Selling Australia as "clean and green"

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Contributed paper presented to 48th AARES Annual Conference, Melbourne, 10-13 February 2004

Abstract

"Green and clean" has been used as a key marketing tool to promote Australian products overseas. The rationale is that consumers are generally concerned about personal health and the environment and will choose, and pay price premiums, for products that are perceived to be clean (good for them) and green (good for the environment) over alternative products. But is Australia seen as clean and green? Is it really why people buy Australia? This paper attempts to investigate such questions.

Key words: export marketing, clean green image.

Introduction

Major trends in the food industry include an increasing demand for convenience and growing concerns over personal health and the environment, particularly among the more affluent consumers (Mech and Young 2001). Demand for convenience is a result of changing social and demographic trends, e.g. urbanisation, women in the work force and dual income families, where people have busier lifestyles and less time for food preparation at home. The consequence has been a rapid growth in the demand for processed products, pre-prepared foods, take-away, eating-out, fast foods, and 'one stop' shopping. Unfortunately, the demand for convenience has produced some undesirable side effects. That is, as more services and processing are provided by the food industry, consumers have little knowledge of, as well as control over, what is in the food they eat. In the past, consumers had trusted the food industry and government to do the right things by them. However, in recent years numerous food scares around the world, and extensive media coverage on them, have caused alarm among the general public about food safety and the trustworthiness of the food system. Well-publicised food scares include harmful chemical residues in plants and animals, disorders such as mad cow disease (BSE) and foot and mouth disease (FMD), and microbiological contamination from salmonella and *E. Coli*. The issue of genetically modified organisms (GMOs) in food production in recent years also adds to the long list of food safety concerns.

Increasing environmental awareness is another important development in the food sector. Issues of concern include soil degradation, pollution of drinking water and rivers, the greenhouse effect, depletion of the ozone layer, the loss of biodiversity and the reduction of natural resources. Agriculture in particular has a major impact on the environment, especially land, water and biodiversity (OECD 2001). Industrialised mainstream agriculture has contributed to environmental problems because of the heavy reliance on external inputs, especially synthetic chemicals, and intensive livestock production has been blamed for the outbreak and the spread of BSE and FMD in Europe. These issues raise doubt about the conventional food system and the impacts it has had on people's health and the environment. Consumers have become less confident in, and less trusting of, agricultural production systems and the governments that were supposed to provide safeguards. The restoration of consumer confidence in food safety is therefore a major challenge for the agro-food industry.

Considerable policy changes have been implemented by the agro-food industry and government in response to these pressures (Ridley 2001). For example, governments have banned or imposed tighter restrictions on the use of toxic chemicals and farm practices that may be harmful to human health and the environment. In addition, governments have introduced regulations on consumer protection and product labelling. Various government programs have been developed to encourage the adoption of new technologies and farming techniques that reduce the use of chemicals and other inputs such as water. Producers, food manufacturers and marketers alike have put in place quality assurance programs to guarantee traceability and food safety and quality. Many producers and traders are also promoting and marketing products as natural, clean, or green, targeting groups of consumers who are health and environmentally conscious. The rapid growth in organic food sales worldwide, particularly in the industrialised countries such as the United States, Western Europe, and Japan, reflects the increasing demand for clean and green products (OECD 2003a). An increased demand for organic and environmentally friendly products has also been evident in Australia (RIRDC 2003). Suppliers of organic and other "clean and green" products are often motivated by price premiums and the market access afforded by such products, and in some cases subsidies and tax breaks from the government.

However, there is widespread consumer confusion over the proliferation of marketing claims and labels. What do "clean" and "green" really mean? What does certification mean? What does an organic label or eco-label stand for? What is the potential for "free-riding" (OECD 2003b) or "greenwashing" (Mech and Young 2001) with ambiguous lablels? As such, there is a trend across all markets for objective proof to support claims of cleanliness, safety, environmental benefits and other specified attributes (Underwood 1997).

Over the past decade, issues concerning the impact of agriculture on human health has been reasonably well addressed by organizations in Australia such as APVMA, EPA, FSANZ and AQIS and international organizations such as WTO and WHO. Many aspects of animal and plant health and quarantine have also been addressed. Consequently, claims about "clean" food being safe and free from harmful pathogens and chemicals are well covered by regulations (e.g. Food Standards Code, Health Act, Import and Export Control

Act in Australia and Sanitary and Phytosanitory Guidelines at the international level) and by industry-led, HACCP-based Quality Assurance (QA) systems (e.g. Cattlecare, Flockcare, Freshcare).

