

4. Future Needs and Recommendations

Familiarity

This study showed that there is a need for increased understanding and familiarity with the concept of environmental management systems in agriculture. Key needs identified were information (to flow in more than one direction), knowledge of motivations and helping farmers to discover and realise these, tools, and mechanisms by which farmers can be recognised.

Cary et al. (2002) suggested that, for farmers, it is particularly important to gain experience and familiarity with new practices at low/no risk to themselves, if they are to begin implementing these changes themselves. The use of demonstration farms, as employed by the Linking Environment and Farming (LEAF) program or by state/federal governments in several countries, would seem to be one way of providing this experience. Therefore, it would be prudent if, in Australia, state government research farms begin to implement EMSs on their own sites. NSW DPI has commenced this process at all of its research stations (although not all properties are expected to be subject to external auditing and certification). However, Friedman and Miles (2001) cautioned that, while ‘showcasing’ examples of EMS implementation is important, it may be difficult to generate such examples at a sufficient depth to be useful. It may be more effective to use a range of demonstration farms than trying to highlight all permutations in one enterprise.

The use of pilot programs can provide a stimulus to become involved in an EMS. However, Andrews et al. (2001) found that EMS developed as a result of pilot program involvement often had rather short-term objectives that focused more on compliance and pollution prevention than EMSs developed as a result of individual thought and effort. In the latter case, there was more variation and a longer-term focus in the objectives. In part, this may be due to the preferences and thought patterns of the person promoting and/or delivering the pilot program. Carruthers and Tinning (2003) noted that various monitoring and indicators developed to evaluate environmental impacts often relate more to the particular researchers’ theoretical knowledge and background than the needs of the resource manager charged with addressing the issue. Care is needed, therefore, when undertaking pilot EMS programs to ensure that any EMSs developed are designed to meet the needs of the farm managers, not those of the researchers, consultants or auditors who may be involved.

Similarly, there is a need for awareness of EMS more generally amongst those who might provide support for farmers. Agricultural departments, industry groups, regulatory bodies and private farm consultants could all provide assistance to farmers – either in regard to specific technical solutions to environmental issues, or to EMS more generally. Farmers in the study who were seeking solutions to technical matters

were usually able to source free information on such issues. EMS farmers, on the other hand, were frequently forced to pay for information on EMS development, adding to their overall costs. The EMS farmers included in this study were the very early adopters – most had little, if any, external support from industry or agency staff. There were few resources they could draw upon, which added to the expense and time in developing EMS. Recent work in Australia to develop a range of tools and support materials for farmers implementing an EMS should be expanded and enhanced.

Support

The study has highlighted a number of areas of potential support required by farmers wanting to adopt more formal approaches to environmental management. The farmers themselves have suggested potential roles for stakeholders. Pretty (1995) outlined 12 policy areas that would support the widespread adoption of sustainable agricultural practices, many of which are equally pertinent to adoption of EMSs. These recommendations include:

- establishing a national {sustainable agriculture and integrated pest management} strategy
- giving priority to research into sustainable agriculture
- granting farmers appropriate property rights
- promoting farmer-to-farmer exchanges
- offering direct transitional support to farmers
- directing subsidies and grants towards sustainable technologies
- linking support payments to resource-conserving practices
- setting appropriate prices (penalise polluters) with taxes and levies
- providing better information for consumers and the public
- encouraging the adoption of natural resource accounting.

Statements by case study participants during interviews supported many of these recommendations. In terms of developing an overarching national approach in Australia, the National EMS Framework (Standing Committee to the NRM Ministerial Council 2002) provides an important initial step in developing strategic direction upon which to base EMS development.

Pretty (1995) went on to outline a range of further measures that could be implemented at the community level to support on-going change in agricultural practices by the wider community. These include the formation of local groups to foster better linkages between farmers, fostering rural partnerships, supporting on-farm training, and allocating local responsibility for landscape conservation. Amongst professional institutions, suggested mechanisms included encouraging participatory methods and processes; supporting information systems to link research extension and farmers; and developing a capacity in planning for conflict resolution and mediation. The use of EMS will fit into all of the categories suggested by Pretty and, in many ways, the standardised processes could enhance uptake of these mechanisms.

