

Part Four - Case Studies

A Review of Selected New Zealand Environmental Management and Quality Assurance Programmes

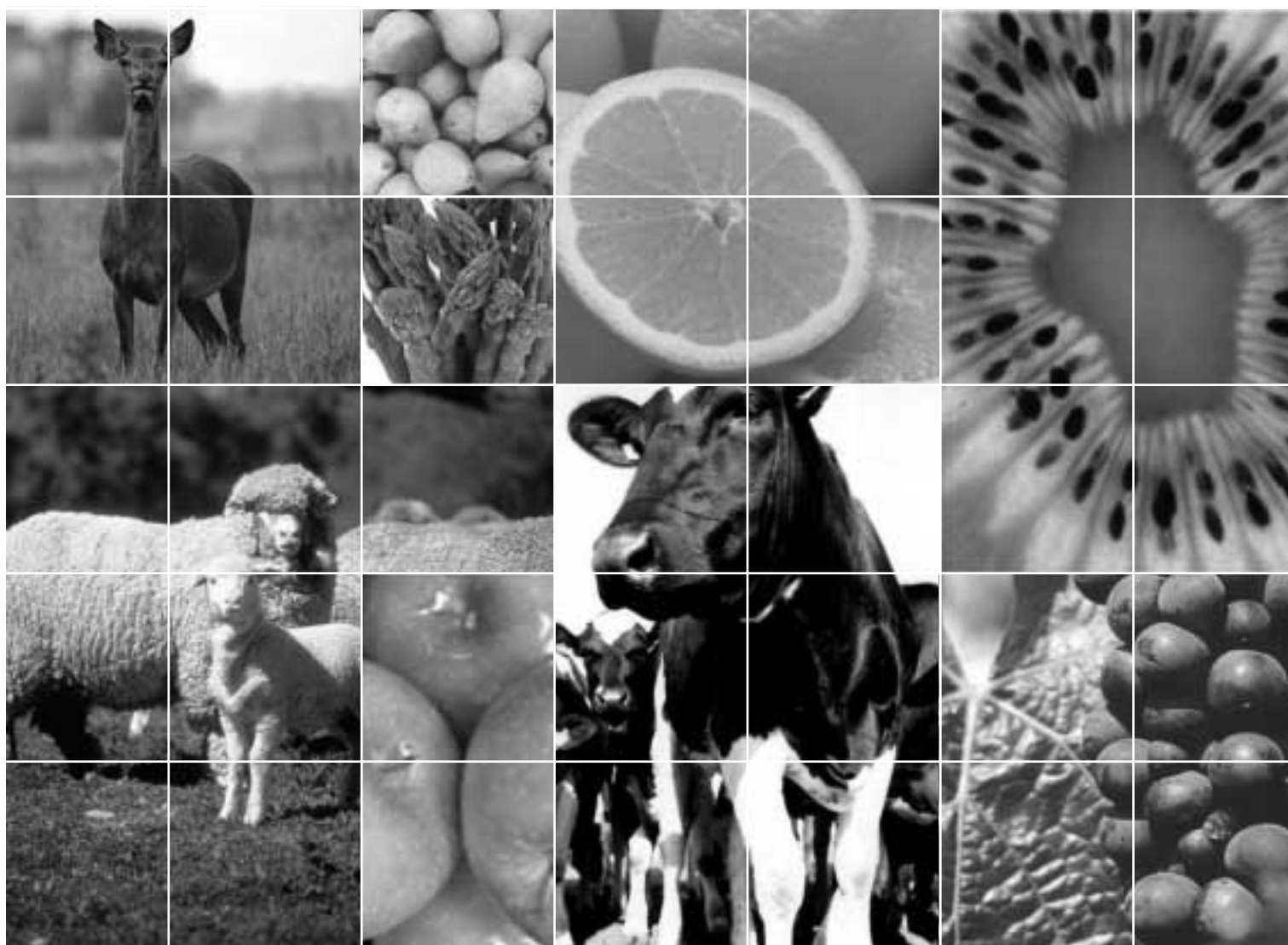


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1.0 Introduction

1.1 Background

The Sustainable Agriculture Management Systems Network (SAMsn) has been established by a group of organisations who have a common goal in developing a template of principles that could form the basis of any agriculture or horticulture industry sustainable management programmes in the future.

This report details part of the investigation that has been undertaken to gain a clearer picture of approaches primary industries have followed in the development of EMS/QA -type programmes.

Five existing programmes were reviewed and case studies of these are presented in this report. These programmes are:

- DeerQA – the New Zealand Deer Industry Quality Assurance Programme;
- New Zealand Fresh Produce Approved Supplier Programme for vegetable and fruit growers;
- KiwiGreen and EUREP-GAP programmes, covering kiwifruit;
- Sustainable Winegrowing New Zealand; and
- Market Focused – an environmental management system developed for dairy farmers.

These programmes represent a range across existing programmes currently in use by the agriculture and horticulture industries and include IPM, QA and EMS programmes. All were developed by industry for use in the relevant sector.

Each of the five Case Study programmes were reviewed in 'The SAMsn Initiative: Part Three'. Some material from Part Three is repeated in this section to enable the Case Studies to be complete in themselves.

1.2 Methodology

The objective of this report is to: 'Undertake an in-depth study of a small number of selected programmes including costs of compliance'.

The objectives for the case studies include:

- to clarify the processes used in the development and management of the programmes;
- to establish the relative performance/impact of the programme;
- to clarify the future intentions for the programme development and gaps; and
- to clarify the best management practices for design and management.

Information for the case studies was obtained from meeting with programme managers, as well as analysis of the programmes. The questionnaire used is attached as Appendix Two. A draft report for each programme was prepared and sent to the relevant industry for review. An analysis of the completed case studies was then undertaken to identify common issues, trends and strategies.

Each case study includes:

- Programme background – outlining the development of the programme;
- Programme management – how the programme is managed on an on-going basis;
- Programme performance – any assessment or evaluation of uptake and adoption;
- Cost Benefit analysis – to quantify the costs and benefits wherever possible for each of the programmes studied; and
- Summary of key factors.

Cost Benefit Analysis

The cost benefit analysis was undertaken by Stuart Ford, an economist with The AgriBusiness Group.

The methodology used for the cost benefit analysis is as follows:

Defining Costs

The direct costs include actual expenditure involved in setting up and maintaining the system. Indirect costs include such things as the time involved in managing and recording the system or carrying out additional activities as well as other impacts, such as loss of productivity (if they occur).

Defining Benefits

In some programmes direct benefits are easily quantified as market premiums. In other programmes these are less obvious and involve benefits, like market access. In the latter case, benefits are quantified on a 'with and without' basis, comparing the returns to the system with market access with those that do not have access.

Indirect benefits include such things as access to new knowledge and technology as well as increases in productivity or cost savings are identified.

Viewpoint

Costs and benefits were quantified at each stage of the supply chain to determine the degree of benefit at each point.

2.0 Deer Industry Quality Assurance Programme

2.1 Programme background

The New Zealand Deer Industry Quality Assurance Programme (DeerQA) was established from 1991, following widespread industry debate on the future direction of the industry. Quality assurance was identified as being a critical factor for future market access into premium value markets. At the time of its development, venison processing plants did not have quality assurance programmes in place, other than MAF's regulated requirements. The development of the deer industry quality assurance programme was supported with seed funding from the New Zealand Game Industry Board (now Deer Industry New Zealand), as it was considered to be an industry-good initiative. The initial focus of the programme was primarily on food safety and animal welfare.

The overall programme is described as DeerQA and consists of four components:

- Transport Programme
- On-farm Programme
- Venison Processing, including the Cervena® Marketing Programme
- Livestock Agents QA Programme.

In addition there are requirements for velvet products, which, while not part of the programme, are aligned with it.

The range of components reflects the industry's intent to have quality assurance programmes covering the industry value chains from "pasture to plate" for venison and "pasture to patient" for velvet. The programme follows the core principles of quality assurance - reliability, independence, customer driven and committed to continuous improvement.

Transport Programme

Transport was the first component of the quality assurance programme to be developed as there were relatively few operators to target and there were significant meat quality issues identified as resulting from the poor handling of deer prior to and during transport. A working group made up of key industry players was established to develop a transport standard. This group was made up of:

- leading deer transport operators;
- Game Industry Board representatives;
- deer farmers;

- MAF animal welfare representatives; and
- animal scientists with experience in animal behaviour.