By comparison, environmental regulations and verification processes for "green" claims are less well developed. This is due to their more recent history and the perception that environmental issues are less of a direct threats to people's health than food safety and quality (Ridley *et al.* in press). However, the situation is changing. In Western Europe especially, the requirements for improved environmental performances and accountability are high. In Australia, tools are being developed to quantify the condition of natural resources such as soil, rivers and threatened species (NLWRA 2001). Moreover, there are now several government agencies and national programs promoting environmental sustainability, such as the National Food Industry Strategy (Troeth 2002) and the National Framework for EMS in Agriculture (NRMMC 2002). There have been several certification systems in operation, but there is no broadly adopted, science-based method for verifying the environmental performance of farming systems, and certainly not one that is also widely recognised and accepted by consumers (Bishop 2002, Ridley *et al.* in press). Troeth (2002) has summed up the need for further development of Environmental Management Systems (EMS) with the following statement:

> "Given the growing sophistication of the international market place, it is no longer enough for us to simply claim to be 'clean and green'. Consumers are demanding credible evidence to support our claims. And it is here that EMS can play a role because it is s management system that substantiates them".

The objective of this paper is to review on-farm EMS in Australia and identify the strengths and weaknesses of EMS in meeting the demand for clean and green products. The paper begins with the definitions of clean and green and other related descriptors. It is followed by a description of various environmental certification schemes and an assessment of the validity of claims under different schemes. On-farm environmental management systems in Australia are then discussed, with a focus on their current status, the measurement problems and factors that limit the wider adoption of EMS. The paper ends with the future prospects for the EMS and some concluding remarks.

Clean, green and other descriptors

A range of marketing terms and claims have been used by producers and marketers to promote their products. Some of them are legally defined, for example, organic. However, most are not, including "clean" and "green". McCoy and Parlevliet (2000) have attempted to define or attach general meanings for "clean" and "green". According to them, "clean" is usually used to mean "freedom from physical, chemical or microbial contamination". Physical contamination can occur when foreign objects and materials are imported, either intentionally or unintentionally, during production or processing or distribution. Chemical contamination can result from incorrect use or overuse of pesticides, herbicides, fertilizers, growth promotants and antibiotics on farm and other chemicals during processing, storage and transport, leaving

unwanted chemical residues in or on the final product. Microbial contamination can occur through improper processing procedures, unhygienic work environment and practices, and/or growth of micro-organisms already in and on the product. More recently, some consumers may define clean food as being free of genetically engineered organisms.

However, it is seldom that a food item is 100 per cent "pure" or free of any contamination. That is, in reality, it is either physically impossible or economically impractical to reduce the risk of any type of contamination to zero.[1] Therefore, food products that meet all the maximum residue limits and maximum permitted concentrations based on well-documented and well-recognised food standards (e.g. the Food Standards Code in Australia and the Codex Alimentarius Guidelines of the Food and Agriculture Organization of the United Nations) are considered by law as "clean" and, hence, safe to eat. In addition to being applied to food safety aspects, clean is often used loosely in daily language in conjunction with water, air, ocean, environment, energy, etc. to mean "free of pollution", "low level of pollution" or "not pollution causing".

"Green", on the other hand, is often applied to products and production systems that are perceived to be friendly to, or have low impact on, the environment. Therefore, "green" is generally synonymous with "environmentally friendly" or "eco-friendly". However, unlike "clean", "green" is not as clearly defined because there are no clear agreements on what constitutes environmental impacts and how to measure them, let alone a set of commonly acceptable standards or minimum requirements.

"Natural" is another term that is frequently seen on labels and advertising. Although it was originally defined by USDA in reference to meat and poultry only (FISI 2001), "natural" has been applied to a wide range of products without attaching clear meaning to them. Generally, natural means "minimally processed without containing synthetic or artificial ingredients". Minimally processed means "a process that does not fundamentally alter the raw product". Most of the products (e.g. grains and dried fruit) found in the specialty health/natural food shops or in the health food section of the supermarket seem to be labelled as natural based on this definition. In daily use, "natural" means "pertaining to nature or the created universe" or "not artificial". As such, products may also be referred to as "natural" because less synthetic chemicals are used to enhance the growth of the plants or animals, or because less restrictions are imposed on the movement of animals (e.g. free range chickens or pigs). Again, there is no commonly acceptable standards or minimum requirements for minimal processing, additive-free or free-range.

Since some of the descriptors are yet to be defined legally and since the product characteristics to which they are applied cannot be verified upon inspection or consumption by consumers, they have been used as a marketing tool. This is particularly true for environmental and functional qualities. As such, it is often not

[1] For example, based on the Food Standards Code in Australia, food is not required to be labelled if it contains less than one per cent of GMO.

clear to consumers whether a particular claim is lawful or truthful. According to research conducted by the Consumer Union (2003), most of the marketing claims that we see in the market are rather dubious. In their Label Report Card, eco-labels and many other claims were evaluated based on seven criteria:

- How meaningful is the label?
- Does an organization verify that the label standards are met?
- Is meaning of the label consistent?
- Are the label standards publicly available?
- Is information about the organization publicly available?
- Is the organization behind the label free from conflict of interest?
- Was the label developed with broad public and industry input?

