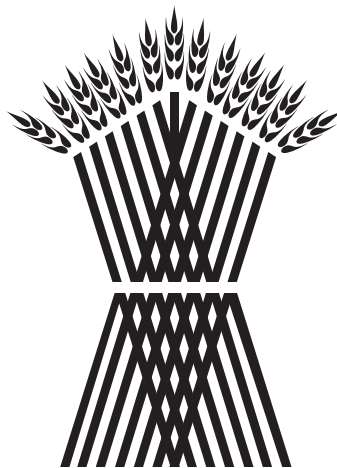

STRATEGIES FOR 'GREENING'
THE NEW ZEALAND PIPFRUIT
EXPORT INDUSTRY:

The Development of IFP and Organic Systems

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Chapter 1

Introduction: 'Greening' Horticultural Exports

1 Introduction

This report provides an introduction to New Zealand's pipfruit industry, and a review of different attempts within the industry to produce fruit which has an enhanced environmental or 'food safety' profile. While the New Zealand pipfruit industry has been recognised throughout its history as a producer of high quality fruit, in the last five years there has been increasing pressure from both consumers and trade regulators to formalise production practices that are 'safe' and guarantee minimum consumer risk through unacceptable chemical residues. Collectively we refer to these strategies as 'greening', however, as this report will detail, there are many factors prompting greening of exports and the potential strategic responses vary.

These trade and consumer pressures are not unique to the pipfruit industry. Since the completion of the GATT Uruguay Round in 1995, certain key markets for New Zealand produce - particularly Europe and Japan - have quickly moved to replace tariff barriers with a new form of trade protection. This new strategy can be termed 'green protectionism' as it establishes barriers to food imports through decreasing the Maximum Residue Levels (MRLs) permitted for agrichemicals and expanding the list of banned inputs (such as Bovine Growth Hormone for beef), and also through moratoria on products pending scientific assessment of their potential negative long-term environmental or animal welfare consequences (Campbell and Coombes 1999).

While these mechanisms of green protectionism have been emerging at a regulatory level in markets like the EU, a second tier of market regulation has also emerged through the influential product specifications demanded by prominent supermarket chains and consumer co-operatives in Europe, the US and Japan. These distributors have tried to leverage market share by appealing to the increasing level of consumer concern at food quality and safety. The result is that suppliers of produce to these distributors - especially suppliers of fresh fruit and vegetables (FFV) - are forced to establish complex auditing and traceability systems to ensure product quality and food safety.

Consequently, a number of prominent exporting organisations, particularly in horticulture, have initiated moves to reconfigure their production systems in order to meet these emerging regu-

latory, distribution and consumer demands. The kiwifruit industry has moved most rapidly to establish 'green' production systems through fostering both certified organic production, and the IPM system called KiwiGreen for their mainstream product (Campbell *et al.* 1997). Similar strategies have also been adopted by Heinz-Wattie NZ Ltd. with a strong emphasis on organic processing vegetables, and plans to move a majority of vegetable production into less intensive systems of crop management (Campbell 1996; Coombes and Campbell 1998). Similar moves are also underway in the wine industry, and a variety of FFV such as squash, avocados, persimmons and citrus.

While the earliest significant moves by an FFV export industry were those undertaken by the kiwifruit industry between 1991-1994, the pipfruit industry has also been one of the first major industries to respond to regulatory and market pressures for 'green' production. The New Zealand Apple and Pear Marketing Board, and its marketing arm ENZA, have moved quickly since 1996-97 to implement an industry-wide programme of integrated fruit production (IFP). Existing alongside the IFP programme is a small, but growing, pool of organic pipfruit producers. To date, ENZA's institutional focus and resources have centred on IFP, however there are signs pointing to an interest in developing organic exports as part of its overall marketing and product development programme. To that end, tensions have arisen between ENZA and Freshco - the company operating under an organic export license granted by the NZAPMB - over the future of the organic and 'mainstream' pipfruit industries. In light of these and other issues shaping organic and conventional/IFP production practices and their institutional organisations, the processes of pipfruit industry 'greening' are complex and intertwined with the broader issues of producer board deregulation.

1.1 Methods of Analysis and Report Structure

The purpose of this report is to provide an analysis of the pipfruit industry which enables us to compare the apparent 'greening' strategies within this industry with other strategies emerging across New Zealand. Clearly, the pipfruit industry is facing the same pressures being felt by other horticultural exporters in the global market. However, there are also endogenous factors within the pipfruit industry which have conditioned the style and extent of the 'greening' of pipfruit exports. Consequently, the central methodological challenge of this analysis is to separate the endogenous factors from those that provide a more general insight into greening strategies among New Zealand's export industries. This separation

of endogenous from general factors can be most easily achieved by comparing the pipfruit industry to previously conducted industry case studies. Such studies have already been conducted into process vegetable exporting from Canterbury (Campbell 1996) and Gisborne (Coombes, Campbell and Fairweather 1998), kiwifruit exporting from the Bay of Plenty (Campbell, Fairweather and Steven 1997), and organic FFV production in Nelson (Coombes and Campbell 1998). Comparative analysis of these case studies has yielded a hypothetical 'Development Scenario' for greening export horticulture in New Zealand. This general Development Scenario identified eight areas which were influential on industry 'greening' and yet showed endogenous variation within industries (Campbell and Fairweather 1998). These eight areas are:

- **Infrastructure:** the presence or absence of a necessary level of market demand and development of an infrastructure for delivering product to these markets at a viable economy of scale. Also, the extent to which processing structures need to be restructured or retooled to enable auditing and separation of particular types of product (such as organic).
- **Industry politics:** the level of political support or indifference to 'greening'; and also the degree of difficulty in establishing an industry policy framework in support of greening strategies.
- **Inter-company relationships:** the configurations which can form around different companies or organisations involved in exporting, particularly those that affect the degree to which co-operative synergies can form or the emergence of competition between companies for a limited number of suppliers.
- **Certification and audit systems:** the degree to which certainty and credibility of audit and labelling/branding systems are established within an industry; the evolution of industry-specific specifications, and the practice of audit and inspection.
- **Technical barriers to greener production:** particularly in the development of adequate substitutes for existing pest and disease management systems, other limiting factors, R & D structures and funding for R & D.
- **Skills development and information transfer:** the specific form by which new production techniques have been developed in specific industries and how these skills are networked or extended among growers.
- **Stepping stone systems:** In the case of organic production, the intermediate steps through which growers can pass before becoming fully

committed to organic production. The psychological or technical distance perceived by growers when contemplating a shift from conventional production to an alternative, greener system, can be decreased by experience with aspects such as audit or inspection required by intermediate systems.

- **Ideological barriers:** These are primary barriers to attempting greener production which involve none of the previous seven dimensions, but reside within the ideological assumptions or predisposition of a prevailing farming culture (both on-farm or at an institutional level).

The following chapters of this report will situate the New Zealand pipfruit industry within the eight general dimensions of a hypothetical Development Scenario outlined above. Initially, the particular endogenous variation of the pipfruit industry within the Development Scenario will be examined. Chapter Two outlines the historical development of the pipfruit industry and the way its particular infrastructure and political configurations have emerged. The formation of the New Zealand Apple and Pear Marketing Board (NZAPMB) in 1948 has proven to be the pivotal development, shaping the industry's evolution and its ability to define future directions. It is important to note that throughout its history, the statutory powers of the NZAPMB have been contested and some regional differentiation of support has been displayed. This knowledge helps place in context current debates inside and outside the industry concerning the politics of 'greening' as they are linked with proposed government deregulation of the NZAPMB. Chapter Three and Four then trace the development of two strategies for greening the industry: Integrated Fruit Production (IFP) and organic production. IFP has come to represent 'mainstream greening' of the industry and is being used by ENZA as their principle means of managing market access risks. Chapter Four provides some insight into the current level of organic pipfruit production in New Zealand and comments on the complex set of economic, environmental and political trade-offs faced by organic growers. Chapter Five then reviews the Development Scenario to enable comparison of the pipfruit industry to the previous case studies in processed vegetables, kiwifruit, and organic FFV. From this an industry benchmark is established situating pipfruit within the wider development of green food exports from New Zealand. This benchmark is briefly outlined at the conclusion of this report and will be examined in more detail in a future publication.

1.2 New Zealand's Pipfruit Industry - A Brief Profile

New Zealand produces about 1 per cent of the world's apples, and captures about 3 per cent of the global export apple trade. Compared to key competitors (Figure 1), there is a strong reliance on fresh exports.

Receiving the lowest producer subsidy equivalents in the OECD (Figure 2), New Zealand's pipfruit industry has responded effectively to increased risk and 'globalisation pressures, and it has been named as the World's Most Competitive Apple Exporter from 1996-1999 inclusive¹.

Owing to natural hazard events (hail and drought in 1994 and 1998 respectively), tightening grade standards (from 1998 on), hold-over stocks in northern coolstores (particularly in 1997) and an oversupply of fruit on world markets, the financial position of the pipfruit industry in New Zealand has been variable or declined since 1994. Performance indicators for 1998-99 initially looked promising compared to the previous two years but

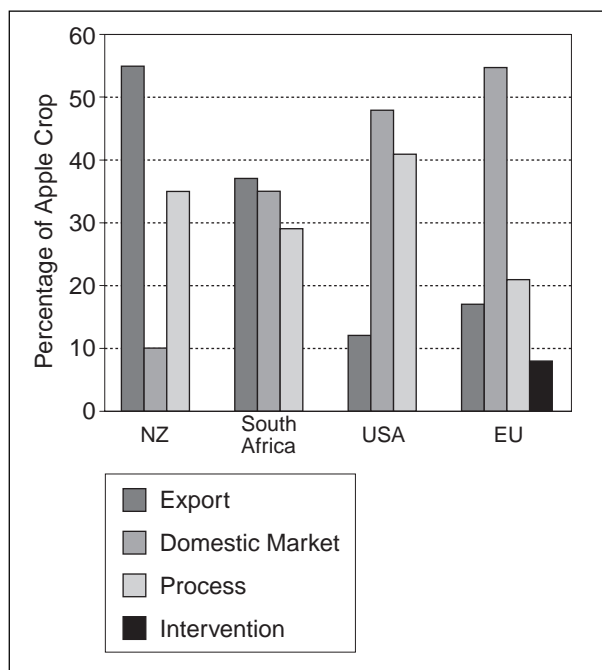


Figure 1. Crop Utilisation Statistics: An International Comparison. Source: World Hort Trade & Export Opportunities, 1996

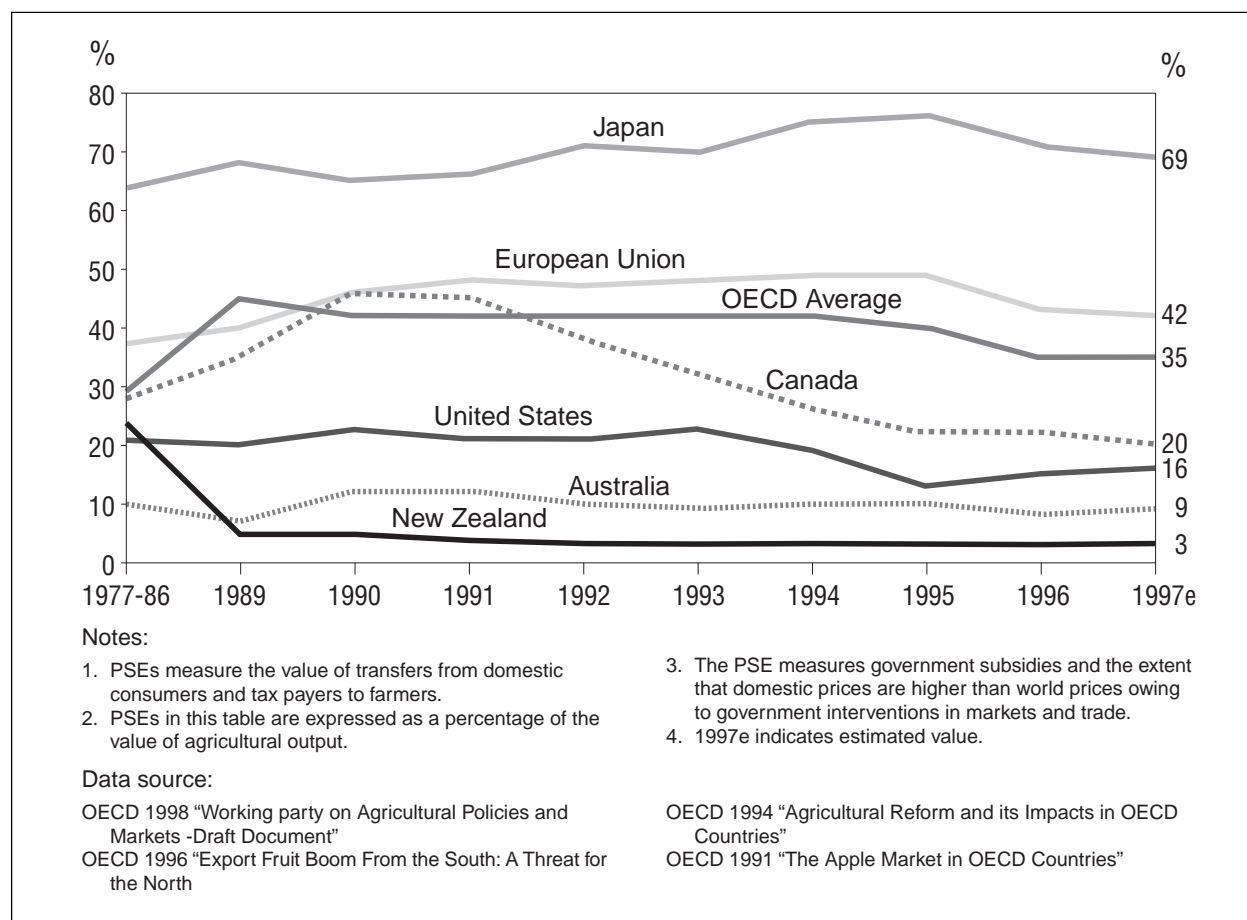


Figure 2. Producer Subsidy Equivalents, OECD 1976-1997

¹ The World Apple Report is produced by an independent research organisation in the United States. The report has only been produced since 1996, and New Zealand has won each year. The rankings are calculated on 21 criteria organised into three main categories: (1) production efficiency; (2) industry infrastructure and inputs, and; (3) financial and market factors.

have since deteriorated. The net average (grower) return improved from \$10.31/tce² in 1997 to \$14.17/tce in 1998, but declined again to \$11.01/tce for 1999.

An overview of the value and relative input of fresh apple exports to horticultural and total agricultural exports is given in Figure 3. Pipfruit and kiwifruit are New Zealand's two major horticultural exports in terms of financial value.

The export crop submitted by growing region is shown in Figure 4. There are nine regions in New Zealand which produce pipfruit, with the three dominant areas being Hawkes Bay, Nelson and Central Otago. Figure 4 uses data from 1997, which included final sales of Applefields' pipfruit, and so accounts for Canterbury's more significant contribution compared to Central Otago for that year.

Almost half of the national export crop is produced in Hawkes Bay and over one third is produced in the Nelson region. The Hawkes Bay horticultural sector is the largest and most concentrated of any in New Zealand. Within this sector, fruit growing accounts for 60% of the total activity and pipfruit growing dominates the regional fruit industry. Similarly, Nelson has a high degree of dependence on horticultural activity, where two out of every three jobs in that sector relates to fruit (mainly apple) growing (BERL 1997, 1998).

The area of land planted in pipfruit for Hawkes Bay and Nelson varies considerably. Hawkes Bay has about 7,000 hectares of pipfruit orchards, while Nelson has about 4,000 hectares (Statistics New Zealand 1996). The numbers of orchards vary year to year, with an overall trend towards larger orchards and fewer growers since the early 1990s. In 1997, there were approximately 800 growers in Hawkes Bay and 500 in Nelson.

Figure 5 shows the total revenue earned from exports of fresh pipfruit in 1997. According to MAF (1998) that total income amounted to \$376 million. Economic analysts suggest there is anywhere from a twofold to sevenfold multiplier effect in relating export revenue generation to total economic impact. Figure 5 shows a threefold multiplier effect based on regional distributions of pipfruit exports - indicating that the pipfruit industry makes a significant contribution to regional economic performance.