Over a period of 18 months this group came together on average every six weeks to develop the draft standard, with the Transport Programme commencing in 1992.

Though DeerQA is a voluntary standard most deer industry transport operators are now trained and accredited to the programme. All but one processing/exporting company require transport operators to be accredited when delivering deer to their plants. By 2003 there were 133 registered transport companies with 128 of these being accredited, and 30 drivers having participated in, and passed, the driver training programme.

On-farm Programme

The On-farm Programme was developed in 1993 to complement the established DeerQA Transport Programme. The drivers for the development of this programme included:

- an expectation that market demands would require such a programme;
- observations of the wide range of the quality of deer submitted for slaughter (e.g. level of defects) and animal venison quality resulting from variations in on-farm management; and
- the Cervena® programme demanding a greater consistency in venison quality and the expansion of this programme to provide assurance in relation to a number of aspects of the deer production environment. This requirement came after the Cervena® strategy was put in place. Quality Assurance underpinned the Cervena® programme.

A working group was established using a process similar to that used in the development of the transport strategy. The working group included:

- forty two deer farmer representatives, broadly based, reflecting regional, scale and type of deer farming operations; and
- a range of stakeholders, as involved in the development of the transport standard.

The group met every six to eight weeks over a period of 18 months. Game Industry Board funding was used to cover the costs of these meetings.

The On-farm Programme has been strongly supported by both the farmers and venison processors, who have adopted the programme as part of their company specific requirements. This in turn has minimised compliance costs for farmers who may be supplying more than one processing company.

Venison Processing

All venison processors are required to comply with a range of food safety regulations prescribed and audited by MAF to be eligible to export product. In addition to MAF requirements, the industry has a set of industry agreed quality standards which are voluntary (with almost all companies adopting them), externally audited and which comply with ISO 9002 standards. Aspects of the venison processing standards were developed by the deer industry and are managed through a technical committee made up of industry representatives. The industry standards have been moving from an ISO basis to one based on Hazard Analysis at Critical Control Points (HACCP) principles and now encompass individual company MAF Risk Management Plans.

Cervena® Marketing Programme

The Cervena® programme is a trademarked assurance programme that provides purchasers of qualifying product assurances that the product has been naturally produced and has been covered by a quality assurance programme throughout the value chain. This provides an assurance that the venison will be of a consistently high quality – tender, natural, healthy with a higher yield and long shelf life - along with assurances that other consumer needs are met, such as welfare, and natural production. This programme has been supported by most of the venison processing companies. The development of the programme was facilitated through a similar process as the other components of the quality assurance programme, with funding support from the Game Industry Board and Trade New Zealand.

To qualify as Cervena®, products:

- must be processed by a licensed operator. Conditions of this license require that industry agreed processing standards must be complied with;
- only include specified premium cuts; and
- only include young animals (under three years).

These criteria are based on research relating to product tenderness to ensure that Cervena® product consistently delivers on its promise of natural tender venison.

Livestock Agents Programme

A recent component of the industry quality assurance programme covers stock agents and stock and station companies. One of the main components of this programme requires stock agents to attend a two-day course and become accredited to the Stock Agents DeerQA Programme. This training provides stock agents not only an understanding of the Transport and On-farm DeerQA Programmes, but also relevant legislation such as the Health and Safety Act, Fair

Trading Act, and animal welfare regulations. All stock and station companies participating in the QA programme are required to have an individual company procedures manual, which is subject to audit. These manuals contain all company procedures for agents and are a valuable tool for new entrants into the industry.

Velvet

In addition to the above quality assurance programmes there are various regulations and codes of practice covering the deer industry for the removal, management and processing of by-products and velvet. The National Velvetting Standards Body (NVSB) covers requirements from the NAWAC Codes of Welfare for Velvet Removal. A 'Quality Mark' programme has also been implemented for further processed velvet products which identifies those products meeting industry agreed criteria relating to animal welfare, product safety and efficacy.

2.2 Programme Management

Though initially supported by the Game Industry Board the management of the programmes are now nearly fully self-funding, apart from the industry funding for QA staff.

Detail of costs

The On-farm accreditation to the programme is a one-off charge of \$220 for assessment.

Farmers can choose to be accredited through an exporter/processor quality assurance programme, which is currently usually provided free of charge.

Transport operators pay for drivers to attend an 8.5 hour training course which costs \$95 (plus GST).

Venison processors pay annual charges to MAF and NZ Food Safety Authority (NZFSA), as well as external auditors. The value of these is dependent on the scale of operations.

The Cervena® programme, though initially funded by the Game Industry Board, is now funded by the licensees and marketers using the programme.

The Livestock Agent programme is funded by the stock and station companies and includes all costs involved in running the industry training.

The NVSB Velvet Removal Programme includes a \$123.76 joining fee covering manual and materials, registration and examination costs. Veterinarian fees are additional. An annual \$55 re-licensing fee applies in addition to supervisory vet costs.

Technical Committees have been established to govern the further development and improvement of the various standards and programmes. These committees are made up of industry representatives relevant to the

programme (e.g. farmers on the On-farm Programme, transport operators on the Transport Programme) and typically meet one or two times per year to review and revise the standards.

The On-farm Technical Committee has developed an extension of the standards through the development of a strongly linked, but separate document, the Deer Farming Landcare Manual (SFF Project 00/187 complete 2004). This describes best management practices and basic environmental management principles and seeks to increase the emphasis on minimising negative environmental impacts from deer farming. The On-farm Standard has a new, clearly identifiable environment section which includes specific links to the Landcare Manual where farmers can refer for descriptions of best practice methods. Both documents will be subject to continuous improvement and regular reprint.

The On-farm Programme is currently undergoing its 9th reprint, and future reprints will include the relative status of the QA guidelines – identifying what are recommendations or minimum requirements. Examples of evolving issues are the inclusion of disease management and the management of wintering practices. There has been some industry debate as to whether the On-farm Programme should be extended to cover these types of production values and the level of detail that may be included.

The promotion of the various programmes has generally not been supported by any formal publicity programme, but rather through word of mouth, websites and reference to the various DeerQA Programmes in industry papers. The exception has been the Landcare Manual Project, where the Annual Deer Farmers Environment Awards were initiated to create significant environmental awareness within the industry and encourage uptake of the Landcare Manual and adoption of best management practices. The recent adoption of the components of the QA programme by meat processors and marketers has been a catalyst to industry adoption, as has the Cervena® Programme.

Both the Transport and On-farm Programmes are internally audited:

- The DeerQA accredited transport operators are audited by the DeerQA Manager. The frequency of these audits may increase for an operator if there are any complaints.
- Farmers registered in the On-farm Programme are audited by industry assessors who, in the main are, or have been, deer farmers. These assessors have undertaken extensive audit training. A lead auditor provides training to the farm auditors and audits their performance.

The Cervena® and Processing programmes are subject to external audit:

- Individual company QA programmes use third party auditors to monitor their own programmes. This gives them credibility in international markets.
- Individual exporting/processing companies are now audited on a regular basis by their off-shore customers to meet their QA standards. Through this process both farms and transport are audited by these importing companies.

Farmers and vets participating in the NVSB velvet removal programme are subject to audit.

There are steps in place (most importantly the use of a Lead Auditor) to ensure consistent application and interpretation of standards by all participants and auditors.

2.3 Programme Performance

The DeerQA programme has been strongly adopted in many parts of the deer industry, principally based on the perception that it contributes to enhancing venison, velvet and co-product quality and value, as well as minimising a number of risks associated with the production, transport and processing of deer.

There has been some assessment of the importance and impact of the DeerQA programme.

Transport Programme

The transport industry has adopted the Transport Programme, with many venison processing plants requiring stock to be transported by a company accredited under the programme. By 2003 there were 133 registered transport companies with 128 of these being accredited, and 30 drivers having participated in, and passed, the driver training programme.

Prior to the introduction of this programme in 1992 there was an industry average of 22 percent incidence of animal bruising which has now been decreased to between 2-2.5 percent. It is suggested that a significant factor in this reduction has been the industry adoption of the transport QA standard and associated training of transport operators. A similar trend has occurred with pelt damage, with a pre-1992 incidence of 98 percent of hides having a defect or down grade. By 2003 this had reversed with 98 percent having no defects or subject to downgrade.

