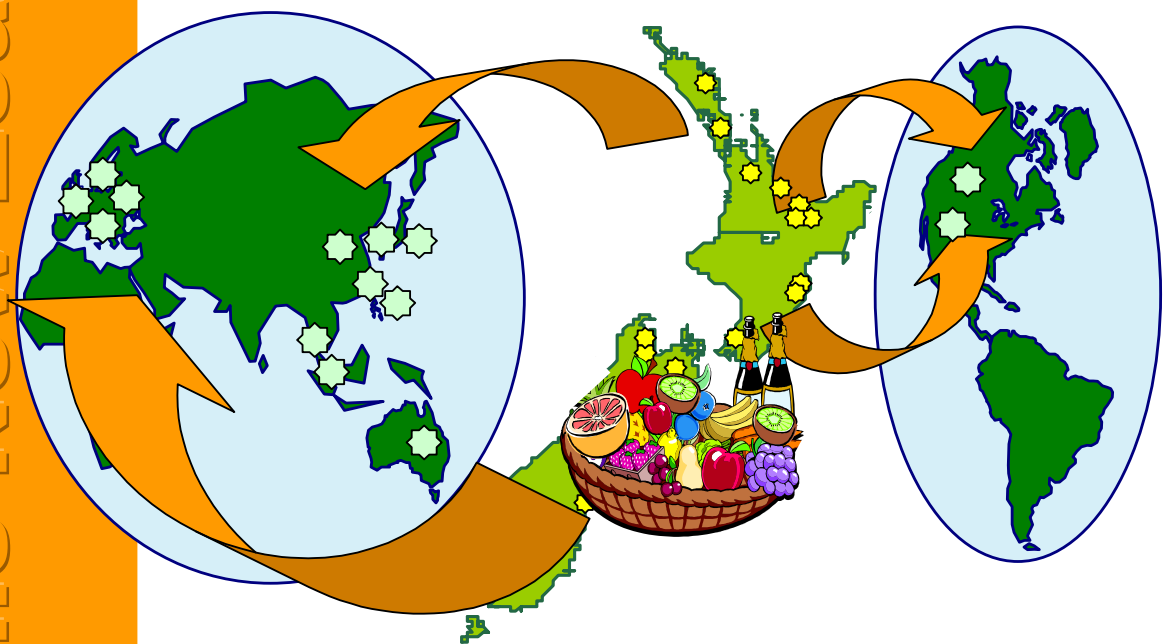


The New Zealand Fruit Industry

An Investment in the Future



New Zealand Fruit Industry - An Investment in the Future

November 1998

Version 1.1

'New Zealand Fruit Industry - An Investment In The Future'.

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Development of this document was paid for by the New Zealand Fruit Industry. It is intellectual property of the Industry, and should be held confidential within it.

Acknowledgements

This report had its origins in the 'Futures for Fruit' industry conferences held in 1996 and 1997 under the leadership of Nick Marsh and Mike McAllum of the Foresight Institute. Its preparation was co-ordinated by a Fruit Industry Policy Team comprising:

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The Policy Team acknowledges the many individuals who have made significant contributions to this document and the various activities that led to its preparation.

The New Zealand Fruit Industry would like to thank the following organisations for their contributions to this document.

<p>New Zealand Fruitgrowers Federation The Horticulture & Food Research Institute of New Zealand Ltd Kiwifruit New Zealand New Zealand Apple & Pear Marketing Board Massey University New Zealand Avocado Growers Association New Zealand Berryfruit Growers Federation Incorporated New Zealand Citrus Growers Incorporated New Zealand Feijoa Growers Association</p>	<p>New Zealand Fruitgrowers Federation New Zealand Horticulture Export Authority New Zealand Hop Marketing Board New Zealand Nashi Growers Association New Zealand Tamarillo Growers Association Persimmon Association of New Zealand Pipfruit Growers New Zealand Incorporated Summerfruit New Zealand Incorporated United Fresh New Zealand Wine Institute of New Zealand</p>
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Preface

This document has been prepared by the New Zealand fruit industry and represents the culmination of over 3 years work by a wide range of industry participants.