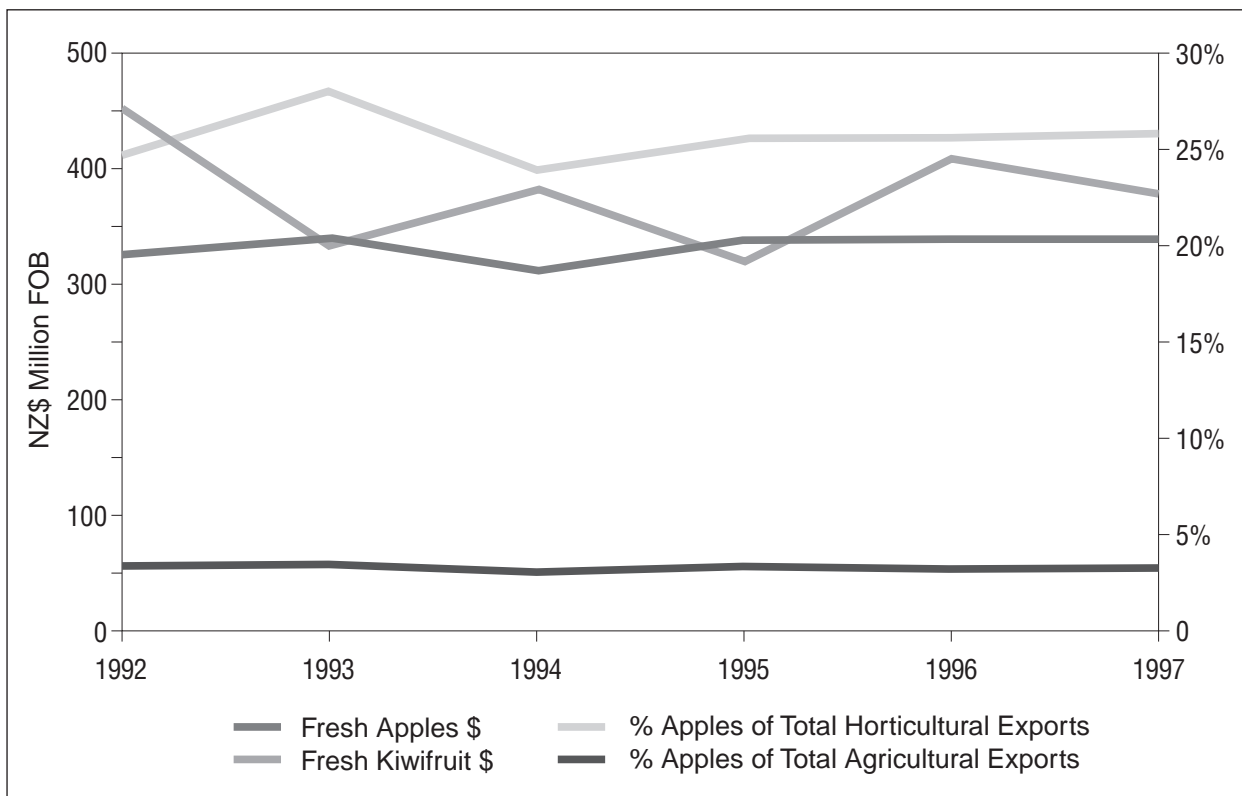


Figure 3. Horticultural Exports, 1992-1997. Source: Ministry of Agriculture and Forestry, 1998

² tce = tray carton equivalent, which equals 18.2 kg.

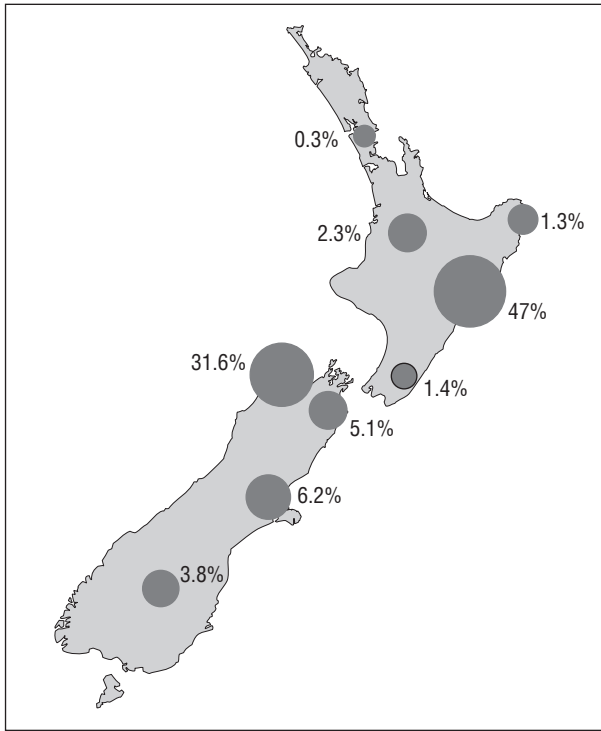


Figure 4. Export Pipfruit Crop Submitted by Growing Area, 1997 (%). Source: ENZA, 1997

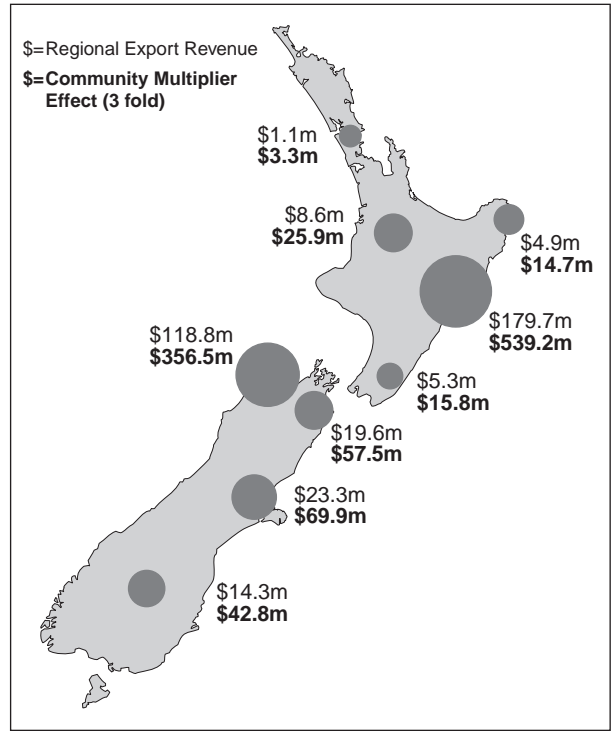


Figure 5. Fresh Pipfruit Exports - Revenue, 1997. Source: MAF, 1998

Chapter 2

Industry Evolution: Historical Processes and Contemporary Issues

2 Introduction

The New Zealand Apple and Pear Marketing Board (NZAPMB) currently has statutory powers, thereby controlling the sale of export pipfruit as a 'single desk' seller in overseas markets. These statutory powers are the primary influence on industry structure, functions, strategic operations and future development directions. This 'single desk' regulatory environment has also had a significant influence on how the pipfruit industry has responded to national and international discourses on 'sustainable production practices' and to concerns about 'environmentally safe' food. Consequently, the historical processes that led to the formation of a statutory empowered producer board in control of the pipfruit industry form an important backdrop to contemporary strategies. In this chapter, the history of the current regulatory structure is traced from the early 1900s to the present day. Understanding the foundations of the NZAPMB provides some insight into the complex politics surrounding interrelationships between different 'green' factions of the industry. Three major contemporary issues are then discussed. These are: the current state of the ongoing debate about deregulation of the industry; the emergence of 'green protectionism' in destination markets for New Zealand pipfruit; and the rise of consumer concerns and the resultant importance given quality and audit systems by destination markets.

2.1 From Federation to Board: Evolution of the 'Single Desk'

Fruitgrowing has been carried on in New Zealand since the arrival of early European settlers, with the Government drawing attention to the potential for commercial fruitgrowing in the 1890s. However, it was not until 1906 that any marked developments in commercial fruitgrowing and industry organisation occurred. At that time, improved knowledge of pest control and marketing methods enabled New Zealand's fruitgrowing industry - notably apples and pears - to significantly expand (Monigatti, 1966). In pre-WW1 years, New Zealand apple growers were exporting predominantly to South American markets and their product was being compared favourably to fruit from world-leading apple growing regions in the United States and Canada.

A defining moment in the industry's history took place with the passing of the Orchard Tax Act in 1916. In a historically unusual request for new taxation, fruitgrowers petitioned the government in 1915 to impose an annual tax on all orchardists of one shilling for every acre of planted orchard. The proceeds went to the 'New Zealand Fruitgrowers' Federation Limited', and as of October 1916 fruitgrowers used this official body to represent their interests. Some early debate occurred within the Federation as to whether it would concentrate its representative activities on the export apple industry or on all fruitgrowers, with the latter option being chosen.

Between 1910 and 1914, the apple export trade had expanded from 5,650 cases to 68,000 cases and had instigated a sudden expansion of new plantings. This expansion was reflected in the industry slogan, "grow apples for export" (Monigatti, 1966). Land that was previously thought worthless for grazing or mixed cropping (particularly around Nelson's Moutere Hills) was subdivided, cleared, planted and sold by companies to absentee business owners looking for good investment opportunities. Indeed, growing apples was considered a 'patriotic act' after 1914 as proceeds from national apple shows raised money for the war effort. Early Federation directors also promoted the health benefits and 'high quality' characteristics of New Zealand apples, claiming that the world could not find superior fruit in terms of 'colour, quality, flavour and texture' (cited in: Monigatti, 1966:13).

The Federation's initial constitution promoted the principles of industry co-operation to "...foster and protect the fruit industry throughout the Dominion" and so encourage industry growth (cited in: Monigatti, 1966:13). To that end, efforts were made to establish provincial co-operatives throughout New Zealand's fruitgrowing areas. These co-operatives acted under the auspices of the Federation to market all fruitgrowers' output. Their purpose was to equalise prices nation-wide, simplify distribution procedures and mitigate against unnecessary financial loss from inter-provincial competition. Otago fruitgrowers were the first group to form a co-operative company in 1917, as they were "thoroughly dissatisfied with the existing methods of marketing their produce" (Monigatti, 1966:14). Other provinces followed suit, and within a few years industry decisions were being co-ordinated on a national scale to establish a single logistical infrastructure; for example, standardising the size of packing cases in 1918. At this time, it was also noted that post-harvest facilities, particularly cool storage in each major city, needed expansion.

The planting boom slowed in 1917 and 1918, but increased again after WW1. Pipfruit exports

increased again in 1920, but both growers and the Federation recognised that the industry was at a critical stage of development in terms of potential for export growth, and demanded "...some proper scheme for the distribution of fruit, both locally and abroad" (Fruitgrowers Federation Conference, 1920). Increasing pressure for co-operative organisation of the apple industry came from the Nelson Provincial Fruitgrowers Council after 1920. Eventually, the New Zealand Fruit Export Control Board was established under the Fruit Control Act of 1924, and this body had the power to control all fruit intended for export, leaving provincial industry societies to control domestic fruit production, distribution and pricing. As early as 1926, intense discussion ensued surrounding the branding of New Zealand apples and other fruit. It was decided that export fruit be branded as 'New Zealand' fruit rather than showing various provincial labels, as the 'national' brand was better recognised and perceived to represent exceptional quality in overseas markets.

Throughout the 1930s and 1940s, several important trends emerged in the pipfruit industry that built on marketing changes from the previous decade. First, more emphasis was being placed on research and development. This involved the development of new varieties, pest and disease control, and improved post-harvest technology as ways to encourage a more robust export and domestic industry. Second, continued political pressure was exerted by growers and the Federation to continue the co-ordinated exporting of fruit to maintain maximum profit for New Zealanders in economically constrained times. The historical heartland of the industry, Nelson, adopted a leadership role in promoting co-operative industry action.

In 1946, the Federation directors decided that a proposed Apple and Pear Council should have full powers to regulate and control both the industry's domestic and export activities, and after two years of negotiating with the Government, the Apple and Pear Marketing Act was passed in 1948. This act forms the basis of industry operations to date by giving statutory powers to the Apple and Pear Marketing Board to acquire and market all apples and pears grown in New Zealand. From 1948 to 1953, however, final marketing decisions about disposal of the pipfruit crop were made by the central government's Marketing Department. In an important milestone for the industry, in 1953 the Apple and Pear Marketing Board took over from the Marketing Department and gained exclusive control of the purchase, assembly, distribution and marketing of the apple and pear crop. Also of significance, in the same year, was the Orchard Levy Act, which transferred the power to levy orchards from the Department of Agriculture to the Fruitgrowers' Federation.

The 1950s and 1960s were decades of varied prospects and developments. Financially, the Apple and Pear Board had some difficult and unpredictable years due to occasionally heavy Northern Hemisphere crops, and keen competition from Southern Hemisphere producers including South Africa, Argentina and Australia. Some positive steps were made by the Board in establishing local fruit processing factories, coolstores and transportation networks to better service a rapidly growing industry. This eventually led to considerable industry investment in, and ownership of, infrastructure facilities.

While strong political support existed for the Board, a vociferous minority of growers complained that Board operations were inefficient and that its exclusive crop control was hindering overall industry development. Criticisms of this sort had existed on the fringes of the industry since the 1920s. However, the vast majority of industry participants and government officials resoundingly supported the principle of statutory control of the pipfruit crop for reasons of maximising economic returns, industry stability and growth.

In the 1960s, the varietal mix characterising the national crop was (compared to contemporary standards) extremely varied. Included in the 1963 harvest, for example, were 141 varieties with 109 of them making up only 2 per cent of the total volume. Sturmer and Granny Smith were the most plentiful varieties, with Delicious, Cox's Orange Pippin, Jonathan and Golden Delicious also being exported in high volumes. Debate in the 1960s over crop profiles highlighted the potentially powerful role of the Board in shaping crop characteristics for effective overseas marketing. These debates have continued and expanded to the extent that the Board's activities in managing crop profiles, quality parameters and varieties are among the most important determinants of international marketing success and have become a major area of contention among different groups in the industry.

Between the 1950s and 1970s, the Hawkes Bay region expanded pipfruit plantings to become a significant growing area, second only to Nelson which remained the historical home of the industry. In 1978, Hawkes Bay surpassed Nelson in terms of overall production volumes and export prominence.

Despite increased production levels, the development of new varieties (Gala, Splendour, Spartan), and continued international demand for New Zealand pipfruit, the industry and its governing Board experienced a period of crisis in the 1970s. With Britain entering the EEC in 1973, duty-free access to British markets was lost to pipfruit growers. After some disastrous financial years in the late 1960s, increasing production costs combined

with unregulated production and generous grading standards put the industry under extreme pressure during the 1970s. The result was intense speculation whether the pipfruit industry would suffer the same fate as its Australian counterpart and go into massive decline. However, significant Board reorganisation, capital development and some good financial years in the late 1970s saved the industry from near collapse.

Building on experience from the previous decade, a far-reaching programme of product differentiation and development was initiated in the 1980s. Orchardists were encouraged to plant varieties specific to New Zealand, such as the Braeburn and Gala strains. At this time however, no international plant variety rights (PVR) were placed on these New Zealand varieties, a factor which would later erode their competitive 'earning power' as other producing nations could grow them more cheaply (largely through lower labour costs). Growers replanted about 10 per cent of their trees each year to keep up with changing market preferences for new varieties (Enterprise New Zealand 1993). The mid- to late-80s were also a time of profound political, economic and social restructuring in New Zealand, which included significant reorganisation of sub-national/local governing structures and the deregulation of the economy (Le Heron and Pawson 1996). From the 1980s on, orchardists have received no direct government subsidisation in any part of the production, handling or marketing processes. Indeed for the last twenty years, New Zealand has had the lowest producer subsidy equivalents of any OECD nation - placing the pipfruit industry under intense pressure to operate efficiently. By extension, growers have had to accept and manage increasing personal risk and industry costs (particularly packaging and quality control).

This wide-scale restructuring effort, typified by increased planting of new varieties, buoyed production and exports in the early 1990s. Although these conditions were not sustained in the mid-1990s (owing partly to depressed international prices and a devastating hail storm in 1994), overall production of higher value varieties will double by the end of the decade. Between 1985 and 1995, New Zealand's pipfruit production expanded from roughly 7200 ha to 15,900 ha - a large proportion of this being in-fill in the Hawkes Bay region. In 1993, the Government acted against organised criticism of producer board structures (the Apple and Pear, Dairy and Kiwifruit Boards) by exempting them from the pro-competition ideology that had characterised the economic and social restructuring starting in the mid-1980s. The decision to protect the NZAPMB in 1993 was accompanied by opening up the domestic apple market to full competition which attracted interest from British Columbia Tree Fruits Ltd. - North Ameri-

ca's largest fruit exporter and periodic exporter of fruit to New Zealand (McKenna *et. al.*, 1998).

2.2 Current Industry Trends: Deregulation, Green Protectionism and Changing Consumer/Retail Demands

The pipfruit industry in the 1990s has been confronted by a range of changing trade and economic conditions, and political pressures. The three most significant pressures in relation to greening strategies are the deregulation debate, green protectionism in the post-GATT environment and changing consumer demands.

2.2.1 The Deregulation Debate

In May 1998, the National Coalition government announced in its budget speech that all producer boards would be deregulated. This announcement had particularly significant implications for the three industries with 'single seller' status - pipfruit, kiwifruit and dairy. Each of these industries is organised as a national co-operative, and participants have some stake in how various industry structures are defined and operated. Removal of the legislation giving the 'single seller' producer boards exclusive control over export products would have potentially widespread economic and social impacts on each industry (YAF 1998a, 1998b; BERL 1997, 1998). Located far from its main markets, capitalising on an 'exclusive' New Zealand brand (ENZA), and producing a small fraction of the world's apples - the single seller system was widely considered in the industry to maximise grower returns. While overseas evidence suggests that it would be likely that some growers and post-harvest operators would make more money in a multi-exporter system, the impact on the majority of growers, related service industries, dependant communities and net foreign exchange earnings is thought to be negative (YAF 1998a; BERL 1999).