How well do products claims such as "green" and "environmentally friendly" measure up to these criteria? Not that well, unfortunately, concluded the Consumer Union.

It was found that both "green" and "environmentally friendly" fail in all categories. The failure of the labels to measure up is because currently there is no standard definition for either "green" or "environmentally friendly" and there is no independent organization behind the claim other than the company manufacturing or marketing the product. Some manufacturers may cite specific reasons to justify their claims while others may not. Without adequate information, it is difficult for consumers to determine whether products labelled as "green" or "environmentally friendly" are in any way better for the environment or caused less harm than other products. Both the US Federation Trade Commission (FTC) and the International Standards Organisation (ISO) consider these claims to be too vague to be meaningful to consumers. Based on the FTC guidelines, manufacturers are required either to avoid using such terms or to substantiate and qualify them to avoid misleading consumers. The ISO standards for environmental claims also prohibit companies from using them on their certified products (Consumers Union 2003).

In contrast, the "USDA organic" label has passed the Consumer Union's test without difficulty because the meaning of the label is clearly defined and compliance with the national standards is ensured by independent, third party certification and backed up by USDA accreditation process. The same argument can be applied to "certified organic" in Australia, with AQIS being the competent government authority that accredits commercial and other organisations to provide organic certification services to farmers. However, one can argue that in both cases of "USDA organic" and Australia's "certified organic", there may still be a conflict of interest between the certifying body and the manufacturer or marketer of the product being certified, despite the fact that all the certifying bodies in Australia and the US are accredited by government. The credibility of the system, therefore, depends on how stringent and transparent the certification and accreditation processes are in terms of standard setting, enforcement and the level of auditing in the system. In any case, certification, either voluntary or mandatory, is an effective way by which consumers can be assured of the authenticity of the marketing claims and labels.

Selling the "clean and green" image

Australia has been promoting its "clean green" image overseas, ever since its 1993 export drive to sell "pure Australian food" to its Asian Pacific customers (Short 1997). It takes advantage of the fact that consumers are generally concerned about their health and the environment and that, as discussed earlier, green, clean and natural are not being legally or meaningfully defined. The Australian Government has justified its use of the "clean and green" claim for domestic agricultural produce based on "its commitment to strict quarantine practices and excellent chemical residue status" (AFFA 2002)[2]. In recent years, "clean and green" is applied especially to freedom from exotic diseases and pests such as BSE or FMD[3]. Another example is the "Naturally Victorian Initiative" aimed at promoting Victoria's safe quality food from environmentally responsible agriculture (Victorian DPI 2002). It is claimed that Victoria has a competitive advantage in producing such clean, green and safe food because of its plentiful supply of natural clean rivers and water resources, extensive low input farming systems and skilled, efficient and environmentally responsible farmers. Tasmania is also keen to promote itself as "clean and green" citing its "Natural Advantage" in terms of maritime temperate climate and four distinct seasons, freedom from major pests and diseases, the seven-year moratorium on GMOs[4], and the ban on the use of hormonal growth promoters in cattle, as well as "many checks and balances throughout the production systems" (DPIWE 1996).

New Zealand also has a "clean and green image", attributed largely to a low population density and limited industrial development (and hence relatively benign pressures on the environment) and unspoiled natural beauties such as pristine beaches, crystal-clear unpolluted lakes and rivers, lush green pastures and abundant wildlife (Ministry for the Environment 2001). Clearly, the clean green image stems primarily from having inherited, by default, a relatively clean and green environment.

The general rationale behind promoting the 'clean green image" as a marketing strategy is that if a state or country has a natural environment that appears visually to be "clean and green", then what it produces can be perceived to be clean and green, and consumers, those overseas in particular, would want to eat, and pay a premium for what it produces. But to what extent is this true? Is Australia's environment clean and green? Is Australian agriculture clean and green? Does Australia's clean and green image really motivate consumers? How effective is a "clean and green image" as a marketing tool?

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[2] Unfortunately, these strict restrictions may be seen as a way to impose technical restrictions on imports, which, without a scientific basis, may be violations of WTO rules and seen as protectionist.

[3] In a speech delivered by Senator the Hon Judith Troeth to the Pig Research and Development Corporation, it was said, "Maintaining Australia's relative freedom from exotic diseases is the basis for our "clean green" image and a key element in helping to open up new market opportunities" (Troeth 1999).

[4] Indeed, "GM-free" was used as a strong argument by Tasmania and the Victorian dairy industry to ban GMOs in their states. It was argued that GM-contaminated products may destroy their "clean green image". In a media release, the headline reads "Dairy exporters hope to maintain "clean green" image" with its strict "GM free" contracts with farmers. It is argued that a GM-free status will give it a clean green image and receive a premium for it (ABC 2003).

