

The Winston Churchill Memorial Trust of Australia

Report by Sherryl Wright – 2002 Churchill Fellow

To compare participation levels and experiences of agri-environmental payments based on environmental performance with outcomes achieved by landcare projects funded through a regionally devolved grant. Looking particularly at market-based approaches such as eco-labelling, ISO 14001 certification as evidence of 'clean and green' production, and other product labelling for healthy, safe and environmentally responsible food and fibre.

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1. Introduction

The Churchill Trust supported my study to visit the Netherlands, United States and Canada to compare participation levels and experiences of agri-environmental payments based on environmental performance with outcomes achieved by landcare projects funded through a regionally devolved grant. Looking particularly at market-based approaches such as eco-labelling, ISO 14001 certification as evidence of 'clean and green' production, and other product labelling for healthy, safe and environmentally responsible food and fibre.

I would like to thank the Trust for providing this unique learning opportunity. The study has provided me with a global and systemic perspective of agriculture. At present farming enterprises are expected to account for public and inter-generational goods. There is an inequitable burden of responsibility for land stewardship placed on farmers, and in an ungovernable global market most producers lack the power to set prices for their produce but are expected to pay for natural resource conservation. It was largely outside the scope of this study to investigate the 'bigger picture' of globalisation and the environment but the effects are integral to sustainable agriculture and demand the attention of many of the people interviewed.

I sincerely thank the 54 individuals interviewed during this study, many of whom are leaders in agri-business, agricultural researchers and farmers involved in agri-politics, who were so generous with their time and wealth of knowledge. It is indeed difficult to single out highlights. I'd like to thank Mr Harold Rudy and the team involved in the Ontario Environmental Farm Plan for ensuring that my visit was filled with interest and diversity.

I would also like to thank Dr Ross Higginson, who encouraged my application to the Trust and hope my efforts to disseminate my experiences honour his confidence in me.

2. Executive Summary

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The project evaluated farmers' experiences of financial incentives for conservation and sustainable agricultural practices including government grants, regional contracts in the Netherlands, Environmental Management Systems in the United States and Canada, price premiums for organic produce and other types of eco-labelling. The aim was to form an opinion about the most effective way of gaining broad participation in best management practices.

Over the 7 weeks of the study I interviewed 54 people, 17 farmers and 37 working in agricultural extension, research and/or policy. I visited farm enterprises ranging from national, corporate hog producers, family operated intensive diaries in the mid-west, to family run organic farms in the North-East. Their views are represented in the case studies throughout the report. I was very fortunate in being able to learn from leaders in the field of sustainable agricultural extension, research and policy. The influence of a few of these is marked.

Farmers are shouldering the responsibility for land stewardship however, few feel they can afford practices that don't have a direct return or a price premium. It is largely public funds through government programs that catalyse private farm investment in conservation and sustainable agricultural practices. Landcare and the Natural Heritage Trust has focussed on voluntary farmer education and voluntarily changing management practices. State governments are tending to enact more regulation of natural resources. Little attention has been paid to encouraging retailers, processors, financiers and consumers to change their actions.

Educating consumers will have a significant impact back through the food supply chain to the farm practices. This is more evident in the Europe, England and increasingly in the United States and Canada. There, consumers have had confidence shaken by regular and dramatic events like intensive livestock diseases, drinking water contamination, or pesticide poisoning. Farmers and retailers are driven by market demand for safe food. The environment also benefits when human health assurances have to be given to access markets.

The conclusion drawn is that market based approaches are most likely to bring about long-term change to the way food and fibre is grown and distributed. Eco-labelling and accreditation of farm practices (possibly using an Environmental Management System) gives the consumer a choice in deciding the social, animal and environmental impacts of the food they purchase. This is a niche market that currently fetches a premium for the grower. The market demand is growing rapidly and prices will fall accordingly, making the choice more affordable.

There is definitely a role for government to support initiatives that develop eco-labels, educate consumer choices, facilitate processing, distribution and marketing. Australia unfortunately has few private foundations which are open to any innovative activity that may be contrary to International Trade Agreements or multi-national corporate interests.

I hope to forge a role for myself in facilitating dialogue between consumers, processors and growers. This may be through EMS, eco-labelling, consumer education, local growers markets or regional differentiation of products.

3. Programme

I sincerely thank the 54 individuals interviewed during this study for their generosity in giving of their precious time and wealth of knowledge.

Organisation visited	Interviewee	Position
Agcare Guelph Ontario	Jackie Fraser	Program Manager
Alma Farm Ontario	Steve Eastep	Producer
Arcana farm Richmond Vermont	Anne Mueller	Owner/Manager
Aubodon Family Farms Iowa	Cindy Madsen	Organic pork producer and CSA coordinator
Avalon Farm Elmwood Ontario	Byron Monk	Beef Producer
Bragger Dairy Farms Spring Valley Wisconsin	Jo Bragger	Dairy Farmer
Bureau of Cooperative Environmental Assistance, DNR Madison, Wisconsin	Mark McDermid and John Shenot,	Bureau Director & Environmental Asst Coordinator
CLM (Centre for Ag & Environment) Utrecht Netherlands	Andrean Guldemond	Program Director, Nature Conservation and Biodiversity
Craftsbury Organic Farm, Vermont	Glenn Colville	Farmer
Discovery Farms Program Wisconsin	Jim Leveridge	Field Advisor
Hanover Ontario	Gerald Poechman	Organic Producer
International Agriculture Centre Wageningen	Jim Woodland and Irene Guyt	Head of Social and Economic Dept. & Specialists in participatory evaluation & agriculture
Iowa Farmer's Union & GRACE representative Claire Lake	Chris Peterson	Vice President
Iowa Practical Farmers, Ames Iowa	Gary Huber	Director
John Vickery, Consultant, St Paul Minnesota	John Vickery	Consultant for social analysis of participation extension programs
Leopold Center for Sustainable Agriculture, Ames Iowa	Jeri Neal	Program Leader, Ecological Systems & Research
Leopold Center for Sustainable Agriculture, Ames Iowa	Richard Pirog	Director, Food Systems
Mapleton Organic Dairy Moorefield Ontario	Martin De Groot & Ineka Buoy	Organic Producer
Michigan Farmer's Union	Carl McIlvain	President
Michigan State University, Dept. of Agricultural Economics, Lansing	Sandra Batie	Professor of Food and Agricultural Policy
Mid West Food Alliance, White Bear Lake, Minnesota	Ray Kirsch	Coordinator
Minnesota Farmer's Union St Paul Minnesota	Doug Peterson	President
Natural Resource Conservation Service Madison Wisconsin	Brian Holmes & Lyn Kirschner	Ag EMS Livestock Pilot
Natural Resource Conservation Service Greenfield Massachussets	Pat & John Devine	Farm Services Program & Extension Officer

Organisation visited	Interviewee	Position
Natural Resource Conservation Service Burlington Vermont	Kip Potter	Environmental Program Manager
Natural Resource Conservation Service Des Moines Iowa	Larry Beeler	Extension Manager
North-east Organic Food Association, Ashfield, Massachussets	Ed Stockman	Extension Officer
Ontario Farmer's Association Grimsbury	Mary Lour Garr	Board Director and retired producer
Ontario Farmers Association	Tom Perkes	Director of Member Services
Ontario Farmers Association Hanover	Gertie Blake	OFA Coordinator Bruce and Grey Counties
Ontario Ministry of Ag & Food, Marketing & Services	Gary Nelson	Snr Trade Advisor
Ontario Ministry of Ag & Food, Marketing & Services	Mick Hicknell	Snr Trade Advisor
Ontario Ministry of Argiculture and Fisheries	John Smith	EFP Review Coordinator
Ontario Soil & Crop Improvement Association (OSCIA), Guelph	Harold Rudy	Program Manager
Organic Trade Association. Greenfield Mass	Tom Hutcheson	Policy Director
Ontario Soil & Crop Improvement Association (OSCIA) Guelph	Andrew Graham	Environmental Program Manager
OSCIA Toronto	David Armitage	Policy Officer
Pioneer Farm, Research farm for University of Wisconsin Plateville Wisconsin	Ted Bay	Water Quality Specialist
Royal Bank of Canada, Hanover	Remco Brannoc	Rural Lending Officer
Secretary on Air and Waste Issues, Madison Wisconsin	Jeff Smoller	State Secretarial Advisor
Smithfield Industries P/L Algona Iowa	Al Witt	MidWest Environmental Coordinator
Son Bow Farms Inc Spring Valley Wisconsin	Jay Richardson	Dairy Farmer
Trees Forever Ames Iowa	Pam Helfer	Field Coordinator
Unites States Department of Agriculture Des Moines Iowa	Mike Bevan, Maury Wills and Barbara	Land Stewardship Program
University of Massachusetts, Rural Extension Services & Agriculture	Stephen Herbert	Head
University of Massachusetts, Rural Extension Services & Agriculture	Wes Autio & Masoud Hashemi	researchers/extension
University of Wageningen, Netherlands	Jaap Frouws	Rural Sociology
University of Wageningen, Netherlands	David Kleijn	Ecologist & Reseacher
Wisconsin Farmer's Union Chippewah Falls Wisconsin	Geri Jaeger	District Director

4. Description and lessons learnt

Not all countries have a commonly understood definition of sustainable agriculture however the following words were often used by interviewees and reflect the definition used in the Brundtland report on sustainable agriculture - "Our Common Future" launched by then Prime Minister Bob Hawke in 1980.

