmers in diverse agricultural industries embrace it. Given the existence of significant barriers to EMS in agriculture, whether or not farmers chose to embrace it depends in large measure on how government assists in overcoming those hurdles. Although EMS in agriculture holds enormous promise, the premature view of EMS as an environmental management panacea is cautioned. Just as orthodox regulation has limitations, so too does EMS. The very fact of its voluntariness means that high participation rates cannot be guaranteed. Indeed, high participation rates would not necessarily be synonymous with good environmental performance or outcomes, especially so in the absence of farm-relevant and production-oriented environmental information for use in an EMS.

In making agri-environmental policy choices, governments would be wise to consider their best options for fostering widespread and long-term improvement in environmental management in agriculture. Making wise policy choices now, is likely to prove decisive in laying the foundations for resilient future agricultural systems.
References