A study on New Zealand's clean green image, commissioned by New Zealand Ministry for the Environment (2001), sought to find out whether New Zealand was as clean and green as portrayed, and, if it was possible, to put a dollar value on New Zealand's "clean green image". The study found that New Zealand's clean and green image did exist and had a significant export value. It also found the image existed despite the fact that there were environmental problems that were serious enough to potentially tarnish such an image and undermine the sustainability of the export value attributable to that image. In other words, such an image was not based on the reality of the state of the environment. However, the study warned that as consumers worldwide are increasingly more aware and better informed of the environmental issues, such an image would eventually need to be backed up by reality, as well as product quality, if New Zealand were to continue to use it as a marketing tool. This is consistent with the view of Fitzsimons (2002) that the image existed more by good luck than by good management and that New Zealand risks losing its economically valuable "clean green" image unless it moves towards more sustainable development, echoing a comment from 1993 (Hughes) that "New Zealand's clean green image is entirely dependent on how successful the country manages its environmental responsibilities".

In Australia, Miller (2000) is also critical of the "clean and green" claim made by governments because "the reality belies the rhetoric" as environmental problems such as dying rivers, collapsing biodiversity, surging greenhouse emissions, spreading salinity, clear-fell logging and coastal pollution indicate. She argues that while exotic diseases and chemical residues are important aspects of "clean and green", major indicators of environmental health – water, soil and biodiversity – continue to decline despite having some of the best environmental protection laws in the world, along with strong community awareness and support for Clean-up, Greening Australia and Landcare programs and the like. One key reason is that the environment remains a low priority on the political agenda. Like New Zealand, Australia may not be as clean and green as it claims. And Australia's ability to maintain and build our access to export markets is going to be increasingly based on our treatment of the environment (Hodge 2001).

So, how effective is it using a clean and green image as a marketing tool for Australia? In a story on the FMD outbreak in Japan, the headline reads "Clean image may not save Australia's beef industry" (Stewart 2000). It says "While the Australian government is trying to play down the scare and rely on Australia's "clean green" image to overcome any backlash against beef exports, the former Australian trade commissioner representing food exports to Japan, Sean Limbery, warns Japanese consumers will be difficult to console". When asked, "so you don't think that Australia's "clean green" image can just overcome a general concern about beef?", the answer from Limbery was "No. It has not happened in the past". The BSE incident in Japan in September 2001 has also seen beef demand in Japan and Australian beef export to Japan being reduced drastically, despite the strong campaign from Meat and Livestock Australia (MLA) to

guarantee the safety of Australian beef.[5] The BSE incident in Canada in May 2003 also prompted bans on Canadian beef and the mandatory testing of BSE of all beef. These examples show that a clean green image may be something nice to have, but it may not be enough in times of crisis when verifiable "product quality" is the only guarantee that consumers can rely on. Furthermore, it appears that an image is vulnerable to threats from many quarters, such as a disease outbreak, a GMO contamination, an environmental disaster, or even "rotten" bananas imports from the Philippines (O'Loughlin 2002).

Kennedy (2002) also said that, "promoting on clean and green is not enough". What is needed are documentation and systems of certification that back up the claim. This means, having a natural environment alone is neither a necessary nor a sufficient condition for producing clean and green products. Moreover, that is always not likely to be the sole or main reason on which purchasing decision is based. There is also a need for the development of realistic techniques for monitoring farm management and environmental performance so that "clean and green" claims can be authenticated.

Bishop (2002) contends that although the meaning of "clean and green" is not easily defined, substantiated programs that can demonstrate shifts towards low environmental impact, high quality and safe food production can be considered reasonable measures of "clean and green". Indeed, the answer may lie in the QA and EMS whereby QA focuses on the quality and consistency while EMS focuses on the environmental impacts.