On-farm Programme

The On-farm Programme has been strongly supported by deer farmers with 62 percent being registered and 1,200 – 1,300 fully accredited by 1999. (This represents 2,700 out of a total of 4,300 farmers being registered.)

When this programme was initially established there was no direct benefit obtained from farmers registering or becoming accredited to the programme because processing and marketing companies, though supportive, did not require suppliers to address the issues covered in the programme. Most companies have now established on-farm quality assurance programmes, partially in response to market demands, principally from Europe and the UK, but also because of observed improvements in the quality of deer from those farmers who are accredited. Some companies provide incentives to those who comply with either the DeerQA or their own QA programmes, such as providing preferential booking for supply and premiums, e.g. 5c per kg. Farmers also report that the programme provides advantages to their production in that it describes best management practices for aspects of deer management. Some farmers do have other costs associated with gaining accreditation if they are required to rectify aspects of the system so they can meet the standard.

Vension Processing

The Venison Processing programme has been adopted by five of the six major venison processing and marketing companies and incorporated into their own quality assurance programmes and standards.

An advantage of this has been the mutual recognition by processing companies of each other's quality assurance programmes when these are based on the industry's generic DeerQA Programme. This minimises the need for farmers to gain accreditation to a number of different quality assurance programmes in order to supply competing processors. However, while many companies have adopted the DeerQA Programme as their own 'base-line' this also provides companies with the flexibility to 'add-on' requirements specific to their and their customers' needs.

Other performance indicators

- There has not been significant criticism of the DeerQA Programme, which may be a reflection of the voluntary nature of it. It has been suggested that the lowest level of adoption of the programme is with smaller, lifestyle deer farmers, which is unfortunate as some of these farmers would benefit from a greater understanding of deer management to minimise animal welfare issues and enhance product quality.
- The development of the standards and the operation of the quality assurance programmes have helped identify gaps in knowledge and problems that can then be the subject of subsequent research.

- Due to its early establishment, high levels of compliance and proactive development of environmental aspects (including the proposed QA linkages with the Deer Landcare Manual) the deer industry has earned the respect of some environment lobby groups and so has not suffered from the negative publicity that has been directed at some other sectors for their perceived poor environmental performance. Such negative media focus on a sector has the potential for severe market place effects.

2.4 Cost Benefit Analysis

Table 1 sets out costs and benefits for the DeerQA programme.

Key considerations

- The key driver was quality assurance;
- It is integrated across the supply chain; and
- It has a voluntary status.

Cost benefit summary

- Strong industry focus on external markets;
- Good industry co-operation and integration;
- Direct costs minimal in relation to farm income;
- Indirect costs dependant on individual property remedial action required;
- Provides strong animal welfare benefits;
- Major benefits are gained at the processing and marketing points of the chain. Presumably these are passed back to producers in prices paid for livestock as the industry is in a strong demand phase; and
- Most requirements are Best Management Practices (BMP) therefore should not be regarded as a cost as they are 'costs of being in business'. For example, farmers would not be able to remove velvet without the NVSB velvet removal programme providing a system of assurances relating to animal welfare and farmer access to otherwise 'vet only' drugs for velvet removal.

Table 1: DeerQA Costs and Benefits

Costs			
		Description	Value
Initial Setup			
Fees	✓	Initial assessor costs	\$220
Administration	✓	Record keeping	
Monitoring			
Audit	✓		
Remediation Costs	✓	Property dependant	
Staff Training	✓	Transport 8.5 hours / Agents two day course	
Ongoing Annual Costs			
Fees			
Administration	✓		
Monitoring			
Audit	✓	Random	
Staff Training			
Benefits			
Environmental			
Improved Environmental Performance	✓	Adding EMS elements	
Prevention of Pollution	✓	Disposal of wastes	
Resource Conservation / Enhancement	✓		
Enhanced Compliance			
Animal Welfare	✓	Shelter / Nutrition / Disease / Antler removal	
Economic			
Market Access	✓	Anticipated rather than actual.	
Revenue Gains	✓	Some premiums offered	
Productivity Gains			
Quality Gains	✓	At processing	
Cost Reduction			
Require BMP			
Social			
Enhanced Public Image			
Staff Awareness / Education	✓		

2.5 Summary

Deer Industry New Zealand believes that the process used for the development of DeerQA was extremely successful and reflective of:

- the programme development being well resourced with an adequate time period for this process e.g. 18 months;
- the inclusion of users e.g. farmers, transport operators in the development of the standards which ensured that they are relevant and appropriate;
- identifying gaps in knowledge e.g. ventilation requirements for deer in transport crates and the commissioning of research to obtain answers so that relevant measures could be placed in the standards;
- the establishment of an ongoing standard review and enhancement process driven by the relevant users; and
- the establishment of a full-time quality assurance manager position to facilitate training and oversee the ongoing management of the programmes.

DeerQA has helped in enhancing co-operation within the industry. The development of the standards and ongoing management of the technical committees provides an opportunity for what are normally competing businesses to come together. Critical common issues are identified and industry responses developed e.g. research, advocacy to government agencies such as MAF. These common positions have a greater influence than if individual companies were to undertake them separately.

On reflection, it has been suggested that the overall success of the programme might have been enhanced if there had been initial integration of exporters into the standard development groups. This would have probably resulted in their adoption of the programmes earlier and may have introduced new issues or directions for the standards to cover. However it has also been suggested that at the time of development there were many small exporters who may not have had the capacity to effectively contribute in this process.

3.0 New Zealand Fresh Produce Approved Supplier Programme

3.1 Programme Background

The NZ Fresh Produce Approved Supplier Programme (FPAS) commenced development in the mid-1990's, being initially developed by the Fresh Vegetable Sector within Vegfed. It has now been extended to include all fresh produce, with fruit growers becoming part of the programme in 2000. It was a proactive initiative by industry to ensure that safety standards were met in the production of fresh produce.

The programme is HACCP- based and incorporates the principles of ISO. It applies to the whole supply chain of fresh produce including transport and packaging.

The aim of the programme was to develop a cost effective single programme tool which would meet legislative requirements such as the Food Act 1981 (Amended 1996) with the focus of the programme on Food Safety and Occupational Safety and Health. It was developed:

- in response to consumer awareness both domestically and internationally; and
- to ensure that there is only one auditor through the gate – i.e. the grower does not have to comply with a multiple range of programmes and requirements.

The focus is on the areas of production where hazards to food safety may occur, such as in agrichemical application, fertiliser application, packaging and handling, reflecting the HACCP approach.

An underpinning principle is that the programme can be applied regardless of the size or complexity of an operation – from small through to extensive operations. It is focused on an approach to business that allows suppliers to develop and respond to requirements in a way that suits and reflects individual businesses. The focus is on a 'business to business' basis rather than a 'business to consumer' basis. While the consumer is the benefactor, the programme was not intended to have a high public profile or to override promotion and branding being undertaken at business levels.

The programme was developed over four years by MAF Quality Management (now AgriQuality) with financial support from AGMARDT and the Fresh Vegetable Sector. Development included an international literature search, extensive consultation with all stakeholders in the industry and a series of pilot groups with growers. Draft documents were circulated to a range of growers for comment and some trial audits were undertaken. The key was to find practical solutions that could be readily implemented on-farm.

The programme includes modules on:

- Growers Code of Best Practice;
- Packhouse Code of Best Practice; and
- Transport Code of Best Practice.

The transport module was developed first and launched in 1997, followed by the grower and packhouse modules.

The programme has been updated twice, in January 2001 and May 2002, incorporating industry feedback, customer requests and regulatory requirements. In particular industry sought changes to records management and the addition of checklists and cross-referencing to reduce compliance fatigue.

3.2 Programme Management

The objective of the programme is to become an Approved Supplier so the Approved Supplier trademark can be attached to produce. All supermarkets in New Zealand now require Approved Supplier status from suppliers.

Steps to becoming an Approved Supplier include:

- attendance at a training workshop where the programme and how to implement it are outlined, including provision of worksheets and checklists;
- working at the property level using the supplied checklists to ensure all requirements are met;
- register for assessment so an assessor can visit the property and carry out an assessment of the operation to ensure that processes meet the required standards;
- obtain Approved Supplier status.

