

Is there a potential for certified clean and natural beef in northeast Victoria?

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Abstract This study investigates the potential for development of a regional environmental certification scheme through which beef producers in northeast Victoria, who were employing a high standard of environmental care, produced premium quality beef that could attract an improved financial return over regular market prices. Beef producers, butchers, domestic consumers and the restaurant industry were surveyed to identify the level of interest in the community for organic food and 'clean and natural' beef. Beef producers were further surveyed to identify their views on some elements of sustainable agricultural production. The findings conclude that there is a potential niche market for 'clean and natural' beef in Northeast Victoria. A certification scheme for 'clean and natural' beef could utilise existing quality assurance schemes such as Livestock Production Assurance Program, Meat Standards Australia and Environmental Management Systems to demonstrate food quality and environmental management credentials.

Keywords: clean and green beef, Meat Standards Australia, Environmental Management System, Livestock Production Assurance Program, Cattlerecare, sustainable agriculture.

Introduction

Modern agricultural systems and conventions are foremost causes degradation of the natural resource base both in Australia and worldwide (Reid 1995). There is now widespread acknowledgement by governments and communities that agricultural productivity cannot be sustained if current management practices continue to predominate in Australia and other developed nations. At the same time as the increasing awareness of environmental issues, there is also increasing pressure on rural industries and food producers to guarantee the safety and quality of food products for consumers (Alexander 1999).

The international growth in 'green consumerism' is now offering primary industries a new opportunity to improve financial rewards from farming. An ever-increasing sector of the public is willing to pay a premium for food that they believe to be healthier and produced in a manner that is not detrimental to the environment (Marshall 1992). This sector of the food industry, often known as "clean and green", includes the successful organic food industry. According to Monk (1998), this success can be attributed to the internationally recognised system of organic certification. Nevertheless, the attainment of organic certification can be

difficult to obtain and maintain for a variety of reasons, such as weed management issues. There is also debate that organic farming does not adequately address some issues of environmental management such as water management or greenhouse gas emissions, leading to disagreement amongst farmers that organic farming is more 'sustainable' than conventional farming systems (Alexander 1999).

In response to the increasing demand for environmentally friendly food products, both internationally and nationally, an opportunity is now emerging to develop food products that carry an 'ecolabel' - that is, food products that claim to have been produced in a sustainable agricultural system. In order to satisfy consumers of the validity of these claims, governments and industries are exploring methods to ensure that such environmental claims can result in demonstrably improved environmental outcomes. Environmental Management Systems or certification and accreditation programs are amongst the tools that are emerging as the most appropriate for achieving consumer, government and producer acceptance of environmental labelling.

In this study, the term 'clean and natural' has been utilised to refer to 'clean and green'

food produced with environmentally sound management. A number of issues related to the development of 'clean and natural' agricultural produce are reviewed, including the essential elements of 'clean and natural' produce, methods by which these characteristics can be verified, and aspects related to the marketing of such products. To determine the potential for an environmental certification scheme, four segments of the meat supply chain in Northeast Victoria were surveyed to identify the attitudes of beef producers, processors, vendors and consumers towards 'clean and natural' agriculture and organic agriculture.

Opinions were also sought on existing certification programs for beef producers and the components of a sustainable agricultural system. This information can be used to assess the potential market for 'clean and natural' beef and form the basis on which to develop the framework of a regional alliance of beef producers focussed on producing beef that satisfies strict standards of environmental management, while still returning a price premium to the producer.

Background

The degradation problem

The Northeast region of Victoria is an area of approximately 1.9 million hectares of land (8.9% of Victoria) that is abundant with natural resources nestled in between the Victorian Alps, Warby Ranges and the Murray River/NSW border. It includes the municipalities of Wodonga, Indigo, Wangaratta, Alpine, Towong, Moira and East Gippsland.

The North East Catchment Management Authority (NECMA 2003) estimated that annually the "region contributes \$3.24 billion to the state and national economic wealth" with beef cattle production as the predominant livestock industry. In the 2001 national census (ABS 2001, cited in NECMA 2003), the total population of Northeast Victoria was 94,383. The farming and forestry sectors formed 7.5% of the total jobs in the region but this figure has been waning at about 4% per annum over the last decade. Additionally, there were indications of higher average age of farmers with 50% of jobs of those over 65 years of age employed in the farming sector.