Within the pipfruit industry, opinions vary over the deregulation debate. While the vast majority of pipfruit growers (approximately 80%) support the economic logic of a single seller system, there is less agreement on whether ENZA functions as efficiently as possible and in the best interests of New Zealand growers. With the introduction of another internationally popular new variety, Pacific Rose, balanced against the prospects of another poor trading season in 1999-2000, the willingness of growers to protect their current industry structure in the face of imposed deregulation threats looks likely. The longevity of that support however, remains uncertain.

Since the May 1998 budget announcement, the government has softened its stance on the inevitability of deregulation in the immediate term, adopting a less definite timeframe for reform. There has been continued industry debate over the key issues of ownership and marketing efficiency. In July 1999 the Government introduced legislation that would retain the single-seller status of the NZAPMB, but would make ENZA operate under the Companies Act of 1993 as ENZA Ltd. Strictly speaking, the industry now operates with separated regulatory and marketing structures and (in law) is no longer a co-operative organisation. Shares in ENZA Ltd. will be issued to growers on the basis of a formula to be determined by them and ratified by a referendum achieving 75% consensus. Shares in ENZA Ltd. will be fully tradeable, but only among growers. The New Zealand Apple and Pear Act (1948) has been amended to the Apple and Pear Restructuring Act (1999). The impacts of the amendments and the new industry and management structure have yet to unfold, but are being contested by different political factions within the industry (McKenna, Campbell and Roche, 1999)

Industry reform sees a new regulatory body being set up and operating by 1 April 2000. This body will consist of:

- two appointees by Pipfruit Growers of New Zealand Incorporated;
- two appointees voted in by growers; and
- one appointee determined by the other four.

The functions of this regulatory body include:

- authorising ENZA Ltd. as the main exporter of pipfruit;
- monitoring ENZA's compliance with the regulations that govern its special rights;
- appointing an independent committee to decide on export consents on the basis of complementarity criteria.

Other important changes to industry structure and function include that there is no compulsory acquisition of fruit by ENZA Ltd.; that onshore logistics are completely contestable and; that point of acquisition moves from coolstore to 'free alongside ship' (FAS). Whilst the Board preferred it had maintain its cooperative structure³ the Government insisted that industry restructuring would improve transparency and accountability; provide better price signals; allow capital withdrawal, and; clearly separate commercial and regulatory functions. In these respects, the new pipfruit industry structure is very similar to that existing for kiwifruit.

2.2.2 Green Protectionism

Even before the completion of the GATT Uruguay Round in 1995, border controls on the sanitary and phytosanitary (SPS) qualities of food imports were becoming tighter. Such controls do not appear to be entirely divorced from politics. In 1992, the kiwifruit industry experienced difficulties in the Italian market with authorities claiming that New Zealand kiwifruit exceeded maximum residue levels (MRLs) for certain agrichemicals. The fact that restrictions on New Zealand sales occurred just as the harvest of Italian kiwifruit was less than co-incidental. At the same time, the New Zealand pipfruit industry began to experience greater difficulties reconciling the SPS criteria established for entry into the US market with lower MRLs. This was due to a number of factors including more stringent checking of shipments, development of pest resistance to insecticides and increasing restrictions on pesticide use.

These moves in the early '90s intensified after the completion of the GATT round in 1995. SPS barriers now involve much lower MRLs, an increasing range of banned inputs, and clauses enabling embargoes on goods that might cause environmental damage or compromise animal welfare. Campbell and Coombes (1999), argue that SPS and/or 'food safety' barriers have become a major mechanism for protecting EU and Japanese farmers against a tide of cheap, intensively produced, imports from the US.

This process of increasing green protectionism has been contested by the US, in particular, by initiating a series of challenges to this kind of barrier in the newly formed World Trade Organisation. In part, this reflects the inherent contradictions arising from the latter stages of the GATT Uruguay Round negotiations, as the various parties to the Uruguay Round Agricultural Agreement (URAA) agreed that free trade could not be allowed to override the legitimate environmental and food safety concerns of food importing countries (Campbell and Coombes 1999). However, the process for establishing legitimacy for environmental claims has proved highly problematic. Within the URAA, the principle was established that 'scientific proof' was required for this. While that principle was agreed upon, the practice of establishing scientific consensus has proved very difficult in highly politicised trade situations. Two examples of this in 1999 alone are the widespread agreement of the US science establishment that Bovine Growth Hormone (BGH) has no adverse effects, while EU scientists contend that there are potential health and animal welfare risks from using this particular input. A second debate is also emerging over the potential environmental and health risks posed by genetically modified foods.

³ *Letter to Growers: Industry Reform*, NZAPMB 13 July 1999.

The result of these conflicts around perceived potential risks is that it is unlikely that markets will quickly move towards more permissive SPS regimes and, in fact, it is more likely that some First World markets will become more restrictive. New Zealand's FFV exporters have identified these trends as threatening to the long term market access for conventionally produced FFV from New Zealand.

By the early 1990s, ENZA had spread its international risk by developing markets in over 60 countries - compared to about 40 countries in the 1970s (ENZA 1998). Despite reaching so many markets, ENZA could not avoid the emergence of green protectionist strategies in some key markets. While green protectionism has provided one set of pressures to shift mainstream production techniques away from more intensive methods, the next sections discuss the way in which such a strategic shift would be compatible with new market opportunities within First World countries.

2.2.3 Changing Consumer/Retail Demands

While the 1990s have been characterised by complex trade negotiations and the emergence of new global trading realities, there have also been significant shifts *within* destination markets. Two such shifts have involved the continued move by First World consumers towards 'fresh', 'healthy' or 'green' foods (Le Heron and Roche 1995; Goodman and Watts 1995; Campbell and Coombes, 1999; McKenna et. al, 1998), and the subsequent shift by large distributors such as supermarket chains and consumer co-operatives to position themselves as the preferred suppliers to this growing (elite) market. New Zealand's reputation for quality since early in the century has become one of the pipfruit industry's most important strategic assets at the close of the 1990s. Industry research in applied science, marketing and management all point to the need for New Zealand to underpin what some have called its 'psychic premium' (Richards, 1997:1). In a world oversupplied by fruit, consumers in wealthy countries are wanting a fresh food 'experience' when they purchase fresh fruit (Rabobank, 1997). In this context, the market scene of the new millennium will be:

"...influenced more strongly by the concerns for personal health, animal welfare, and the well-being of the countryside. New Zealand's present vote of confidence from the rest of the world, in terms of a clean green environment, currently gives it a small window in history on which to capitalise and reposition many of our products."

(Richards, 1997:4)

Given the dual pressures of legislated/ governmental requirements and retailer demands to meet perceived consumer preferences that to-

gether created a green protectionist barrier, the NZAPMB moved in 1996 to develop an Integrated Fruit Production (IFP) system. Such systems were recognised by European consumers in particular as providing 'safe' and 'environmentally grown' fruit (see subsequent sections for discussions of IFP), and would also satisfy rising SPS barriers at the point of entry into these markets. For ENZA, this transition marked a shift from commodity trading of intensively produced fruit to a reimagining strategy which preserved market access and tied ENZA more closely to large retail chains (ENZA 1999). First World supermarket chains are growing in size and developing extensive international linkages, while at the same time becoming more prescriptive in their fresh fruit requirements. Concentration of the retail sector is particularly pronounced in ENZA's main markets in the UK and the USA which respectively take 30 per cent and 25 per cent of New Zealand's total crop by volume. The power of retail chains to influence 'environmentally safe' production practices was clearly signalled by UK supermarket Tesco in 1997, which claimed to be the largest single customer for New Zealand pipfruit. Tesco informed growers that not only were they poised to demand that produce be grown under IFP or similar schemes, but that they would not pay a premium for it. In effect they were demanding IFP practices as the minimum entry standard to gain access to their consumer base.

The implications for growers are significant, and have an impact on options for varietal mix, production techniques, labour processes, management practices and acceptable trade-offs between economic and environmental sustainability.

2.3 Summary

The early history of the pipfruit industry is characterised by three issues of importance. First, the export-dependent nature of the industry that has rendered New Zealand highly dependent on shifts in world markets. Second, a sustained but contested commitment by successive governments and growers to the idea of co-operative ownership and monopoly powers for the industry culminating in the establishment of the Apple and Pear Board in 1948. The legitimacy of this structure has only recently been questioned by political dogma and has the ongoing support of the majority of producers. Third, New Zealand pipfruit has achieved a reputation for quality since the earliest attempts at exporting. This image of quality has been placed under pressure by trade and consumer shifts in requirements in the 1990s, with the consequence that the NZAPMB has initiated a broad shift away from conventional production and towards IFP. This new management regime should enable the New Zealand pipfruit industry to retain

market access and fulfil the expectations of distributors and consumers regarding the 'clean green' qualities of their products.

Successfully establishing this new regime, however, does provide a series of major challenges for the industry. The following two chapters examine in more depth the development of the IFP programme and the positioning of the alternative strategy for greening pipfruit – organic production.

Chapter 3

Integrated Fruit Production - Pipfruit: Background and Context

3 Introduction

This chapter reviews some key international and national factors shaping the development and implementation of New Zealand's Integrated Fruit Production (IFP) programme in the pipfruit sector. IFP represents an intermediary step toward industry 'greening' as it impels conventional growers to adopt a number of less chemically-intensive management techniques without adopting the entire rationale of organic production. This chapter will describe:

- the IFP- P (pipfruit) scheme
- national legislative guidelines for sustainable agricultural practices, and
- selected international examples of IFP programmes.

Some of the politics surrounding ENZA's adoption of the IFP programme are reviewed to exemplify how 'industry greening' has been contested by various groups within the industry.

3.1 The IFP-P Programme: National Regulatory Background

The New Zealand Integrated Fruit Production - Pipfruit programme (referred to as IFP-P or simply IFP) was introduced in the 1996-97 season, and modelled on European IFP standards (Manktelow, 1997). European IFP programmes have already been in operation across a number of fruit sectors since the early 1990s, and were founded on concerns for the broad issues of food safety and environmental concern. These included:

- the perceived health risks from pesticides residues on fresh fruit
- persistent contamination of ground water from pesticide use
- the development of pesticide resistance among key pests
- concerns over food safety among fruit processors

Since the early 1990s, the food safety concerns behind the shift towards IFP in Europe have since

become increasingly enshrined in both the 'green protectionist' measures of European regulators (thus becoming of direct concern to exporters from New Zealand), and also the food safety initiatives of distribution outlets such as supermarket chains.

While the market pressures over 'safe food' were clearly evident in the mid-1990s, the style and extent of how New Zealand's FFV exporters responded to these pressures varied.

At the national regulatory level, New Zealand policymakers sought to reconcile the evident necessity to address concerns about 'sustainability' in general (both at home and in the overseas marketplace), with the more specific political commitment to engage in any such activities with the minimum of governmental intervention or guidance. The result was a pursuit of 'sustainability' that was often contradictorily defined and pursued in a token way by different government agencies.

The Ministry of Agriculture and Fisheries' (MAF)⁴ position on sustainable agriculture provided a policy prescription for the movement to 'environmentally friendly' farming practices in New Zealand. MAF's framework for 'Sustainable Agriculture' (1993), drew on the Resource Management Act (1991) and the Biosecurity Act (1993). The commitment to sustainable management practices is clearly outlined in these guidelines, which were intended to maintain or enhance: (1) the ability of people and communities to provide for their social and cultural well-being; (2) the economic viability of agriculture; (3) the natural resource base of agriculture; (4) other ecosystems influenced by agricultural activities, and; (5) the quality and safety of food and fibre (MAF, 1993:4).

MAF's approach aimed to ensure profitable conditions for primary producers, which some have argued, contributed to a narrower interpretation of sustainability principles than by some other ministries (Blunden *et al.*, 1996). Comparing MAF's guidelines to the more embracing definition of sustainability provided in the Resource Management Act (RMA), the inherent ambiguities and difficulties of defining sustainability concepts and practices are apparent. As an entry point into discussions of preferred environmental management practices and concepts, the RMA explicitly pursues a comprehensive definition of 'environment' to include social, economic and cultural well-being in the maintenance of natural and physical resources. MAF's 'Sustainable Agriculture' priorities on the other hand highlight economic well-being as the bottom line for defining and developing 'environmental' management practices.

⁴ In 1998, MAF restructured its responsibilities, in dropping the 'Fisheries' portfolio, and adding the 'Forestry' portfolio. Thus, the acronym 'MAF' has been kept, but is now read as the Ministry of Agriculture and Forestry.

Further, the focus on 'management' raises several more issues in the identification and implementation of sustainable farm practices. These concern: (1) the need for adequate information in making informed decisions; (2) the need for bureaucratic support systems sensitive to 'sustainability' principles; and (3) the need to recognise that 'local' sustainable management options may have implications for environmental change that extend beyond individual and community control (Blunden et al., 1996).

Within the wider regulatory environment created by the RMA and MAF's sustainable agriculture initiatives, the most cogent attempt to achieve some concrete outcomes in primary production was a multi-commodity initiative, in the mid-1990s, called 'Project 98'. While referring to the local policy environment, Project 98 also recognised the importance of developing IFP-type programmes in key food export industries to maintain market access. Project 98 included a range of commodities, but highlighted the pipfruit, kiwifruit and stonefruit industries as areas where IFP programmes were necessary to ensure export market share through product differentiation and institutionalising New Zealand's 'psychic premium' (Richards 1997; Ball 1997; Wilson 1996; Pimentel 1997; Williams 1997).

Within the pipfruit industry, the need for IFP production was reinforced by pressures relayed from pipfruit markets. Many European supermarket chains advised ENZA that unless they could supply IFP-grown product as soon as 1997 they would not be considered preferential suppliers. Indeed, ENZA was faced with the potential loss of important retail outlets if IFP practices did not develop within a short time frame prescribed by buyers. This trend was identified as the key factor demanding the development of IFP systems in a 1996 industry report researching the utility of IFP-P (Wilson 1996). These market demands were, however, further complicated by the contradictory regulatory trajectories of the EU and USA, with the EU supporting a shift towards IFP-style production while US quarantine requirements increasingly targeted both low residues and a high level of guarantee that pests were not present on fruit (Wilson 1996: 1-2).

While it is possible to see support for the development of IFP-Pipfruit in the wider programme of Project 98, it would be incorrect to give credit to Project 98 in actually bringing about change within specific industries. The kinds of contradictory pressures experienced *within* industries like pipfruit were even more pronounced for Project 98 working parties which sought to establish standards and responses *across* industries. The result was that by 1999, Project 98 had delivered a vague draft system for auditing endogenous industry

attempts to green production and left it to the industries themselves to develop actual IPM systems.

This conclusion to the Project 98 initiative, and the wider contradictions of government attempts to encourage 'sustainability', provided no substantive incentives or interventions to assist any such moves – in stark contrast to similar moves in Europe. This shifted the burden back to industry sectors to develop their own strategies to meet new market demands for greener production systems. Within the kiwifruit industry, and in some processed vegetable export sectors, industry groups and companies initially targeted organic production and then mainstreamed IPM/IFP-style pest control techniques into conventional production (Campbell 1996; Campbell, Fairweather and Steven 1997; Campbell and Fairweather 1998). Within the pipfruit industry, initial attempts to establish organic production were bypassed in favour of establishing of an IFP programme for pipfruit. Among other things, the risks associated with growing organic apples were deemed to be too great. This is not to deny that individuals did attempt organic production of pipfruit over many years, but simply recognises that such moves were not encouraged by the pipfruit industry (see next chapter).

3.2 The IFP-P Programme - International Context and Experience

3.2.1 IFP - What Is It?

In the simplest sense, IFP outlines an integrated approach to pest and disease management which: encourages monitoring to determine if pest and disease thresholds have been exceeded before spraying; gives preference to non-chemical controls wherever possible; and when chemical controls are needed, gives preference to the use of 'targeted' sprays such as the insect growth regulator chemicals and *Bacillus thuringiensis* (Bt) sprays which are less toxic and are more specific to particular pests thereby allowing pest predators and parasites to be effective (ENZA, 1996). This contrasts with the previous approach of calendar schedules of broad-spectrum pesticides, an approach designed to maintain a toxic environment to prevent any pest establishing, and which produced orchard systems devoid of beneficial fauna and so totally dependent on continued pesticide intervention for pest and disease control.