To maintain the Approved Supplier status there are a range of audit requirements:

- an Annual self assessment is carried out using checklists provided;
- an initial external assessment and an assessment at the first anniversary is carried out;
- following the initial assessment an external field assessment is carried out one year in every three;
- a random external audit may be undertaken;
- a targeted external audit may be undertaken; and
- a residue test may be requested or taken.

The length of time required to obtain Approved Supplier status is dependent on a number of variables such as the size of the operation, resources available and prior existence of systems and knowledge. On average two - three months is required. Following approval, daily maintenance is required in that recording of data and

information is a daily event. Essentially this incorporates the approach to business that the programme encompasses.

To assist the suppliers, checklists, templates and workbooks are provided, both electronically and in hard copy.

Matters covered in the assessment are:

- management commitment;
- product identification and traceability;
- product management;
- quality control;
- handling, storage, packaging and delivery;
- product and staff safety;
- training;
- purchase of goods and services;
- complaints/ corrective action;
- internal assessments; and
- records and documentation.

The programme is overseen by the Fresh Produce Approved Supplier Committee which meets half yearly, administered by Vegfed, with AgriQuality carrying out day-to-day administration. There are currently four trainers and 22 auditors throughout NZ.

A Wholesaler/ Retailer Advisory Committee is to be established, which is designed to create linkages across the programme. Establishment of this committee at an earlier stage may have overcome some problems in initial stages, although there was consultation with individual retailers throughout the development.

The programme is constantly reviewed with review/ feedback forms provided in the manual for suppliers to use to provide ideas.

The programme costs are:

- \$125 +GST for registration, manual and training workshop;
- \$280 + GST annual fee to cover audits and accreditation for a single operation;
- \$70 + GST for additional operations.

3.3 Programme Performance

By 2002 there were 2000 growers who had become Approved Suppliers. In the vegetable industry this represents 80 percent of production. There has been slower uptake from fruit sectors as there are a number of industry specific programmes such as KiwiGreen and

AvoGreen. A significant number of summer fruit and pip fruit growers are registered with the Fresh Produce Approved Supplier Programme.

Benefits derived from being an Approved Supplier include maintaining access to markets and achieving preferential supplier status with buyers. Typically price premiums are not based on being an Approved Supplier but the benefits of being able to sell, and being able to sell at an optimum time saves on additional coolstore and transport costs. These benefits may be reduced as more growers become Approved Suppliers so other points of differentiation and new initiatives may be needed.

The programme has also benefitted the industry image and led to greater linkages between the different sectors. There are, however, still some sectors, especially those with a greater export focus, who are not fully incorporated into the programme.

A clear benefit of the programme is that there is regulator confidence in the programme that it will deliver safe food to consumers.

The programme is currently being extended to encompass EUREP-GAP requirements and be benchmarked as complying with EUREP-GAP.

3.4 Cost Benefit Analysis

Table 2 sets out the costs and benefits for the Fresh Produce Approved Supplier Programme.

Key considerations

- The key driver is food safety with some OSH elements;
- It is integrated across the supply chain; and
- It has a voluntary status, although it is necessary to obtain Approved Supplier status to supply many supermarkets.

Cost benefit summary

- Focused on food safety, especially on residue levels;
- Integrated strongly as it is a requirement of achieving Approved Supplier status;
- Direct costs minimal in relation to farm income;
- Indirect costs are high due to the administration requirements, but are seen as part of normal business expense;
- The major benefit is access to major customers; and
- Other benefits are low.

Table 2: Fresh Produce Approved Supplier Programme Costs and Benefits

Costs			
	✓	Description	Value
Initial Setup			
Fees	✓	Annual fee	\$280
Administration	✓	Regular paper trail and admin requirement	
Monitoring	✓		
Audit	✓	Initial at end of first year.	
Remediation Costs			
Staff Training	✓	Attendance at training workshop. GROWSAFE.	\$125
Ongoing Annual Costs			
Fees	✓		\$280
Administration	✓		
Monitoring	✓	Annual self assessment	
Audit	✓	Once every three years or random.	
Staff Training			
Benefits			
Environmental			
Improved Environmental Performance	✓		
Prevention of Pollution	✓		
Resource Conservation / Enhancement			
Enhanced Compliance			
Animal Welfare			
Economic			
Market Access	✓	Approved supplier status requirement	
Revenue Gains			
Productivity Gains	✓		
Quality Gains	✓		
Cost Reduction	✓		
Require BMP			
Social			
Enhanced Public Image			
Staff Awareness / Education	✓		

3.5 Summary

The Fresh Produce Approved Supplier Programme has achieved significant uptake of a voluntary programme. While it was not designed with the intent that it would be used by supermarkets as a requirement for procuring produce, the requirement for Approved Supplier status has greatly enhanced the level of uptake. One of the challenges facing the programme is the benchmarking and relationship with other more export driven schemes to ensure that growers do not have to comply with multiple programmes.

Currently steps are being taken to have the Fresh Produce Quality Assurance Programme benchmarked against EUREP-GAP so that compliance with the programme will provide access to EUREP-GAP markets.

4.0 Zespri KiwiGreen and EUREP-GAP Programmes

4.1 Programme Background

The New Zealand kiwifruit industry has had a strong history of identifying consumer demands and rapidly developing appropriate systems to effectively service these. The establishment of the KiwiGreen programme is consistent with this history. The KiwiGreen programme has the aim of being an environmentally and ethically responsible production system that ensures safe fruit for consumers. The programme uses an integrated pest management (IPM) approach to pest and disease control. The aim of the programme is for there to be nil or minimal residues on fruit at harvest and the meeting of quarantine requirements of importing countries.

The KiwiGreen programme was initially established to satisfy Italian demands for residue free kiwifruit. In 1991 Italian officials invoked local standards governing maximum residue levels, that were more stringent than evolving European wide regulations, to prosecute some sellers of New Zealand kiwifruit. New Zealand was exporting three million trays of kiwifruit to Italy, making it an important market. By 1992 however, Italy had become a large producer of kiwifruit and was exporting to other European Union countries. Though the Italians justified their action as a mechanism to protect Italian consumers, it was perceived by the New Zealand Kiwifruit Marketing Board (NZKMB) as being indicative of a strategy to protect their domestic agriculture through the establishment of a food safety barrier. In response to the Italian actions, a trial was established to produce residue-free fruit, and by 1993 produced enough fruit to satisfy the market demands for Italy. New Zealand fruit could therefore not be rejected because of residues. Based on the results of this trial the NZKMB decided that all its export fruit should follow the management protocol as established for the Italian market because it anticipated further market access issues based on the presence of chemical residues. This programme was labelled the KiwiGreen programme.

The basis for the programme was the introduction of integrated pest management (IPM) strategies for the control of significant kiwifruit pests – various types of leafroller and scale insect, as well as the light brown apple moth. The research and development for these IPM strategies had been underway for some time and was carried out by DSIR/MAF and subsequently HortResearch. This was done in close consultation with growers. The funding for this research was supported mainly through public good research funding. The

NZKMB, and subsequently Zespri International Ltd, supported the extension of the information to growers and later refinements of the programme.

The programme has been modified over the years to cover a greater range of pests and diseases and monitoring methodologies, and management approaches have been refined, based on the results of further research and experience.

Currently the programme is still focused on pest and disease management. In 1996 an initiative to establish a broader based environmental management system was initiated with the establishment of a Kiwifruit Monitor Orchard selected as a site to trial an environmental management system. On this orchard a broad analysis of the social, economic and environmental impacts of the management system were undertaken. In addition, a range of environmental indicators were identified with an associated process for the monitoring of these. The focus of these initiatives was both on the orchard and the subsequent post harvest operations of the kiwifruit sector. One area of focus was quantifying the energy used and CO₂ emitted. A draft environmental management system was developed and loosely called KiwiGreen 2000. This was circulated within the industry for feedback on whether it should provide the basis to extend the scope of the existing KiwiGreen programme. The industry agreed however not to adopt this initiative because of:

- the perceived potential increase in monitoring and production costs associated with the new programme; and
- market developments – not least the emergence in demand in key markets for compliance with the EUREP-GAP programme.