Utilising a peer support and education network such as that used in the LEAF program in the UK may be a useful model for EMS development in Australia. Peer hostility to EMS adoption also needs to be addressed.

Group support before auditing is important to assist in confidence and EMS development (J. O'Sullivan Gipps Beef. pers. comm. 2002). Mentoring programs have also been used within a supply chain context in the UK (Jones 2000) to encourage and support SMEs to adopt and implement EMS, and to provide relevant training, information sharing, enhanced monitoring and reporting between partners.

Group development of EMS also provide a mechanism where farmers can share costs and experiences in developing EMS, using small trials within the group to evaluate tools, technical solutions and similar approaches. Government resourcing could perhaps be provided in part for facilitators who could work across several groups, with funds also coming from within the group itself (similar to the approach taken in employing an agronomist or integrated pest management consultant that serves the needs of a particular group in one area). Using the services of someone who gains experience across a range of groups means that each individual group stands to gain from the experiences of a much wider range of parties.

Development of participatory and collaborative approaches, which combine research, trialling of new and innovative approaches and extension and/or training, in collaboration with industry and peer support and discussion, would seem to offer the most promising means to facilitate uptake of EMSs. The ability to network, discuss options, and gain experience from others undertaking similar changes has been found to be important to encourage SMEs to adopt EMSs in other industry sectors (Friedman and Miles 2001). Government support for such initiatives would be invaluable to the Australian farming community.

Information

The provision of easy-to-access, relevant and practical information on EMS and other forms on environmental management and expected outcomes is another area ripe for development. Farmers developing and implementing an EMS were frustrated generally by the lack of unbiased advice (that is, decoupled from consultancy services) and regarded highly the innovation of (the then) NSW Agriculture in providing a full-time officer to assist with EMS development. Since the study was undertaken, a range of EMS projects have begun across Australia but generally these are staffed by short-term appointed officers, who frequently have a specific enterprise focus to their work. Establishment of a national network of EMS facilitators (similar to the Landcare network) would be a great step forward.

Tools

Development of industry-specific guidance, examples and tools would be beneficial. However, farmers in this study did not want to see prescriptive performance outcomes being developed. Rather they favoured a flexible approach, allowing for innovation. Newbold et al. (1997) suggested that tools to minimise and control environmental impacts in agriculture are already used by many farmers, who may not recognise that they are using these tools. These authors grouped the tools thus; environmental

indicators, environmental impact assessment, agricultural codes of practice, life cycle assessment, environmental risk assessment, and the LEAF audit. Successful EMS development will depend upon ensuring that similar tools relevant in the Australian context are built in.

It may be that more EMS tools specific to agricultural enterprises should be developed. The Canadian Standards Association, for example, has drafted guidelines and requirements for EMS development for hog operations. These guidelines blend both ISO 14001 systems elements and specific environmental impact control into one document, and assist farmers in identifying and addressing environmental issues agreed upon as 'relevant' for their particular industry sector.

In addressing the difficulty of farmers' identifying aspects and impacts, it is worthwhile bearing in mind the assertion of Andrews et al. (2001) that use of generic checklists of aspects and impacts 'bypasses a critical thought process of identifying their own distinctive aspects and impacts'. In other words, in a desire to make things simple, there needs to be careful management to ensure that the individual manager is fully engaged and kept in full control of final outcomes. The system that is developed must meet the individual business needs. Tinsley (2002) also suggested that staff involvement in developing EMSs and various management strategies (in a group learning environment) are of more use to a business than solutions supplied by 'experts'. Industry groups could, and should, promote such group learning approaches in the agricultural context, with government agency staff able to provide assistance with group facilitation and extension.