Words used by interviewees to define sustainable agriculture included:

"handing land on in the same or better condition"

" the rate of replacement doesn't exceed rate of extraction"

"minimising the long-term costs"

"the environmental costs are included in the cost of production and are not shifted to the public purse"

4.1 Contextual Issues

Interview responses were often in the context of issues affecting agriculture at that place and time. Several issues arose that were not within the scope of the study but were heavily influencing farm business decisions, these issues include:

- globalisation of commodity markets: the pressure for the cheapest produce and the shifting of contracts from country to country without consideration for timelags required to make infrastructure and social adjustments
- the impact of large multi-national food companies on family farms, the diversity of produce and rural town economies
- the marketing of genetically modified crops as a 'revolution' that saves chemical inputs without full advice on the resistance risks and overseas markets negative responses to GMO products.

There are many positive responses to these issues that are described throughout this report and could well be the catalysts for reshaping the food system.

Implementation of the US 2001 Farm Bill had stalled because of the US national security commitments. All States had received severe budget cuts to existing programs and were renegotiating programs under the Farm Bill, providing an opportunity for further improvements.

The management of intensive livestock waste is an area receiving massive attention and resources in the Netherlands, the United States and Canada, where populations are far denser than in Australia.

The attention given to intensive livestock lots in the United States is a result of the conflicts arising between neighbouring land-uses as well as national concerns about water quality and biodiversity.

Conflicts and law suites arise from neighbours complaining about the odour of intensive livestock sheds that sometimes house more than 10000 hogs, for

example. The odour is in the dust. Particulate matter bigger than 2.5 microns can carry disease and odour. Whilst there is no hard data to suggest human health is adversely affected (unless the dust aggravates respiratory problems) smart operators will endeavour to eliminate the dust by siting the sheds downwind and planting windbreaks. Neighbours have complained about headaches and a plethora of complaints from 5 miles away.

Walkerton in Ontario Canada lost 7 citizen in an incident recently, where the town bore which supplemented the drinking water supply was contaminated. This is another example of the potential for conflicting land uses and how the environments ability to assimilate waste is an overused environmental service. In Walkerton, bacteria (*E. coli*) from a neighbouring manure pit leached downslope into the town bore. The producer involved was able to show an EMS as evidence of his efforts to farm responsibly and was acquitted after a lengthy and very public trial. This an example

Most farms in the Mississippi basin are drained marsh, with plastic perforated drain tiles buried about 6ft underground that hook up with county drains that carry water to ditches and eventually to rivers. In the last 20 years conservation practices such as putting in terraces to reduce soil erosion and riparian buffer strips have made a significant difference in reducing nutrient run-off. However, the tile drains still transport excess nitrogen. The nutrient load, particularly nitrogen, on the Mississippi River is so severe that there is an apoxic zone in the Gulf of Mexico. That is, there is a dead zone created by the lack of oxygen, visible on satellite imagery at the delta of the River.

To minimise excess nitrogen all livestock producers in the USA must have nutrient management plans. The average age of farmers is 60yrs and they have traditionally had livestock. Manure disposal has generally been at the closest convenient site rather than seeing it as a resource to be applied across the whole farm. Applications of anhydrous fertiliser tend to follow the ratios of nutrients prescribed many decades or even a generation ago with little soil testing to better define soil requirements.

At present USA government conservation incentives and regulations manage manure but not chemical fertiliser applications. If manure is over-applied by 10% there is a fine. Only a small percentage of farmers apply manure as opposed to anhydrous fertiliser. It is likely that all farmers applying fertilisers will have to have nutrient management plans in the future.

US government programs have focussed on pesticide reduction in the past and have made huge improvements in the pesticide loads in rivers. Now the focus is on nutrient management and it is largely farmers (particularly intensive livestock lots) who are getting the negative press.

The Dutch have a compulsory Mineral Accounting System developed by Dr Jaap Frouws, Wageningen University, the system monitors nutrient losses from intensive piggeries. This was a European Union initiative to reduce nitrate pollution and water quality. If the nutrient losses from a farm are too high a levy is charged. There is a paper trail for manure sold as fertiliser and a quota for the number of animals per hectare per property.

Initially farmers reacted strongly protesting to the compulsory system. People have become accustomed to it but continue to negotiate the options and flexibility within the legislation. Farmers can enter in 2 ways: a generic contract or once their environmental credentials are proven they can negotiate more flexibility. There are still those farmers who oppose any environmental legislation.

4.2 Conservation Policies and Incentives in the US and Netherlands

Agri-ecological policy in the United States

(based on an interview with Professor Sandra Batie, Professor of Food and Agricultural Policy, University of Michigan, Lansing)

Throughout the 1970's the US focussed on highly visible, point source pollution and invested massive amounts in sewerage treatment to improve water quality. The US didn't turn its attention to the impact of agriculture on the environment until 1985. Initially environmental policy was driven by food quality legislation, effectively banning the use of carcinogenic pesticides, the spin off is environmental protection. Now the legislation is even more stringent and states that food cant have traces of chemicals that harm children. This is driving research to find products that are even more benign and again the spin off will be environmental protection.

Commodity crops have a larger **environmental footprint** due to the area farmed but the value crops tend to be closer to urban areas and impact on a greater number of people. The held hypothesis is that large intensive production is not sustainable – having adverse impacts on environment and rural socio-economics. However, large corporations should have the money to invest in technology that protects the environment and would do so given the will or regulation.

In the delivery of USA conservation programs, outcomes have been diluted and more money has flowed to subsidise commodity producers. The take-up by corporate farms is due to the large amounts available for infrastructure as well as their ability to contribute matching funds and technical expertise. Agencies no longer have the staff to provide a free service to smaller farmers so they cant deliver the outcomes intended by the congress.

Currently, conservation is managed farm by farm and not by ecosystem relationships between species and habitat size requirements of species. Environmental footprints may be measured by the species impacted upon by the development and what the species status is, eg. threatened or endangered. For example, the Conservation Reserve Program covers 36 million acres largely in prime habitat for pheasants, turkeys and quails. However, song-birds need contiguous riparian forest and wetlands, which have not been so popular under the voluntary conservation arrangements. There is a movement to replace these in rural area.

Strategic investment of public conservation funds needs to work at both scales to produce the intended outcomes:

- Amalgamation of all the small projects' outcomes will eventually have an impact at a catchment scale, working cooperatively across a community of small farms to link projects together (the landcare model)
- simultaneously, working where there's an overlap between the biggest environmental footprints and those farmers willing to participate.

Willingness can be motivated through the minimal threat of legislation, that is, if they don't become proactive the legislation will enforce the change. In other words, conservation is currently voluntary and cost-shared but soon it will be mandatory and not cost-shared.

Good programs are targeted (to the problem) tailored (to the farmer) and transparent (publicly accountable). Land use 'problems' are targeted because they aren't sustainable. For example, in the Shandoah River catchment 7 dairy farmers had an impact on 50% of the area so there is a bigger bang for buck if programs target those 7 farmers. However, there's a balance to be struck between continued support for the willing and simultaneously, encourage more people to be willing.

Market driven incentives can recruit more farmers into the willing like price premiums for produce or discounts on costs such as insurance discounts for farmers who undertake conservation practices (lowering the risks of law suits) or environmental assurance programs that show due diligence if a farmer is fined or sued.

The USA Environmental Assurance Program provides a framework to show due diligence. The program has 3 tiers – starting with a nutrient management plan, then a whole farm plan, and then to the community/sub-catchment plan over 5 years. The program tries to gain incentives for those producers involved.

Environmental Management Systems ISO14001 enables the monitoring of environmental impacts and is often implemented because the producer believes regulators will be easier on them in the advent of an incident. In terms of conservation, an EMS ISO14001 is only as good as the objectives – which need to encompass more than personal business interests and perhaps should include community values and environmental services.

The **EQUIP program** subsidises manure storage pits and buffers to protect waterways from eutrophication. The policy doesn't encompass commercial fertiliser application. Fresh water will eutrophy with excessive nitrogen and marine environments with excessive phosphorus. The EQUIP program requires tissue tests and soil tests to try to apply just the right amount of manure that the soil can hold and the plants can take up. Nitrogen easily leaches through the soil profile and phosphorus will leach through if the soil/plant

capacity is loaded. The policy doesn't encompass commercial fertiliser application.

The US has irrigation districts of ditches to dams through metered gates. Farmers pay a fraction of the true cost and allocations are centrally planned. The rivers are over-appropriated during droughts and some court cases are in progress.