In 2001 Zespri established its Customer Gateway Programme to implement and manage changes within the industry required by its major retail customers. Initiatives under this programme included the implementation of systems to satisfy the EUREP-GAP requirements and the establishment of improved product track and trace systems. The key driver for this initiative is that without compliance with the EUREP-GAP programme by 2004, access to key European markets will be lost. EUREP-GAP is an initiative of 20 large European based retailers to establish a common standard for safe and sustainable agriculture. It is anticipated that compliance with the EUREP-GAP programme will be simplified because of the existing KiwiGreen programme and other components of the Zespri supply management system, as well as regional and local body plans established to fulfill the requirements of the Resource Management Act.

4.2 Programme Management

The KiwiGreen programme has the aim of producing fruit with minimal or nil residues. The programme includes a Grower Manual and a co-ordinated monitoring and audit process.

The KiwiGreen manual, which is provided to all growers, contains:

- information on kiwifruit pests and the management of these;
- the standardised KiwiGreen pest monitoring process;
- botrytis information and recommended management strategies;
- an appendix with resources to assist with the monitoring associated with the programme; and
- guidelines on the use of the programme with the various type of kiwifruit.

Principal features of the programme include:

- sprays are to be used only in response to a demonstrable need;
- all persons spraying agrichemicals within an export kiwifruit orchard have to have certification under the GROWSAFE® programme;
- spraying decisions are influenced by the orchard history, weather conditions and levels of pest present; and
- growers are required to complete and submit a spray diary at harvest.

All export growers are required to comply with the conditions of the programme. A key component of the programme is the seasonal monitoring of pest/predator levels which is carried out by the grower or pest scouts. The spray diary details the timing, type and volume of chemical used on the crop. A crop cannot be packed until a completed spray diary has been submitted.

This programme is a component of the kiwifruit industries total quality management programme which defines the management of the fruit throughout the value chain e.g. production, harvesting, packing, shipping and retailing.

The costs associated with the KiwiGreen programme are:

- Pest monitoring, which can be undertaken by either the grower or a scout and is often provided by a packhouse. If scouts are employed by the grower costs are typically \$400 - \$500 per orchard per year;
- Audit requirements, with the packhouse receiving and reviewing the spray diaries.

There is not perceived to have been a significant change in yields and quality resulting from the restrictions on the types of chemicals and frequency of use imposed by the KiwiGreen programme. The restriction on higher cost chemical use and the lower frequency of use will have enhanced the overall efficiency of production in most situations.

To comply with the EUREP-GAP programme, production is assessed against a checklist of 254 questions that confirms that the production is consistent with the production of safe food using sustainable practices. Zespri is currently a Supplier Member of EUREP-GAP and plans to become a Produce Marketing Organisation, which will enable Zespri to represent growers, minimising the need for external audits. Zespri, in association with packhouses, is working with growers to provide resources and support to facilitate grower compliance with EUREP-GAP conditions. The process for this includes the following steps:

- in late 2002 kiwifruit growers were sent a checklist to assist them review current orchard practices and assist them identify any non-compliance;
- non-compliances are recorded, addressed and packhouses advised. The packhouses will also undertake internal audits of growers;
- Zespri will audit the packhouse on their systems and a sample of growers; and
- every year 55 growers will be subject to external audit by an independent certification body that will also review the packhouse systems and audits as well as the Zespri system and audits.

The anticipated costs for growers associated with EUREP-GAP are:

- Grower compliance check – this process is relatively simple and is designed to be undertaken by the grower;
- Corrective actions - if non-compliances are found then the grower is responsible for addressing these. The costs associated with this will be dependent on the issue;
- Auditing of the grower by the packhouse – paid for by the packhouse;
- External audit costs – between \$1,300 - \$1,500 per audit, are paid for by the industry, not the individual grower.

The drivers for both the KiwiGreen and EUREP-GAP programmes appear to be well understood by the industry and the programmes have been well supported by growers. The promotion and support of the programme has been through Zespri and the

packhouses. Extension activity has also been supported by the original research undertaken on kiwifruit orchards and the input of scientists in the promotion and continuous refinement of the enabling technologies and management approaches. The adoption of the KiwiGreen programme by growers was enhanced by the central role of the NZKMB and Zespri in the marketing of kiwifruit and its ability to set standards and policies that were backed by regulation for the export of kiwifruit. This meant that there was no alternative to adoption. This also appears to be the case with the EUREP-GAP programme.

4.3 Programme Performance

The KiwiGreen programme has been very effective in shifting growers from using chemicals that have a risk of leaving residues on fruit to less toxic options e.g. oil, *Bacillus thuringiensis*. Some direct benefits of the programme include:

- The volume and value of chemical used on orchards has decreased and the average number of applications decreased;
- The discipline of pest monitoring has provided many orchardists with a closer insight into the ecology of their orchards and enhanced their overall management and output;
- Market access – the programme has decreased the risk of trade barriers based on residues being imposed on New Zealand kiwifruit exports;
- The programme has enabled the use of a strong natural and safe market promotion programme to occur with integrity. New Zealand kiwifruit is sold at a premium in most markets – a factor of the market perceptions and its quality. There is no doubt that the KiwiGreen programme positively contributes to this.

Balanced against this are the increased costs in monitoring and the possible restriction on the use of some inputs if pest levels get to severe levels. Some growers report that the KiwiGreen management programme may be less effective for control in these situations than if alternative chemicals were used.

It is too early to assess the performance of the EUREP-GAP programme, as it is only now being introduced. It is anticipated however that it will provide enhanced security for market access, as well as strategies to enhance the broad sustainability of participating orchards.

4.4 Cost Benefit Analysis

Table 3 sets out the costs and benefits for the KiwiGreen programme.

Key considerations

- The key drivers are market access and IPM;
- It is integrated across the supply chain; and
- It is requirement of supply by the sole exporter.

Cost Benefit Summary

- Based on IPM concepts;
- Strong industry focus on external markets;
- Good industry co-operation and integration through to marketing;
- Direct costs minimal in relation to farm income;
- Indirect costs as a result of compulsory requirements are seen as industry BMP;
- Strong economic benefits both from existence and output and input gains; and
- EMS add on through the EUREP-GAP programme.

4.5 Summary

The KiwiGreen programme was one of the first integrated pest management programmes introduced to a whole industry and has been well supported by all the industry. Factors in the success of the programme include:

- Kiwifruit has relatively few pests and diseases and research has been undertaken for some time in the development of effective control alternatives;
- The central role of NZKMB and Zespri in being able to demand compliance with its conditions if kiwifruit is to be exported;
- A wide industry understanding of the rationale behind the programme e.g. the Italian market access issue;
- Effective extension of an effective integrated pest monitoring and management process to growers; and
- The integration of the programme into the kiwifruit industry Total Quality Management programme.

The EUREP-GAP programme appears to be meeting a similar level of acceptance by growers. The market access driver would appear to be the most significant factor in this, however growers' experience with other industry initiatives such as the KiwiGreen programme have established a positive environment for its adoption as have the processes used by the industry to promote and facilitate grower uptake.

Table 3: KiwiGreen Costs and Benefits

Costs			
	✓	Description	Value
Initial Setup			
Fees			
Administration	✓	Record keeping requirement	
Monitoring	✓	Regular orchard monitoring	
Audit	✓	Self and external assessment	
Remediation Costs			
Staff Training	✓	GROWSAFE required of applicators.	
Ongoing Annual Costs			
Fees			
Administration	✓	Provide spray diary at harvest	
Monitoring	✓	Defined Monitoring process BMP	\$4-500
Audit	✓	External	
Staff Training	✓	Orchard Monitoring	
Benefits			
Environmental			
Improved Environmental Performance			
Prevention of Pollution	✓	Spray only on demonstrable need	
Resource Conservation / Enhancement			
Enhanced Compliance			
Animal Welfare			
Economic			
Market Access	✓	Avoid trade barriers	
Revenue Gains		Requirement of industry to export	
Productivity Gains	✓	By product of BMP	
Quality Gains	✓	By product of BMP	
Cost Reduction	✓	By product of BMP	
Require BMP	✓	Best practice pest and disease monitoring	
Social			
Enhanced Public Image			
Staff Awareness / Education	✓		

5.0 Sustainable Winegrowing New Zealand

5.1 Programme Background

The Sustainable Winegrowing New Zealand (SWNZ) programme is an initiative of NZ Winegrowers. The programme was previously called New Zealand Integrated Winegrape Production when it was first developed in 1995.