A number of threats to the assets base of the Northeast Region have been identified, many of which are linked to agricultural activities in the region (NECMA 2003). These threats are analogous with the environmental impacts of agriculture that have been extensively documented in Australia by many sources such as the Industry Commission (1997) and Malcolm, Sale and Egan (1996). The most

significant environmental impacts of livestock production include decline in soil structure; deterioration of water resources; chemical contaminants and residues in soil and water; aggravated erosion; weed invasion and greenhouse gas emissions. Many, such as dryland salinity, waterlogging, erosion and loss of biodiversity, can be linked to the clearing of native vegetation for grazing and cropping systems. The natural resource base can suffer enduring and irreparable damage from these impacts that, in turn, will threaten the sustainability of our agricultural industries.

The policy response

Public and private sectors need to maintain a sustained and strategic effort to restore landscape health. Sustainable land management plans should deliver social, economic and environmental benefits. In many catchments such as Northeast Victoria, changes in land use, rather than simply changes in land management may be required. NECMA (2003) believes that a "strategic and integrated approach to catchment management is vital". NECMA noted that in the Northeast, some natural resource management decisions have, unfortunately, not been holistic as a result of specialisation of individual resource elements such as water, soil, vegetation, wildlife, pests and pastoral and public lands.

The scale of Australia's environmental problems is beyond the capacity of any one sector to pay for and the responsibility for improving environmental management needs to be shared across government, industry and the community (ACF 2002). Many farmers are already embracing some aspects of sustainable land management. One problem that limits the success of government environmental programs in agriculture is that most are voluntary. According to Watts (2003), voluntary movements like Landcare and the Natural Heritage Trust have "delivered impressive social capital gains" and occasionally have even "precipitated attitudinal change". However, in general, the environmental gains have not been significant despite the expense of hundreds of millions of dollars in environmental works. Watts (2003) and Mech and Young (2001) explain that voluntary schemes that specify substantial environmental outcomes usually have low participation rates; on the other hand those schemes that are less demanding are more readily embraced. This is related to the landholder's difficulties in finding time or money to devote to environmental works or even to participate in educational activities.

Comment [k1]: This is said to be from "2002" in the References.

The level of regulation of agricultural activities is already generating considerable animosity within the rural community. Any attempt to make environmental management schemes compulsory would be controversial. Mech and Young (2001) highlight that models of industry self-regulation and external regulation have both weaknesses and strengths, and a combination of methods may be preferable.

A number of environmental partnerships is developing between producers and either government, environmental organisations or others within the supply chain. In these arrangements, businesses or farmers are advantaged by voluntarily endeavouring to reach particular environmental goals. Other partnership participants provide these advantages and Gunningham and Sinclair (2002) believe the three major benefits that can be derived from environmental partnerships are commercial benefit, political benefit and improved public reputation through association with a respected third party.

Of course, the drivers for environmental partnerships are related to the increase in environmental awareness on the part of the consumer and the community in general, who are also increasingly demanding stronger assurances of food safety and environmental responsibility. Manning (1997) outlines many changes in social structures that have been influential; the food issue trends that are likely to continue into the future include speed eating/faster food, healthy food, leisure eating and environmental concerns and food safety. Issues over food safety (BSE, chemical residues, E. coli and salmonella outbreaks), and now increasing concerns about the environmental impacts of conventional agriculture, plus increased media focus on reported organic benefits and matters such as genetically engineered foods have been factors in the growth in the organic market (Alexander 1999; McCoy 2002).

'Clean and green' food

Organic Agriculture is currently the largest segment of the 'clean and green' food market. The phrase 'clean and green' is appearing regularly in the language of many participants in government and agricultural industries. The actual meaning of this phrase does not appear to have been strictly defined. However, the context in which the phrase is used implies that 'clean' refers to freedom of primary produce from contamination by chemicals such as pesticides or antibiotics, and also freedom from microbiological agents that may threaten public health. The term 'green' may

be more difficult to define and the context of its use in agricultural reporting varies. Food production may be in 'natural' farming systems or by methods that avoid or minimise environmental damage, both vague notions. Whether a 'green' farming system allows synthetic chemicals and fertilisers also appears a matter of some dispute amongst farmers and other industry observers.