3.2.2 IFP-P Links to IPM

Integrated Pest Management (IPM) is the philosophical cornerstone of international IFP-P programmes. IPM is defined as, "the control of pests by employing all methods consistent with eco-

conomic, ecological and toxicological requirements while giving priority to natural limiting factors and economic thresholds"⁵. IPM concepts developed in the 1960s and 1970s, and were extended in the 1980s to include disease control and other aspects of crop production. With support from the International Organisation for Biological Control (IOBC), IFP programmes for pipfruit have been practised in Europe since the late 1980s. By the early 1990s, apple producers in Italy, Austria, Germany, Switzerland and the USA were involved in IFP practices (Solymar 1996). While each country's IFP programmes are different (owing to specific pest and disease conditions), they all adhere to common principles and, particularly in Europe, reflect high levels of consumer concern over pesticide residues on fruit. The IOBC has defined IFP as:

...the economical production of high quality fruit, giving priority to ecologically safer methods minimising the undesirable side effects of and use of agri-chemicals to enhance the safeguards to the environment and human health

(IOBC, cited in: Solymar, 1996:44).

The shared emphasis on environmental and financial viability in IFP programmes is echoed in New Zealand's draft standards for the implementation of IFP, and in MAF's position paper on sustainable agriculture⁶. The balance between environmental and economic objectives inherent within IFP-P has important implications for ENZA's crop management strategies and international marketing approaches.

Reports on European schemes (Solymar 1996; Waldner 1995) suggest a strong degree of co-ordinated grower support for the programme. For example, in the South Tyrol, Italy, which is one of the most intensively cultivated fruit-growing areas in the world, IFP programmes have been in operation since 1988-89. This area produces about 40 per cent of the European apple crop. In the USA, 2180 growers are involved in IPM in New York State, each devoting a proportion of their orchards totalling about 1305 ha over the whole state. Growers in New York estimated using 30% fewer pesticide applications throughout one growing year compared with conventional fruit production (CFP) practices (Solymar 1996).

3.3 IFP-P in New Zealand

Perhaps the most definitive signal sent to ENZA by overseas retailers occurred in 1995-96 when a group of retailers in the United Kingdom specified that pipfruit from New Zealand must be produced following Integrated Crop Management Systems⁷ (ICM) (Anon, 1995; Batchelor et al., 1997). Given that the UK takes 25-30% of New Zealand's pipfruit exports, and that six retailers in that market control more than 75% of all fresh fruit and vegetable sales, it would be perilous for producers not to follow those buyer's requirements.

In 1996, the Fresh Produce Consortium (FPC) - a group of UK retailers - developed the FPC Code of Practice (COP) designed to meet UK legislative requirements relating to food safety and pesticide use. Any supplier of fresh fruit to the FPC was required to meet the COP, or as in the case of New Zealand, was encouraged to develop IFP production systems within a specified minimum time frame.

New Zealand's response to these pressures from Europe were rendered more complex by the US market. While IFP programmes are an important feature in different USA growing regions (notably western New York State and New England), the United States Department of Agriculture (USDA) has zero tolerance quarantine requirements for key pests on imported fruit from New Zealand - making it more difficult to grow IFP fruit for that market. In contrast, European Union standards for certain key pests and diseases are more tolerant, reflecting, to some degree, cultural/consumer acceptance of less chemically produced and treated fruit, and also the difficulty in imposing strict biosecurity on a continental landmass like Europe where many pests have already become established through Europe's long trading history with the rest of the world.

The New Zealand IFP-P programme commenced in 1997 with the introduction of management systems for controlling pests and diseases. It is designed to eventually include altered practices of: water management; site, rootstock and variety planting; soil management and tree nutrition; weeds and sward management; tree training and management; orchard environmental quality; cleaner production; and spray application methodology (ENZA, 1996). In 1999 growers are expected to keep a Pest Control Record Book (PCRB)

⁵ Brader, L. 1974. "Present Status of Integrated Control of Pests", in *Mededelingen Faculteit Landbouwwetenschappen* 533: 245-265.

⁶ This is also reflected in the commitment of organic production systems, in particular those operating under the umbrella of the International Federation of Organic Agriculture Movements, to 'environmental, social and economic sustainability'. However, in practice many growers perceive that it is easier to invoke economic concerns in the context of IPM systems than organic ones.

⁷ The ICM initiative was developed by 20 EU-based supermarket or retail chains to describe a set of protocols as an umbrella for products from 'low-input', IPM (including IFP), or 'spray-free' systems (Howley, 1997).

which details key pest controls applied for each IFP orchard and is subject to auditing by ENZA. The aim is to document and provide a traceable path for IFP fruit from the orchard to the marketplace (ENZA, 1996). ENZA is planning to have its entire export crop converted to IFP-P management standards by the 2000-2001 growing season.

New Zealand's IFP-P programme is well advanced compared to its southern hemisphere competitors. A significant reason for this stems from the fact that the pipfruit industry operates under a producer board which has the advantage of being able to implement cohesive, comprehensive and significant changes in quality and grade standards in a short period of time. A unified body also can better support changes with the necessary R & D and implementation investment. IFP is currently established, but fragmented, in South Africa and not yet operating consistently in Chile and Australia (Nelson Mail, 1997, 25 August).

3.3.1 Building upon the 1991 Pesticide Risk Management Strategy

An important factor underlying the relatively easy transition from CFP practices to meeting European IFP standards was the existence of the pipfruit industry's pesticide risk management procedures that had set strict guidelines for maximum residue levels since 1991. In turn this procedure formalised and developed from earlier measures designed to comply with market requirements regarding pesticide residues. Anticipating consumer preferences for safer fruit, ENZA's pre-IFP pesticide risk management policy (PRMP) was designed to avoid regulatory, consumer and/or retailer concern with residues in food (Batchelor, *et al.* 1997). The PRMP was based on:

- registered numbers for all growers facilitating 'traceability' from the orchard to the packed carton of fruit;
- growers being able to use those pesticides registered in New Zealand and approved by ENZA;
- ENZA monitoring maximum residue requirements and concerns in overseas markets;
- ENZA produced an annual wall chart for growers that showed the approved pesticides and withholding periods;
- mandatory completion of Pest Control Record Books (PCRBs), or 'spray diaries', by all growers intending to export pipfruit - the PCRB shows all pesticide use;
- computer analysis of every spray entry in the PCRBs to ensure compliance with pesticide wall chart specifications; and

- annual random residue testing and surveillance residue testing of export fruit from at least 25% of growers.

Industry records show that, since the PRMP was introduced in 1991, New Zealand's export pipfruit has readily met residue restrictions for individual importing countries (Batchelor, *et al.* 1997). This also means that New Zealand has generally met its sanitary requirements under the Phytosanitary and Sanitary agreement of GATT.

At the level of implementation, New Zealand's IFP-P guidelines were developed from European IFP standards (Anon. 1994). However, examination of New Zealand disease management practices suggested that relatively little change was needed to meet the European IFP standards due to the prior existence of the PRMP (Manktelow *et al.* 1997). In some aspects of orchard management, such as applying post-harvest fungicides, ENZA's conventional (non-IFP) practices already exceeded European IFP standards, so that few changes were required. In an analysis of a small pilot programme trialing IFP practices in 1997, meeting or exceeding European IFP guidelines was not expected to compromise disease control (Manktelow *et al.* 1997).

The first IFP-P planning meeting was held in November 1995. NZ IFP-P draft standards for pest and disease control were completed in March 1996, the committee structure was established by October, and the NZIFP-P pilot programme took place between October 1996 and May 1997. July 1997 saw a review of the pilot programme, and between November 1997 and May 1998, 370 growers throughout New Zealand were involved in IFP growing, with another 120 growers involved in the IFP-P Transition programme for the United States. The IFP-P Transition programme followed most of the full IFP production practices, but included some additional organo-phosphate sprays pre-harvest to prevent quarantine rejection. As an incentive for growers to adopt IFP (and IFP Transition) practices, a premium of \$0.25/carton of export fruit was introduced for the 1998 growing season. The IFP Manual was re-written in August 1998, and by January 1999, 900 growers were either submitting fully IFP or IFP-Transitional fruit. For the 1999-2000 growing season, there will only be one IFP programme - the 'Transition' structure will be phased out. Within a three year period therefore (1997-99 inclusive), approximately 50% of the national export crop has been converted to IFP or IFP-Transitional production practices.

Starting in 1998, HortResearch's Central Otago (Clyde) and Canterbury (Lincoln) research stations have developed systems-based programmes linking the economic and environmental 'sustainability' objectives of IFP and Biological/Organic Production systems. Although each pro-

duction system has some differing aims, the point is to establish a continuum of pest and disease control knowledge, starting from IFP at one end and moving up to fully organic production at the other end. In essence, the systems-based research is trying to establish a relationship or ratio between pest and beneficial insect numbers as a way of measuring sustainability. This would indicate (in light of current IFP experiences) whether the orchard under study is an ecologically healthy, sustainable and economically viable system. Ultimately, the aim is develop 'orchard algorithms' that will allow comparisons between orcharding systems (Hill, 1999). The interest in the programme is driven by market access issues, and focuses on fruit quality. The pipfruit export industry is interested in this research because published results could be used as a marketing tool to address environmentally conscious customers in Europe and the US (Hill, 1999). From the point of view of growers, the research may help them identify how they can move to more sustainable systems by constructing detailed knowledge systems of pests, diseases and appropriate management technologies that do not centre on applications of agrichemicals.

3.3.3 Technology Development and Transfer

In its first year of operation (1997), 88 growers in three regions in New Zealand participated in a pilot study of IFP growing practices. The main regions chosen - Hawkes Bay (53 growers), Nelson (12 growers) and Central Otago (19 growers) - exhibited a range of pest and disease management issues and climatic variation. The other two regions involved in the pilot study included four orchards in Canterbury and two orchards in Waikato. To gauge the relative success of IFP-P, the economic performance of trial blocks on the 88 orchards were compared to CFP-produced fruit from the same orchards.

In general, growers in each region involved with the pilot IFP-P programme produced excellent

fruit quality with low levels of pest damage (see, Walker *et al.* 1997 for a detailed analysis of trial results). Table 1 shows the cost of insect pest management in selected Hawkes Bay orchards, comparing IFP and CFP practices. Depending on the region, 35-60% reductions were achieved in post-bloom insecticide applications compared with CFP practices in corresponding regions. Similarly, the use of organophosphate (OP) insecticides fell by 88-93% in each of the three main test regions (Walker *et al.* 1997). While there were some pest difficulties associated with the programme in its first year of trial, the overall economic performance of IFP production blocks was better than for fruit produced by conventional means. Further, those involved with the programme reported improved worker and environmental safety. Not included in Walker's (1997) costing analysis, but critical to a fuller economic evaluation of the IFP programme, were the potential benefits of improved market access for IFP fruit and additional costs associated with crop monitoring undertaken by growers themselves to determine when sprays should be applied.

Three months prior to implementing the pilot study in 1997, ENZA representatives stimulated grower interest in IFP by meeting with orchardists to report on the market access restrictions being imposed by UK supermarkets (Batchelor *et al.* 1997). It was thought that market performance data would provide the most persuasive evidence of the need for growers to adopt new production strategies. In other words, ENZA's industry greening strategy is predicated on the twin goals of ensuring economic benefit through establishing 'environmentally differentiated' fresh produce and guaranteeing maximum market performance by maintaining access to established and lucrative markets that were moving towards 'green protectionism' and more stringent food safety requirements.

Making the steps from PRMP to IFP practices required timely and effective technology develop-

Table 1. Comparing IFP and CFP Pest Management Costs. Source: (Walker *et al.*, 1997:262)

Programme and cultivar ¹	Fruit Damage (%)		Mean No. insecticides	Insecticide \$/ha ²	Fruit loss \$/ha ³	Total cost of pests (\$/ha)
	Leafroller	Other				
Integrated						
Cox	0.10	0.25	2.5	268	86	354
Gala	0.10	0.47	2.8	283	218	535
Braeburn	0.32	0.34	3.4	328	207	535
Conventional						
Cox	0.03	0.10	6.0	400	32	432
Gala	0.04	0.13	8.0	527	65	592
Braeburn	0.03	0.10	8.7	573	41	614

¹Blocks of matched programme pairs: Cox (n=2), Gala (n=7), Braeburn (n=6).

²Based on 1996 recommended retail prices of respected insecticides

³Using estimates of fruit yields and fruit values taken from the MAF 1995-96 Farm Monitoring Report

ment and transfer procedures. Moving from a pilot programme in 1997 to full industry compliance by 2000-2001 presents a major logistical challenge in the organisation of the programme, technology transfer activities and compliance monitoring. The four key institutional structures that are designed to achieve these goals are:

I. NZ IFP-P National Committee

The purpose of this national level committee is to oversee development of the grower's IFP Manual, generally monitor progress, 'troubleshoot', and report on the programme's progress. The Committee consists of 10 growers representing seven regions, one AGCARM representative, one environmentalist, one consumer representative and one horticultural consultancy representative. The National Committee is chaired by a representative from ENZA with two senior scientists from HortResearch as Co-Chairs.

II. NZ IFP-P Technical Subcommittees

There are 15 IFP-P Technical Subcommittees, each with 4-10 members. These groups are responsible for developing the technical content of the IFP Manual. Subcommittee membership consists of individuals from ENZA, HortResearch and AgResearch.

III. ENZA IFP-P Steering Committee

This group assists the Technical Subcommittees by identifying supplier-marketing requirements for fruit produced following NZ IFP-P specifications. Group membership consists of specially appointed individuals from within the NZAPMB.

IV. NZ IFP-P Regional Task Forces

The 10 growers on the National Committee form regional groups in each of their growing areas. The intent is to provide regional grower/industry forums for discussing the grower's Manual and principles of the IFP-P programme. Membership of these groups is comprised of growers, and they are the main link between the National Committee and growers for comment on various elements of the IFP-P programme.

operational focus of the single desk structure governing the export apple industry in New Zealand. The international market signals for New Zealand's IFP fruit are good, with New Zealand pipfruit consistently commanding the highest fruit values in European and USA markets.

However, implementing the IFP programme has been marked by political strife within the industry about 'going green'. Unlike the kiwifruit industry which synergistically linked R & D, Infrastructure and Marketing of *both* organic and IPM fruit, the pipfruit industry has experienced an institutional split between organic and IFP strategies. The next chapter reviews the way in which organic pipfruit production has evolved and the contested position it takes in the industry.

3.4 Summary

The adoption rates of IFP-P practices in New Zealand have been extremely rapid. Within the space of three growing seasons, IFP-P has been taken from the testing phase to large scale production. Approximately 900 growers, out of a total 1,600 growers nation wide, were submitting either fully IFP or IFP-Transitional fruit in the 1998-99 growing season. These rates of adoption would not be possible without the comprehensive research and

Chapter 4 Organic Pipfruit - Production, Practices, Politics

4 Introduction

This chapter provides contextual information on: organic pipfruit production in New Zealand; the way exports are currently organised; and some economic forecasting data on organic conversion costs and benefits. Integral to the discussion are the politics surrounding the organic pipfruit industry, as it is currently organised. The NZAPMB, while not a significant exporter of organic pipfruit at present, figures prominently in political discussions of the organic industry's future viability and direction. The chapter concludes with some organic pipfruit growers' observations and insights on key issues facing their industry.

4.1 Organic Pipfruit in New Zealand

The market opportunities for organic apple production in New Zealand are generating significant interest from growers. Over the last two seasons (1997 and 1998), small volumes of organic apples have been exported to Europe. Market data show that in 1997-98, conventionally grown apples returned approximately \$10.00 tce, while organic apples returned about \$30.00 tce (ENZA 1998; Agriculture New Zealand 1998). These figures should be interpreted with some caution however, because they represent different sets of industry costs and costs associated with the NZAPMB's foreign exchange management in the 1998 - factors that prevent any direct comparison of market performance.

There is currently one 'large scale' exporter of organic apples - Freshco - which is based in Auckland. Freshco shipped approximately 150,000 tce in 1997 and gained an export consent to ship 350,000 tce in 1998-99 (although there have been difficulties in securing adequate supply). Industry sources suggest that Freshco will attempt to gain export consent from the NZAPMB in 1999 to ship 650,000 tce of apples overseas in 2000. Given New Zealand's total export volume (in 1998-99) of approximately 16 million tce, the 1998-99 export organic crop represents about 2 per cent of the total exported pipfruit crop. Freshco handles a range of FFV exports and has specifically targeted organic produce, with a third of its business in 1999 organically certified to some extent, and a declared aim of 100 % certified or produced using 'environ-

mentally sound' growing practices within five years (New Zealand Herald, 23.8.99).

Up to 1996-97, there were few opportunities to pursue export marketing of organic pipfruit. The organic production that did occur was conducted by small-scale, organisationally isolated growers with a strong commitment to the sustainable agriculture movement. The first pipfruit orchard in New Zealand to be certified as fully organic by Bio-Gro was in Mariri (near Motueka) in 1988. Industry personnel suggest that up to 30 organic pipfruit orchards existed throughout New Zealand up to the early 1990s. However, very few of these original organic orchards exist today (HortResearch, pers. comm., 1999). Until 1996-97 when export marketing opportunities were provided through Freshco, organic pipfruit was largely sold at the gate or distributed to New Zealand outlets specialising in organic produce, with a very little being entered into ENZA pools of conventionally grown fruit for export.