Lewis and Tzilivakis (1998) described a computer-based environmental checklist auditing process that allows farmers to develop eco-rating for specific practices and evaluate these against perceived site-specific best practice. These ratings can then build into a targeted EMS program for each farm. Johansson (2002) described a number of tools available through the ISO 14000 Registry specific for micro-enterprises to use when developing EMSs. However, in order to tailor EMS as a tool for small businesses, simplicity, cost, maintenance, paperwork and time are all factors for consideration (Williams et al. 2000).

Newbold et al. (1997) developed a computerised EMS for agriculture that integrated quantitative self-assessment procedures with linked eco-ratings (which reflect environmental performance in fertiliser, pesticide, energy, water use, and conservation), information on legislation, formal EMS information, auditing, technical data, COPs, a glossary of terms and a contact database. This package encourages record-keeping and data collection, and provides 'what-if' scenarios for use by consultants and agricultural colleges. While the package is aimed at service providers rather than farmers, it is conceivable that a similar farmer-focused package could be developed in Australia. Provision of specific data linked to enterprise and location would be a useful addition. Such an innovation could be most usefully entered through the self-assessment process, where options given would link to both enterprise and location. In this way, a farmer

could complete a self-assessment which begins on a range of broad questions, with subsequent questions being streamlined according to earlier responses.

Delineation of expected outcomes

There is also a need to determine what outcomes are expected of EMS, both by individual users and society at large. As stated by Mech (2002), an EMS is not a panacea for all environmental issues. Speir (2001) raises some of the shortcomings associated with ISO 14001 when using it as a public policy instrument. If improved environmental management on-farm is desired only as an instrument to deliver public good, then supplementary public reporting of progress against prescribed performance measures may need to be included into the typical EMS cycle described by ISO 14001. However, if government wishes to take a hands-off approach, and yet be assured that a particular approach to addressing environmental management is being applied, ISO 14001 can provide this mechanism. The major point of distinction would appear to be whether outside assistance (i.e. money) is required to conduct environmental works—if so, then there should rightly be some form of performance evaluation and key performance indicators developed against which progress can be monitored and the ‘right’ to assistance be assessed. If, however, individuals wish to apply a systematic approach that has been shown to yield significant business benefits for their own purposes, with no or little outside assistance, then ISO 14001 would seem to be a useful process to apply (see also Corbett and Russo 2001).

Training for farmers, support agencies and auditors

Farmers who had adopted EMS had found sourcing support and information difficult, adding to the expense of developing their own EMSs. At the time the study was conducted, there were virtually no EMS facilitators available, and Landcare officers and other community groups were unable to assist. The development of a national training course specific to agriculture on EMS (Carruthers 2003a) has been an important development, but there is a need for a national network of skilled trainers and facilitators to assist farmers develop and implement EMSs.

The inexperience of many auditors with agricultural enterprises also needs to be addressed, as it can be a factor when these auditors estimate the time that an audit will take. Amongst the EMS farmers who had undertaken external auditing, there was a general feeling that few EMS auditors had a thorough understanding of the agricultural sector. Further training and awareness of agriculture-specific issues for auditors would seem warranted. There is a small, albeit slowly growing, number of EMS auditors in Australia who do have agricultural backgrounds available to work with farmers. Following the 1999 EMS workshop, several auditing companies reported that they were starting to recruit auditors with an agricultural background. EMS consultants are also developing more specific agricultural expertise.

Consistency between auditors should also be encouraged. While no Australian studies (to the knowledge of the author) have been undertaken on harmonisation of EMS

auditing procedures in Australia, Ammenberg et al. (2001) examined the interpretation of the ISO 14001 clauses by auditors, and found considerable variation both in processes and the interpretation of the Standard. Again, training of agricultural specific EMS auditors would appear to be prudent here to avoid such problems.

Further, a study of the auditors currently providing EMS auditing services to Australian farmers is recommended. Areas of consideration could include acceptable standards for identification of aspects and impacts, demonstration of required procedures and outcomes, and monitoring procedures.