New Zealand's fruit industry is a unique business generating earnings of \$1.3 billion and employing 22,000 people. It has a proven international reputation for creative marketing and for delivering quality innovative fruit and fruit products to customers all around the world.

The industry was also one of the first within New Zealand to use a foresight process in its planning. At the 1996 New Zealand Fruitgrowers Federation's Conference a group of key industry participants attempted to progress the scenario that the fruit industry should continue to "grow and sell" products as it had done in the past. After debate, they pronounced the scenario untenable. This realisation prompted the development of a strategic intent for the fruit industry, a visionary but realistic option to inspire discussion, debate and hope.

During 1996 and 1997 the industry foresight process "Futures for Fruit" involved an extraordinary range of people from across the industry through numerous workshops and personal interviews. The process culminated in November 1997 with the release of a Fruit Industry Strategic Intent. During 1998 many fruit product groups used the Industry Strategic Intent and the MoRST template to prepare their own strategic intent documents.

The fruit industry has chosen a growth strategy, based on continuing innovation and knowledge leverage, in the expectation that the returns will reflect the impact of fashionable, new and exciting products in niche segments of world markets. This document is intended to demonstrate the potential of this, and assist the industry to attract the investment needed to achieve the goals and contribute to Government outcomes.

I would like to thank and acknowledge these individuals, companies and industry groups for the time, effort and investment they have made in the preparation of this document, the development of product group strategic intent documents and for their inputs into the "Futures for Fruit" project. The process has at times been frustrating and challenging but in the main it has been inspiring and enlightening. More than anything it has demonstrated that the future we create for New Zealand's fruit industry will be bright and exciting.

Peter Silcock

Convenor, Fruit Industry Policy Team.

CEO, New Zealand Fruitgrowers Federation.

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Executive Summary

1. Introduction

There is growing world-wide demand for food as a result of population growth and increasing levels of disposable income. The growing affluent population is seeking high quality, healthy, convenient, safe and novel products. Rapid expansion of supermarkets is fuelling these changes. Fresh, convenient and nutritious fruit products are a key component of this consumer demand.

The New Zealand fruit industry has conducted foresight and research studies over the past three years examining these and other global trends and discontinuities. The industry has identified a strategy for success that will move it away from commodity products towards niche lifestyle products, and enable it to leverage its valuable knowledge.

The industry is positioned for substantial expansion, but it requires funds to support the research and technology investment needed to supply quality fruit-based products to world markets.

2. An Invitation

The industry has developed a Strategic Intent to position itself by 2010:

The New Zealand fruit industry will be leaders in knowledge and fashionable high value products and services in key market segments earning \$4 billion from the export and domestic markets by 2010.

A more profitable fruit industry can be created - commitment to this strategy will reduce the risk of declining profitability, business failures, declining regional employment and lower taxation receipts. Additional resources are needed to implement the industry's strategy: this document invites participation by a wide range of stakeholders.

The New Zealand fruit industry's current position was obtained as the result of:

- **collaborative investment in research and development**
- **successful transfer of technology to growers and other participants in the industry**
- **successful marketing.**

We now have an opportunity to protect and leverage further this valuable national capability, to develop the fruit industry as a whole into a cluster of excellence with rapid innovation as the cornerstone of its global competitive advantage.

3. The Fruit Industry

The industry currently earns over **\$1.3 billion** annually, of which 70% is overseas earnings.