Environmental certification

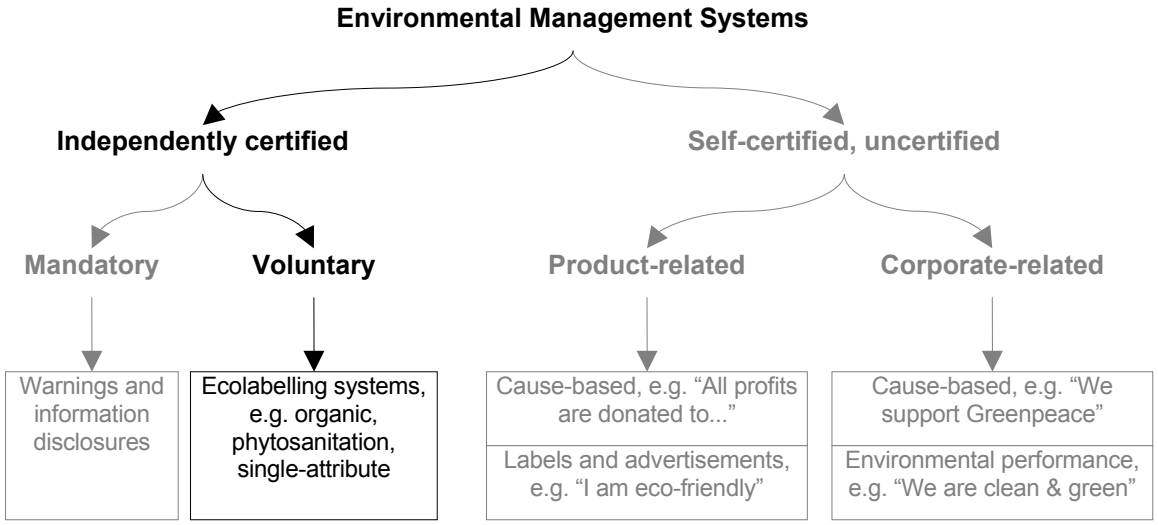
With the increasing demand for authenticity in environmental claims, many EMS have become popular in primary industries, including agriculture, mining and forestry, as well as down-stream industries such as paper manufacturing and photocopier construction. Different stakeholders have used different approaches to encourage environmental sustainability (Figure 1).

Scientists and government agencies have generally adopted a technical, regulatory approach based on existing knowledge of human health, agricultural productivity and environmental sustainability indicators. This approach is implemented through mandatory or voluntary regulations and guidelines concerning on-farm issues such as environmental protection and property rights and off-farm factors such as food safety and trade practices.

Legislation may be used to encourage improved environmental performance by offering incentives, like funding for Landcare programs and the EMS Incentive Program, or by imposing disincentives, e.g. fines for unauthorised tree clearing. Although regulations can have important economic impacts on production, they

[5] MLA spent an extra $5.5 million on promotion in the Japanese market, following the reported case of BSE (Stewart 2002).

are not designed primarily to be marketing tools in a commercial setting. Further, the selection and use of indicators to measure environmental performance can be complicated and often provides little practical information for the farm manager (OECD 2003b, Watts 2003).



Source: Adapted from the US Environmental Protection Agency (1998).
Figure 1. Classification of environmental management systems and marketing claims

An alternative approach to environmental management has been the ecolabelling schemes developed by the private sector, which are gaining growing support from the government. In this case, the interest is in facilitating the trade of "environmentally sustainable" goods or "environmentally preferred" products in a verifiable way. Firms that supply environmentally preferred products must conform to a set of standards. Consumers of such products rely on the certification system to assure them that the goods conform to contractual, labelling and other expectations.

The commercial schemes commonly focus on evaluating and monitoring methods of production, defining which activities or inputs are allowed, required or prohibited, usually according to industry-determined best practice management. In other words, these systems are process-based. Many schemes have robust certification and auditing procedures and are used effectively in providing sellers with premium prices and market access for verifiable specialised products.

Straddling these approaches are a range of tools such as ISO 14000, Life Cycle Assessment (LCA) and Input-Output Accounting (IOA) that use a combination of management and monitoring tools to evaluate the environmental performance of agricultural systems. LCA and IOA offer frameworks for identifying and quantifying the direct and indirect external costs of agricultural production. The environmental costs can then

be used to create budgets or accounts of materials – nutrients, energy, carbon – moving in and out of a farming system, giving a broader picture of sustainability than conventional financial accounting methods.

Environmental claims and ecolabels may also be grouped according to their method of evaluation and certification (if any), whether voluntary or not, audited or not, and so on (Figure 1). Among the independently certified schemes, the mandatory claims commonly relate to warnings and disclosures required by government, such as applications and disposal of chemicals on farms. These labelling systems are science-based and their adoption rate is very high, though presumably not 100%. However, the ability of government to achieve change is limited because of the tendency to stifle the private sector's attempts to develop innovative approaches to environmental management. Public regulation can be expensive to administer, and governments may face political difficulties in checking compliance and enforcing penalties to internalise environmental costs (Douglas 1999, Mech and Young 2001). On the other hand, legislation can be effective as an indirect means by supporting, rather than hindering, industry and business (e.g. certification groups, accreditation companies, monitoring agencies) in developing processes for dealing with environmental impacts.

Voluntary independently certified schemes have received the most interest from farmers and other land managers, processors, sellers and end consumers and are the focus below. These schemes appear to have some commercial potential, hence their rapid proliferation, although their net benefit to farm management skills and the environment will take some time to determine. The voluntary nature of these schemes tends to limit their ability to produce broad, industry-wide change in management practices or environmental outcomes (Mech and Young 2001).

Environmental performance and indicators

In general, independently certified claims are more reliable than self-certified claims. However, credible EMS and ecolabels require scientifically sound tools to quantify actual environmental performance. A production process-based EMS may only provide "best practice" management guidelines or environmental reference levels, rather than specific environmental targets (OECD 2001). Environmental indicators offer land and resource managers the ability to put a figure on some of the impacts of agriculture. When selected appropriately (i.e. with broad stakeholder input) the indicators can be incorporated into EMS and used to support environmental performance claims.