Understanding of motivations and drivers

It will be important to more fully understand the initial motivations for EMS adoption, and their relationship to the issues addressed and the eventual outcomes achieved. We need to question whether EMS adoption creates improved environmental performance, or whether the commitment to improve performance is expressed through the mechanism of an EMS vehicle. At present, in the case of Australian farmers, we cannot answer this question. Coglianesse (2001) asked a similar question regarding the industrial application of EMS, and was unable to provide an answer. In addition, not only the environmental outcomes, but also the social and financial benefits, require further scrutiny.

Incentives

Regulation and the fear of being fined did not appear to be major drivers for either group, and thus regulatory-based incentives are unlikely to be significant factors prompting the implementation of an EMS (although there appeared to be some scope for use in licensing arrangements, in certain industry sectors). The EMS group, however, did suggest that regulatory relief may provide an incentive to develop enhanced management practices. Coupled with this, and the expressed need for government support and assistance, it would appear that there is an opportunity for regulatory agencies to provide support through partnership programs for farmers to develop and implement EMSs. Recognition of the use of EMS may provide one mechanism for regulatory relief and/or self-regulation potential for agricultural industries, an approach now being used for agriculture in Wisconsin under the “Green Tier” program (J Shenot pers. comm. 2003).

Panayotou (2001), citing a 1995 survey of chief executive officers of 11 US corporations, claimed that the most effective way to improve acceptance of ISO 14001 EMSs would be to provide stronger regulatory incentives, strengthen trade benefits and increase public awareness. The latter two options would seem to be the most likely to succeed within the agricultural context in Australia, as regulatory drivers do not appear to be creating significant impacts on farmer thinking and decision-making at present. However, Knowles and Hill (2001) also reported that small wineries in South Africa stated that they would wait to be ‘forced’ into using EMS by their markets, lending support Panayotou’s second suggested mechanism.

In Australia, assistance with making the initial changes to management (the adjustment or transitional costs) would go a long way to providing farmers with the confidence to commence change towards EMS, as such assistance reduces the initial risk. However, developing overly stringent requirements for allocation of funding, without linking requirements to a risk-assessment based analysis of individuals needs for financial support, may limit the uptake of such assistance. Provision of financial support should also to be linked with monitoring programs to demonstrate outcomes arising from such expenditure.

Corbett and Russo (2001) also sounded a note of caution regarding incentive programs to encourage EMS implementation as a means to achieve community good and common environmental outcomes. They advised that careful consideration be given to incentive programs, to avoid 'rewarding failure' by providing incentives to the worst environmental offenders.

Metrics

Ways to measure the success of an EMS within the agricultural context are needed. Davis (2000) recommended that in the early stages of EMS implementation, the means of defining success and developing metrics are two of the most important issues to be controlled. Any national program to encourage the adoption of EMS amongst farmers should also consider these factors. In the case of agriculture, it is imperative that measures of success are also agreed with external stakeholders, in order to reduce the potential for urban/rural conflict.

At present, one of the few ways to determine if an EMS is 'successful' is by whether the system meets the requirements of external certification. Often, however, such certification is neither needed nor wanted by the business manager. Instead, meeting a range of environmental outcomes (as developed by community groups, industry groups or agencies) may be desired. An agreed range of metrics and indicators which meet the needs of diverse audiences could potentially be developed. An emerging area for consideration is how well an EMS (or any other management approach) might enable managers to meet catchment targets. Little has been done in this area, but common processes according to EMS principles of defining issues, determining outcomes and adjusting management accordingly between farmers and catchment management authorities should enhance progress.

If EMS adoption is driven by the desire for public acclaim and approval, there need to be easy ways to measure and communicate the outcomes achieved, combined with an awareness of what an EMS is and does. In addition, the methods used to achieve the desired outcomes may also need to be communicated and understood. This implies that there needs to be combined communication, monitoring and agreed measures and outcomes, developed in a collaborative way – a process most likely to be facilitated by governments. Tools and measures (metrics) to assist with the evaluation of benefits of EMS implementation, and indeed of other forms of enhanced environmental stewardship, are required.