Twyford-Jones and Doolan (1998) state that the consumption of certified organic food "runs parallel with economic development and income growth". Evans (1994) investigated various aspects of consumer behaviour in relation to organic food products. She found that the intention to buy organic foods was statistically significant with the intention to pay a price premium. When ranking claims of various attributes of organic food in importance to themselves, consumers ranked food safety claims higher than health claims. Environmental claims such as "cares for the environment" and "environmentally friendly" were ranked lowest in importance.

In the US, research has shown similar priorities amongst organic consumers where the majority rated freedom from synthetic herbicides and pesticides (77%), freedom from artificial ingredients and preservatives (61%) and ecologically sustainable production methods (56-58%) as extremely important (Food Alliance 1994, cited in Holzner 2003). In Europe, consumer research indicates that although consumers' main concern regarding food relates to the health aspects, issues such as the environmental impact from food production and animal rights have become increasingly important over time (Marshall 1982).

Certified organic food can attract a price premium that can fluctuate depending on the industry and marketplace. Pearson and Neeson (1997) have noted that in Australia this bonus varies from a moderate 10% to amounts over 100%, although the price premium will only subsist while the product has traits that are esteemed by the customer. Holzner (2003) states that research by the United States Department of Agriculture has shown that annual price premiums for vegetables between 1989 and 1992 were generally resulted in prices that were double conventional prices. In Japan, price premiums for Certified Organic products are currently around 10-15% above conventional products.

Pearson and Neeson (1997) questioned why, if organic products are better for the customer and environment, organic product sales are less than 1% of total food sales. They suggest that this is the result of

“unfocussed marketing” since the customer and his requirements have been misunderstood, rather than any public lack of interest in the environment. Twyford-Jones and Doolan (1998) support the observations regarding marketing predicaments in the organic industry and state problems of “quality assurance; product recognition; consumer confusion over logos; certification and trademarks; and uncertainty of supply, quality and price” must be overcome in order for the organic market to grow.

Nevertheless, demand for organic food is increasing both in Australia and internationally. In 1990, the domestic organic sector in Australia was estimated at A\$28 million but in 2003 the estimate of retail sales was nearly A\$200 million. International demand for organic food is expanding at 20-25% per annum and it is estimated that if accelerated growth rates of organic food consumption continue in Europe, 30% of all European food consumed will be organic by 2010 (Neeson and O'Malley 2004). In the past decade, there has been a significant increase in the land area devoted to organic food production in Australia, the land area doubling between 1990 and 1995. The organic beef market in Australia is only a small proportion of the total beef industry. However, Australia is the largest organic beef producer (in landmass) followed by Argentina, Italy and the United States.

Governments and markets are increasing their demands that farmers justify their reputation and claims for producing ‘clean and green’ produce. Government agencies, particularly those associated with natural resource management, are evaluating both regulatory and voluntary options to increase the adoption of sustainable environmental management. Mech and Young (2001), review the potential for Voluntary Environmental Management Arrangements (VEMA) to address complex environmental and natural resource management issues. VEMA are an assortment of voluntary arrangements concerned with environmental management with objectives relating to the environment, marketplace or the community that include Environmental Management Systems (EMS). The quality of the standards, auditing, certification and labelling for a specific VEMA will determine the degree by which environmental management outcomes may be enhanced by implementation of that VEMA. The design specifics also determine the level of consumer confidence and marketplace recognition associated with different schemes. Both Evans (1994) and Holzner (2003) found that consumers place a high level of importance on independent

certification labelling in order to have confidence in the claims of an organic food product.

The meat sector

Australian meat and livestock industries have made considerable effort to meet customer expectations of food safety and animal welfare in order to maintain and expand markets in Australia and there are a number of VEMA and quality related schemes already in place such as Livestock Production Assurance Program, Cattlecare, Flockcare, National Feedlot Accreditation Scheme, and ISO 14000. Due to the earlier awareness of food safety issues, systems that are product quality focussed are more developed than those systems that concentrate on the complex environmental matters (Alexander 1999). It should be noted that Buckley and Drew (2002) have highlighted that current programs such as Cattlecare have not achieved the results initially anticipated.

There is widespread recognition that Australia is in a position to produce large amounts of high quality beef that is considered as ‘clean and green’. Australian beef is promoted in Korea and Japan as “clean, natural and safe” (Ball 2003). In Japan, the meat is branded as “Aussie Beef” and has brand awareness up to 95%. In Korea, Australian beef, under another brand, has already achieved 30% brand awareness.