The programme has been developed by a SWNZ Working Group, which included scientists, viticulturists, consultants and New Zealand Winegrowers staff. Funding was obtained from MfE's Sustainable Management Fund to assist in the development of the programme, which included an initial five vineyard trial and later, a larger group of 120 vineyards.

The programme has been modelled on a Swiss Integrated Fruit Production system. Since the initial development a range of trials and research have been undertaken, culminating in the release of the 4th Edition of the technical manual. Three hundred and eight growers, reflecting 60 percent of the production area, adopted the programme in the 2001/2002 season, although the programme is still voluntary within the industry. The renaming of the programme in 2002 was to improve the general understanding of the programme by both growers and consumers alike.

SWNZ is an holistic approach which seeks to encompass all appropriate environmentally and economically sustainable winegrape production methods suitable to New Zealand conditions into a single set of consistent and transparent standards, giving priority to methods that are the safest possible for the environment and human health. It includes management of soils and fertilisers, pest and diseases, use of agrichemicals, cover crops, irrigation management, sward management, and integrated plant protection. It recognises the importance of achieving a balance between environmental and economic factors in production.

A number of key principles underpin SWNZ to ensure that it is accepted both nationally and internationally.

- Practices must:
 - be standardised;
 - have defined limits; and
 - be open to audit and scrutiny.
- Processes must be open to continuous improvement, based on research developments.

The programme is based around a seasonal activity chart and a 'scorecard'. The data on the scorecard

reflects the individual vineyard, with the data being the basis of the audit, which is held one in every three years. The scorecard reflects the SWNZ standards which are based on the common principles across all vineyards. The programme has a manual that includes detailed chapters on technical issues, which are updated as new research becomes available.

5.2 Programme Management

The programme is managed by a National Co-ordinator within NZ Winegrowers.

The programme is based on an individual vineyard. Multiple vineyards, which are not contiguous, are registered as separate entities for the programme. The objective is to become an 'Accredited Vineyard' which provides access to use of the SWNZ logo for marketing of the grapes, but not for use on bottled wine.

All growers are required to have completed a GROWSAFE® course. In the first year of the programme scorecards and associated documents are sent in and assessed, followed by a vineyard audit. Meeting all the criteria satisfactorily will achieve accredited vineyard status. Growers not meeting all the criteria are given provisional vineyard status.

Members are provided with a SWNZ manual, scorecard, field notebook, and field guide for pest identification. Spray diaries must be kept and submitted as part of the scorecard return. Soil, petiole and fertiliser records may also be requested.

The scorecard sets base standards for each activity covered by the programme and ranks the sustainability level based on the type of practices undertaken in the vineyard. The total score provides an indicator of the level of sustainability of the operation and identifies the areas where improvements need to be made. Any 'unsustainable' scores would result in a provisional status until the issues have been adequately addressed.

The programme auditing is undertaken by Zespri New Zealand auditors during the November to March period, with an audit occurring one year in three, although random audits may also be undertaken.

All participating vineyards pay an annual subscription of \$300 + GST. Where multiple vineyards exist the subscription is \$100 for each additional vineyard. This subscription covers programme management and auditing.

Currently in development is a database which will include data from scorecard results. This will be used to provide reports to growers and also to establish benchmarking both regionally and nationally.

5.3 Programme Performance

While the programme is still voluntary there has been increasing uptake and adoption. In 2000/2001 240 growers were using the programme. This increased to 308 members in 2001/2002, reflecting 60 percent of the production area. There are a number of incentives to encourage involvement, one being the requirement by some wine companies for grower suppliers to be adopting SWNZ. At present there are no strong market demands for the programme, but the industry is conscious that it promotes itself as 'the riches of a clean green land' and so seeks to ensure that such claims could withstand international scrutiny.

Montana Wines have adopted the programme across all their vineyards and the National Viticulture Manager has publicly stated that there have been benefits and quantifiable savings derived from adopting the programme.

The Living Wine Group, a group of seven wineries which have achieved ISO 14001 accreditation, also acknowledge the significant role that SWNZ has to contribute to the New Zealand wine industry, and are members of the programme.

Future work includes establishing the costs and benefits of adopting the programme.

5.4 Cost Benefit Analysis

Table 4 sets out the costs and benefits for the Sustainable Winegrowing programme.

Key considerations

- The key drivers are IPM and the pre-emptive attempt to maintain market premiums;
- It is not integrated across the supply chain at this stage; and
- It is voluntary.

Cost Benefit Summary

- Good industry co-operation and integration through to marketing;
- Strong industry focus on competitive growth strategies;
- Low direct costs but high indirect costs related to record keeping for audit and monitoring to achieve BMP; and
- Excellent range of environmental, economic and social benefits.

5.5 Summary

The programme is broad based in that it seeks to incorporate environmental and economic factors within the programme. It is much more than an IPM type approach to issues, but rather a more holistic approach underpinning the whole business. The emphasis on ongoing research embeds into the programme that it is not static but rather will seek continual improvement based on research findings and developments.

Table 4: Sustainable Wine Growing New Zealand Costs and Benefits

Costs			
	✓	Description	Value
Initial Setup			
Fees			
Administration	✓	Set up data recording system	
Monitoring	✓	Self assessment	
Audit	✓		
Remediation Costs			
Staff Training	✓	GROWSAFE course Monitoring	
Ongoing Annual Costs			
Fees	✓		\$300 annual
Administration	✓	Diary and record keeping	
Monitoring	✓	Mandatory for pest and disease, soil and water.	
Audit	✓	External every three years	
Staff Training			
Benefits			
Environmental			
Improved Environmental Performance	✓	Soil and water health	
Prevention of Pollution	✓	Reduced spray use	
Resource Conservation / Enhancement	✓	Water use	
Enhanced Compliance			
Animal Welfare			
Economic			
Market Access			
Revenue Gains	✓	Attempt to maintain premium market position	
Productivity Gains	✓	By product of BMP	
Quality Gains	✓	Anecdotal impact on juice quality	
Cost Reduction	✓	Reduced spray use	
Require BMP	✓		
Social			
Enhanced Public Image	✓	Important driver	
Staff Awareness / Education	✓		

6.0 Market Focused

6.1 Programme Background

Market Focused is an environmental management system for dairy farmers, which includes environment and animal welfare. The development of Market Focused was initiated by the EQUAL group of farmers who had held a series of 'think tanks' on developing such a system for the dairy industry. The programme was developed over a three-year period by a stakeholder group, including Otago Regional Council and all the dairy companies, and led by NZ Dairy Research Institute. The EQUAL group trialled and peer reviewed the programme during its development. It was launched in September 2001, which was followed by a series of workshops throughout the country outlining the programme to dairy farmers.

The programme received funding support from MfE's Sustainable Management Fund, and the remainder from industry and Otago Regional Council, a key stakeholder in the project. Regional Councils were briefed on the programme but were not overly involved in the development, except for Otago Regional Council.

Since the restructuring of the dairy industry, Fonterra, in conjunction with Dexcel, has taken the programme and are both championing it with farmers, including through a series of workshops in the latter part of 2002.

The industry recognised that there was a need for a programme as the effects of dairying on the environment were known to be presenting challenges and there was a need for industry systems to address these issues. Already established were Environment and Animal Welfare Policies for the industry and it was determined that Market Focused be developed as a tool to implement those policies. There was also recognition that much of the marketing and promotion of NZ dairy products overseas capitalised on a 'clean green image' and the programme was to ensure that such marketing was credible.

The NOSLaM programme (see 3.4.2) and EQUAL principles were used as a basis for the programme development, with these being trialled and adapted for the dairy industry. However the requirements of NOSLaM, which were necessary to meet ISO standards, were rejected by farmers and a more self-regulatory approach was sought. This resulted in the programme being totally self-assessment, with no external audit component.

Part Two of the programme, based on the NOSLaM approach, has been developed by Otago Regional Council and is available on CD to farmers who are

seeking a more detailed approach to environmental management.