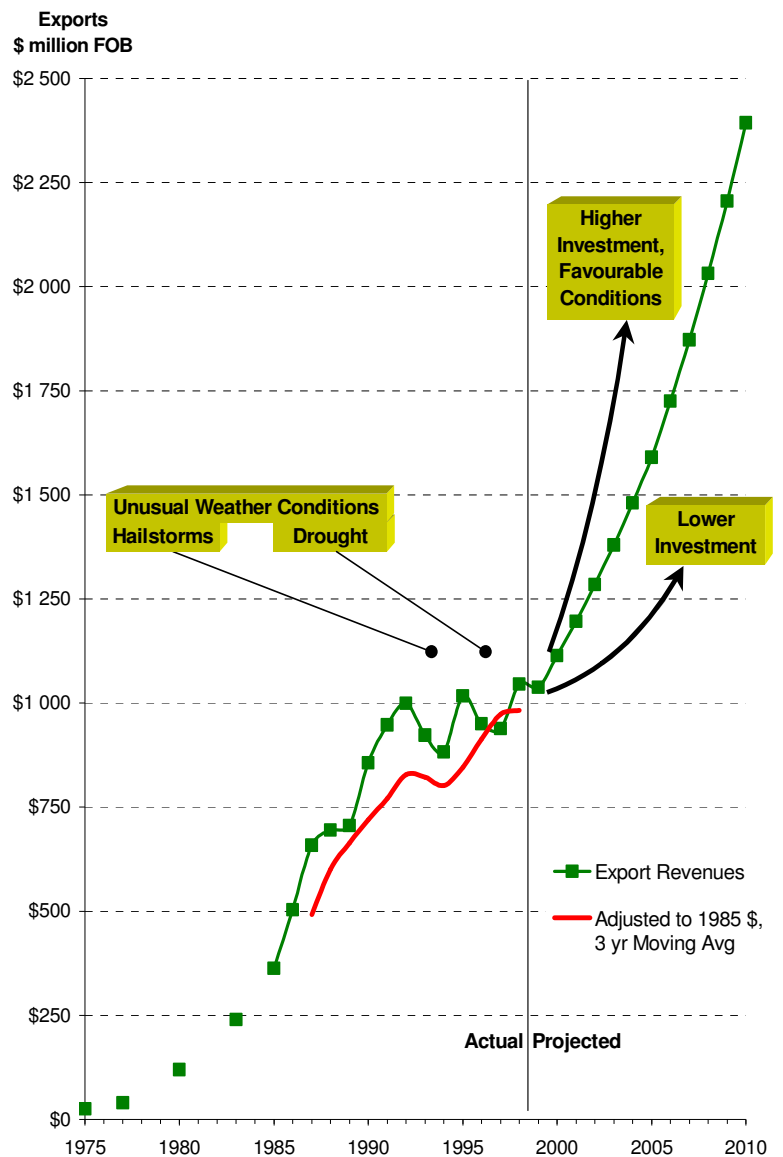
Export revenues have doubled during the last twelve years, and are expected to almost treble by 2010 (refer Figure 1).

The industry is on a steady growth path based primarily on successful innovation.

Revenues were markedly affected during the 1990s by exchange rate movements and adverse weather events.

Pipfruit, kiwifruit and grape/wine account for 88% of total revenue, but several other fruit are emerging as important sectors.

Figure 0-1: Trends in Fruit Exports (FOB, current and constant 1985 \$)



The New Zealand fruit industry:

- ≡ is a very successful niche market player and benchmark supplier of quality fruit and fruit products
- ≡ has global leadership in the development of new fruit varieties
- ≡ produces fruit that carries New Zealand into world markets in over 60 countries, providing a valuable image of New Zealand that can be leveraged by others
- ≡ has efficient producers of high yielding, high quality fruits
- ≡ has long term and well-developed relationships with leading wholesalers and retailers in chosen markets
- ≡ consistently achieves price premiums over other suppliers - including in their home markets
- ≡ is a major employer and contributor to regional economies in New Zealand
- ≡ is well organised, with integrated production and marketing infrastructures.