Unfortunately, the ‘clean and green’ reputation of Australian farmers has been coming under considerable scrutiny by national and international markets. The image has been tarnished by the increasing number of reports about the deterioration in the health of Australia’s land and natural resources. Added to this are reports of chemical contamination of food products and allegations of animal cruelty and evidence of wildlife culling (Alexander 1999). Consequently, Australian agricultural industries must now exhibit a high level of “duty of care” to the land in their custody. Of course this is not only necessary to protect international and national markets but is actually an imperative in order to protect those natural resources essential to long-term prosperity in this country.

On this basis, there are good environmental and commercial grounds for encouraging beef producers in Northeast Victoria to embrace sustainable agriculture and produce a certifiable ‘clean and natural’ beef.

Methodology

To study the potential for the establishment of a regional environmental certification scheme as a means to improve the economic and ecological sustainability of beef production in Northeast Victoria, a number of

questions need to be considered. The predominant question is whether there is a market for 'clean and natural' beef. If there is a market, as much information as possible needs to be collated regarding who will buy it and how much extra will be paid for beef bearing an ecolabel. In addition, it is necessary to consider the type of claims that would be demonstrated through any form of ecolabel applied to beef, as the design of any certification system must be physically achievable by the farmers while still achieving environmental outcomes for the farm and for the catchment as a whole.

To answer some of these questions, surveys were developed and conducted on four segments of the meat supply chain in Northeast Victoria, namely the beef producer, the meat processor or butcher, the domestic consumer and the hospitality industry. Each segment received a different survey that was relevant to their place in the supply chain. The term 'clean and natural' was deliberately chosen instead of 'clean and green' to avoid any confusion with the respondents who may have misconstrued the meaning of 'green'. The phrase 'clean and natural' was defined as 'meat that is assured to be free of pesticides, chemicals and antibiotics and has been produced in grass-based sustainable farming systems that minimise environmental degradation'.

The preparation of the questionnaires followed recommendations of Alreck and Settle (1995). Drafts of the consumer and farmer surveys were pretested on several individuals prior to distribution. Manual processing and cross analysis of the survey results was conducted and data displayed as percentages of the total number of respondents.

The Producer Survey was mailed to those whose major farming enterprise was beef production, and not to any dairy farmers. The initial questions gained information about the size and type of beef production systems of the respondents. The remaining questions focused on farmers' attitudes or experience with the main accreditation systems used in the beef industry, their attitudes to organic farming systems and their opinion on the nature of a sustainable farming system. The survey also determined the amount of monetary reward that would be required for them to join an accreditation scheme for 'clean and natural' beef.

The source and quality grading of the beef, together with customer enquiries about their meat purchases, were the main questions posed by the Butcher Survey. Opinion was also sought on their perception of consumer preferences and the potential domestic and

international market for 'clean and natural' beef.

The Consumer Survey investigated participants' current buying patterns for beef and organic products including the premium they are prepared to pay for the latter. Opinions on current beef production with regards to chemicals and environmental impact were also sought. The survey of the hospitality industry was intended to identify factors that influenced the choice of meat and other food purchases for the restaurant and then to determine if they might consider purchasing beef bearing ecolabels for being 'clean and natural'.

Results

Beef producers

Sixty-one beef producers across nine localities of Northeast Victoria were surveyed in 2003 with a 57% response rate. Over 71% of the farmers were more than 50 years old, none was under 30 years old and 68% of the farmers had been farming for at least 20 years, with only 9% of the respondents relatively new to the industry, farming for less than 10 years.

The size of the farms was very variable, with herds ranging from 22 to 1000 head of adult cattle, and a similar range for cattle under two years of age. The total number of cattle managed by the 35 farmers was 13,695 although several farmers noted that their numbers of cattle were down on their normal levels due to the drought of 2002/2003.

Many of the certification schemes for beef farmers have been running for less than ten years; 57% of the farmers had no experience of any of the four certification programs listed, namely Cattlecare, MSA grading system, European Union program and Johnes Disease Market Assurance program. Farmers generally had a poor opinion of certifications schemes. For example, 31% of the farmers (11 people) had been involved with Cattlecare (founded 1995) at some stage in the last five years. Only two of those eleven who had been accredited found that it brought financial benefit. In total, only 9% of farmers thought Cattlecare could deliver financial benefit. Despite this, producers were still very interested in participating in an accreditation scheme for 'clean and natural' beef if it could get a price premium. 29% of farmers needed a financial incentive of 10-20% to participate, while 31% would need over 20% premium to entice them into a scheme. Only one farmer was prepared to participate for free.