The programme covers environmental matters including animal welfare issues. The matters covered are largely based on NZ Dairy Industry On-farm Environmental Policies and Guidelines or the Five Basic Principles for animal welfare.

Environmental management includes:

- effluent;
- water;
- fertiliser;
- waste;
- soil; and
- pesticide/ agrichemical management.

Animal welfare includes:

- animal husbandry;
- animal feeding practices;
- disease and injury control; and
- animal environment.

There is a template sheet for each issue in which the farmer completes objectives for the farm, best management practices to be used, monitoring required and actions needed. The reverse side has some suggested objectives and Best Management Practices (BMP's). The templates are self-assessments as to how the industry objectives may be met on farm.

The programme is voluntary and is promoted to dairy farmers through workshops, articles, Dexcel Consulting Officers and discussion groups. The Consulting Officers are able to provide information and can also be a linkage with regional and district councils.

The time input from a dairy farmer would vary depending on the complexity of the farm system and records currently kept.

6.2 Programme Management

The day-to-day management of the programme is entirely at the farm level with no external inputs required such as registration, reporting or auditing requirements.

6.3 Programme Performance

A Dexcel Environment and Animal Welfare Survey undertaken in the winter of 2002 suggested that 24 percent of dairy farmers knew of Market Focused. Of these 51 percent had a copy of the programme and 35 percent of this group had completed the manual. The sample size was relatively small and was undertaken before much promotion of the programme. It is intended that a comparative survey will be undertaken to provide

data on the uptake following the promotion undertaken at the end of 2002.

No records of those undertaking the programme are maintained so it is otherwise difficult to quantify the level of up-take and response.

A report undertaken by Alan McDermott and Terry Parminter for FORST, 'The Adoption of Market Focused by Dairy Farmers' concluded that the farmers interviewed and those who attended a series of focus group workshops held largely favourable attitudes towards Market Focused and understood the rationale behind the development, promotion and likely roll-out by dairy companies of this environmental management system for the dairy industry.

The main motives farmers thought would encourage them to implement Market Focused were:

- improved market security and access;
- satisfying local communities that farmers are looking after the environment and their livestock; and
- improving the quality of staff in the dairy industry.

Some of the factors farmers believed were important for implementation included:

- having flexibility between regions to reflect regional issues;
- having sound scientific evidence underpinning standards and practices;
- having a robust auditing system with penalties and possibly incentives; and
- having an extension network in place.

Data recording and cost of system changes required to comply with Market Focused were identified as the greatest barriers to farmers implementing Market Focused.

Farmers anticipated that the main consequences of implementing Market Focused would be:

- farmers taking greater responsibility for their actions on their farms and the effects they have;
- farmers developing best management practices for their own farm system;
- the dairy industry would use sustainable on-farm practices and adhere to standards;
- dairy farmers would gain credibility with communities and consumers;
- the New Zealand dairy industry would retain market access securing future prices;
- better communication between farmers and their employees and improved performance of farm staff;

- farmers and employees would spend more time recording data and completing paperwork; and
- extra capital investments may be required to implement the programme on-farm.

6.4 Cost Benefit Analysis

Table 5 sets out the costs and benefits for the Market Focused programme.

Key considerations

- The key drivers are public image and development of an EMS;
- It is not directly integrated across the supply chain at this stage; and
- It is voluntary and un-audited.

Cost benefit summary

- Poor producer focus on external customers;
- Strongly integrated industry with little ability to differentiate product price (co-operative) therefore no existence of quality premiums;
- Based on EMS only;
- Low administration costs;
- Potentially high costs of remedial action, (property dependent);
- High environmental outcome benefits;
- Potentially high social benefits from image enhancement; and
- Few obvious economic benefits.

Table 5: Market Focused Costs and Benefits

Costs			
	✓	Description	Value
Initial Setup			
Fees			
Administration	✓	Record keeping and manual filling	
Monitoring			
Audit			
Remediation Costs	✓	Most likely	
Staff Training			
Ongoing Annual Costs			
Fees			
Administration	✓	Self assessment	
Monitoring	✓	Record keeping	
Audit			
Staff Training			
Benefits			
Environmental			
Improved Environmental Performance	✓	Water quality	
Prevention of Pollution	✓	Effluent treatment	
Resource Conservation / Enhancement	✓	Water	
Enhanced Compliance	✓	Meeting RMA requirements	
Animal Welfare	✓	Setting standards and targets	
Economic			
Market Access		Pre emptive	
Revenue Gains			
Productivity Gains	✓	By product of animal welfare	
Quality Gains			
Cost Reduction			
Require BMP	✓	In some things	
Social			
Enhanced Public Image	✓	Very important element	
Staff Awareness / Education	✓		

6.5 Summary

The implementation of Market Focused is at an early stage of its development. Promotional workshops held in the latter part of 2002 sometimes became more focused on the proposal by Fonterra to develop an Environmental Accord and to make environmental assessments mandatory for the industry. Such initiatives would take the industry beyond the scope of the Market Focused, so the future development of the programme will depend on the direction that the Shareholders Council takes on the Environmental Assessment proposals currently being discussed by the industry. Proposals that adherence to an EMS programme would be a prerequisite to being able to supply milk have not met much favour within the industry to date.

While there are views that consider that Market Focused will deliver market access, there needs to be research carried out to quantify such benefits. Responses from participants in the FORST survey placed considerable emphasis on such benefits, so quantifying these may be essential for the acceptance of the programme on a wider basis.

The respondents also raised the issue of an auditable scheme, which is contrary to the feedback received during the development stage of the programme. Developing an audit system that is credible and meets the needs of all stakeholders would obviously present challenges and change the focus of the programme.

7.0 Analysis of Findings

7.1 Programme Background

Development

All the programmes studied were developed as a result of industry initiatives. A range of strategies were used in the development of the various programmes. These included:

- Industry-wide stakeholder group – e.g. farmers, processors, marketers, exporters;
- Involvement of external groups –e.g. scientists, MAF;
- Use of existing programmes as a basis – e.g. Sustainable Winegrowing;
- Focus on legislative requirements – e.g. Food Safety;
- Use of trial programmes or monitor orchards.

The level of consultation with potential users varied somewhat, reflecting the extent to which the programme would be either voluntary or requiring industry wide compulsory compliance. It was suggested that closer consultation with marketers and exporters in the development stage for some programmes would have been an advantage in both the design of the programmes and to support subsequent industry adoption.

Drivers

The key drivers behind the development of all the case study programmes were the market access and regulator drivers. The programmes were a way to enable accountability and so ensure continued access to markets or the ability to do business. They were also seen as a means to substantiate the ‘clean green’ marketing image. The drivers are identified in Table 6.

Table 6: Programme Summaries and Drivers

Programme & Lead Organisations	Date Established	Type of Programme	Driver(s) for Establishment
DeerQA (Game Industry Board, Deer Industry NZ)	1991	Voluntary, Quality Assurance programme ‘Pasture to Plate’ (venison) ‘Pasture to Patient’ (velvet)	Marketing, variations in animal and meat quality
Fresh Produce Approved Supplier (Vegfed)	1999	Voluntary, HACCP based food Safety programme – ‘Business to Business’ with a focus on the domestic market	Market – food safety issues To minimise regulatory controls being imposed
KiwiGreen, (NZ Kiwifruit Marketing Board)	1993	Compulsory, Integrated Pest Management and residue management programme	Market Access, residues
EUREP-GAP (Zespri Int.Ltd.)	2002	Voluntary sustainable management programme	Market Access
Sustainable Winegrowing NZ	1995	Voluntary sustainable management programme	Environmental protection. Protection of market image
Market Focused	2001	Voluntary Environmental Management System.	Environmental protection, protection of the industry’s reputation, public image

7.2 Scope of programmes

Table 7 summarises the topic areas included in the respective programmes.

The scope and content varied according to the main focus of the programme. For instance KiwiGreen is an IPM programme, because of the market focus on residues, but it is also part of a wider Total Quality Management programme managed by Zespri.

Most of the programmes are designed to cover, or integrate with other industry initiatives that cover, the whole supply chain. For instance, DeerQA has transport, on-farm, marketing and livestock agent modules and has been adopted by processors and exporters.

A number of programmes were being added to over time, such as the addition of environmental issues to DeerQA, and EUREP-GAP to KiwiGreen.