Privatisation of water supply doesn't recognise the triple bottom line (social, environmental and economic) and the rules of the game aren't well defined. For example, Atlanta and California have aging infrastructure that needs replacing so the water companies are reneging on the contracts. The State is taking them to court.

Globalisation has different effects on the price and industry structures of commodity products as opposed to niche products. Globalisation of commodities like corn, wheat and soya drives prices down. Niche agriculture is value and quality driven and not subsidised. However, niche products might still have a global market, for example, there are joint agreements across North and South American continents to supply year round fruit to North American consumers who will pay the transport costs.

Corporate farms are getting bigger and more powerful while smaller commodity farmers are being pushed to the wall. Often they rely on off-farm incomes so they can't be pushed further to provide environmental services for fear of electoral backlash. Some researchers have come to the conclusion that a key for small or poor farmers (no matter which country they're in) is helping them gain access to supermarkets. Therefore, they need to understand how to become a high quality and faithful suppliers.

The USA Farm Bill is heavily criticised because it subsidises commodities when the US administration is saying they want free trade. Power relationships between government and agricultural lobby groups are very unequal. The larger corporations that produce commodities have the ear of government and are heavily subsidised because they can swing elections. For instance, a change of one senator in a state like South Dakota (commodity cropping area) could change whether the US senate was republic or democrat.

Genetically Modified Organisms (GMO) have reduced overall pesticide use by 2%. Eighty percent of the area where pesticides have been reduced are treated with Round Up. Unfortunately, as weeds become more resistant we will lose Round-up as a choice and will be forced to use less benign herbicides. GMO policy needs to be more precautionary as the effects on soil biota are largely unknown – research has shown that 300 days later herbicide traces are still present in the soil. The University of Michigan website presents a series of papers under the heading of "Health, Trade and Ecology" that covers GMO issues very well (www.umich.edu).

Ultimately, the retailers have control of the food supply chain because they listen to their consumers. Britain and most of Africa have refused the entry of

GMOs because of community sentiment. Small African farmers can't legally save GMO seed and their leaders fear the resulting hunger and rebellion.

Over time, what consumers want consumers get. Markets will respond to evidence of consumer desires and willingness to pay for something. So, to create a systemic change we need to focus on consumer education and choices. The range of products (plant genera) available in supermarkets is becoming broader but the trend is less diversity of the species grown, eg. one type of pepper and one type of cucumber or lettuce etc. There is also less and less seasonality as cooperative networks are formed to supply the markets all year round. The majority of consumers are not purchasing food on the basis of how and where it was grown. However, a small but growing sector are looking for alternatives, and a new generation who have higher expectations than that of their parents.

At present, Michigan supermarkets have on average only 15 linear feet devoted to organic produce but the market is growing 20% per year. Recently enacted National Organic Standards have made it possible for corporate growers in California to label their product "organic" and supply across the whole nation thereby lowering the price premium for small growers. However, consumers are slowly being educated about food miles (ie. the environmental impact of transportation which is an average 2000 miles). However, per unit of food it may take less energy railing produce from California rather than trucking to a growers market, so need to be careful when using the food miles argument as the only distinction between small and large scale, corporate organics.

There is a growing consciousness to buy local produce, as it's seen as supporting their local economy and reducing environmental impact. Small scale organics tend to adhere to a philosophy and ethic that is not yet being duplicated by corporate farms.

Understanding human environmental health helps to drive agri-ecological policy and practice. The scientific community is starting to make better connections between agriculture and human health. It seems that there is a threshold after which the exposure greatly increases the risk of these diseases. For instance, farmer's and their families have higher incidence of lymphoma and prostate cancers. Thirty percent of pesticide is absorbed through skin, but a 100% through the scrotum (contact is made when urinating). Families can be affected by hugging before removing clothing or showering.

Non Government Organisations (NGOs) often effect change through their influence on the consumers. When an organisation such as Greenpeace makes a claim a food company will negotiate rather than risk even a small shift in market share that will affect their profit. Companies have been known to recall products because of the influence of NGOs.

Retailers don't take hard stands that result in losses either. McDonald's have demanded no GMO potatoes in response to consumer concerns. In the past, McDonalds have successfully demanded that chickens were grown in more humane sized cages and overnight the producers changed.

McDonalds are now moving towards no hormones in beef. There is a lot of hostility towards NGO activists but such groups are a valid representation of a part of civil society and how it operates.

Case Studies in US Agriculture

Case Study – Political power, subsidies and factory farms in the USA

A commonly held view is that the current administration's agricultural policies are founded in a belief that large corporations should be in charge of agriculture. Often the policies distort markets and are counter to a level playing field. The large food companies and commodity groups are among the largest campaign contributors, they invest without limit to promote candidates for office, and they are therefore reputed to be the most powerful lobby group in Washington.

Bobby King, Food and Agriculture Policy Officer for the Land Stewardship Project in Minnesota works at two levels to redress the imbalance – supporting local opposition to development applications at county level and responding to Federal legislation that distorts a free and fair agricultural market.

Local complaints about intensive livestock developments are largely conflicts over incompatible neighbouring land uses, the affect on property values, as well as the environmental impacts and aesthetics. The complaints fall into two main categories:

- against farmers wanting to increase the intensity of their existing livestock production – because they feel their financial choices are limited
- against large companies wanting to establish a development or financially pushing contracted farmers to increase their intensity.

The Land Stewardship Project has successfully resolved disputes by:

- supporting members to lobby county commissioners and push for the development of environmental guidelines
- facilitating discussion between contract farmers and their neighbours to bring social influences to bare on the decision. Often the resolution is to build smaller sheds.

Some counties are in favour of 'factory farms' believing there will be economic benefits to the local community. However, the profits are not spent locally, all inputs are purchased elsewhere at the cheapest price – including the labour.

Government subsidies are encouraging over-production of corn, soya, cotton, wheat and rice, pushing the prices down. The infrastructure is developed around monocultures of these commodities. The infrastructure is counter to enterprise diversification because it is difficult to find markets or processors for alternative crops.

The big companies such as Cargill's purchase corn in bulk at low prices, process and supply it to their contracted growers. Corporations purchase corn cheaper on the oversupplied market than it costs small farmers to grow

it. Small family farms tend to grow their own corn. Subsidies don't apply to corn that is grown and fed to livestock on the same farm.

Legislation to prevent packers from owning livestock will help preserve a competitive and diverse agricultural produce market. The project is aiming to preserve independent markets, land ownership and farmers so that farmers committed to a 10 year contract have other market options to return to after the contracted period ends.

Farmers might start with a lucrative contract and believe they can continue to negotiate a lucrative contract. However, the companies squeeze a little more with each renewed contract and the farmers are locked in because of their investment in the infrastructure (sheds). The companies grow to monopolise supply to the packers, often own the processing and packaging and can control prices. There is no transparency of price so the buyers squeeze the producers to gain the lowest price.

The Tyson Poultry is an example of an industry completely dominated by one player. They own baby chicks through to produce in the supermarket. Farmers are labourers on their own farms. The hog industry is rapidly following the same path with contracted farmers having less and less power to negotiate a fair price because the packaging and processing is monopolised.

The Land Stewardship Project is working with other groups to have legislation in place to ensure the companies are liable for the costs of clean-ups and damages. The Project was also among a group that initiated the Conservation Security Program (CSP). This program is to be funded from the Farm Bill 2001 but has stalled due to the budget cuts. The CSP will make agri-ecological payments to farmers based on both economic and environmental benefits that flow to the rural community.

Case Study – farmer's union representation to government

Gerri Jaeger, District President, Wisconsin Farmer's Union raises heifers for an intensive dairy by grazing on planted pastures. The animals have stronger bones, muscles for calving and even immune systems. In his early 60's it also means that Gerri has less work than if he owned the dairy. His farm is almost organic (no pesticides and herbicides) but not certified. Gerri's view is that as the 'big end of town' moves into the organic market the standards are going to slip. At present the National Standards list the practices that producers cannot undertake. There is a push for standards that list the practices a producer must undertake as a minimum, known as 'beyond organic'.

Gerri is a farmer's representative on the committee to establish criteria for counties to approve expansion and siting of intensive dairy enterprises. The DNR has enlisted representatives from agri-business, professional dairy producers association, conservationists, and departmental reps from agriculture. The criteria aim to prevent local prejudice against agri-business

and expansion of existing dairies where they conflict with urban development. The criteria will include distances between buildings and odour management. The process for developing criteria is being professionally and independently facilitated. The outcome of the committees work will be enacted to guide county assessment of development applications. What constitutes an expansion has not yet been defined. The standards should encompass best management practices relevant to the soils, property size and livestock management.

In Gerri's view odour became a real problem with the advent of factory farms where concrete floors replaced straw and hay. The manure remains in soluble form rather than mulching with the straw. The straw could be spread on fields without any odour and prevented much of the manure from running off.