The majority of farmers (83%) believed 'clean and natural' beef should bear an ecolabel to that effect. However, only 34% of farmers thought that Australian consumers

would pay extra for ecolabelled beef. There seemed widespread confidence that there is an international market for 'clean and natural' beef, with 66% answering in the affirmative.

All farmers surveyed cared about the ecological sustainability of their farm. Most believe that a farmer can be both ecologically and financially sustainable and the majority are concerned about the impact of their farming activities on the catchment health. 83% agreed that farmers should be financially rewarded for farming in a sustainable manner. The majority of farmers believed that the health of their farm had improved over the last ten years. Findings for productivity were similar, with only two farmers finding that productivity had or may have dropped.

Farmers in Northeast Victoria appeared to be unimpressed by organic farming techniques, although the extent of their understanding of organic farming practices was not determined. In this survey only one farmer thought organic farming could be more sustainable than their current system, although 68% thought organic farming may lead to a healthier environment, which presents some contradiction. 20% of farmers thought organic farming could not be financially viable, although 57% had no opinion. The farmers were more decided about management issues though. 77% believed weeds would be more troublesome to control on organic farms and 34% were concerned that animal health would suffer under organic practices.

The final section of the survey determined farmers' opinions about what elements constitute an ecologically and financially sustainable farming system. 74 % of farmers agreed that having a Whole Farm Plan was necessary or very necessary for sustainable management and 60% thought the same about having an Environmental Management System (EMS). 49% of farmers claimed to have prepared or were preparing a Whole Farm Plan and 40% of farmers claimed to have, or were planning to develop, an EMS despite only 20% of the farmers claiming to have had involvement in an existing EMS program. EMS programs have only emerged in agriculture in the last five years so it is highly unlikely that many farmers would have had a formal EMS developed prior to this time.

The producers were more unified on water management, with 86% supporting 'best practice' water management. 23% of farmers thought synthetic fertilisers did not have a place in a sustainable farming system, while 51% did not believe they impacted on

sustainability. 57% of farmers did not support genetically modified organisms in sustainable farming systems and 31% had no opinion on this issue. However, they were almost unanimous in their support for the use of antibiotics in diseased animals and the importance of high animal welfare standards in a sustainable farming system. 37% of farmers felt protection of waterways and vulnerable gullies was not an important part of sustainable agriculture, nor was the provision of 5% of the property set aside for native vegetation. Almost 50% of the farmers did not think protection of remnant vegetation was important.

About 63% of farmers agreed that 'clean and natural' animals should be slaughtered in abattoirs with environmental management systems, thereby maintaining the environmental policies through the supply chain.

Butchers, supermarkets and meat processors

Eighteen questionnaires were returned, representing a 42% response rate. Nine respondents sold their meat as a retail butcher outlet (50%), while five were supermarkets (28%). On average, about half the turnover of meat in the respondents' outlet was beef products, while about 28% was lamb.

About 61% of respondents claimed that their meat was quality assured, and another 11% had some items quality assured. 61% of vendors revealed that customers had made enquiries about the meat that was sold, with the reason for questions ranging from grain-fed versus grass-fed, breed of animal, source of the meat (local), freedom from hormones or organic certification. Only two outlets of the eighteen respondents sold organic meat, although 55% of outlets reported that they had fielded enquiries about whether they sell certified organic meat.

One-third of respondents thought that at least 10% of their customers were concerned about whether their beef was coming from a sustainable agricultural system. 39% of respondents thought at least 50% of customers would purchase beef that carried a quality assurance and ecolabel for 'clean and natural', with another 39% of respondents believing that 10-50% of customers would buy such a product.

61% of respondents sourced all or the majority of their beef from Northeast Victorian. Nearly all the respondents thought that they had clients who would prefer to purchase locally sourced beef.

Just over 75% of respondents thought that 'clean and natural' beef should, or maybe should, return a premium price to the

producer. Opinion was fairly evenly divided about the price premium that clients may pay for 'clean and natural' beef although no one thought they would pay more than 20% extra. 68% of respondents thought there was international demand for beef certified as 'clean and natural'.