The emphasis on innovation and quality has allowed the New Zealand industry to achieve and sustain a premium position in global markets. This is illustrated in Figure 2, which compares prices obtained for apples by the principal Southern Hemisphere and representative Northern Hemisphere exporters. This outstanding position is the result of successful development and introduction of new varieties, improvements in orchard systems and fruit production technology, an emphasis on fruit quality, and the development of world leading marketing and distribution systems.

This achievement is also the result of investment by both Government (in terms of R&D) and the private sector (in land, upgraded technology, new fruit varieties, R&D, and marketing expertise). This investment must continue for the industry to survive.

4. Vision 2010

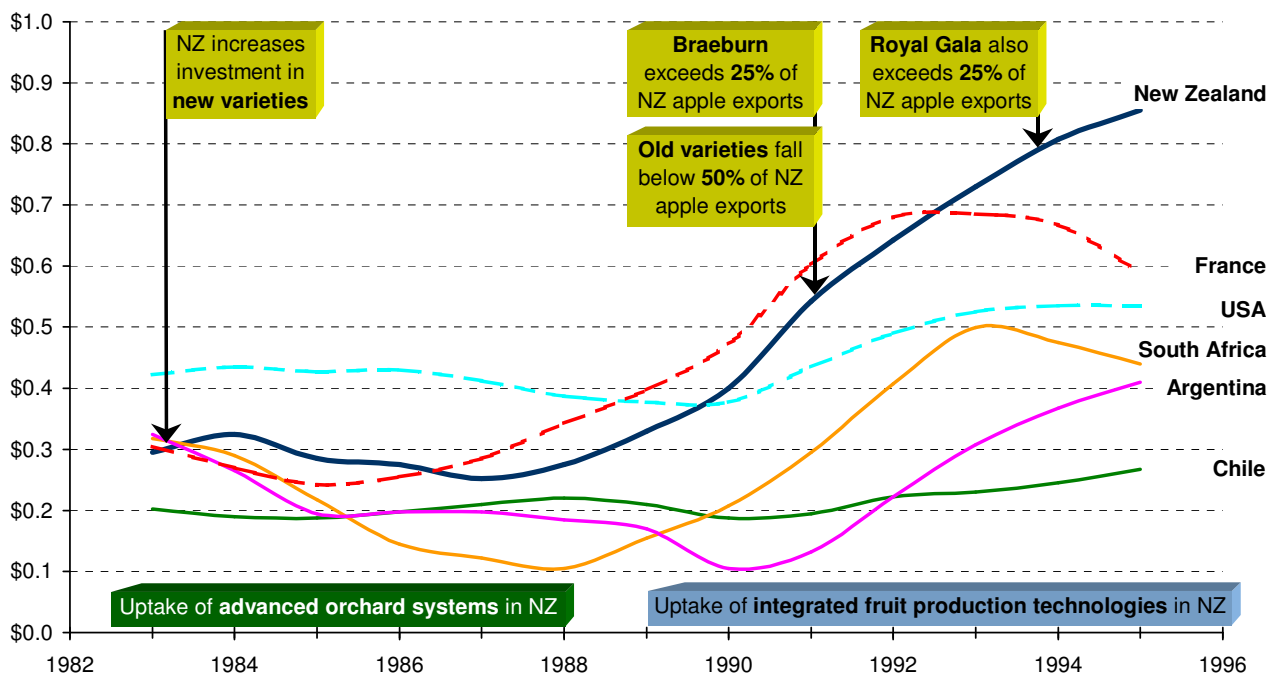
By 2010, the New Zealand fruit industry will have:

- revenues from fruit and fruit-based products of \$3 billion, of which \$2.4 billion will come from export and \$0.6 billion from the local market. At least 33% of this will come from high margin fashion goods and services
- an additional \$1.0 billion in export revenue earned by leveraging knowledge and intellectual property.

As a result of achieving these goals, the industry will have:

- stimulated regional economies by about \$8 billion, and increased employment
- enhanced New Zealand's international image, to the benefit of other exports and tourism
- improved production and processing systems through the use of highly efficient and sustainable practices
- made a substantial contribution to the health and wellness of consumers.