The Farmers' Union has three key areas of work: cooperation, legislation and education. A small contingent of 5 members will fly into Washington regularly for a meeting with congressman and senators to discuss issues relevant to Bills before the House or Bills that could be created. At present issues the Union is lobbying on include: Country of Origin Labelling (COOL), Importation of dried milk protein and the proposed USDA change of the definition of 'milk' to make passage for imported milk products, discussion of the 'level playing field' that allows the importation of the cheapest product to increase profit only for multi-national food corporations without supporting US industry.

Case Study: Environmental incentive programs in Iowa.

(Interview with Larry Beeler, Resource Conservationist and program leader for field staff across the State, Natural Resource Conservation Service, Des Moines, Iowa)

Natural Resource Conservation Service works largely with individual landowners and rarely with agri-business corporations to deliver conservation incentives. An estimated participation rate in Iowa is as high as 70%, largely due to the price subsidies that come as part of the conservation contracts. A high percentage of family farms in the State have off-farm incomes so price subsidies help keep them afloat.

A commonly held belief amongst conventional farmers is that organic agriculture or any other diversification can't survive economically. Whilst they may respect the environmental credentials of organic production there is a human tendency to ridicule people who try to do something different (until it is a demonstrated success). The success of alternative products rests heavily on the farmer's ability to find a market or do the marketing themselves.

The Iowa State government offered funding to transition from conventional to organic production. They limited the area to 40 acres to allow time and to retain some production as a fall back during the learning curve. Those already in organics were signing up and a small number of conventional farmers who had been keen to try organic production enrolled in the program. No technical support was available for those undertaking transition until a mentoring network was recently established.

The diversification is of benefit but the farmers struggle to find a market for their produce where the infrastructure is firmly entrenched in corn, soya bean and pork. With the smaller harvests it is difficult to access transport to wholesalers or processors. Direct marketing and growers' markets are a viable alternative if farmers are prepared to do the marketing to grow and maintain their client base, provide an efficient and reliable service to that market. Some are prepared to take the time to grow their direct sales to the point where it provides a supplementary farm income. Cooperatives have also been successfully used to bulk up and find markets for niche or alternative produce.

The NRCS has in the past provided direct marketing courses for farmers, which some have really flown with. For example, one particular pork producer used the label "naturally grown pork" meaning he used no hormones and no drugs. When his local direct sales dwindled despite his best efforts he launched into wholesaling. He bought 'naturally produced pork' and re-sold it through supermarkets as far a field as California and is now doing very well. However, he already had a background in marketing to add skills to this business.

Larry's general assessment is that the policies are achieving environmental outcomes. There is a far higher awareness now of the causes and processes of land degradation but still it is economics or the perceptions of what is economically viable that drive the farmers' decisions.

Regional Environmental Contracts in the Netherlands

Environmental management commenced in Holland in 1975 with negotiated contracts between farmers and the government based on lost income for land taken out of production for biodiversity. It has evolved into a positive payment for environmental services. This operates through contracts with specified terms and conditions between groups of farmers, Nature Associations, and the CLM (translation is the Centre for Agriculture and the Environment). These contracts cover 500 000 ha which is a quarter of the agricultural land in the Netherlands.

Nature Associations create a mosaic of fields through discussion between the members of their group. The group size can be 10 to more than a 100 members. The Association sets the objectives then approaches the farmer to nominate an area of his farm (the Association tries to sway that decision). This approach allows for a mosaic of complimentary management practices that provide niche requirements perhaps in different properties. For example, one farmer may have good shelter/nesting and a neighbouring property may provide foraging requirements. The evaluation survey indicates that the reasons individual farmers often nominate a particular area is because it wasn't suitable for intensive use (due to shape, location, soil). However, the scheme was over-subscribed so the Associations were able to be selective.

The government has negotiated regional contracts with the Associations to meet environmental targets set out in a European Union (EU) Initiative and provides agri-environmental payment known as *agri-milieuker*. The payments are about equivalent to the production from that field, 50% of the funding comes from the EU. In the future, more funds would go into these schemes rather than price subsidies.

The actual area under contract is about 60-80 000 hectares and a lot of that is for migratory geese. Very little diverse landscape is left in the Netherlands. The aim is to provide breeding grounds for bird populations so genetic mixing occurs with outside populations. The success of these schemes stands or falls with the motivation of the farmer so it is best to concentrate on areas that are most likely to give results and on the farmers who are willing (conversation Kleijn, 2003).

Nature Associations are co-financed by EU so they are not legally allowed to advise on effectiveness of location of sites. It is uncertain whether they can continue to work in the present form. They could play a pivotal role and have an understanding of the ecological processes. If the Associations were given the authority to act as conduits between government and farmers the lengthy and illogical process from initial contact to receipt of payments would be substantially reduced from the current average of 18 months.

Farmer's are motivated to enter the non-compulsory contracts by the financial incentives as well as the aesthetics. The number of farmers participating in the schemes is growing. Farmers are also trying to change their image and have been severely criticised for polluting groundwater and surface water with pesticides and manure.

Farmers take pride in the diversity on their farms and in their growing knowledge of their environment. Mr Andrean Guldmond from the CLM felt that the farmers would not view compulsory regulations for nature conservation favourably.

Extension in the Netherlands was privatised some years ago and it has become unaffordable for the average farmer. However, the Dutch Department of Agriculture has funded the Centre for Agriculture and

Environment (CLM) to develop the knowledge of Association members through tools such as websites, practical on-farm research, and courses for key people. CLM is acting as an educator and brings groups together for workshops on specific issues. The Associations bring farmers together to work across the landscape on issues broader than just biodiversity conservation. For instance, The Nature Associations are also engaging in the coordination of pesticide minimisation, conservation education as well as economic diversification into enterprises such as respite care, children's parties, and tourism.

The *agri-milieuker* program had been evaluated recently and ecologists seem to be seizing the opportunity to raise the targets set in the contracts. The CLM acknowledges that the Netherlands is an important breeding ground for many endangered meadow birds and that farmers play a pivotal role in providing habitat. Farmers are rewarded for maintaining appropriate habitat based on the number of meadow birds and the species diversity. With the aid of nature volunteers, nests are located and protective barriers are erected before cows are allowed to graze a field or so that silage can be cut without destroying the nests.

David Kleijn, ecologist at Wageningen University believes the nature associations effectively cluster fields together within an area and try to establish contracts in areas where the environment is still of reasonable conservation value. However, the benchmarks set out in the contracts just meet the minimum requirement established in the EU initiative. For example, the plant benchmark could be met by most farmers and only requires 20 indigenous species in a 20m² quadrat, including common species and weeds. Future improvements in the contracts are unlikely to focus on benchmarks because of the many environmental variables (eg neighbour using pesticides or increasing groundwater levels outside of farmers control).

Dr Jaap Frouws, Rural Sociology Lecturer at Wageningen University, is also of the opinion the contracts through Nature Associations and the Mineral Accounting system can lead to economically and environmentally sustainable agriculture if the benchmarks are adequate. It remains contentious as to what standard or benchmark should be set in a landscape that is completely modified from its original nature.

The Nature Associations are reputed to have the right ethic and are very aware of their responsibility and accountability. The reporting is a self-assessment. Compliance with the contracts is audited externally with 5% of sites visited. Compliance on one field may not reflect the management on the rest of the property. So, are the associations effecting a change in practice across the whole landscape and are the prescribed management practices enough to enhance species richness, including meadow bird species?

The evaluation of the ecological impact of the program concluded that the schemes are not very effective in enhancing biodiversity because they leave out requirements at some stages of the species lifecycle. For instance, farmers delay mowing to enable recruitment of meadow birds but don't

ensure nearby foraging is available to raise the birds to fledgling stage and therefore the population doesn't increase. The evaluation raised many research questions that are now being funded to trial. The conclusion may be that the only way is to find out how to enhance diversity, then how much it costs, then whether it is possible to combine it with commercial farming.

4.3 Government Incentives - Lessons learnt

Government conservation incentives haven't been enough to cover the loss of production, largely because the public purse can't afford this level of subsidisation of agriculture. Resource economists conclude the market has failed because the cost of production doesn't include externalised costs such as water quality impacts, soil degradation and loss of biodiversity. Subsidisation of the environmental costs of agriculture is the only form of subsidisation allowed under the GATT Agreement, perhaps this will change in the new trade agreement due to be renegotiated 31 December 2003.

Richard Pirog at the Leopold Centre for Sustainable Agriculture believes that what is needed is a fundamental change to the food systems. Environmental goals need to be grounded in business principles if we are ever going to get past the dependence on grants and subsidies. Primary producers generally don't change practices unless it's profitable or unless they receive compensation or financial support. At present the bulk of farmers in the USA don't believe they can afford conservation, and this view is widely held in Australia also.