Consumers

Fifty-six questionnaires were returned out of sixty-three residents of the Northeast Victoria who were surveyed, which is almost an 89% response rate. The survey results indicate that 79% of consumers had purchased food products certified as organic at some time. Purchasers of organic foods generally did so for multiple reasons, with 'freedom from chemicals' the most common, followed by healthier food. 46% of respondents thought organic food was produced with less damage to the environment. Only 25% bought organic food because they thought it tasted better than conventionally produced food.

Almost all consumers considered environmental claims made by food products at least occasionally. All but 9% of consumers were prepared to pay extra for a product that they believed to be safer for the environment. About 34% of the consumers stated that they were prepared to pay up to 10% extra and a further 28% would pay up to 20% extra. 12% were prepared to pay over 20% extra for an environmentally safe product.

With 57% of consumers eating beef between one and three times a week and a further 23% eating beef more than three times a week, it could be regarded as a regular consumer item. Only 18% of consumers were confident that the beef that they eat is free of any chemicals, pesticides or antibiotics.

Only 3.6% of consumers thought that beef was produced in a way that did not damage the environment. All consumers thought that meat that was produced with minimum damage to the environment should, or maybe should, bear a label to that effect. All consumers said they would or might choose 'clean and natural' labelled beef over ordinary beef. Almost 43% of these would pay 5-10% extra for the 'clean and natural' beef; 11% would pay 10-15% extra, and 32% of respondents would pay over 20% extra for 'clean and natural' beef. Despite these results, about a third of consumers did not consider themselves to be 'green consumers'.

Restaurants and Hotels

Out of thirty-six restaurants that received the questionnaire, eleven responded, - a response rate of 31%. Only two of the respondents used any certified organic food in their restaurant. 73% of respondents said they had never fielded customer inquiries

regarding the use of certified organic ingredients.

Over 80% of respondents gave preference to food products produced locally where it was possible and 44% of these highlighted this in their menu. Preference would be given to a local brand of meat by all the restaurants, although 40% of these would only buy a local brand if it was at the right price. All the respondents listed meat quality as strongly influencing the purchase of red meat, while 27% also listed price as an important factor. Only one restaurant used the MSA grades in purchasing meat. It was important to all restaurants that the meat was quality assured, although a definition of 'quality assured' was not explained in the survey.

Almost all restaurants would be interested in using quality meat produced in an environmentally sustainable way (i.e. 'clean and natural') with 54% prepared to pay at least an extra 10% for meat certified as 'clean and natural'. 27% of restaurants would not be prepared to pay extra for a certified clean and natural product.

Discussion

The surveys of stakeholders in the beef supply chain support many of the findings that have been highlighted in the literature review.

Farmers and 'clean and natural' agriculture

It is not possible to say if the respondents to this survey are a typical cross section of the farming community in Northeast Victoria. It is possible that those farmers who took the time to respond to the survey were those who are most interested in the subject of sustainable agriculture. Consistent with the finding of NECMA (2003) of the aging farming population in Northeast Victoria, there was a high average age of participants and this may have an impact on the potential for an environmental certification scheme. Such a program would involve long term planning and goal setting and would require a long-term commitment from participants. This may be difficult for older farmers who may be planning an exit strategy from farming rather than developing a 10 or 20-year plan.

As evident in the conclusions of Buckley and Drew (2002), there is clear cynicism or disappointment in the ability of current quality assurance programs to deliver financial benefits to the farmer. This experience of failure on one or more occasions amongst many farmers is likely to have left some disillusionment, and would likely have contributed to the desire for a guaranteed high financial return (greater than 10%) among the farmers from

Northeast Victoria before becoming involved in another certification program.

The farmers clearly believe in the importance of being ecologically sustainable and believe that they can still be financially sustainable at the same time. The use of a Whole Farm Plan and Environmental Management System is clearly of importance to the majority of farmers. As many farmers don't yet have those plans then this is likely to be an area that should improve in the near future. Analysis of the survey data showed that there was clear variation in farmers' opinions about what aspects constitute sustainable agriculture.