Table 7: Scope of Programmes

Coverage	DeerQA	Fresh Produce (FPAS)	KiwiGreen EUREP-GAP		Sustainable Winegrowing	Market Focused
			KG	E-GAP		
Record keeping	X	X	X	X	X	X
Varieties, rootstocks, breeding	X			X	X	
Farm/orchard history and management	X	X	X	X	X	X
Fertiliser use, soil protection	X	X		X	X	X
Irrigation				X	X	
Crop protection – pest, disease and weed management	X some	X	X	X	X	X
Harvesting and transport	X	X		X		
Post harvest treatments and management	X	X		X		
Waste pollution, management, recycling and reuse	X			X	X	X
Worker health, safety and welfare	X	X		X	X	
Environmental protection	X some			X	X	X
Animal welfare and management	X					X

7.3 Programme Management

Programme management includes the day to day management, audit and assessment processes and programme review.

Table 8 summarises aspects of the management of the various programmes reviewed in these case studies.

Table 8: Programme Management

Programme	Assessment and Audit process	Programme Review
DeerQA	Audit by industry assessors for on-farm and transport programmes (additional assessments through company QA programmes). External audit for processing and Cervena programmes.	Via regular meetings of technical committees
Fresh Produce Approved Supplier	Self-assessment, initial external assessment, follow-up external assessment every three years. Random and targeted external audits. Residue tests of product.	Via the Fresh Produce Approved Supplier Committee. The programme has been updated twice based on industry feedback.
KiwiGreen, EUREP-GAP	Requirement for spray diaries to be submitted before fruit is accepted. Packhouse undertake audits Self-assessment. Audits by - packhouse, Zespri and external auditors.	Via Zespri technical committee Via Zespri Customer Gateway Programme
Sustainable Winegrowing NZ	Self-assessment using a scorecard and seasonal activity chart. Vineyard audit in the first year. Spray diaries and other records must be kept and submitted. External audit occurring once every three years as well as random audits.	Via the Sustainable Winegrowing NZ Working Group
Market Focused	Self-assessment by the farmers against a template. No audit.	The programme has only recently been launched, however it is anticipated that it will be reviewed by Dexcel and other industry stakeholders.

Themes that emerge relating to Programme Management include:

- Management of the programmes varies, with some industry organisations undertaking the management of the programmes internally e.g. DeerQA, while others e.g. Fresh Produce Approved Supplier, contract out many aspects of the programme management.
- A feature for all the programmes reviewed were the pragmatic approaches to the management and auditing of the programmes, with the aim of developing approaches that optimise the value of the programmes while minimising the related compliance costs.

7.4 Programme Performance

It is difficult to determine the relative performance of the more recently developed programmes and their value in addressing the factors that prompted their development e.g. Market Focused. For those programmes that have been established for some time it would appear that most have succeeded in enabling the relevant industry to effectively respond to the development drivers.

For these older programmes, there appears to be a commitment to continuous improvement, which is reflected in the extension of the scope of the programmes to service market and industry demands.

There are currently initiatives to expand the scope of many of these programmes to incorporate additional measures to minimise negative environmental impacts. Another trend is for programmes to attain compliance with external programmes such as EUREP-GAP.

To date, no substantive evaluations of programmes have been undertaken to quantify performance and outcomes.

Table 9 summarises the adoption levels of the case study programmes.

Table 9: Adoption levels

Programme & Lead Organisations	Date Established	Adoption level
DeerQA (Game Industry Board, Deer Industry NZ)	1991	62 percent of (2,700 of 4,300) deer farmers. Most venison processing companies Most transport companies accredited (128 out of 133 registered)
Fresh Produce Approved Supplier (Vegfed)	1999	80 percent of vegetable production (2,000 growers). Fruit sectors – lower as there are other industry specific programmes
KiwiGreen, (NZ Kiwifruit Marketing Board)	1993	100 percent of kiwifruit growers
EUREP-GAP (Zespri Int. Ltd.)	2002	Not established
Sustainable Winegrowing NZ	1995	60 percent of the grape production area, 308 growers (2001/02)
Market Focused	2001	Unknown number of dairy farmers (Registration not required)

7.5 Cost Benefit Analysis

The Cost Benefit Analysis sought to define both direct and indirect cost and benefits of developing an EMS/QA-type programme.

The direct compliance costs are estimated to be no higher than 2 percent of gross revenue so are relatively insignificant in relation to the business economics. The indirect costs of initial setup may be high for some operations if they are well behind required standards and need remedial action. These costs should not be seen as costs of the programme, rather as catch up business costs.

Indirect costs are in two forms:

- Increased administration in the form of record keeping, which should be seen as an essential part of being in business as customer requirements for food safety and traceability increase; and

- Implementation of specified monitoring systems that are industry best management practice and directly result in economic gains through increased output value or lower input costs, or both.

Benefits appear to be very closely related to the system purpose and type:

- QA, IPM and residue reduction programmes are easily and specifically designed to achieve those outcomes as well as strong economic benefits;
- Programmes with a strong environmental outcome appear to be less rigid in their ability to specify activities and therefore less strong in economic outcomes.

Table 10 summarises the costs and benefits of the Case Study programmes.

Table 10: Farmer/Grower Programme Adoption Costs and Benefits

Programme	Costs (ex GST)	Key Benefits
DeerQA	On farm - \$220 for assessment Transport Operators - \$95 Other components – mix of annual charges	Decreased animal bruising at Deer Slaughtering Premises from 22 percent to below 2.5 percent Some meat processors provide preferential booking and a small price premium Adoption of Best Management Practices enhance overall production efficiency Enhanced product quality and marketing e.g. Cervena programme
Fresh Produce Approved Supplier	\$125 - registration, manual, initial training \$280 - annual fee	Maintenance of access to markets and achieving preferential supplier status Decreased risk of negative market events e.g. residue discovery Enhanced confidence by regulators and other stakeholders in the industry
KiwiGreen, EUREP-GAP	Pest scouting - \$400-\$500 an orchard Audits funded by the industry	Improved market access Decreased risks of negative market events e.g. residues Enhanced production efficiency Improved market positioning
Sustainable Winegrowing NZ	Annual subscription - \$300 per vineyard with additional vineyards \$100 each.	Some wine companies require suppliers to be accredited to the programme Improvements in the sustainability of vineyard operation, however this has not been clearly quantified No current market premium however the programme supports the overall clean, green image of NZ wine
Market Focused	No cost	Improved industry reputation from proactive initiative Other benefits too early to establish

8.0 Conclusion

The above analysis demonstrates that within the wide range of programmes reviewed there are some common themes of components that have contributed to the successful implementation of the programmes.

- Involvement of relevant stakeholders in the development of the programme, including marketers where the programme is to address the total chain management.
- The content and composition of the programmes reflected the key drivers, such as market image, food safety and market access.
- It is noted that some programmes are being extended to meet an increasing range of objectives. Other programmes reviewed in Part Three of this report also demonstrate that the modular approach to incorporating additional matters can work effectively. Increasingly the additions include a wider range of environmental components and have a focus on sustainable land management.
- Generally most programmes include an external audit. The notable exception is Market Focused, which relies on farmer self-assessment. Where the programme is the basis of accreditation, certification or market access such external confirmation of adoption and on-going compliance with the required standards is considered essential.
- The adoption rate is higher with programmes that are required to ensure access to a market. They are not compulsory to the extent that a grower could choose to not access such a market. However there has been an acceptance that to ensure access, adoption and compliance with the programme will be undertaken. This is demonstrated in the high level of uptake in programmes such as the number of vegetable growers accredited as Approved Supplier under the Fresh Produce Quality Assurance Programme, which is motivated by the demands of local supermarkets, or the 100 percent of kiwifruit growers adopting KiwiGreen.
- The costs of compliance with the programmes are not considered to be higher than 2 percent of gross revenue. Given the benefits that accrue from adoption of the programmes this is considered to be an insignificant cost and should not be considered a barrier to uptake or adoption of a programme.

The analysis demonstrates that there is a general acceptance of programmes that are industry developed and led with a clear focus on market objectives. The challenge is to ensure that there is inclusion of, and a balance between, environmental, economic and social imperatives to ensure that the objectives of sustainable management are achieved.