Redesigning the food system

The Leopold Center for Sustainable Agriculture (www.leopold.iastate.edu) facilitates projects with the aim of finding the market triggers that encourage sustainable land use. For example, the Centre has projects to develop: an inter-disciplinary business degree with a minor in sustainable agriculture; and a seafood supply chain where everybody gets paid when the product is sold. This is a different view of the supply chain where the purchaser cares for the supplier and is interested in the viability of the business.

A few progressive banks have recognised that they are exposed to greater financial risks where environmental risk is not managed. Lending rates and terms could be differentiated according to environmental risk and would reduce bad debts and increase deposits.

Shared responsibility for the environment across the whole food system will be difficult to achieve and requires redesigning capitalism to some extent, to reduce waste, reduce the pressure on the natural resource base and also, to change the farmer's situation so they aren't just low cost providers.

There is a perception that tweaking the system with the next new technology will solve all the problems. Richard Pirog says we continue to incrementally change through efficiencies or substitution instead of rethinking the system. For example, in Iowa, very little land is being used for grazing instead they

grow animal feed, mostly corn. Grazing enables management of native prairie grasses, which cropping destroys. Land values (for subdivision) and commodity price supports (paid to growers who sell on the open market) are more profitable land uses than grazing. A few have the vision of one third of Iowa being used for grazing but they need infrastructure. It is problematic to develop policy that will trigger the system change when there is so much corporate power and investment in political campaigns.

Another systemic change is the move to regional direct marketing, which can be the most ecological and energy efficient distribution of food (eg. reducing the food miles – on average food travels 2000 miles in the US). Regionality of produce can be distinguished by its unique characteristics, such as 'clean and green' and biodiversity. People within a region find it easier to see the distinctions between them and other regions. Currently, we end up with blanket approaches because it's easier for people outside to govern. The Leopold Centre is trying to document the economic and community benefits of direct marketing systems and will seek the expertise to craft the marketing messages to attract business.

Strategic government investment in sustainable agriculture might be better served by tipping the balance in favour of accredited sustainable food systems. Educating and informing consumers and business is a good starting point, as is including farmers on marketing boards, and then let the market demand drive sustainable practices. A market approach would also entail putting an economic value on environmental services provided by farmers and independent monitoring of food prices to ensure they reflect the real cost of production (including environmental services). In this way everybody who eats shares the environmental cost of conserving our natural resource base for sustainable agriculture.

The challenge may be that traditionally consumer trends change more quickly and unpredictably than farm practices can accommodate. However, it makes sense to spend our energy on the drivers of agricultural practice rather than on the visible symptoms of unsustainable practices and expecting major changes in thinking from a farming population that is fast approaching retirement.

The ideal solution is to create dialogue between consumers, researchers, processors and growers about the way in which food is grown. There is a growing consciousness around the world about issues such as human health impacts of pesticides, animal welfare, drugs used on livestock, water quality and inter-generational sustainability. Most people take the opportunity to do something meaningful if it's offered and they feel the costs are fair.

4.4 Environmental Performance using Environmental Management Systems (EMS)

Environmental Management Systems may vary in detail but are fundamentally a process to plan, act, reflect and change. There is an International Standard known as EMS ISO 14001 that is a comprehensive

system for identifying environmental hazard and risks, actions to manage the significant aspects of the business, for monitoring the actions taken, keeping records and regularly evaluating progress. In large enterprises an ISO 14001 can be a full time job and can be costly, particularly if independent certification is needed for product labelling or to provide confidence to buyers. Simpler forms of EMS have been developed that have the same function but reduce the paperwork, time and cost. The 'functional equivalents' are more suitable for smaller farms.

EMS in US agriculture

One of the attractive aspects of the EMS ISO14001 for industry is that the enterprise sets its own objectives. This is also the limitation for using ISO14001 for public policy setting and regulation because a company will firstly look at the financial costs and benefits of any commitment it makes in the objectives. If a conservation practice doesn't have a financial benefit is unlikely to be included. For example, one national company who implemented and accredited an EMS started with 136 issues identified by staff that became a short list of 9 significant aspects that provided an operational return and reduced the risk and potential costs of an incident. The 9 significant aspects included: sweeping fans and flushing sinks to reduce odours, settling out solids before recycling water used to flush out sheds, removing salt crystals that obstruct manure lines, daily checking of freeboard and breaches on containment pits, manure application rates per acre of crops, and improvements to manure pit designs.

The Green Tier System program in Wisconsin is developing a functional equivalent –that is, an EMS with objectives, operational control, monitoring, risk analysis, emergency procedures and an independent review at some point. Less than 5% of Wisconsin's product is going overseas so compliance audits and accreditation against an international standard (ISO14001) are not necessary. Farmers already have specific on-farm quality control systems for various elements such as food safety and nutrient management. EMS is viewed as an efficient way to encompass and integrate all existing mandatory quality control systems. With increasing population pressures and conflicts of land-use the farming sector will be faced with more and more legislation and regulation of their operations.

The State of Wisconsin is aiming to pass legislation which will recognise an EMS as a way of proving environmental performance, with the possibility of becoming a substitute for blanket regulations and targets. The legislation will enable a sub-catchment group of producers to manage and monitor their environmental risks (eg. water use, waste emissions, nutrients, groundwater quality and native vegetation) under a functional equivalent of an EMS and perhaps under a contract with government. Minimum standards or targets still need to be identified in the EMS. Final judgement of negligence or abuses would still be prosecuted in the court system.

EMS is attractive to farmers wanting to increase the intensity of their animal lots (from 500 to 1000) and who are finding local community opposition. Proven environmental performance will be required for development

permission from the county councils (up to 1000 animals) and the Department of Natural Resources for livestock numbers over 1000 animals.

Case Studies – EMS Implementation in the USA

Case Study: Smithfield Industries' experience of implementing an EMS ISO14001.

Smithfield Industries is a conglomerate of hog producing companies with 1400 staff, 400 contract farmers and 130000 hogs across 5 states with export markets. Smithfield's have committed staff and funding to a certified Environmental Management System (EMS) ISO14001. All sheds are very automated with climate control, feed and water monitoring, exhaust and effluent controls. The most significant environmental issue is the odour and spills of manure, which can pollute waterways with excessive nutrients, and the risk of neighbour complaints about dust and odour.

The company owner saw an EMS as a means of establishing an environmental record of compliance and satisfying the demands of export markets.

The company aims to have their contract farmers compliant with the significant aspects identified in the EMS. They have already started this process by establishing an emergency response plan with each farmer. In future, product premiums may be paid to encourage further compliance with the company's EMS. There is no premium at the moment because there is no environmental label. The U.S. Department of Agriculture has a label called 'process verified' which relates to animal welfare but could be further developed to accommodate environmental aspects.

Studies indicate that average "soccer mums" would pay a few cents more for a pork chop that was raised in an environmentally assured way.

Benefits have already been realised from the company's investment of over \$110,000 in ISO14001 implementation and certification. The EMS has operationalised (ie. delegated responsibilities and actions in job descriptions) all assurance systems including workers' safety. Each of the company's 1400 employees are trained and accountable for environmental aspects of the company's operations. Ultimately, this vigilance will save the company fines for manure spills or other accidental pollution. For example, the manure lagoons (that can hold 1 million to 5 million gallons) are walked twice a day to ensure no breaches and spills. The EPA inspect the farms quarterly and hefty fines are in place for polluters. Neighbours are also watchful. EMS monitoring records are admissible in court proceedings that arise from failures to protect the environment or law suites from neighbouring land users.

As a result of implementing an EMS the company has created a new database to track work orders, all repairs and associated costs, environmental issues and the root causes of equipment or process failure. Management can then use this data to identify problem cost areas eg. 23 issues on a specific manure reception pit pump would indicate that some remedial action needs to be taken.

Case Study: Why one Wisconsin dairy will pilot an EMS.

Jay Richardson, Spring Valley started farming 10 years ago after completing a business degree, he has gradually built the dairy to 550 milking cows, producing 10 gallons each per day has taken the first steps to work with government to establish an EMS. The biggest challenge is covering the level of investment with only half the potential capacity of the sheds.



The dairy has the latest barcode technology for monitoring the treatments and milk production each animal.

The owner was encouraged to undertake an EMS by two very experienced producers in the region. It is thought that an EMS will be an efficient way to show compliance with manure management regulations and quality assurance systems (eg. testing for antibiotic contamination of milk, which cannot be legally traded). Most of the dairy practices are already compliant but not written into a plan. County permits are required for facilities over 1000 animal units (about 700 cows) and in this case county resistance is the barrier to the dairy reaching its full capacity.

The dairy owner is very conscious of the need to maintain good public relations with neighbouring family farms and to avoid environmental incidents. He understood when he started the business that public relations would be the key to his success and this is largely the driver of the EMS.

"If smaller dairies were to spill manure on the road nobody says anything but larger dairies come under more public scrutiny." Even contracted manure haulers comply with his emergency response for cleaning up spills.

The perceived financial benefits include a 30% reduction in liability insurance equating to about US\$5000 p.a. The insurers consider an emergency response plan will reduce the risk of an incident, and in the event of an

incident a quick and well-executed response should reduce the environmental impact and risk of litigation. He doesn't believe an EMS in itself will fetch a price premium for his product.