4.2 Institutional Support of Organic Pipfruit - ENZA

To date, the NZAPMB has provided little support (logistically, economically or politically) for any development of organic pipfruit to date. This does not, however, imply a complete absence of organic-related R & D within the pipfruit industry. The Crown Research Institute, HortResearch, has conducted experiments, research and field trials with organic pipfruit since the late 1980s.

It was not until the current (1999) selling season that ENZA has published organic price lists in its market reports to growers. In so doing, ENZA has 'officially' acknowledged the existence and viability of the organic pipfruit export market. The 1999 price estimates for organic and conventional (including IFF) fruit are shown in Table 2 below (note that values are early season estimates and that price schedules fluctuate throughout the season).

Since claiming to have conducted a small, but successful, organics programme with fruit being targeted to key bio-outlets in Continental Europe and the UK in 1998, ENZA has developed a proposal to develop its own organic export programme (ENZA 1999). The features of the programme are relatively straightforward. First, ENZA will accept submissions of fruit in three Bio-Gro categories across all ENZA commercial varieties, including:

Bio-Gro Category	Time from Registration	Bio-Gro Certification
Conversion	0-12 months	Not certified
Transition*	12-36 months	certified
Organic	36+ months	certified

* time spent moving from conversion to transition and then to full organic varies at the discretion of the local organic inspector.

Table 2. Price Schedules for Conventional, IFP and Organic Pipfruit, January 1999

VARIETY	CONVENTIONAL/ IFP (\$/tce)	*CONVERSION/TRANSITION (\$/tce)	FULL ORGANIC (\$/tce)
Braeburn	14.00	26.50	42.00
Cox's Orange Pippin	17.70	26.00	42.00
Fiesta	n/a	20.50	35.00
Fuji	18.70	24.50	40.00
Granny Smith	7.50	19.50	27.00
Pacific Rose	21.50	27.50	43.00
Red Delicious	5.28	14.00	25.00
Royal Gala	17.90	27.00	42.00
Beurre Bosc (non-USA)**	16.45	19.00	n/a
Doyenne du Comice**	31.00	37.00	46.00
Taylors Gold**	33.70	37.00	46.00

*prices listed are for ENZA-Grade (top grade) **pear varieties
source: ENZA 1999

Bio-Gro is planning to adjust their organic classifications in 2000. Until then, ENZA is planning to sell both Bio-Gro non-certified Conversion fruit, and Bio-Gro certified Transition fruit in Europe as 'In Conversion to Organic'. ENZA suggests this will help growers achieve maximum market returns. ENZA also notes that in the absence of a contract with importing authorities in Europe, there is no guarantee that its current organics marketing strategy will work. In the event that it does not, non-certified organic fruit will be marketed as conventional product. Note that the sale of conversion and transition fruit can cause confusion in organic markets where these terms may not be fully understood. This happened with kiwifruit in Europe in 1999, and was seen as a threat to the integrity of New Zealand's organic certification (RA Martin, pers. comm.). Indeed, market research in the UK, US and Canada mid-way through the 1998-99 selling season revealed that: (1) Freshco's 'organic transition' fruit was often being sold in the same bins and at the same price as conventionally produced ENZA fruit, and; (2) Freshco (inadvertantly) relied on ENZA's established market access, New Zealand's 'clean, green' image and quality profile to sell their organic transition fruit (Grower Management Services, 1999; McKenna and Bird, 1999). Produce managers interviewed in selected Tesco's and Sainsbury's outlets in the UK indicated that no premiums were available for organic transition, or non-certified pipfruit.

Branding fruit as 'organic' or 'in transition' to organic is a central component of ENZA's emerging organic programme. Although transition fruit may not recover a premium price, the aim is link the ENZA brand with developing organic programmes. To that end, the following steps have been taken for identifying various levels of organic fruit entering the European market in 1999:

- CONVERSION FRUIT - will be packed through Bio-Gro certified packhouses and identified with an ENZA 'In Conversion To Organic' sticker.
 - CERTIFIED TRANSITION FRUIT - will be supplied by growers holding current Transition Bio-Gro certification for their products. The fruit will be packed through Bio-Gro certified packhouses and will be labelled with an ENZA 'In Conversion to Organic' sticker and the Bio-Gro Certified Transition sticker.
 - CERTIFIED ORGANIC FRUIT - will be supplied by growers holding Full Bio-Gro certification for their products. The fruit will be packed through Bio-Gro certified packhouses and labelled with an ENZA 'Certified Organic' sticker and the Bio-Gro Certified Organic logo.
- Although ENZA remains a relative late arrival on the organic pipfruit scene, it is rapidly designing an appropriate marketing strategy for organic fruit. Specific points of development in the marketing plan include:
- Targeting product to premium UK and European organic-related segments, 'Bio' shops, and differentiated retail structures;
 - Premium positioning with marketing under ENZA Select brand;
 - Promotional Point of Sale materials;
 - Servicing the European continent with fully organic fruit as a priority;
 - Identifying customers in the UK to purchase 'Conversion to Organic' pipfruit - particularly smaller fruit that is not desired by premium markets.

4.3 ENZA's Organic Strategy - Issues and Challenges

The principal challenge associated with ENZA's organic programme is identifying and securing a supply pool. To date, ENZA has no growers specifically supplying it with organic fruit - a fact that fundamentally constrains its marketing programme. Of the 37 growers presently growing organic fruit, all of them are supplying Freshco. However, in the 1999-2000 season, ENZA will compete directly with Freshco for securing volumes of organic fruit and will operate as a commission seller. Organic growers will not have industry (good) costs deducted from grower returns and will have some technological production support.

An issue which affects the development of both ENZA's and Freshco's organic programmes is the credibility of Bio-Gro's certification process. Interviews with research scientists, growers, industry personnel and academics all identified a perceived lack of professionalism - in terms the administration of inspection and administration of certification - within the Bio-Gro organisation as a vital issue that must be addressed. It is also problematic that Bio-Gro is a private organisation and, at the time of interviewing, had yet to achieve suitable support from any governmental regulator or auditor. In early 1999, the Organic Products Exporters Group (OPEG) and Bio-Gro NZ commissioned MAF to develop auditing systems in order to resolve market access issues in the EU. This raises the possibility that MAF could also audit alternative certification systems to Bio-Gro NZ, and accredit these other systems to the satisfaction of export markets. Large existing export companies like Zespri International Ltd. and Heinz Wattie NZ Ltd. have endorsed Bio-Gro NZ as their label of choice even if other possibilities were available. Their reason for doing this is to build upon the considerable investment of time they have put into Bio-Gro NZ both in developing professional relations with inspectors, as well as promoting the Bio-Gro label in overseas markets. As ENZA has not yet either invested in a professional relationship to Bio-Gro NZ or given market support to one particular label, the choices open to ENZA may be wider - it could support an alternative certification scheme which does not yet exist in New Zealand. Given the relative newness of ENZA's participation in organic pipfruit, it is unlikely that the industry (i.e. the NZAPMB) would be tempted to intervene with its own organic standard or certification process - especially given the failed attempts by some new entrant companies in attempting to devise their own standards in 1998 (see Coombes *et al.* 1998).

4.4 The Economic Viability of 'Going Organic'

Interpreting the relative cost and benefit structures involved in developing an organic pipfruit orchard are problematic on a number of fronts. First, while the current pay-outs to organic growers are comparatively much better than for conventional (and IFP) growers, there are many factors bearing on the possible persistence of such differential returns. In the only other FFV industry to attempt marketing of organic alongside IPM fruit, kiwifruit, the premium for organic produce has remained (generally because the two fruit types are sold into different market niches). The organic premium for kiwifruit did decrease relative to the overall volume of specifically organic product, but then recovered again over the last three years (Campbell *et al.* 1997).

Second, the issue of grower risk is complex and difficult to estimate given the short track record of organic pipfruit exports in New Zealand. Organic growers and consultants generally agree that organic pipfruit is much harder to grow than other organic export crops like kiwifruit (e.g. Clearwater 1999 pers comm.). Consumer expectations of an apple's visual appearance, taste and texture are high - with colour, sweetness and flesh firmness being key purchasing drivers. While yields are a constant concern for new organic growers, the kiwifruit industry experience is that slight declines in yield are more than offset by premiums on returns. A more pressing concern is the vulnerability of pipfruit to adverse climatic, pest and disease events in managing production. Further, copper sprays are presently only permissible under Bio-Gro certification standards but are critical to controlling black spot disease. Should copper sprays be re-classified as 'non-organic' by Bio-Gro, an event which has been discussed because of copper accumulation in soil, the economic risks associated with organic growing would increase considerably. Organic growers recognise that there are many technological and knowledge gaps facing the industry that could change the grower-risk profile in a very short time span.

Third, the fact that there has been only one exporter of organic pipfruit in New Zealand to date, keeps the fruit prices and grower pay-outs higher than if competition ensued between two or more organic exporters in international markets - multiple exporters normally lead to weak selling practices and lower grower returns in the long term. Ironically, Freshco is attempting to maintain its 'monopoly' position in organic exporting - seeing the advantages of being a single seller - at the same time it is challenging ENZA's overall political position as a statutory producer board. Should ENZA or any other exporter successfully start ex-

porting organic pipfruit, initial returns to growers may rise due to competition for supply, but international evidence would suggest that returns would decrease in the long term (Steele, 1995; YAF, 1998; Glass, 1998; McCann, 1999).

4.5 Organic Conversion Feasibility Study - Hawkes Bay

Acknowledging these, and other risk factors, a feasibility study for conversion to organic pipfruit production was conducted for the Hawkes Bay Focus Orchard Property (Mountainview) to determine the costs and benefits of organic practices on a privately owned, commercial orchard. The study was conducted in 1998 and evaluated conversion feasibility budgets over a three year period, ending with full organic certification.

Owing to space constraints, the level of detail in the feasibility forecasts and the fact that financial analysis is specific to Mountainview Orchard, only a brief description of various scenarios will be provided here. Figure 6 shows calculations based on the following assumptions: (1) no new variety development over the forecast period (1999-2002); (2) productivity declines among all varieties (ranging from 17% to 30%); (3) stable packout rates compared to conventionally produced fruit; (4) increased income from organic fruit premiums, and; (5) increased input and labour costs for organic management practices. According to Freshco's grower payout records, the income projections are conservative enabling Figure 6 to act as a baseline conversion forecast.

Using these forecasts, net grower annual income increased by approximately \$2,000 once full organic certification was achieved (after three growing seasons). Based on this analysis, the growers at Mountainview Orchard determined that the economic incentives for switching to organic production were therefore not overly convincing given additional risk factors (as discussed above) were not included in the equation.

Building on Figure 6, two sensitivity scenarios were conducted as represented by Figures 7 and 8. Figure 7 incorporated income projections at 10% above the baseline scenario, and Figure 8 assumed organic packouts were 65% (a 5% increase from the baseline scenario).

Figures 7 and 8 show higher income differentials between conventional (including IFP) and organic fruit than the baseline scenario. The most positive scenario is shown in Figure 7, in which organic fruit values increased 10% compared to 1998 data.

Careful review of the conversion assumptions, and interviews with industry personnel and grow-

ers suggest some caution in interpreting the conversion forecasts. First, direct comparisons of organic fruit values with CFP/IFP fruit values is somewhat falsely constructed. The differences in marketing 130,000 cartons of organic fruit (in 1997-98) and 15 million cartons of CFP/IFP fruit over the same period are immense. CFP/IFP fruit are pooled to service over 60 international markets, and so have to meet various import criteria and satisfy a diverse range of fruit profile requirements. This will necessarily lead to a different cost-income structure than is experienced by small volumes of organic fruit targeted to two principle markets. Second, as production of organic pipfruit increases it is very likely that not all organic fruit will be sold at the top end of the market. Once 'second grade' organic pipfruit is sold, overall grower payouts for organic fruit may fall as the international market is oversupplied with conventional pipfruit and customers may be unlikely to pay a premium for low quality organic fruit.. Thirdly, organic fruit values are always highest when they are marketed alongside CFP fruit. With the advent and development of a industry-wide IFP programme for pipfruit, the relative fruit values of New Zealand organic fruit may decline, as these IFP fruit may meet the needs of a part of the market currently buying organic fruit. In summary, therefore, any current economic forecast of net benefits from organic conversion for pipfruit must also consider that the risk profiles used will be constantly evolving and shifting.

4.6 Growing Organic - Rationale and Risks

This section reviews some key themes surrounding grower-defined rationale and risks in 'growing organic'. Intensive, semi-structured interviews were conducted with six organic growers in Hawkes Bay and six IFP growers in Hawkes Bay and Nelson between September 1997 and March 1999. The interviews lasted from one and a half to two hours, were conducted at each grower's orchard and were sometimes combined with orchard walks. Five comprehensive themes structured the interviews including: (1) grower background; (2) why choose organic (IFP)?; (3) current challenges; (4) future considerations, and; (5) general issues and comments.

Interpretation of the interview data focuses on organic grower's comments. The two principal thematic similarities between IFP and organic growers involve (in order of priority):

- prospects of improved economic viability by capturing 'green' market premiums for fresh, 'safe' foods, and;
- improved (less toxic) orchard environments for family and workers.

4.6.1 Grower Background

All of the organic orchardists interviewed were first time growers who did not come from family backgrounds involving pipfruit orcharding. Three of the six growers had been following IFP practices and decided to make the next 'small step' to organic growing. There appeared to be a more ex-

PLICIT philosophical awareness involving environmental protection and enhancement among organic growers than among IFP growers. Since 1998 the element of 'choosing' IFP has also been reduced given ENZA's decision to adopt IFP growing as its 'mainstream' direction. Most of the organic growers interviewed also expressed disaffection with ENZA's management of the pipfruit industry

Conventional				
Season	1999	2000	2001	2002
Gross TCE	9,454	9,953	10,351	10,494
Export TCE	5,682	5,882	6,041	6,098
\$/G.TCE	\$ 10.14	\$ 10.44	\$ 10.66	\$ 10.73
Gross Orchard Income	\$ 99,863	\$ 107,910	\$ 114,318	\$ 116,620
Total Operating Costs	\$ 64,521	\$ 66,406	\$ 67,906	\$ 68,445
Operating Surplus	\$ 35,342	\$ 41,504	\$ 46,412	\$ 48,175

Organic					
Season	1999	2000			2002
		Conversion	Transition	Biogro	
Gross TCE	9,454	9,953	7,973	8,088	
Export TCE	5,682	5,882	4,651	4,697	
\$/G.TCE	\$ 10.14	\$ 12.48	\$ 14.39	\$ 16.19	
Gross Orchard Income	\$ 99,863	\$ 128,216	\$ 118,733	\$ 134,989	
Total Operating Costs	\$ 64,521	\$ 92,443	\$ 83,909	\$ 84,402	
Operating Surplus	\$ 35,342	\$ 35,772	\$ 34,823	\$ 50,586	

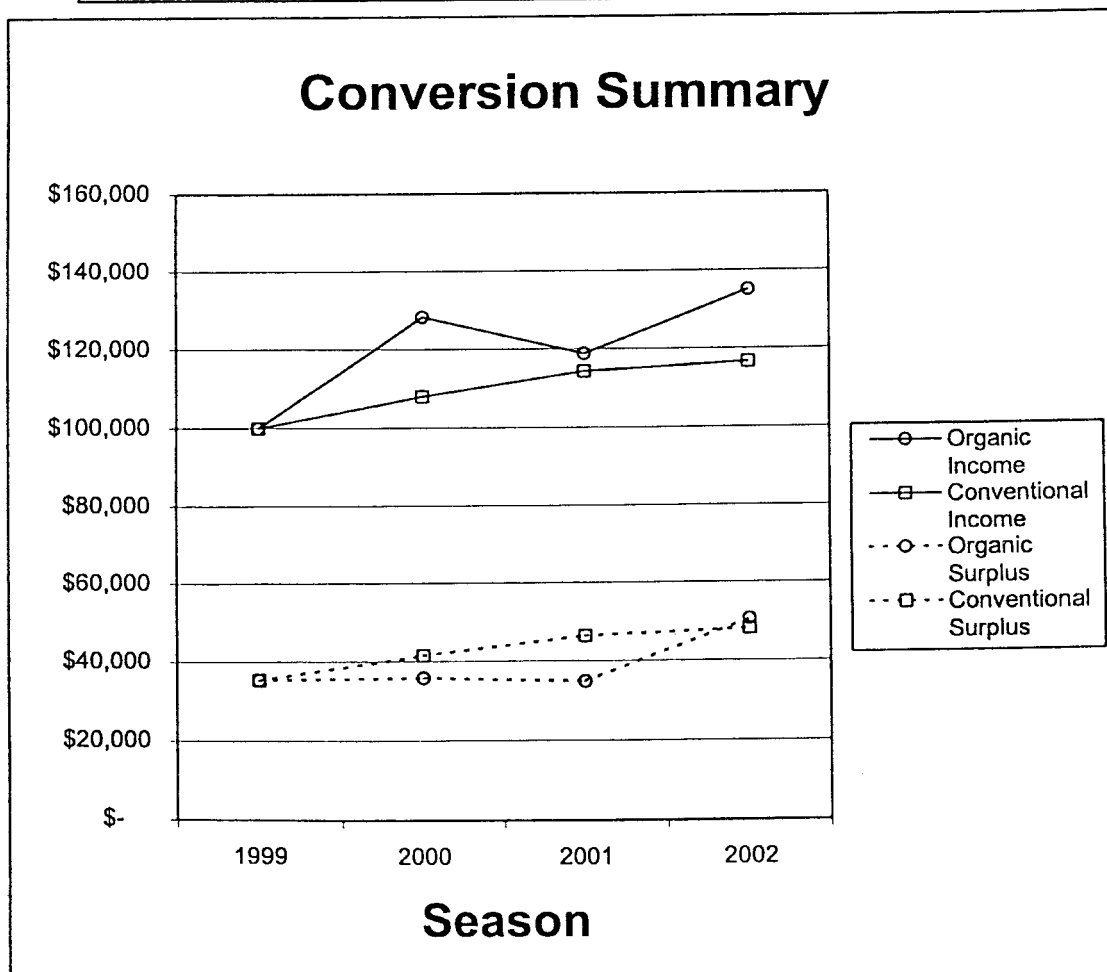


Figure 6. Organic Conversion Summary - Baseline Scenario. Source: Agriculture New Zealand (1998)

and identified the organic production niche as a means of reducing ENZA's influence over their business.