Many of the farm and business management approaches described in this report had only been in place for a very short period, and so monitoring and data collection were frequently ‘immature’. At present, a detailed analysis of motivations, costs, and benefits is difficult. Andrews et al. (2001) found that not all facilities using an EMS reported direct economic benefits arising from EMS adoption; however, managers believed that using EMS had been a worthwhile process. Using the ISO 14031 process for environmental performance evaluation can also yield significant planning information on which to base enhanced environmental management (Løkkegaard 2000). While farmers in Australia (or elsewhere) have little experience with this approach, following the ISO 14031 processes can provide direction for management, operational, and environmental condition indicators that could be built into an EMS. Overall though, the sorts of data generated from an EMS will differ depending on the end-user – if the EMS is being developed to demonstrate a general approach of ‘good stewardship’ and specific environmental outcomes, then the indicators chosen will likely differ from those of a system set up specifically to provide information on the cost effectiveness and environmental outcomes of a regulated farm demonstrating legal compliance.

There is also much to be done in the field of assessing intangible benefits that can accrue from adoption of advanced management approaches. Steger (2000), Andrews et al. (2002) and others have all highlighted a range of intangible benefits that can arise from EMS use. Pretty (1995), Panayotou (2001) and Speir (2001) all highlighted the need to be able to accurately measure improvements made in environmental performance accruing from changed practices.

Developing mechanisms for recognition of stewardship

Many farmers are hoping for market benefits in the future and see their environmental performance as positioning them to take advantage of these benefits when they become available. Development of clearer market linkages would support the desire to generate market returns for improved environmental stewardship. Although use of a certified EMS does not allow the practitioner to sell products as ‘environmentally friendly’, an externally certified EMS provides credible demonstration of both commitment to environmental management and progress towards defined consumer-mandated or preferred outcomes. As one farmer in the study expressed it, “The EMS stays on-farm, it’s the benefits we get from the EMS that we promote off-farm in our marketing”.

At present, it appears that consumers still focus more on food safety and quality issues than environmental matters. Farmers in this study indicated that they felt that animal welfare would be an increasingly important factor in meeting market demands in the future. The development of a means to signal superior performance in these areas to consumers to facilitate preferential purchasing is another aspect of development required.

Johansson (2002) described a web-based registry that allows businesses with an EMS based on ISO 14001 to post a profile of their business and which also serves as an on-line support and learning mechanism. Businesses using this facility may either

self-declare against the ISO 14001 or they may be externally audited. The Registry also provides for EMS verification through the “EnviroReady Report”, administered by professional accountants. The business’ EMS is compared to the requirements of the ISO 14001 Standard, with documentation examined using procedures detailed in the ‘Generally Accepted Accounting Principles’ scheme. The Canadian Institute of Chartered Accountants participated in the development of this program (Johansson 2002), and it is plausible that a similar approach could be developed for agricultural enterprises specifically (involving perhaps the Australian Institute of Agricultural Science and Technology as the verifying body). The Joint Accreditation Scheme of Australia and New Zealand (JASANZ) and SAI Global already operate a database of organisations certified against Australian and international Standards, but at present there is no readily available listing of businesses that may be using an EMS and self-declaring, rather than certified.

Enhancement of information and communication flow

An area that has received little attention so far throughout the world is the use that can be made of data generated by farmers as they apply EMS. Streamlining of communication has been described as one of the major benefits of EMS use (Steger 2000). It is clear that greater adoption of formalised approaches to environmental management will lead to more information becoming available to determine the costs and benefits of developing, implementing and maintaining an EMS, or indeed any form of environmental management.

Streamlining the availability of environmental information was seen as desirable by farmers in this study. Uptake of best management practices and codes of practices could be facilitated by use of EMS, and data exchange enhanced considerably between farmers and agencies where partnerships approaches were adopted. Improved information regarding catchment targets and specific on-farm actions to allow the meeting of these targets was sought. Farmers could also provide data back to agencies to better inform future target setting.