Besides good public relations Jay is also seeking a good relationship with regulators. He believes that State and Federal regulators will accept self-regulation as an alternative to trying to enforce more and more regulations. Enforcement of regulation tends to be complaint driven because of the lack of resources to monitor compliance on every farm.

A third party audit doesn't have a financial return to the business to justify the expense and wont be completed in the foreseeable fortunate.

Ontario Environmental Farm Plan – useful for all farmers

The Ontario Environmental Farm Plan (EFP) is a functional equivalent of EMS ISO14001 with a self-assessment, action plan and \$1500 to start implementation. It was developed by farmer organisations as a proactive response to the perceived threat of further regulation and increasing risk of litigation. The EFP manual aims to be useful for every farm in the Province of Ontario and costs only the farmer's time to complete. The manual is a series of worksheets on every environmental risk relevant in the field or farmstead in Ontario. Two workshops with expert presenters support farmers in the review of environmental risks and solutions.

Completed plans are scored against criteria by field officers and are reviewed by a panel of farmers in each county. Once an EFP has passed the peer review it is eligible for the \$1500 implementation incentive. The Incentive payments are audited for public accountability. Farmers will have the opportunity to review their progress when the next phase of the EFP program is rolled out. New government funds will be available as incentives for implementation of individual plans. Independent third party audits may be of value to some and will also be sought voluntarily.

The EFP has proven very successful, 25000 Ontario farmers have completed the initial workshops, 16000 have undergone peer reviews and 10000 have taken up the \$1500 implementation incentive.

The Ontario Ministry of Agriculture and Food is not expecting 100% of the population to adopt EFP for the reason that the average age of farmers is 60 and their goals include the sub-division of a property to retire. The Ministry believes the EFP has already had a significant impact on the water quality by fencing off creeks and providing off course watering points. The next phase needs to focus on incentives, technology transfer, as well as market drivers to the implement the plans.

The most important success factor has been that the program was developed, promoted and delivered by a non-government coalition which included the Ontario Federation of Agriculture, the Christian Farmers' Federation of Ontario, AGCare (Agricultural Groups Concerned About Resources and the Environment) and the Ontario Farm Animal Council.

Technical committees were set up to develop **best management practices**, the resulting worksheets are a practical compromise between scientists, politicians and county farmers. An enlightened public servant negotiated the lead agency role with the Ontario Soil and Crop Improvement Association (farmer organisation) who have very successfully guided the programs development.

Workshop places were filled through formal and informal networks, that is, through the usual phone calls and coercion of local farm leaders who had been involved in the programs development and/or pilots.

EFP participants thought that the workshops were very useful in helping see their farm differently and raising awareness of environmental risks. They felt the success of the program was largely due to the delivery through farmer led organisations and the easy structure of the manual. The real elegance of the manual is that in the process of scoring, a description of management practices indicates how to improve your score.

It is always tempting for governments to want to use farm management tools as an efficient source of checking disease, nutrient management or other regulatory or biophysical purposes. Unfortunately, any attempt to use the EFP process will undermine the very reason for its broad community adoption.

The EFP process must remain voluntary and confidential to be a useful self-education and continuous improvement tool.

The Canadian courts have already accepted the Environmental Farm Plan records as proof of 'due diligence' in the case of the Walkerton disaster. The town council had located a bore to supplement drinking water downslope from manure pits on an intensive piggery without notifying the farmer. When the drinking water was contaminated with E.coli and seven people died, the farmer was charged and taken to court. The farmer's impeccable records proved he had been environmentally responsible and he was acquitted.

The finance industry has also accepted the EFP as evident of environmental risk management. For example, The Royal Bank of Canada considers a farm's environmental risk management when lending is over CAD \$1 million. The bank is seeking to minimise its own liability for clean-up costs in the event of bankruptcy when the bank by default becomes the property owner.

Case Studies - Ontario farmers' experiences of EFP

Case studies – motivations for undertaking an EFP

Gertie Blake is a field coordinator for the Ontario Farmers Association and also a pork producer who has completed an EFP, motivated by the drinking water quality issues that abound. The value of the EFP workshops and identifying where they are on the best management practices scale was useful in moving them further towards better practices. "It was very useful to identify cheap easy and quick actions that would have a significant impact on their environmental performance".

Steve Eastep purchased his farm 20 years ago as a sod grass farm and after 5 years and very high interest rates in the early 80s changed the enterprise to intensive poultry, pigs, corn and soya, alfalfa. Once there was a very good living in poultry but the margins are getting tighter despite a quota system that requires farmers to purchase a quota to raise additional birds (14000 extra birds can cost US\$1 million). The cost of production is increasing because of the technology required to maintain constant temperatures with confinement areas in extreme seasonal variations (sheds cost US\$250 000). To protect the investment back up generators are required (at a cost of US\$40 000) as the birds will die within an hour in a summer blackout like the one experienced throughout mid-western United States and Ontario in summer 2003. On top of these production costs are the costs of environmental protection. This property chooses to use a shed (US\$20 000) to store dry manure from the sheds rather than managing slush with its stronger odour and run-off. The risk of course is internal combustion if the pile isn't regularly turned. Steve chose to implement an EFP to improve his operations and reduce the risk of an environmental incident.

Gerald Poechman, an Organic cereals, hen and egg producer, and past president of the Christian Farmer's Association in Ontario and was part of the pilot EFP program because he felt that the EFP was a step in the right direction and that as a leader he could encourage others to follow. Doing an EFP enabled him to critique his own organic production in terms of environmental impact. He hoped that the EFP was a process to bring the laggards and rule breakers up to standard (environmentally). His own knowledge of environmental issues facing Ontario was enhanced through the workshop process and he was able to analyse the on-farm risks and prioritise them into an Action Plan. Jobs that he walked past everyday were given significance and greatly enhance his environmental performance (eg. moving the eave trough away from the barnyard so as to avoid manure run-off). Only after he had finished these simple jobs did he claim the \$1500 incentive for completing an EFP.

Gerald believes that regulation and funding incentives as superficial solutions. He prefers to encourage a strong ecological ethic amongst farmers rather than just the drive for cash. He cited the New York watershed of the Catskills as a case in point where the government has thrown millions at the farmers and found no impact then started to work one-on-one to understand each farmer's circumstances and negotiate a solution.

Gerald markets his produce to consumers with a certain value system. He attaches information to the product and maintains a website for interested consumers. He has in fact created attention to his organic eggs through the high price ... "people stop to see what is so good about the eggs that cost so much more".

Gerald and 30 out of the 59 dairy farmers in Ontario started a marketing cooperative called "Organic Meadow". It is now doing a \$10 million turnover

with 35% growth per annum. They realise they need to find a partner who isn't going to corrupt their vision by monopolising the distribution system.

The Christian Farmers' Association vision (www.christianfarmers.org) incorporates the family farm, rural community and Christian ethics of wealth sharing and fair world trade which recognise greater principals than just an economic bottom line. Gerald works hard to empower farmers to be the designers of their own futures by creating understanding of the ramifications of technology. In this way farmers will maintain future choices and alternatives.

Case Study – Mapleton Organic Dairy Farm

Martin De Groot and Inget Buoy converted Mapleton Farm in Ontario to organic production 10 years ago and now produces GMO free soya for the export market, milk and meat. They add value by making and distributing yoghurt, frozen yoghurt and ice-cream across southern Canada under their own label -"Mapleton's Organic". Martin's motivation for becoming involved in EFP was that he feels it is the next logical step in directing objectives for the business and developing an action plan for environmental and conservation aspects. Martin conducted EFP peer reviews in his county.

Martin, typical of most small organic farmers, sees farming as a vocation and not just a means of making money, as is the trend with corporate farms. Martin agrees that markets drive most farmers but would prefer it to be an occupation that is licensed to ensure at least a basic training in agro-ecology and healthy food production. The certification of organic production is a case in point – it's an assurance to consumers that the food is produced in a certain way. The next step, 'beyond organics', would assure consumers that the food production systems also consider impacts on other species, protecting diversity for future generations food supply. An alarming number of domestic species are becoming extinct across the globe. Where are we heading, asks Martin, towards monocultures of major commodity crops and herds?

4.5 Environmental Management Systems - Lessons learnt

Simple and time efficient management systems will always be the preferred choice for smaller farming operations. Functional equivalents of ISO14001 work well where there is no food labelling nor market access requirements.

The Ontario Environmental Farm Plan not only keeps the time commitment to a minimum but also incorporates the latest scientific knowledge to indicate best management practices to producers during the self-assessment.

Large corporate farms need a return on the time and money invested in EMS. The return may be international market access ie. providing buyers and consumers with confidence in their product or reducing the risk of environmental incidents that attract hefty fines. EMS can reduce operational costs by using monitoring data to identify recurring problems.