4.6.2 Choosing Organic Production Systems

All of the organic growers interviewed appeared to have completed detailed risk-benefit analyses on the conversion process. Table 3 below identifies

key themes commonly identified by the interview participants (in no order of priority).

The grower's risk-benefit scenarios reveal some interesting insights into pipfruit industry 'greening'. First, more 'costs' associated with conversion were identified than benefits for adopting organic practices. Second, the costs are almost exclusively economic or technology-based,

Conventional				
Season	1999	2000	2001	2002
Gross TCE	9,454	9,953	10,351	10,494
Export TCE	5,682	5,882	6,041	6,098
\$/G.TCE	\$ 10.14	\$ 10.44	\$ 10.66	\$ 10.73
Gross Orchard Income	\$ 99,863	\$ 107,910	\$ 114,318	\$ 116,620
Total Operating Costs	\$ 64,521	\$ 66,406	\$ 67,906	\$ 68,445
Operating Surplus	\$ 35,342	\$ 41,504	\$ 46,412	\$ 48,175

Organic +10%				
Season	1999	2000	2001	2002
		Conversion	Transition	Biogro
Gross TCE	9,454	9,953	7,973	8,088
Export TCE	5,682	5,882	4,651	4,697
\$/G.TCE (+10%)	\$ 10.14	\$ 13.73	\$ 15.83	\$ 17.81
Gross Orchard Income	\$ 99,863	\$ 140,636	\$ 130,205	\$ 148,087
Total Operating Costs	\$ 64,521	\$ 92,443	\$ 83,909	\$ 84,402
Operating Surplus	\$ 35,342	\$ 48,193	\$ 46,296	\$ 63,685

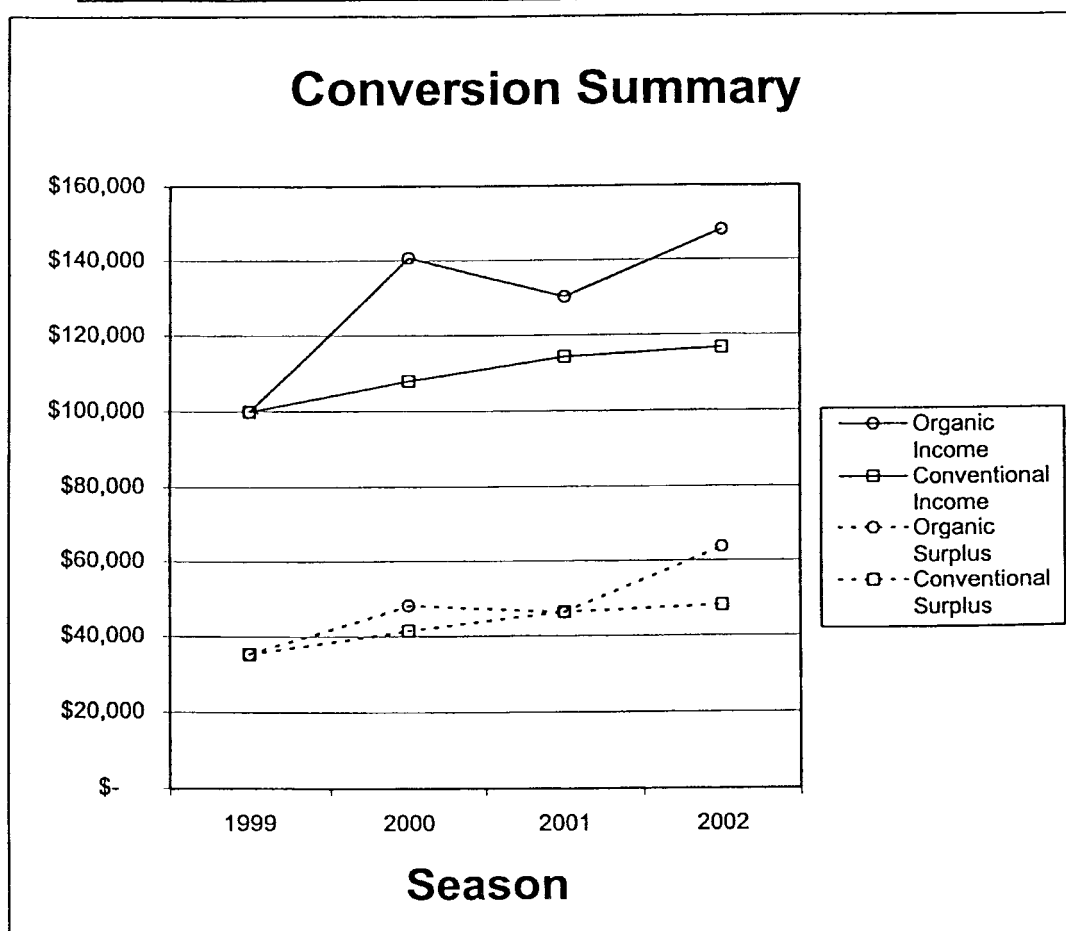


Figure 7. Organic Conversion Summary - Increased Fruit Value Scenario. Source: Agriculture New Zealand (1998)

whereas the benefits included more qualitative perspectives - but not to the exclusion of economic benefit. Finally, there was a certain degree of 'the unknown' about the longer term viability of organic pipfruit markets, although all the growers felt generally positive about the potential.

Opinions varied among the growers as to the most pressing current challenges facing their op-

erations, and the organic pipfruit industry in general. Access to better information and technology specific to organic production was highlighted by most growers. Three of the interview participants also suggested that Bio-Gro was having difficulty accommodating growth in organic pipfruit production. Comments here concerned the lack of expertise and co-ordinated planning by the organisation.

Conventional				
Season	1999	2000	2001	2002
Gross TCE	9,454	9,953	10,351	10,494
Export TCE	5,682	5,882	6,041	6,098
\$/G.TCE	\$ 10.14	\$ 10.44	\$ 10.66	\$ 10.73
Gross Orchard Income	\$ 99,863	\$ 107,910	\$ 114,318	\$ 116,620
Total Operating Costs	\$ 64,521	\$ 66,406	\$ 67,906	\$ 68,445
Operating Surplus	\$ 35,342	\$ 41,504	\$ 46,412	\$ 48,175

Organic				
Season	1999	2000	2001	2002
		Conversion	Transition	Biogro
Gross TCE	9,454	9,953	7,973	8,088
Export TCE	5,682	6,438	5,154	5,219
\$/G.TCE	\$ 10.14	\$ 13.27	\$ 15.44	\$ 17.43
Gross Orchard Income	\$ 99,863	\$ 136,077	\$ 127,125	\$ 145,010
Total Operating Costs	\$ 64,521	\$ 92,443	\$ 83,909	\$ 84,402
Operating Surplus	\$ 35,342	\$ 43,633	\$ 43,216	\$ 60,608

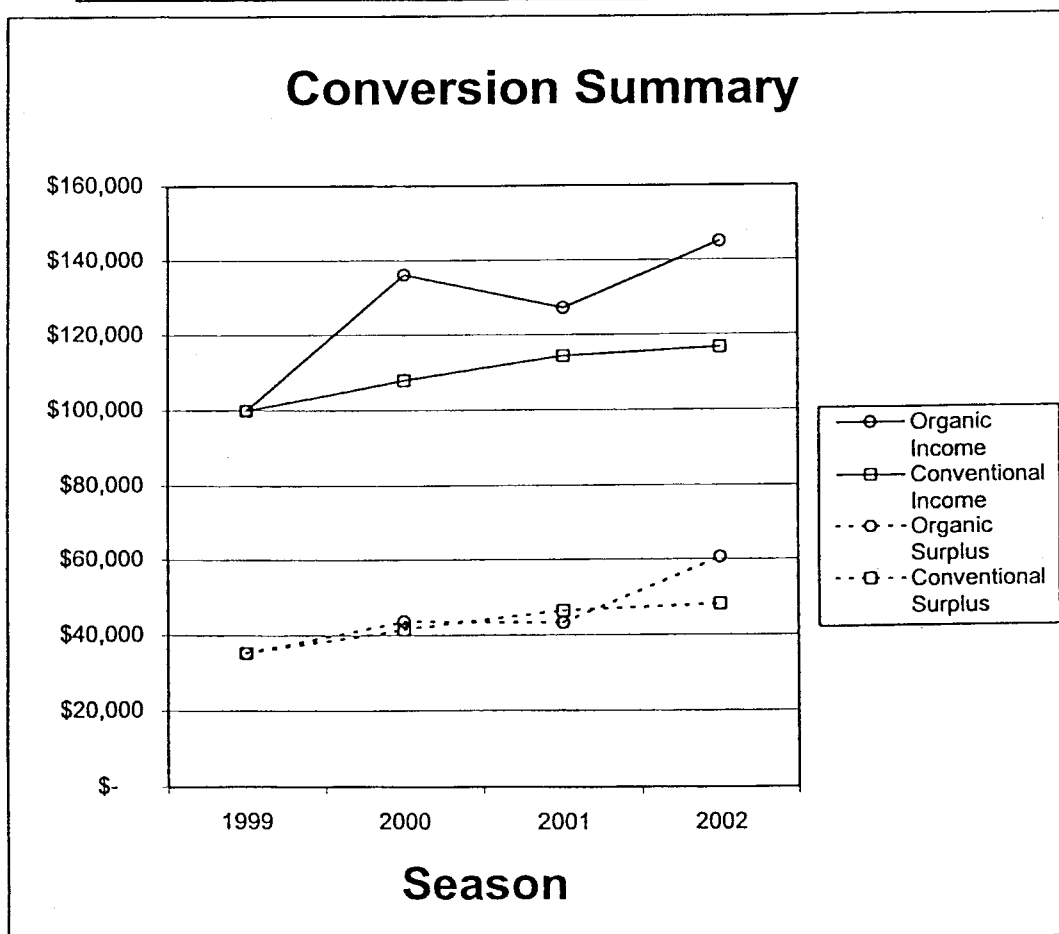


Figure 8. Organic Conversion Summary - Increased Packout Scenario. Source: Agriculture New Zealand (1998)

Table 3. Interview Participants Key 'Risk-Benefit' Trade-offs for Organic Pipfruit Conversion

ORGANIC CONVERSION BENEFITS	ORGANIC CONVERSION RISKS
<ul style="list-style-type: none"> • improved orchard environment • contributing to a better global environment and general health • exciting and new learning opportunities • price premiums • broadening NZ's global market for apples through differentiated products • potential to develop R&D in new directions • potential to have positive impact on CFP by providing new attitudes and knowledge, therefore improving industry overall • existence of organic growers discussion and technical support groups (through Freshco and AgNZ) • escape from control of ENZA 	<ul style="list-style-type: none"> • lack of consistency in annual cropping • crop failure - owing to unmanageable pest or disease issue, or grower inexperience • lower production volumes overall • annual fees for Bio-Gro certification • technological gaps concerning options for reduced crop loads, trouble-shooting in management practices and use of copper sprays • high costs of conversion year while gaining experience • complexity of export license arrangement through ENZA - what to do about premium new varieties under export license? • only high quality orchard sites are suitable for organic production (e.g. poorer soils can put trees under too much stress) • higher labour costs at critical management times

It was also noted by two individuals that, while they were feeling confident and positive in their current transition programme, they recognised that risks intensified in the second and subsequent years creating an overall picture of 'positive uncertainty'. Some of the interview group commented that they felt marginalised from conventional growers because of perceptions of 'questionable credibility'. Others expressed the contrary opinion that organic growing had a new and more professional image given Freshco's involvement and support, plus the general trend among consumers in affluent markets towards 'safer' and more 'environmentally friendly' food production.

4.6.3 Future Considerations

A strong, and commonly expressed set of 'future considerations' involved international bio-security issues in target markets. Here, growers highlighted the following types of concerns:

- the need for comprehensive international discussion and negotiation over certified pest and disease options available to 'organic' growers;
- concern among New Zealand growers that restrictions on pest and disease control options will become trade and market protection mechanisms; and
- the need to improve the international credibility of Bio-Gro and establish better co-ordinated links with IFOAM to ensure practical solutions to issues, such as disallowing the use of copper sprays, in order to minimise the risks transferred to New Zealand growers.

Other future considerations identified by growers centred on the need to develop specific servicing infrastructure for organic growers (such as mulch and compost supplies, trained contrac-

tors, pollination services and transportation links), and the importance of maintaining one exporter of organic pipfruit. Also important to organic growers was the development of an organisation like Pipfruit Growers of New Zealand Incorporated (PGNZI) to address issues of concern to organics growers in an informed and pragmatic manner. There was little faith among organic growers (and conventional growers for that matter) that PGNZI is an effective representative body. Finally, some concern was expressed about the future of organic pipfruit if ENZA became more actively involved and on a larger scale than it is at present.

4.6.4 Comments and Issues

The politics of organic pipfruit production, and more significantly, of export, are problematic as alluded to in earlier sections of this report. Throughout the interview process, growers voiced complex and often contradictory points of view over the modes of conventional and organic industry organisation that would best suit their perceived needs and futures. Illustrating these issues, are the following comments:

"We need to deregulate so we can undertake proper long-term planning."
~Interview 1

"ENZA cannot advance my interests as an organic pipfruit grower."
~Interview 3

"For a marketer to be successful, there needs to be confidence and continuity. Granting export consents on a year by year basis is inappropriate - the conditions are draconian."
~Interview 5

"Growth in organic production could be a threat. Currently, Freshco is the exporter of organic pipfruit, but would not be able to han-

dle 1 million tce...I wouldn't want ENZA to take over marketing, but I don't want competitive marketing. I don't have any confidence that ENZA would do as good a job as Freshco."

~Interview 4

On the issue of what constitutes 'organic', the majority of growers expressed awareness of the importance of an organic production chain - incorporating inputs and value-added handling and processing. Exploring this idea, one grower had some challenging questions about the very nature of 'organics',

"Where do organics start and stop? You need dedicated plant and tools - picking buckets, ladders, hand tools, vehicles - to do it, but what about other parts of the operation? Does organics represent 'efficient' systems? Because right now you need a 30 metre buffer strip between conventional production and organic production which is an inefficient use of land."

~ Interview 1

While several growers suggested that idealism overruled pragmatism within the wider organic movement, none of the organic growers interviewed expressed any desire to return to conventional (IFP) production systems in the foreseeable future. There was some sentiment among organic growers that despite the production risks and uncertain (but positive) marketing future, organic as a movement represented a significant qualitative shift towards better environmental stewardship.

"Business viability is important, but there is a qualitative point at which reduced profitability from an organic production system is preferable to higher profitability from conventional systems."

~Interview 2

The balancing factor with this point of view however is the amount of personal risk each grower can accommodate. Every year spent in organic conversion, transition and fully accredited programmes represents a greater investment in environmental, economic and political systems that are marginalised from the 'conventional' growing politics and practices of 98% of the export pipfruit industry. At least, that is how the pipfruit industry is perceived to operate at this moment - with organics as a potentially viable but politically fractious element operating at the edges of an entrenched political system.