Selecting the appropriate environmental indicators is a difficult task and there is no clear consensus on which indicators are most useful for measuring agricultural impacts. Different land managers may be interested in monitoring different things - production goals versus conservation goals - and will commonly have widely varying levels of expertise in using the indicators effectively (King *et al.* 2000, Duelli and Obrist 2003).

Technical issues about the ease of taking measurements, who collects the data, required time scales and the relevance of the indicator to management policy and practice will also influence choices about which indicators are used and how they are measured. If environmental indicators are to be relevant to agricultural producers, the links between the indicator and farming practice must be clear (Carruthers and Tinning 2003). It is important to translate technical indicators into actual management practices as the latter have more value and relevance to farmers and policy makers alike (Pretty *et al.* 2000). It is also worth noting that a monitoring program will not be fixed over time. Instead, various issues and their associated indicators will wax and wane in importance as policy, economics and environmental health vary over time. As new concerns arise and old issues cease to matter, buyers and sellers will need to modify their verification system and management practices to suit.

Although science-based indicators are relatively robust and well understood, they have several features that limit their use. They may be overly technical to measure, may require special equipment or may not directly assist business operators in improving their environmental performance (Marra *et al.* 2003). Scientists themselves are eager to develop easy-to-use methods of assessing impacts, as those methods mean that more information can be collected by more people[6]. Simpler, farmer-driven systems are needed for widespread implementation to occur, especially for the many small- to medium-sized enterprises (SME) in the agricultural supply chain who lack the human and financial capital to develop elaborate environmental monitoring programs (Vanclay and Lawrence 1994, OECD 2003b).

Some new approaches for integrating a broad range of economic, social and environmental indicators can provide useful frameworks for assessing the performance of a product or production process. LCA and IOA uses such measures to evaluate the impacts of stages in a production cycle including external factors such as fossil fuel inputs and pollution (Goodlass *et al.* 2003, Heller and Keoleian 2003).

A German study used LCA to compare the environmental performance of three grazing systems: high intensity, low intensity and organic (Haas *et al.* 2001). Several sustainability indicators (e.g. nitrogen and phosphorus levels and grassland biodiversity) were measured directly, while other indicators such as global warming potential were calculated from farm records and external information sources. Compared with high intensity farms, the organic and low intensity farms had lower energy consumption and carbon dioxide emissions and more benign impacts on ground water, biodiversity and herd condition. This types of study provides information about which indicators give useful results and which management practices are environmentally friendly, and that information can be used by stakeholders to justify environmental claims or purchasing decisions. An analysis of thirty reports about IOA systems in Europe found that five systems had potential marketing advantages because of a recognised quality label (Goodlass *et al*. 2003). Although

[6] With greater adoption of simple indicators, more user feedback can be obtained (e.g. ease-of-use, relevance and accuracy) and the indicators can be further improved.

these complex systems are difficult to use in many cases, some positive farmer responses have been reported and they appear to have a useful educational role (Ridley *et al.* in press).

On-farm Environmental Management Systems

The evolution of EMS began to take shape in the 1990s with the release of ISO14000, the international standard for environmental management. Since then, several voluntary EMS or related schemes have been created in Australia and overseas. Environmental Management Systems provide a framework to help farmers, processors and others understand what environmental impacts they might be having and to look at management changes that could minimise those impacts. An EMS implementation commonly involves a cyclical process of review, planning and action based on commonly agreed standards of environmental performance. The environmental performance of the enterprise is monitored over time and the results may be used to support "clean and green" claims. An EMS can be externally audited and may be certified to a known standard, such as the internationally recognised ISO14000.

The recently developed Australian *National Framework for EMS in Agriculture* (NRMMC 2002) sees EMS as a generic term used to describe any systematic management approach used by an enterprise or an organisation to manage its impacts on the environment. An on-farm EMS provides a management framework that achieves continuous improvement through a 'plan, do, check, act' cycle. The National Framework for EMS has been designed to:

- provide a national context for existing and emerging industry programs,
- facilitate a consistent national approach, integrated throughout the marketing and supply-chain
- encourage voluntary adoption, and
- promote awareness about environmental priorities.

The *National Framework* notes that an effective on-farm EMS will be industry-driven and simple to use, integrating smoothly with the existing management set-up of individual businesses. Nevertheless, the auditing of compliance must be independent, robust and transparent. An EMS would be expected to provide economic and marketing benefits, though perhaps not in the short term, and a vital criteria for an EMS is that environmental outcomes are meaningful, measurable and preferably compatible with international standards.