The costs involved in implementation and accreditation of an EMS ISO 14001 are an important barrier to its adoption. Costs will increase with the size and complexity of an enterprise. Costs will also increase if the boundaries of the EMS encompass all of the enterprises operations and if it seeks to manage the environmental risks of contractors and suppliers. EMS could be system wide but is often constrained by costs.

Smaller enterprises and individual family farms will find it very difficult to off-set the costs with real savings and will be reluctant to hire a consultant to develop the EMS, spend time and money monitoring and maintaining records, or pay for a compliance audit by an independent 3rd party.

At present, the environmental outcomes of an EMS are only as good as the company's environmental protection ethic. The objectives are voluntarily set by the private enterprise. If current market trends persist, then consumers will be influencing the objectives and targets set by producers to improve animal welfare, human and environmental health. Biodiversity may not be well served by the EMS ISO 14001 unless the farm owner is bound by regulations, which are diligently monitored and enforced with expensive fines. Governments don't have the resources to police conservation and if it did it wouldn't be popular with the rural electorates.

4.6 Eco-labelling – paying for sustainable agriculture

Eco-labelling refers to the way agricultural products, both food and fibre, are grown and/or processed. Organic produce undergoes regular independent certification to ratify growers' claims about being chemical free. Other labelling schemes go further to make claims about animal husbandry and protection of the soil, water quality and in some instances biodiversity.

In the Netherlands Produce with an Eco-label is either certified organic through the accreditation scheme (subsidised by government) or it is grown under contracts known as *agri-millieukeur*. *Agri-millieukeur* is a labelling agreement that was formulated between a retail food chain, the farmer's union and the CLM. Dutch farmers are more interested in organic production than Dutch consumers because the farmers want to improve their environmental credentials. For instance, organic milk is often processed as conventional milk, foregoing any price premium.

Case Study – Getting an eco-label up and running

The Food Alliance (www.foodalliance.org) is an organisation that has developed, promoted and certifies an eco-label. The Food Alliance organisation is hosted by the Minnesota Land Stewardship Program and funded by public and private grants, along with membership certification fees. The label enable consumers to make food choices that don't have deleterious impacts on their health, the quality of their drinking water and air, wildlife habitat, the health and welfare of animals or workers. Consumer marketing through the Hartman Group indicates that 45% of consumers will choose products that have environmental credentials if the products are

where they shop, are visible and readily available. CONVENIENCE is the key, after that price and taste are the two top criteria for consumer purchasing decisions.

Produce bearing the label comes from farms and ranches that meet environmental, social and animal welfare criteria. Certification criteria were developed by farmers for each type of produce to meet the overall goals of the Alliance.

Farmers are motivated to become certified because of access to new markets, not wanting to be totally organic (herbicide is often the barrier), because they want a benefit from practices they are already doing, and to achieve a price premium. Farmers have reported improved access to new markets like natural food co-operatives reflected in small increases in sales and 5-15% premium depending on the product. The cost for certification is \$500 in the first three years and then \$350 every 3 years. Producers also self-assess and contribute a percentage of sales to the Food Alliance. After 4 years there are 60 farms across the Mid-West and 200 farms across the North-West that are certified and marketing their products with the Food Alliance eco-label. The challenges now are to find the resources to promote the Alliance and gain broader participation.

The Alliance is trying to raise the profile of the eco-label and is developing partnerships with food processors, supermarkets, and food companies (that supply packaged food for catering and cafeterias). To be successful the eco-label has to fit into the food system requirements such as bar coding, portion sizes, packaging etc. An additional challenge is that meat processors will charge for tracing the product to attach the labels. The Alliance needs prime-time advertising to raise awareness of the logo and what the label means. From there the farmers are expected to take on the responsibility for getting their product into markets.

Organic labelling – a consumer trend leading to sustainability?

Smaller organic growers work on a different paradigm and are achieving environmental outcomes as a result of the kind of production they undertake. They tend not to need extrinsic motivators such as a price premium. Organic produce is not included in government price subsidies so growers tend not to go through the paperwork to enter the government conservation programs.

The Community Support for Agriculture Program was initiated by the federal government to coordinate the pairing of growers with local consumers. It is certainly a popular way of selling their produce locally and having the capital to plant at the beginning of each season.

The National Organics Standards were enacted in July 2003 and are regarded with a degree of cynicism by small growers. Some growers feel the legislation of standards is a consequence of the large commercial interests

recognising the market opportunities in using the organic label. Agri-businesses tend to have lobbying power and don't necessarily have the holistic philosophy of most smaller organic growers. Because it is enacted politicians can be lobbied to change the standards so the consumers will need to be vigilant. For example, a large-scale Californian grower had his congressman amend the legislation to allow the use of non-organic chicken litter if organic litter wasn't readily available. A month later this amendment was retracted due to the outcry from consumers of organic produce who are prepared to pay a premium price to avoid chemicals. The hope is that this market trend triggers the reduction of chemical use and conserves soil biota, as well as providing healthier food. The National Standards do however provide an opportunity to refine the process of certification.

Case Study - Summit Farm, Ed Stockman, Wetland Ecologist, Organic vegetable and berry grower and NOFA Extension Officer. Plainfield, Mass.

Ed and his family have been organic producers for 20 years. Ed is also the Extension Officer for NOFA in Massachusetts and fields questions by email and phone from growers all around the world. His extension services are paid for by the North-East Organic Farmers Association. The enquiries cover the whole spectrum of growing organic produce, rotations, pest control, companion planting and allelopathy, fertilisation, plant requirements, weed control.

He has been involved in cooperative marketing of produce, which gains access to supermarket chains and shares the high costs of liability insurance. Members of the cooperative can gain access to a competing local supermarket but not the same chain, they can also continue to sell produce through growers' markets in the major cities.

Ed has also had a "pick your own" for about 12 years, quite successfully. The income was sufficient and the liability issues were covered by laws in this state that allow people to advise pickers to enter the property at their own risk. The signage is very obvious.

Certification is now undertaken through a federal Act and agency. Auditors inspect the property and request to see the rotation plan and look for signs of pesticide usage. Samples of soil and produce are only taken if there are suspicions that the chemicals have been used.

The organic markets are driven by direct health concerns but not necessarily environmental benefits. Without measuring the impacts – organic production is intuitively less harmful to biodiversity due to the absence of insecticides and persistent herbicides (glyphosate is the only herbicide used). A great incentive for conversion to organic production would be to pay farmers for the environmental services.

Case Study – Arcana Farm, Richmond, Vermont

Anne moved to Richmond, Vermont 10 years ago to grow organic produce and has developed a niche market for organic seedlings. Arcana Farm now has 35 acres under vegetable, fruit, herbs and medicinal plants, 6 acres under hot houses and employs up to 20 part-time/casuals over the hectic summer growing period. She no longer has time to spend weeding and finds herself in a management role. There is obviously an immense amount of planning that goes into planting and harvesting of over 50 species.

Arcana Farm has the largest stall at the growers markets that are held 3 times a week in the city of Burlington, which has a population of 200 000. Buying locally is a growing trend in Vermont and Massachusetts. There is also a pick your own section of the property where locals pay by the pound on an honesty system. The farm also has CSA (Community Support for Agriculture) arrangements with 20 local families. Produce is harvested twice a week and put into baskets in a shed for CSA families to purchase. Often recipes and advice are a big part of the sales as Americans tend to cook less and less these days, with a huge array of processed and pre-packaged foods available in the supermarkets.

Anne has not heard of EMS ISO14001 and was not involved in any of the government conservation programs. Why? The amount of money is minimal considering the effort farmers have to go to besides she is philosophically opposed to any price subsidies. The concept of being paid for environmental services had appeal though. Anne suggested some indicators such as increasing soil carbon/organic matter, using cover crops and protecting water quality.

She felt the certification process was only a burden from a timing point of view. She received the applications only 2 weeks before the due date and at a busy time of year. She did feel that the new National Standards, through the USDA were motivated by large agri-business who wanted to take advantage of the organic label and market growth, without the commitment to the environment and nutrition.

Case Study - Craftsbury Organic Farm, Vermont

Owned and managed by Glenn and Kris Colville

The Colvilles converted a 200 acre dairy farm to organic production about 4 years ago with a philosophy of healthy food production, environmental protection and humane animal production. Glenn undertook an organic production apprenticeship at the Micheal Fields Agricultural Institute, East Troy, Wisconsin and spent a year with Ruth Zinniker at the The Zinniker Farm Elkhorn Wisconsin. Kris is a herbalist naturopath and has planted pharmaceutical plants such as echinacea, St Johns wort, mother wort, angelica and many others, for her business and as well as selling cut flowers.

Organic produce from the farm includes milk, beef and pork slaughtered off farm, roosters for farm slaughter and a broad range of vegetables including 20 acres of early white potatoes, wheat and oats. Glenn composts the pack from the floor of the barn after winter and spreads it as fertiliser. A range of organic soil amendments are allowed including kelp and ground rock products. Absolutely no man made chemicals are used on the property, no drench, herbicide or pesticide. The main pest of potatoes is the Colorado Beetle for which he sprays a bio-control (bacteria) twice a year.