4.7 Summary

The opportunities for developing export organic pipfruit in New Zealand appear positive. Market data from the last two years of selling small volumes of organic apples show excellent fruit values and firm markets in the UK and Europe. Presently,

most organic exports are organised under an export consent license held by Freshco. ENZA, and the NZAPMB, have been slow to recognise the potential of organic pipfruit, but ENZA is now striving to make some constructive steps towards developing a pool of organic growers. To date, most of the logistical and management support for organic pipfruit growers has come through Freshco or private consultants. There is some sentiment among organic pipfruit growers that more direct ENZA involvement in their industry, or any 'competition' it might provide through developing its own export pool is undesirable. Indeed, most organic growers interviewed for this report suggested that 'growing organic' had been an effective and profitable way to opt out of the mainstream industry - implying that the NZAPMB's management of that industry was less than efficient.

Admittedly, there is some degree of political hostility between Freshco - which is highly critical of ENZA's single seller status - and the NZAPMB. Tensions focus on ENZA's statutory powers and issues surrounding 'industry greening'. As IFP practices become more 'mainstream', the position of Freshco's 'organic fruit' may be eroded in terms of market value. Such a prediction differs somewhat from the dynamics emerging between KiwiGreen and organic Kiwifruit. The reason for this is the generally far higher degree of oversupply of pipfruit in the world market, declining overall demand for pipfruit, and already constrained margins in the main markets for both organic and conventional apples. Further, ENZA has made some steps - albeit slowly - towards 'capturing' a pool of organic growers. The new legislative structure, where export consents are granted by a body independent of the Board has been proposed as a way to avoid such obvious conflicts of interest; however only time will see whether this is indeed achieved.

Given these various tensions, co-operation between the various 'green' components of the industry is minimal or non-existent. Several scenarios might emerge from the current restructuring. First, organic production may continue to operate under export consents and represent (to some degree) a production and political space for growers who opt out of the conventional system based on some combination of environmental, economic and political choice. Second, the entire production and investment structure of organic pipfruit production may fundamentally change. Third, ENZA may make some constructive and concerted steps to encourage and incorporate organic pipfruit growing as an important (if small) component of its production and marketing operations. The advantages of this strategy for ENZA would be some potential economic gain (through developing and exploiting markets); and promot-

ing industry innovation (in research, production, investment and marketing).

At the same time steps should be taken to include organic viewpoints within the overall pipfruit industry body that NZAPMB will become. It is only by deliberate inclusion and constructive participation of the organic sector that the fractious politics surrounding the development of organic pipfruit in New Zealand will be overcome.

Chapter 5

A Development Scenario for Pipfruit

5 Introduction

This final chapter will assess the development of 'greener' pipfruit exports from New Zealand by assessing the current state of the industry through the 8 elements of the Development Scenario developed from prior research in other industry sectors. These 8 factors can operate in an inter-dependent way and the order in which they are presented is not significant. The following analysis will benchmark the pipfruit industry against other sectors – particularly the kiwifruit sector which has many similarities to the pipfruit case, while being more advanced in its greening programme.

The 8 dimensions of a Development Scenario are:

- 1) *Infrastructure*: involving the presence or absence of a necessary level of market demand and an infrastructure for delivering product to these markets at a viable economy of scale. Also, the extent to which processing structures need to be restructured or retooled to enable auditing and separation of particular types of product (like organic).
- 2) *Industry politics*: which identifies the level of political support or indifference to 'greening'; and also the degree of difficulty in establishing an industry policy framework in support of greening strategies.
- 3) *Inter-company relationships*: identifying the configurations which can form around different companies or organisations involved in exporting, particularly the degree to which cooperative synergies can form or the emergence of competition between companies for a limited number of suppliers.
- 4) *Certification and audit systems*: investigating the degree to which certainty and credibility of audit and labelling systems is established within an industry; the evolution of industry-specific specifications, and the practice of audit and inspection.
- 5) *Technical barriers to production*: identifying the predominant R & D concerns in relation to technical aspects of greener production, particularly in the development of adequate substitutes to existing systems.
- 6) *Skills development and information transfer*: examining the specific form by which new production techniques were developed in specific

industries and how these skills are networked or extended to other growers.

- 7) *Stepping stone systems*: which, in the case of organic production, involves intermediate steps through which growers can pass before becoming fully committed to organic production. Other aspects of audit and inspection can also serve to decrease the psychological or technical distance experience by growers when contemplating a shift out of conventional production an alternative green system.
- 8) *Ideological barriers*: consistently, a primary barrier to attempting greener production involves none of the previous seven dimensions, but resides within the ideological assumptions or predisposition of a prevailing farming culture (both on-farm and at an institutional level).

5.1 Infrastructure (Marketing and Processing)

Clearly the infrastructure of the pipfruit industry is most comparable with the kiwifruit industry. Both are overseen by a single channel seller Producer Board, both have corporatised their marketing functions, and both have devolved (only partially for kiwifruit) organic marketing to an independent marketing organisation. At the same time, both Boards have pursued mainstream development of an IPM-based system for all their conventional product.

Therefore the infrastructural impediments faced by pipfruit are generally only of the same minor nature as the kiwifruit industry. The two industries do differ significantly in the extent of historical onshore investment in co-operatively owned infrastructural assets, with the NZAPMB much more heavily committed. Given the Board's 50 year history, and its infrastructural/asset investments, ENZA is much more involved with production which may contribute to its more risk-averse approach to organic marketing. Recent industry changes, however, have seen regulatory functions clearly separated from commercial and marketing functions which will reduce ENZA's historic involvement in production issues. In these respects, the pipfruit industry's model of operation as of 1 April 2000 will come to more closely approximate the kiwifruit industry.

Marketing: Like the kiwifruit industry, the Board has identified shifting trends in the global marketplace. These involve both the emergence of 'green protectionism' as countries move towards stricter food safety criteria, and an increase in the demand for fresh and green produce by consumers. At an infrastructural level, the presence of a single exporter for each industry has created the opportunity for the entire industry to rapidly shift its

product profile for marketing purposes. The reasons why such a shift occurred at a much slower pace in pipfruit than in the kiwifruit industry will be discussed in the next section.

Processing: Fruit separation of organic product at harvest is easily achievable, and can be maintained throughout packing and distribution to destination markets, without retooling of harvest machinery, or processing facilities.

In conclusion, at an infrastructural level, there are no existing significant impediments to the development of either organic or IFP pipfruit. However, there are other characteristics of the industry which have a major bearing on the uptake of greening technologies and products. These will be discussed in the following section.

5.2 Industry Politics

Due to the unique conjuncture of both greening strategies and the politics of deregulation in the pipfruit industry, issues of industry politics have more relevance to the Development Scenario for pipfruit than for any other sector examined to date.

During the period in which IFP and organics have been developing in the industry, these two initiatives have become polarised within opposing factions of the deregulation debate.

Grower and industry interviews between 1997-99 (McKenna *et al.* 1998; McKenna 1998) overwhelmingly suggest that ENZA was slow to adopt co-ordinated and proactive support of 'environmentally friendly' pipfruit production programmes. Where industry research scientists and European market evidence pointed to the need for IPM production practices in the early 1990s, ENZA did not react quickly on this information - instead relying on both its 'preferred supplier' status and its 'clean green image' with important European buyers. Entry into USA markets depended on following the USA Code of Practice which involved an intensive spray programme using organophosphates and CFP production practices. Gaining access to USA markets therefore demanded growing procedures that were environmentally 'unfriendly' and such practices were rewarded by a premium of \$1.00/carton for fruit directed to the American market (McKenna *et al.* 1998). Therefore it can be argued that, to a degree, ENZA showed some complacency in reacting to marketing innovations in Europe, and was not pro-active in negotiating production alternatives for its North American markets.

Between November 1995, when the first IFP-P planning meeting was held, and May 1998, the initiative for the pipfruit industry was called the *New Zealand* IFP-P (NZ IFP-P) programme. It was

not until May 1998 that the NZ IFP programme became branded as the ENZA-IFP programme. The reasons for this are complex, but draw on programme and personnel restructuring within ENZA and the contentious politics of organic apple production. Organic pipfruit production, while it had existed for some time on a small and isolated scale in New Zealand, had been dismissed by ENZA in the early to mid-1990s and so was not targeted for development on a larger, more co-ordinated scale. In the context of explicit demands by large UK retailers in 1997, ENZA gradually co-opted the NZ IFP programme and re-named it to reflect its involvement and control. By 1998, it was clear that IFP would be ENZA's primary means of managing market access risks - having bypassed opportunities in the small, but dynamic organic sector.

The number of organic growers supplying export pipfruit have increased from 2 in the 1996-97 season to 37 in the 1998-99 season. Freshco, the Auckland-based export company selling organic pipfruit abroad, has had to secure an export consent licence from the NZAPMB, under its legal monopoly on all export pipfruit. The main organic supplier to Freshco has been a strong advocate for abolishing the NZAPMB's export monopoly of pipfruit, claiming that it is actively retarding progress in the organic pipfruit market. Having initially chosen to pursue IFP at the expense of developing a parallel organic production programme, ENZA is in the invidious position of granting export consents to one of its major critics who is successfully working in a market ENZA has chosen not to develop. Within this relationship, there is much room for mutual suspicion and criticism.

Owing to marked and vociferous differences on the issue of ENZA's export monopoly, the opportunities for co-operation between ENZA's IFP programme and Freshco's organic production system appear constrained. The organic growers interviewed all expressed frustration with ENZA's perceived mismanagement of the industry's monopoly export control, and have moved to organic production partly as a means of 'opting out' of the national co-operative system.

In conclusion, the combination of industry politics over deregulation and the two greening strategies open to the industry has resulted in a less than optimum scenario for development. While the whole sector has taken on the appearance of the 'two-tier' approach to greening evident in other sectors like kiwifruit, there has been a problematic history of no single agent or entity co-ordinating this approach. As a result, R & D initiatives are not, at this time, able to create the useful synergies apparent between organic and IPM in other sectors - particularly in the kiwifruit and processed vegetable industries. In these other sec-

tors, organic growers provided useful R & D resources for the development of IPM systems. In return, the larger infrastructural commitment by industries to IPM systems directly benefited organic growers. The IFP-P scheme has drawn on a body of international research, and research on organic approaches has been slight. Similarly, extension of new production and management techniques were not occurring in a co-ordinated way between the different greening strategies.

5.3 Inter-Company Relationships

In other sectors, relationships between different companies and exporting organisations have tended towards either a competitive approach – in which companies compete to obtain organic suppliers – or a synergistic approach where organisations co-operate in R & D, and involve themselves in different segments of organic production. In other sectors, we have argued that synergistic linkages between organisations have the best long term consequences for any Development Scenario.

In the pipfruit industry, as is evident from the previous section, there has been some separation of activities between private export of organic fruit and producer board export of IFP fruit, and with similar separation for support systems. However, this separation is not particularly synergistic, and at the current point in time the Producer Board is initiating competition for organic supply. Given that the statutory powers of the Board have historically allowed some planning as to where export licences are granted, there remains an overall atmosphere of suspicion between the various parties.

Consequently, organic or IPM fruit cannot presently be used as a 'keyhole' product as is the case in other industries. For processed vegetables in particular, organic product is used to open market 'keyholes' by making sales of organic production conditional on additional purchase of mainstream product. By splitting the supply between two different organisations, this cannot occur for pipfruit. This situation may change in the near future depending on ENZA's success in securing a pool of organic growers and reliable suppliers of fruit.

5.4 Certification and Audit Systems

For organic pipfruit, existing organic certification systems – principally the Bio-Gro label or Demeter label – are available for organic growers. These effectively provide a third party audit of organic systems. The Bio-Gro label has generally had good acceptance in overseas markets, although recent pressures from regulatory authorities in some destination markets are forcing MAF to become involved in the certification process. The exact form this involvement will take is still uncertain, al-

though, at time of writing, MAF has prepared a plan for MAF to act as an independent accreditor of organic standards in relation to international standards. It is uncertain whether the organic industry will find the benefits of such accreditation outweigh the costs of administering such a scheme.

For IFP-P fruit, the issue of compliance and audit is somewhat more complex. IPM systems in Europe are currently being audited under the umbrella of a trial scheme called Integrated Crop Management (ICM). There is no equivalent structure available in New Zealand. While Project 98 initiatives assisted in the early development of IFP, Project 98 has simply become a suggested audit system of other management systems which is not yet (or may never be) utilised by any of these alternative systems. Currently, the pipfruit industry is testing compliance with IFP-P largely through the submission of PCRBs and testing of fruit for residues. A number of the major supermarket groups have their own audit procedures, which can include direct visitation by overseas staff, or use of prescribed international audit companies. While any system is open to abuse or manipulation, industry sources suggest growers' 'self auditing' is effective. The costs of not following industry procedures and having container loads or pallets of fruit rejected at point of market storage/distribution are too high for growers not to comply to IFP procedures. Global inventory systems, able to link non-compliant boxes of fruit to specific grower identification codes also help encourage growers to be accurate in their IFP production practices.

5.5 Technical Barriers

Organic apples are considered to be difficult to grow successfully. There are a number of pest and disease problems on pipfruit for which there are no fully effective and organically-acceptable controls. Acceptable alternatives are frequently only partially effective, which means that either crop losses will be higher, or that programmes of controls need to be packaged together to effectively replace conventional pesticides. Weaker control agents often also increase the cost of obtaining effective control, while the costs of some natural products or techniques rapidly become not cost-effective. Development of successful control programmes will include defining which varietal and orchard environmental factors are necessary to limit rather than to predispose fruit to attack by pest and diseases. Among diseases black spot and powdery mildew are of most concern, while pests include codlin moth, leafrollers, mealybugs, leaf-curling midges and scale insects. Research, such as on improved biological control and monitoring for pests and diseases can be prohibitively costly for

small developing industries such as organic pipfruit. Requirements for extensive development to fit local conditions, or a high risk of failure, compound the difficulties in overcoming technical barriers.

5.6 Skills Development and Technology Transfer

For organic growers specifically, there has been little in the way of industry-level support of extension or technology transfer. Freshco does provide some information and technical assistance and works with consultants at Agriculture New Zealand in Hastings to co-ordinate discussions and orchard visits among a pool of organic growers and researchers. The Organic Apple Growers Association is also beginning to play an active part in technology transfer and skills updating. While this emulates the experiences of other sectors – where grower networking was the predominant early form of technology transfer – this has given Freshco and advantage over ENZA to date due to Freshco's total capture of the organic pool of suppliers. However, with the latest round of industry restructuring, and ENZA's commitment to acting as a commission seller for organic fruit (where grower returns would not be subject to conventional industry costs), their chances of securing a pool of organic growers are much increased. This is particularly important in times of severe financial stress within the industry where growers will take the highest payouts given available choices. Further, ENZA's existing infrastructure and preferred supplier status within key markets may have a positive impact on selling any organically grown fruit. Added to this is the fact that, so far, Freshco has had a virtual 'single desk' for organic fruit which has left some growers uncomfortable with their degree of control.

For IFP, the advantages of Board support are clear. The technology transfer programme for IFP is extensive. For growers, the primary tool for technology transfer is the IFP manual. Wider aspects of R & D, and technical development of systems outlined in the manual are overseen by four administrative structures. These are:

- the IFP-P National Committee which monitors the overall development of the programme.
- 15 IFP-P Technical Subcommittees which developed the technical content of the IFP manual.
- IFP-P Steering Committee which identifies supplier/marketing requirements for fruit produced under IFP protocols.
- IFP-P Regional Task Forces which operated in each growing region as a forum for participating growers to provide feedback on the

progress and problems that are encountered in the evolving IFP system.

In conclusion, it is clear that industry politics again influences the development of greening strategies. Over the last year, a trend has emerged for control of the IFP grower manual to move from a committee system comprised of representatives of many parties in the industry, to an increasing control by ENZA. This may make IFP technology more responsive to market signals, which in current global marketing conditions is superior to the industry being producer-driven and constraining effective marketing strategies.

5.7 Stepping Stone Systems

One of the overall findings of Campbell and Fairweather (1998) in assessing the general development of organic agriculture within New Zealand horticulture, was that the perceived 'distance' between conventional production and organic production was a disincentive for growers when contemplating conversion. Growers felt that there were too many aspects of their production systems which needed changing to achieve organic status. Consequently, those industries which developed 'stepping stones' for growers found it easier to attract growers into alternative systems. Stepping stones are any system which operates somewhere between conventional and fully organic – such as KiwiGreen for kiwifruit.

In the pipfruit industry, it is clear that IFP has been acting as a stepping stone to fully organic apple production. Most of the organic growers interviewed for this report had been IFP growers, citing the 'small step' from IFP to organic conversion, combined with significant market premiums, as the most important inducement to 'going organic'.

Another stepping stone system that potentially exists is the preparedness of exporters to pay a premium for fruit that is 'in transition' even though this category does not receive a full organic premium in the market. Evidence from market surveys however shows that 'transition' fruit in the UK and USA is often sold with conventional fruit and at the same price (Grower Management Services, 1999; McKenna and Bird, 1999).

5.8 Ideological Barriers

Compared to other industries that have been previously studied, the pipfruit industry most closely resembles the kiwifruit industry. Over the last few years, there appears to be widespread support among pipfruit growers for the idea that markets for pipfruit are increasingly demanding stricter environmental and food safety standards. At a generic level, therefore, there are significantly

fewer ideological barriers than can be found in other industries such as processed vegetables and honey.