The importance of more scientific input, especially from environmental science, in the development of indicators and monitoring tools was highlighted in the *National Framework* and by others. The lack of focus on biodiversity and other less immediate environmental issues has been identified in many contemporary on-farm EMS (Mech and Young 2001, Ridley *et al.* in press). Instead, there has been a focus on production and marketing yardsticks such as soil salinity and chemical residue levels. Given the industry origins of on-farm EMS, this is not surprising. However, some EMS are responding to emerging pressures from consumers and competition by including, for example, habitat and biodiversity conservation aspects in their production standards.

The operation of on-farm EMS can be expected to evolve as market conditions, scientific knowledge and public policy change, as has happened in the organic industry. For example, in the past few years, all major organic standards agencies around the world have included clauses completely banning the use of, or contamination by, GMOs. Other clauses will probably change again in the future. Scott-Orr (2002) had the opinion that, in light of the developments in the risk-based QA systems and on-farm EMS via ISO 14000, a risk-based approach ought to be incorporated into the Australian National Organic Standards. Otherwise, "there is the possibility that organic farmers may be seen as not addressing either food safety or environmental quality concerns satisfactorily".

Adoption of on-farm EMS in Australia

Despite the positive market demand for environmentally friendly products and goods with "clean and green" credentials, several factors have prevented wider use by producers and consumers. They include credibility, complexity and the financial risk associated with the adoption of such schemes.

- **Credibility**

Credibility is a key aspect for certification and labelling of credence goods. In particular, consumers are not environmental experts and cannot be expected to interpret complex information about environmental claims (Benbrook 2003). Australia currently lacks a system that provides credible information to consumers about the environment impacts of goods (Bishop 2002). If a "clean and green" claim has no verifiable basis, producers may be less certain of getting market access advantages or price premiums, while consumers may hesitate to buy a certified product. As the trend for objective proof to support claims of cleanliness, safety, environmental benefits or other specified attributes continues across all markets (Underwood 1997), both producers and consumers will become better-informed and more reliant on credible certification systems. On the other hand, a proliferation of labels tends to confuse shoppers and have the potential to undermine confidence, as been observed in organic products.

Another serious credibility issue for EMS schemes is whether they will provide any real environmental benefits? A well designed EMS will have an inherent process of measuring and reviewing performance, and modifying management practices based on the review cycle ("plan, do, check, act"). While this process may create an opportunity for monitoring of impacts in a verifiable (and marketable) way, it remains unclear whether the systems really improve environmental performance.

A number of international reviews of EMS programs from various industries (not only agriculture) have found little evidence of improved environmental performance and questioned their economic efficiency as an environmental policy tool. In general, linking farm management practices with environmental outcomes is very difficult due to the dispersed nature of agricultural impacts and often large distances in time and space between agricultural causes and environmental symptoms. Where positive outcomes have been reported,

they are usually based on perceptions of stakeholders, rather than measures of actual performance (Coglianese and Nash 2001, Goodlass *et al.* 2003, Kingwell 2003, OECD 2003b).

- **Complexity**

During the transition period, producers who are implementing a credible EMS must deal with conflicting, complex and uncertain information (Goodlass *et al.* 2003). The manager needs to quickly acquire new knowledge about the environmental impacts of agriculture and gain new skills in managing the production system to reduce impacts. New administrative and performance monitoring tasks must also be carried out. Further effort is also needed in negotiating new sources of special inputs, equipment or expertise and in establishing new markets for the certified produce.

Many "clean and green" production systems (e.g. organics, ISO14000) are information-intensive, and that may pose problems for many SME operators intending to use an EMS (NRMMC 2002, Ridley *et al.* in press). Therefore, there will be a role for specialists to assist farmers and others in areas where they lack expertise and training, e.g. whole-farm planning, environmental assessment, compliance issues, novel crop and stock management methods. There is a lack of reliable and definitive advice about methods for tackling certain environmental and production issues like weeds, soil health, water use, native habitat conservation and bush regeneration, indicating that further agronomic and environmental research will also be needed to strengthen EMS monitoring and verification processes.

In addition to basic technical support for compliance and production, new operators will also require trade information to take commercial advantage of their certification status. Finally, the proliferation of "clean and green" claims adds complexity for consumers trying to buy reliably certified products – they too require "trade information". The goal of simplicity applies as much to the producer as it does to the consumer.

- **Financial risk**

While altruistic interest in good environmental stewardship is a key driver for many EMS users, financial interests also play a major part in determining whether EMS are adopted. For many potential users, the financial risks are high (Vanclay and Lawrence 1994, Khanna *et al.* 2002, NRMMC 2002). Firstly, there are new expenses for certification, training and modifying operations and infrastructure that producers must pay for. The costs of using certification systems are widely reported to be prohibitively high.[7] In addition, income is likely to be reduced in the short to medium term. This is because the overall productive capacity of the enterprise will usually be lower as a result of complying with environmental guidelines, e.g. creeks need to be fenced off and water consumption reduced. Yields in the productive parts of the enterprise will usually be

[7] In response to concerns about costs and complexity for small producers, some schemes allow for joint certification by collaborating, but independent, producers (Handley 2003).

reduced because of the undeveloped state of the new biological, agronomic and marketing processes in the system.