Validation of catchment environmental targets is one area that could greatly benefit from an injection of current real-life data that would be generated. Mechanisms to capture and utilise such data need to be developed, while protecting the anonymity of the farmers generating such information, and processes to update and alter targets and targeted performance parameters should be agreed upon by stakeholders. A national database and case studies of outcomes of EMS adoption (such as that developed by Andrews et al. 2001) specifically relating to agricultural adoption, would go a long way to providing the sort of information that farmers requested during interviews in this study. Information on this database could be used to provide motivation for other farmers, encourage ‘co-opertition’ (cooperation and competition), and allow for benchmarking of both environmental and general business management approaches and outcomes. Metzenbaum (2001) suggested that the ability to benchmark is a very powerful tool to allow both comparison of performance and emulation of successful managers. Issues of confidentiality of data would need to be addressed in order to encourage participation in data-sharing programs.

It may be helpful for EMS to use the models provided by LEAF or the TOPCROP model in Australia, where farmers send information on production to a central point, where the data is collated and analysed for trends prior to its return in a summarised form. The Australian Landcare Management System (ALMS) program will attempt to provide this sort of data collection and assessment, with particular reference to both biodiversity and catchment management targets. The success of such endeavours remains to be tested.

Integrated management and auditing

Integration of management appears to be enhanced by the use of a systematic approach. Many of the EMP farmers were using management practices that would meet requirements for EMS development. A range of elements was common between quality and environmental programs, and EMS farmers had successfully merged these practices and management approaches into their overall management.

In addition, many of the management elements partially encapsulated within many BMPs, COPs and similar are common with the management systems elements of ISO 14001, and ISO 14001 is seen as a means to integrate management. Harrison (2002) pointed out that, at least in the USA, extension programs have already provided many of these tools, that many of the elements required to implement an EMS are available, and that integration under one management approach can improve both economy and performance of an agricultural business. The challenge is how to assist farmers to use these tools most efficiently.

Further development of integrated auditing processes was an area under consideration or actively undertaken by several of the EMS group. The EMS farmers made the point that quality and environmental audits could be combined, along with financial and OH and S audits, if a systems approach was taken. The process approach described in ISO 14001 and the ISO 9000 documents facilitated combined audits. However, integration worked less well between EMS and some of the more prescriptive quality assurance programs. Development of improved auditing processes and enhanced auditor training is needed to overcome this areas of inadequacy.

Industry leadership and support

Industry leadership on environmental management generally, and EMS in particular (amongst the EMS farmers), was also sought by farmers in this study. The development of a published 'environmental position statement' by the industry groups could provide a baseline for all farmers to use when developing enhanced environmental management. Amongst EMS farmers, such a statement would be incorporated directly into elements dealing with environmental policies, aspects and impacts, and possibly monitoring and evaluation.

Industry support, in promotion of farmers who had achieved superior environmental management, would also serve to encourage others. Sadly, many of the EMS farmers in this study had believed that their industry did not support them in their changes and,

in fact, some believed that their industry group was actively working against them. As the novelty of EMS wears off, this situation is likely to change. In the meantime, active development and promotion of EMS tools and industry support for EMS projects will assist greatly in EMS uptake.

Government leadership and support

Harrison (2002, citing Repetto 1995) suggested four major ways governments can assist with environmental management program adoption: allow flexibility in setting and meeting environmental goals; promote permits with entitlements for the use of resources, such as emission trading; reward proactive environmental management throughout the entire economy; and build into the price structure of markets the costs of environmental degradation and/or preservation.

Provision of standards as 'base-line' compliance areas, but not prescriptive targets, was seen as a major role of governments. Government support could be expressed in a variety of ways, but most commonly farmers in the study saw that linking benefits with incentives to adopt improved environmental management through positive, not negative measures, would be the most successful.

Suggested mechanisms for encouraging further uptake of environmental management included: meeting farmers' desire for recognition of environmental stewardship: supporting management choices with information: providing regulatory relief through security of tenure and access to resources: and including funding for on-ground works. The increasing trend to link financial assistance to property plans would indicate that a similar mechanism may be useful to support EMS implementation, with the added advantage that the monitoring component of the EMS should provide information regarding the success or otherwise of management to achieve desired outcomes.