The hothouse is essential to start vegetable seedlings in advance of the spring melt to out-compete any weeds and to finish them in a very short growing season. Sometimes there are only 90 days between hard frosts. The 48ft long greenhouse has 2 barrel wood burners to help keep the hothouse warm in winter (minus 30 degrees F). A small blower inflates the dual layers of plastic covering the hothouse with warm air and seals the house tight against the cold winds. The plastic is engineered to retain warmth in the infrared spectrum within the house. The side roll up for summer. The plastic covers cost about \$350 for 2 and last approximately 3 years.



The produce is sweet, plump and relatively blemish free. Kris handles the marketing and pays close attention to the presentation of the produce and often has tourists taking pictures of her stall at the markets in Hardwick. They sell through local growers markets, through a road side stall and have a client list through the Community Support for Agriculture program. The program was established through federal funding some years ago. In this case, participants buy a share of the produce from the farm before planting to provide an income over the winter, share the risk and allow local people to pick produce fresh as they need it. It works like a subscription or perhaps share farming.

Glenn feels the certification process is overburdensome (100 pages every year), repetitious and relies on reporting rather than physical evidence such as soil testing. Most of the farmers in NOFA (North-east Organic Farmers Association) feel much the same as he does about the certification process. He didn't see a need for eco-labelling because of certification and the local marketing.

5. Conclusions

Environmental health and human health can benefit from the same farm management practices, for instance reducing pesticide and herbicide use, and the protection of the natural soil biota. We are separating elements of agriculture that are intrinsically integrated, environment, human health and farm practice. The human body is a contiguous part of the food chain, the chemical loads in the paddock are polluting people (refer www.ewg.org).

Our farmers are not just making a living from agriculture they are custodians of the land for future generations and of the health of the people they feed. Consumers are finding it more difficult to find food that they can trust on the supermarket shelves. Eco-labelling and organic labelling provide some reassurance of the product safety and quality.

Farmers and retailers are driven by market demands. It follows then, that educating the consumer choices will have a significant impact back through the food supply chain to the farm practices that will conserve our natural resources for future generations.

Marketing surveys (819 respondents) indicate that 81 percent of Americans would be willing to pay more for food grown on farms using good environmental practices and 60 percent would be willing to pay more for food produced without using chemicals (<http://sasw.chass.ncsu.edu/global-food/foodglobal.html>)

English and European supermarkets aren't missing the market opportunity to offer their customers a line of produce that can be trusted to take care of their planet and their body. The challenge is getting a share of the price premium back to the producers.

Rural lenders are starting to realise the benefit of environmental management systems that assess the risks of a farming operation. The Banks are gaining business by offering a more competitive interest rate. Farmers with even the average farm debt find it worthwhile to reduce their annual interest payments.

The vexatious question for government is how to maximise the environmental outcomes of public investment while the market for 'responsible' food evolves. It is vexatious because we need to spread a limit budget over the hotspot issues and problematic watersheds, as well as broadening participation to conserve valuable habitat and agricultural lands.

A one-stop-shop approach to allocating funding is by and far the best arrangement and better still if it can be delivered through an agent or network that already has a rapport with local farmers. Participation is greatly increased where technical and financial support is a phone call away. Where there is willingness to undertake conservation works the funding needs to be seamless and easily applied for.

What can I do?

I can support any efforts to create a dialogue between consumers and farmers, through mechanisms such as eco-labelling and differentiation of products. My actions may manifest in my local regions promotion of grower's markets, and in differentiating local products and helping to develop alternative food supply chains that provide growers with a better price for their produce.

I have undertaken training to become an auditor for EMS ISO14001 and hope to continue in the development of this management tool for Australian agriculture. I recently attended the 3rd National Conference on EMS, in Adelaide and to better understand how I can make a contribution and add to the discussion on future directions for EMS.

The conference helped me put my overseas experiences and lessons into the Australian context and I have drawn the following conclusions:

- For industries such as rice and cotton, EMS can help manage environmental risks and public perceptions
- To be sustainable the cost of annual ISO14001 certification needs to be offset by export or niche market access or a price premium, or being able to show environmental 'due diligence'. For example, the cost of certification for one beef producer on the western slopes of New England, NSW was \$5000pa. The producer was not getting a return for that cost and was seriously considering discontinuing the certification process.
- The costs of certification can be defrayed through cooperative group audits and provides a food safety assurance for retailers.
- Most Australian farmers are not of a scale that warrants the expense of certification but may benefit by using an EMS equivalent.

There is significant government support to develop EMS for Australian agriculture. Initially, I will be contributing to this effort by implementing the Victorian model of an EMS equivalent, which looks fairly similar to the Ontario Environmental Farm Plan. I will provide feedback to the Victorian Program Manager and possibly encourage others to take on the same model.

I am also interested in developing an Australia version of the Food Alliance Program found in Minnesota. This will take some ongoing research and a hosting organisation.

6. Recommendations

A place for EMS in Australian Agriculture

The motivators for Australian agricultural enterprises to implement an EMS tend to occur where the farmer perceives a practical connection between managing environmental aspects of the business and an economic return. The associated costs must provide a return or manage a significant risk for the EMS to be a sustainable part of the business. The prime motivators for agricultural business in Australia at present include access to overseas or

niche markets and natural resources such as water, and managing environmental and food safety risks against an international recognised standard. An EMS can be an effective management tool to manage all environmental risks, and can incorporate legislative requirements, hazard analysis, food safety, occupational health and safety systems.

Food retailers are buying produce with food safety assurances to minimise their risk of litigation. A case in England in 1990 was a warning of legal liability for consumer's health. The case involved a number of students who had been poisoned at a school cafeteria after consuming unwashed cucumbers dosed with insecticide. In recent years, two of the largest supermarket chains in England, Tesco and Sainsbury's have sought organic produce from around the world to supply an increasing market demand.

The risk of litigation for Australian agriculture is increasing where adjoining land-uses are incompatible. The conflicts are already occurring around the urban fringes of our capital cities where urban housing encroaches on market gardens, also where rural lifestyle sub-divisions are encroaching on traditional farming zones. Litigation at present is about nuisance odours, noise or spray drift. Litigation risk also exists where agricultural land uses are incompatible, for instance, spraying insecticide on crops adjoining grazing land, or organic production adjacent genetically modified crops.

Australian industries that have high water use or rely on environmental services to mitigate pollutants such as pesticides may benefit by becoming ISO14001 compliant. Benefits might include evidence of 'due diligence', improved natural resource efficiencies, emergency response preparedness, and environmental planning to support licensing.

Eco-labelling and consumer behaviour

Market research surveys conducted locally in Australia and worldwide indicate that the majority of consumers are willing to pay for environmentally friendly food. However, they are only willing to pay a few cents more. Many scientists and farmers have suggested that consumers need to be educated to accept higher prices for environmental friendly products. However, higher retail prices will not necessarily be passed on to support agricultural practices that reduce the use of harmful chemicals or take land out of production for conservation of soil or biodiversity for the public good.

Food retailers will continue to maximise their profits and squeeze the farmers on price, until there is a competitive alternative food supply chain. Large food retailers in the USA are now taking notice of the alternative supply chains developed by farmers and farmer cooperatives to sell differentiated produce direct to the consumer. For example, the market share of organic produce continues to grow and major food retailers and agri-business have now entered that market. The response of the organics industry is to continue to differentiate its produce on the basis of environmental responsibility and animal welfare. However, the bulk of consumers of organic produce buy for the perceived health benefits and for taste.

Products could be graded A, B C to indicate various levels of conversion to a recognised standard of environmental performance.

Sharing the responsibility

Environmental and social responsibility remains the heart of the issue. All consumers of food and fibre along the length of the food supply chain are responsible for land stewardship, animal welfare and worker welfare. How then do we share the responsibility across all of society, across global markets, across cultures and free trade agreements?

It is possible that the market will eventually make corrections, but biodiversity and market diversity are at risk in the interim. Governments have a role to play now to protect biodiversity for the sake of the public and inter-generational good. Simultaneously, there needs to be a focus on changing the food system. Perhaps by encouraging the development of labelling that provides consumers with a choice.

No conspiracy theories

Many family farmers in the USA are becoming activists trying to bring both public and government attention to the impact of globalisation of food production on local communities, animal welfare and the environment. Multi-national agri-business operates with a single bottom line, accountable to shareholders and fiscal responsibilities. There is no conspiracy because most average middle-class families now own shares. The faceless multi-national companies are actually a sea of billions of faces, are the shareholder's ethical and responsible investors? Could triple bottom line (economic, social and environmental) auditing become a requirement for continued registration of companies?

Governments and non-government organisations need to support the development of systems that create a dialogue between consumers, wholesalers, retailers and growers. A useful program could coordinate the development of an Australian equivalent of the Food Alliance label (refer page 27).