The return on investment (e.g. premiums, special access to lucrative markets) is often delayed due to the conversion period prior to full certification and the fluctuations in marketing opportunities. Sometimes adequate premiums may not cover the increased production costs (e.g. disease outbreaks in the poultry shed or new weeds invading a paddock). The relatively small niche market for certified products also is prone to changes in the level of output, and hence price instability.

Further, Ridley (2001) has suggested that premium prices are generally not likely, except in some niche markets, because the market signals to reward good environmental performance are still weak. Most consumers will not pay extra for goods with unfamiliar ”clean and green” claims and unproven environmental outcomes. There are signals from Denmark (a country eagerly embracing the “clean and green” ethic) and elsewhere in Europe, that consumers are reluctant to recognise “Integrated Production” labels (systems with reduced chemical inputs and other environmental benefits) to the same degree as organic labels. Low-input branding has been unsuccessful so far because conventional produce is cheaper for consumers and it is expected that similar difficulties to be experienced by EMS-certified products (Bishop 2002). Without the support from the majority of the consumers, EMS products are likely to remain a niche sector with minimum impacts on the overall improvement of the environment.

In general, for environmental certification and labelling to be effective, it must meet a number of conditions. First, product evaluation must be known and accurate. Second, product standards must be associated with significant environmental differences among products. Third, product information must be disseminated to consumers. Fourth, consumers must understand environmental issues and product-specific information well enough to make informed purchasing decisions. Finally, the label must have substantial market penetration in order to affect a significant number of producers. Achieving all these goals will remain an on-going challenge for EMS development, implementation and adoption.

Conclusion

As consumers around the world become more concerned about food quality and safety and the environmental impacts due to agriculture, demand for clean and green products has increased drastically in the recent decade. Government and business organisations have responded to consumer preferences for such products by marketing their products as “clean and green” based mainly on perceptions and image of fresh air and unspoilt nature. Closer examination of most “clean and green” claims indicated that they are without a solid basis in reality. Flying the clean ‘n’ green flag may have worked in the past in terms of selling products especially overseas. However, as consumers become more sophisticated and demanding and as global competition intensifies, it is no longer enough to simply claim to be ‘clean and green’. Rather,

consumers are demanding credible evidence to substantiate such claims. Various QA systems and eco-labelling schemes have sprung out as a result.

In Australia, EMS are becoming the option of choice for more and more players in agricultural production, and with the continuing development of environmental sustainability indicators, economic tools and legal instruments, a suite of tools is available to improve the environmental performance of agriculture. However, there are uncertainties about farmer adoption and consumer confidence. Despite the positive market demand for goods with verifiable claims, several factors have prevented wider adoption by producers, including credibility, complexity and financial risk. Important questions for EMS are whether the schemes will provide any real environmental benefits and whether they are effective instruments for improving the environmental performance of agriculture. Voluntary systems appear to be the preferred format and are increasingly supplementing or replacing other mandatory environmental policy instruments, such as regulations and taxes, which are often seen as bureaucratic, irrelevant and inflexible. A review of voluntary approaches, however, found that their effectiveness in improving environmental outcomes is often questionable across a mix of industries, including agriculture. In addition, the voluntary schemes tend to have very patchy adoption and therefore less environmental benefits than mandatory regulatory tools. More fundamentally, voluntary systems do not address the inherent conflict between commercial and environmental values.

The limitations on EMS adoption will remain for some time. Therefore other tools are needed to improve the environmental impact of agriculture. As long as the economic value of ecosystem services and costs of protection and repair are ignored (or underestimated), short-term financial considerations will dominate decision making by farm managers. To create an enabling environment more conducive to better environmental management, several changes are needed. Government policy should focus on developing a range of economic rewards for good agricultural management and penalties for non-compliance, funding the research and extension of practical but rigorous sustainability indicators, and ensuring integration and harmony between the various certification systems and numerous other potentially relevant agricultural and environmental programs around Australia. Further, in order to use EMS or other schemes as a means to support a “clean and green” claim, data collection and documentation of the extent of adoption and actual environmental performance and improvement must be put in place as solid proof of claimed environmental credentials.

Given the short history of EMS in Australia and overseas, and the long timeframes needed to change people’s behaviour and the ecosystem, perhaps a decade or two of development and refining might produce a more effective tool for promoting good agricultural practices. In the future, producers may not have a choice about whether they adopt an EMS on their property. Like many other business proprietors, they may eventually be compelled to meet an ever-increasing demand from consumers, as well as government, in order to get a licence or permit to operate an agricultural enterprise. As such, better environmental management, and performance, will become a mandate regardless of what form it takes.

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