The issue of vegetation management has been controversial in the Northeast region for a number of years. The small percentage of remnant vegetation left on farms in the region is a cause for concern for NECMA (2003), despite the high overall percentage of remnant vegetation in the region, most of which is on public land. Nearly 50% of respondents in this survey did not think it was important to protect the remnant vegetation on their properties. Curiously, just as many farmers thought it was important that native vegetation formed at least 5% of the property. This 5% figure was listed due to it being the standard required by NASAA in their organic certification standards for perennial grasslands and remnant vegetation (NASAA 2002).

The level of disagreement between farmers about the importance of remnant vegetation, riparian zones and soil conservation practices would seem to give some credence to the concerns of the general public (National Farmers Federation cited in McKenzie 2003), and confirmed by the consumer survey results regarding the damage done to the environment through beef production.

Butchers and 'clean and natural' agriculture

The means by which the butchers who responded to the survey determined their customer preferences has not been identified. It is likely that in these surveys, the opinions of the butchers about the customer preferences are as much 'educated guesses' as documented facts. Nevertheless, it is clear that butchers think that there is a potential customer base for high quality 'clean and natural' beef produced in the region. Moreover, they believe that some of their customers would be prepared to pay a price premium for it, up to 20% extra.

The size of the survey response was not large enough to determine significant differences in attitudes of supermarkets and butchers to 'clean and natural' beef. The cooperation of butchers and independent supermarkets is

likely to be crucial in the development of a regional environmental certification scheme.

Both butchers and farmers were in agreement that there is an international market for 'clean and natural' beef. This could be an important extra attraction of a certification scheme for beef farmers.

The individual consumer and 'clean and natural' agriculture

The results of the consumer survey suggest that the size of the 'green consumer' population in Northeast Victoria is considerable, with 65% willing to consider themselves as such, and almost all consumers considering environmental claims at some time when making purchasing decisions. As found in Evans (1994) and Food Alliance 1994 (cited in Holzner, 2003), consumers were more concerned that foods were safe and free of chemicals than their friendliness to the environment, a finding which has important implications for the structure of a certification scheme. Almost all consumers were prepared to pay extra for a product that they believed would be safer for the environment and this extended to a willingness to pay a price premium for 'clean and natural' beef.

The hospitality industry and 'clean and natural' agriculture

The small number of surveys from the restaurants makes it difficult to draw many conclusions about the potential for the hospitality industry to be a significant consumer of 'clean and natural' beef. However, the majority of restaurants would give preference to a local product and half the respondents thought they might pay over 10% extra for such beef. These restaurants between them would consume a considerable volume of beef each week (160 kg in these six restaurants alone) so this suggests that targeting the hospitality industry to develop regular clientele could be worthwhile. As quality of the beef was the most important criterion for beef selection then it would be essential that the clientele was confident that there would be consistent supply and quality of the beef.

Important issues related to 'clean and natural' beef.

The survey results combined with the literature review highlight a number of issues relevant to the development of 'clean and natural' beef as a marketable product for the green consumer in Northeast Victoria:

- Beef must have consistently high eating quality. To ensure the development of consistent high quality beef, carcass specifications and processing methods should be defined. All beef should be

identified appropriately and securely to enable full trace back from the 'plate to the paddock.