However, the similarity to kiwifruit exists only at this generic level, as ideological issues surrounding the 'greening' of pipfruit have become heavily intertwined with ideological notions of the appropriate political structure of the industry. In contrast, the NZ Kiwifruit Marketing Board controlled the development of both organic and KiwiGreen, and was politically successful in controlling the gradual restructuring of the industry (and the retention of grower control) partly through the patent success of its greening ventures in the marketplace. Consequently, the kiwifruit industry saw the ideological notion of 'greening' as mutually reinforcing the ideas of a 'single desk', 'grower control', and the sense that the industry had profited from a broad programme of centrally co-ordinated change towards greener production. As well the views of organic growers have been given credence because the New Zealand Organic Kiwifruit Growers Association has been given direct input into industry affairs.

In contrast, the pipfruit industry has seen the ideological notions of greening and producer board control move in the opposite direction to the kiwifruit industry. While the producer board has championed the idea of IFP as the solution to market difficulties with pipfruit, the board did not adopt the stratagem of 'two-tier' greening seen in kiwifruit and other industries. Instead, the organic tier of greening has been captured by opponents of producer board control, and the idea of organic production is being closely associated with ideas of 'less control', 'de-regulation' and 'entrepreneurial marketing'.

5.9 Conclusion

While the pipfruit industry has not followed an identical path to other greening horticultural export industries in New Zealand, the experience of the pipfruit industry outlines the advantages of a 'two-tier' approach.

First, the pursuit of a 'middle-tier' approach concentrating on an IPM or 'low-input' product, without a 'top-tier' of organic product has proved less successful in marketing terms than some industry participants had hoped. For pipfruit, as for kiwifruit, IPM production has only served to secure market *access* by preventing conventional fruit being compromised by 'green protectionism'. It has been harder for IFP pipfruit to secure a marketing *advantage* over conventional fruit, as IFP fruit only authenticates the 'clean green' image that the New Zealand industry has used in the past. Only organic fruit has actually secured extra marketing appeal over and above mainstream fruit.

This mirrors the experience of both the kiwifruit industry and processed vegetable exports. For kiwifruit, a few early supporters of KiwiGreen enthused about the imminent demise of organic kiwifruit as KiwiGreen would produce a 'safe' kiwifruit at a better economy of scale than organic fruit. However, the market performance of KiwiGreen fruit did not lessen the demand for organic fruit, and Zespri International Ltd quickly changed to a successful 'two-tier' marketing campaign (Campbell, Fairweather and Steven 1997). Similarly, Heinz-Wattie Ltd found that organic produce was most valuably used in conjunction with larger volumes of non-organic product to secure access to high-value clients and create a 'market halo' effect for its non-organic produce (Campbell 1996).

The second benefits of the 'two-tier' approach are the infrastructural advantages of R & D investment in generic pest control systems, and the advantages of using a 'middle tier' system as a stepping stone to fully organic production. The value of this approach was most evident in the kiwifruit industry.

The failure of the pipfruit producer board to identify the success of two-tier greening strategies in other industries has had important consequences. While the pipfruit board was similar to the kiwifruit board in initially supporting only an IPM programme, the kiwifruit board still retained control over organic fruit and gave enough assistance to organic growers to prevent them becoming alienated. Consequently, when restructuring pressures emerged in the industry, organic growers still supported the existing board. While both the kiwifruit and pipfruit boards eventually recognised the value of a 'two-tier' approach to greening, the political situation of the pipfruit industry has caused an institutional separation of the greening tiers. This is working strongly to the advantage of Freshco, who are essentially free-riding on the R & D investment in the industry and the stepping stone effect provided by ENZA's IFP-P programme. In the long term, however, it is unlikely that Freshco, as a private exporting company, will invest in the 'common good' infrastructure of the industry. While this has happened in other industries – particularly with the role of Heinz-Wattie NZ Ltd in the process vegetable sector - conditions are somewhat different in the pipfruit industry. The success of other industries such as kiwifruit would suggest that long term greening of the pipfruit industry will eventually be most successful in a 'two-tier' programme under producer board control, but this will be difficult to achieve in the short term.

Bibliography

- Anderson, M., C. Hollingsworth, V. Van Zee, W. Coli and M. Rhodes, 1996.** "Consumer Response to Integrated Pest Management and Certification" in *Agriculture, Ecosystems and Environment*. 60 (1996) pp. 97-106.
- Anon., 1997.** *The Control of Pesticides - A Code of Practice*. Fresh Produce Consortium (UK). Third Edition. 86 pp.
- Anon., 1996.** *New Zealand Integrated Fruit Production - Pipfruit*. ENZAFRUIT New Zealand (International), Wellington, New Zealand.
- Anon., 1995.** *Nature's Choice Code of Practice*. Tesco plc: 33pp.
- Anon., 1994.** *Guidelines for Integrated Production of Pome Fruits in Europe*. IOBC Technical Guide-line III. Second edition. 16pp.
- Anon., 1993.** *Sainsbury's Policy on the Integrated Crop Management System for Environmentally Responsible Crop Production*. J. Sainsbury.
- Ball, N. 1997.** "Plant Protection and Eco-Labeling of Primary Products" *Proceedings 50th Plant Protection Conference*. Lincoln University, Canterbury. pp. 6-10.
- Batchelor, T., J. Walker, D. Manktelow, N. Park and S. Johnson, 1997.** "New Zealand Integrated Fruit Production for Pipfruit - Charting a New Course". *Proceedings 50th Plant Protection Conference*. pp.14-19.
- Blunden, G., C. Cocklin, W. Smith and W. Moran 1996.** "Sustainability: View From the Paddock" in *New Zealand Geographer*. 52(2) pp. 24-34.
- Brader, L. 1974.** "Present Status of Integrated Control of Pests", in *Mededelingen Faculteit Landbouwwetenschappen* 533: 245-265.
- Buisness and Economic Research Limited 1999.** *Deregulating the Apple and Pear Marketing Board - Impacts and Costs*. Draft analysis and report. Wellington: New Zealand.
- Buisness and Economic Research Limited 1998.** *Nelson Regional Economy Driver Clusters*. Wellington: New Zealand.
- Buisness and Economic Research Limited 1997.** *Economic Driver Clusters of Hawkes Bay: A Working Paper*. Wellington: New Zealand.
- Campbell, H. and Coombes, B. 1999.** 'Green Protectionism' and Organic Food Exporting from New Zealand: Crisis Experiments in the Breakdown of Fordist Trade and Agricultural Policies' *Rural Sociology* 64(2) pp. 302-319.
- Campbell, H. 1996.** *Recent developments in organic food production in New Zealand: part 1, organic food exporting in Canterbury*. Studies in Rural Sustainability No. 1, Department of Anthropology, Otago University.
- Campbell, H., Fairweather, J. and Steven, D. 1997.** *Recent developments in organic food production in New Zealand: part 2, Kiwifruit in the Bay of Plenty*. Studies in Rural Sustainability No. 2, Department of Anthropology, Otago University.
- Campbell, H. and Fairweather, J. 1998.** *The Development of Organic Horticultural Exporting in New Zealand*, Agribusiness and Economics Research Unit, Research Report No. 238, Lincoln University: Canterbury.
- Charman, K. 1998.** "US Organics Industry Fights for its Life", *The Orchardist*. pp. 48-51.
- Clearwater, J. 1999.** "Organically Grown, or Genetically Engineered Food?" *Soil and Health*. May/June 1999 pp.17-18.
- Coombes, B. and H. Campbell, 1998a.** "Dependent Reproduction of Alternative Modes of Agriculture: Organic Farming in New Zealand" in *Sociologia Ruralis*. 38(2) pp. 127-145.
- Coombes, B. and H. Campbell, 1998b.** *Recent Developments in Organic Food Production in New Zealand, part 4 - The Expansion of Organic Food Production in Nelson and Golden Bay*. Studies in Rural Sustainability Research Report No. 5, Department of Anthropology, University of Otago.
- Coombes, B. and H. Campbell, and J. Fairweather, 1998b.** *Recent Developments in Organic Food Production in New Zealand, part 3 - Exporting of Organic Produce from Gisborne District*. Studies in Rural Sustainability Research Report No. 4, Department of Anthropology, University of Otago.
- ENZA 1999a.** *Initial Market Forecasts*. Wellington: New Zealand.
- ENZA 1999b.** *Organic Pipfruit Programme - Market Strategies*. Wellington: New Zealand.
- ENZA 1998.** *Annual Report 1997*. Wellington: New Zealand.
- ENZA 1997.** *Annual Report 1996*. Wellington: New Zealand.

- ENZA 1996.** *A Strategic Research and Development Plan for the New Zealand Pipfruit Industry.* Wellington: New Zealand.
- Enterprise New Zealand 1993.** *Releasing the Profits: The Way Forward for the New Zealand Apple Industry.* Wellington: New Zealand.
- Gendall, P., K. Betteridge and B. Bailey, 1999.** "Japan Market for Organics", *Commercial Grower* 54(2) pp. 24-25.
- Glass, A. 1998.** "European Market Dynamics - Pipfruit". Fruit Marketing Seminar, August 1998. London, England. Glass Associates Ltd.
- Goodman, D. and M. Watts 1997.** *Globalising Food: Agrarian Questions and Global Restructuring.* London: Routledge.
- Grower Management Services 1999.** "Market Research and Grower Education Programmes - Field Study". Nelson, New Zealand.
- Hill, M. (1999).** "IFP - Working With Natural Systems", *The Orchardist*. September. pp 67-68.
- Hort Research 1999.** Pers. comm. August 1998 - May 1999.
- Howley, V. 1997.** "The Peak of Practices". *Fresh*: September, 1997.
- J. Sainsbury's webpage.** www.j-sainsbury.co.uk/company/environment.html "Policy on the Environment".
- Kearney, M. 1998.** "Downside to Deregulation of Producer Boards: Pipfruit Perspective". Briefing notes prepared for Pipfruit Growers of New Zealand Inc. by New Zealand Horticultural Economic Services, 22 July 1998.
- Le Heron, R. 1993.** *Globalized Agriculture Political Choice.* Pergamon, Oxford.
- Le Heron, R. and E. Pawson, 1996.** *Changing Places, New Zealand and the Nineties.* Longman Paul: Auckland.
- Le Heron, R. and M. Roche, 1995.** "A Fresh Place in Food's Space" in *Area*. 27, pp. 22-32.
- Mackay, D. 1999.** "Organic Grower Driven by Vision of Sustainability", *The Orchardist*. pp. 19-21.
- MAF, 1998.** *Situation and Outlook for New Zealand Agriculture and Forestry.* Ministry of Agriculture and Forests: Wellington.
- MAF, 1993.** *Sustainable Agriculture.* Policy Position Paper 1, Ministry of Agriculture and Fisheries: Wellington.
- Manktelow, D., R. Beresford, A. Hodson, J. Walker, T. Batchelor, H. Stiefel and I. Horner 1997.** "Integrated Fruit Production (IFP) for New Zealand Pipfruit: Evaluation of Disease Management in a Pilot Programme". *Proceedings 50th Plant Protection Conference.* pp.14-19.
- Martin, N. 1996.** "What is Integrated Pest Management?" Draft report for Mount Albert Research Centre, Auckland New Zealand.
- McCann, D. 1999.** Keynote Presentation. Pipfruit Growers of New Zealand Incorporated Annual Conference. 9-10 September, 1999. Hastings.
- McCann, D. 1999.** "Diabolical Year - Good Future for ENZA". in, *The Orchardist*. October 1999. p 24.
- McKenna, M. 1999.** "The Economic Viability of Deregulation in New Zealand's Pipfruit Industry" in *Primary Industry Management*. 2(1) pp. 4-9. Publishing Solutions: Wellington, New Zealand.
- McKenna, M. 1999.** "The Emperor Has No Clothes - Geographies of Deregulation" in *New Zealand Geographer*. 55(1) pp. 59-62.
- McKenna, M. 1998.** "Growing Apples and the 'Growing Pains' of Restructuring for New Zealand's Pipfruit Industry" in *New Zealand Geographer*. 54(2) pp.37-45.
- McKenna, M. and L. Bird 1999.** "UK and Canada Market Surveys". Massey University Geography Department, July - August 1999.
- McKenna, M., H. Campbell and M. Roche 1999.** "It's Not Easy Being Green: Safe Practices in New Zealand's Apple Industry" submitted to *Australian Geographical*, November 1999.
- McKenna, M., M. Roche and R. Le Heron 1998.** "Sustaining the Fruits of Labour: a Comparative Localities Analysis of the Integrated Fruit Production Programme in New Zealand's Apple Industry", in *Journal of Rural Studies* 14(4) pp. 393-409.
- Monigatti, R. 1991.** *Fruitful Fields: The Development of New Zealand's Fruitgrowing Industry, 1966 to 1991.* New Zealand Fruitgrowers Federation: Wellington, New Zealand.
- Monigatti, R. 1966.** *Fruitful Years.* Ferguson and Osborn Ltd: Wellington, New Zealand.
- The Nelson Mail*, Tuesday August 19, 1997, p. 11.

- New Zealand Fruitgrowers Federation Conference, 1920.** *Conference Report*. Fruitgrowers Federation: Wellington, New Zealand.
- New Zealand Integrated Fruit Production - Pipfruit National Committee, 1996.** *New Zealand Integrated Fruit Production Grower's Manual*. August, 1996.
- OECD 1998.** "Working Party on Agricultural Policies and Markets - Draft Document".
- Pimentel, D. 1997.** "Plant Protection: Trade and the Environment" in *Proceedings, 50th New Zealand Plant Protection Conference*. Lincoln University, Canterbury pp. 20-27.
- Pipmark, 1997.** "Environment Wins With IFP-P". New Zealand Apple and Pear Marketing Board: Wellington, New Zealand. June, pp. 6-7.
- Richards, B.R. 1997.** "Underpinning New Zealand's Psychic Premium" in *Proceedings, 50th New Zealand Plant Protection Conference*. Lincoln University, Canterbury pp. 1-5.
- Saunders, C., Manhire, J., Campbell, H. and Fairweather, J. 1997.** *Organic Farming in New Zealand: An evaluation of the current and future prospects including an assessment of research needs*. MAF Policy Technical Paper 97/13. MAF, Wellington.
- Solymer, B. 1996.** "The European Perspective: Integrated Fruit Production", *Compact Fruit Tree*. vol 29. pp.44-46.
- Statistics New Zealand 1997.** *New Zealand Official Yearbook 1997 - 100 Edition*. Wellington: New Zealand.
- Steele, M. 1995.** "Single Desk Selling in the Export of Apples and Pears from New Zealand: A Review of the Arrangement Used by the New Zealand Apple and Pear Marketing Board". Report by the Cranfield School of Management, Cranfield UK. February 1995.
- Stiefel, H. and D. Lichtwark 1998.** *Techlink Feasibility Study for Organic Pipfruit Production*. Consultancy report prepared for Ru and Chan Collin by Agriculture New Zealand: Hastings.
- Tesco's webpage.** www.tesco.co.uk/report96/page18.html
- The Orchardist.** "Trial for Resistance in Apples". July. p. 27.
- Waldner, W. 1995.** "The Success of Integrated Fruit Production (IFP) in South Tyrol, Italy". *Compact Fruit Tree*. vol. 28 pp.115-122.
- Walker, J., A. Hodson, T. Batchelor, D. Manktelow and A. Tompkins 1997a.** "A Pesticide Rating System for Monitoring Agrichemical Inputs in New Zealand Horticulture". *Proceedings 50th Plant Protection Conference*. pp.14-19.
- Walker, J., A. Hodson, C. Wearing, S. Bradley, P. Shaw, A. Tompkins, G. Burnip, H. Stiefel and T. Batchelor 1997b.** "Integrated Fruit Production for New Zealand Pipfruit: Evaluation of Pest Management in a Pilot Programme". *Proceedings 50th Plant Protection Conference*. pp.14-19.
- Williams, J. 1997.** "Maintaining the Health of Ecosystems in the 21st Century: The Challenges Facing Plant Protection Sciences, Industry and Users", in *Proceedings, 50th New Zealand Plant Protection Conference*. Lincoln University, Canterbury pp. 486-492.
- Wilson, R. 1996.** *New Zealand Integrated Fruit Production*. Consulting report prepared by AGFIRST, Horticultural Consultants. Hastings: New Zealand.
- World Hort Trade and Export Opportunities, 1996.** Draft paper for New Zealand's Horticultural Exports.
- YAF Consulting Ltd. 1998a.** *Supporting the Single Desk: A Preliminary Review of Economic and Community Issues*. Discussion document prepared for United Fruit and submitted to Prime Minister Jenny Shipley, 25 September 1998.
- YAF Consulting Ltd. 1998b.** *A Review of the Deregulation Debate: Analysing Industry-Community Viability and Risks for the Kiwifruit Industry*. Discussion document prepared for United Kiwi and submitted to Prime Minister Jenny Shipley, 27 November 1998.