- Beef must be free of chemical residues. The production of beef that is free of chemicals can be approached from several angles. Firstly, the adherence by farmers to current recommendations about chemical withholding periods and the use of the National Vendor Declaration Scheme has been designed to ensure that beef is free of chemical residues determined by government agencies as the Maximum Residue Limits (MRL). However, this gives no indication about the extent of usage of chemicals on a farm. Alternatively, farmers could seek to conduct their farming activities with minimal or no synthetic fertilisers and pesticides, as is the case with organic and ecological farmers. The farmer survey demonstrates that farmers are already aware that the minimisation of chemical usage on farms is important for agricultural sustainability. However, in line with Alexander (1999), farmers in Northeast Victoria have concerns about the ability of organic farming methods to control weeds and pests. The application of Integrated Pest Management techniques could assist farmers to find non-chemical ways to control pests.
- Claims of responsible environmental management must be verifiable. In consideration of the rising prominence given to the application of EMS to agriculture, then it would be reasonable to use the EMS framework as a basis for a certification scheme. It could be prudent to develop a set of targets or outcomes that could be aligned with the targets outlined by NECMA (2003) for the Northeast Catchment Strategy.
- Beef products must be priced to suit the targeted customer group. The consumer survey indicates that customers may pay up to a 10-20% premium for 'clean and natural' beef products. As discussed in Pearson & Neeson (1997) this premium can only exist whilst customers are receiving a product with characteristics they value. However, the level of price premium should also reflect the effort taken on the part of the farmer to reach the standards set by the certification scheme.
- The supply of the beef must be consistent. In the development of 'clean and natural' beef, the initial supply of animals for processing and sale would require considerable cooperation between producers involved.
- Careful marketing is essential, both at point of sale and in the general media, to ensure a high level of public awareness of the special environmental claims. The development of a local brand of beef that readily identifies that the beef came from the Northeast of Victoria could make it more attractive to local consumers who are keen to support local businesses. It also enables the development of a recognisable mark, logo or name that readily identifies the source of the beef and clearly indicates the environmental claims about the product. The cooking and eating habits of Australian consumers are changing, resulting in an increasing demand for convenience products, and prepared foods (Manning 1997). 'Clean and natural' beef could also be utilised in developing special pre-prepared meals and other emerging niche markets. The restaurant survey also identified a potential market in the gourmet food and restaurant market for an environmentally friendly product.
- All members of a new 'clean and natural' beef business, such as a producer alliance, must maintain their commitment to product development. The history of producer alliances in the beef industry is littered with more failures than successes and many farmers in Northeast Victoria seem quite aware of this tendency.

In the development of a new type of beef product that carries environmental claims, the utilisation of existing quality assurance schemes is likely to facilitate the ability to defend environmental claims while reducing the burden on a producer alliance to develop and certify individual beef producers. For instance, to facilitate grading of the beef it would be worthwhile applying the MSA system of meat grading. The substantiation of chemical usage for both on-farm and animal health matters is now fundamental in the Livestock Production Assurance Program. This scheme verifies use of such chemicals, allows trace back and delivers information to other sectors of the beef supply chain. It is now the industry standard for quality assurance and supercedes the Cattlecare program.

Mech and Young (2001) reviewed the process of designing a voluntary environmental management agreement. Fundamental to the process was the identification of environmental, marketplace and community objectives at the start in order to incorporate the appropriate level of standards and other design features. A regional environmental certification scheme would be interdependent on the local community. By identifying as a local project, it may be more likely to attract

support from local consumers and this finding is supported by the survey results.

Conclusions

As the evidence mounts on the deterioration of the natural resource base in Australia, and government regulation and commercial pressures increase on farmers to demonstrate an acceptable duty of care in the management of their land, the necessity of widespread adoption of sustainable agricultural practices is becoming more intense.

The participation of beef producers in Northeast Victoria in a voluntary regional environmental certification scheme, where it is attached to the development of a locally branded high-quality premium beef product, is one route by which local farmers may embrace more sustainable land management and be rewarded for their environmental stewardship.

This study has determined that there is potential in Northeast Victoria for the development of a regional environmental certification scheme. Surveys of four critical segments in the beef supply chain (the producer, the butcher and meat processor, the domestic consumer, and the hospitality provider) demonstrate that there is interest in such a scheme to warrant a more in-depth examination of a premium beef product to target a particular niche of the 'green' consumer market.

Such a product would have to satisfy the major concerns of the 'green' consumer, namely that the beef is free of chemicals, is safe to eat and is produced with minimal damage to the environment. The consumer is prepared to pay a premium for 'clean and natural' beef, although an ecolabel bearing certification and verification of the environmental and food safety claims would be necessary. The definition of environmental goals amongst the participants in a certification scheme could be a difficult process due to the wide range of opinions demonstrated amongst the farmers about what constitutes sustainable agriculture.

Tying the environmental claims to the development of an EMS (or other VEMA) which is consistent with regional catchment targets and outcomes and ensuring progression through that EMS cycle of review and improvement could be the most appropriate means to deliver improvements to the management of farms, more sustainable use of the farm resources and the limitation of off-farm effects of farming.

In short, the development of a regional environmental certification program for beef producers in Northeast Victoria could satisfy the three core principles of sustainable

agriculture - ecological, economic and social sustainability. This study confirms that there appears to be a niche in the beef market that currently remains unfilled. There may be potential for Northeast Victorian beef producers to fill that niche and gain a long-term marketing advantage while improving the long-term viability and sustainability of this region in southern Australia.

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