Figure 0-2: Prices Obtained for Export Apples (rolling 3 year averages, US\$/kg)



5. Innovative Capability

The fruit industry has an excellent record of innovation that demonstrates its capacity to develop and implement new fruit varieties and technologies. The core of this capability lies in the:

- established R&D capabilities of HortResearch and other science providers
- excellent opportunities within New Zealand for tertiary education and training at all levels up to University post-graduates, to underpin the world class science capability of these providers and the business expertise of the industry
- advanced, specialist capabilities among suppliers to the industry
- strong communication and networking links between all these capabilities and other key players in the industry
- vibrant and entrepreneurial culture in which participants are determined to succeed
- industry structure with effective co-ordination, leadership and representation
- post-orchard industry infrastructure that can handle larger volumes of fruit
- levels of R&D investment that have been appropriate for developing and maintaining niche market products
- technology transfer systems that guarantee rapid identification of industry research problems and rapid uptake of technology.

6. Outcomes

Several key outcomes will be achieved by the success of the fruit industry in 2010:

- novel products will be developed to meet global lifestyle needs
- niche markets for fashion fruit products will be expanded and new markets accessed, promoting the strong NZ brand image
- more varieties in the 'fruit bowl' offered by New Zealand enhanced access to global markets
- value will be added to fruit, and processed products and ingredients developed, enabling exports to be diversified
- handling systems will be developed to deliver high quality product to customers whenever and wherever they wished
- access will be gained to new markets, and access to existing markets will be maintained without the imposition of non-tariff barriers
- New Zealand owned and developed knowledge based management systems and technologies will be marketed and used internationally
- increased fruit consumption contributed towards a healthy and properly nourished population
- safe and secure food chains will be developed for fruit, with increased harmony between production and ecosystem management
- risk will be reduced within all sectors of the fruit industry through an improved and safer environment
- export revenues and import substitution will be increased
- economic and employment opportunities, quality of life and social cohesion in regional communities will be enhanced.

7. Investment Needed in Research & Technology - 2010

The potential benefits of investment already made in the fruit industry will be fully captured as New Zealand expands its range of export fruit products and technologies, and builds on its international reputation for innovation and excellence.

The industry needs investment from current participants and new entrants. It also needs Government investment for strategic research to underpin industry growth.

The fruit industry plans to underpin the overall industry investment by expanding its investment in research, science and technology by 160% by 2010, to \$28 million per annum (c.f. \$11 million in 1997).

Private Sector Investment

The fruit industry will grow as the private sector builds its investment to:

- expand and **diversify the production base** including offshore investments
- **expand post-harvest resources** to handle increased crop volumes
- **expand marketing capability** and market intelligence
- **expand the 'soft technology'** industry infrastructure and share experiences among the fruit sectors
- **expand both research activity and technology transfer.**

Government Investment

Continued R&D investment in the fruit industry by Government will:

- **ensure the industry's continued viability** by providing technical support on food safety, biosecurity and market access issues. This will enable present fruits to retain their place in the market and open new markets
- **enhance its competitiveness** by developing new fruit varieties and technologies that allow New Zealand to expand existing markets and establish new ones
- **spread risk to the industry and the economy** by developing strategies that reduce the cyclical **impacts** of climate and market factors on fruit production, and reduce risk to the national economy and regional employment
- **examine options for the future** by evaluating and reviewing alternative new crops and technologies
- **maintain and build key scientific resources and capabilities** by underpinning industry investment and growth, and by building key scientific capabilities, such as plant molecular biology, plant and consumer sciences, to maintain New Zealand's competitive position and credibility in the international science community; and ensure continued access to overseas innovations.
- **stimulate regional economies** by about \$8 billion, and create approximately 20,000 jobs primarily in regional areas of New Zealand
- make a substantial contribution to the **health and wellness of consumers**
- **enhance New Zealand's international image** to the benefit of other exporters and tourism.

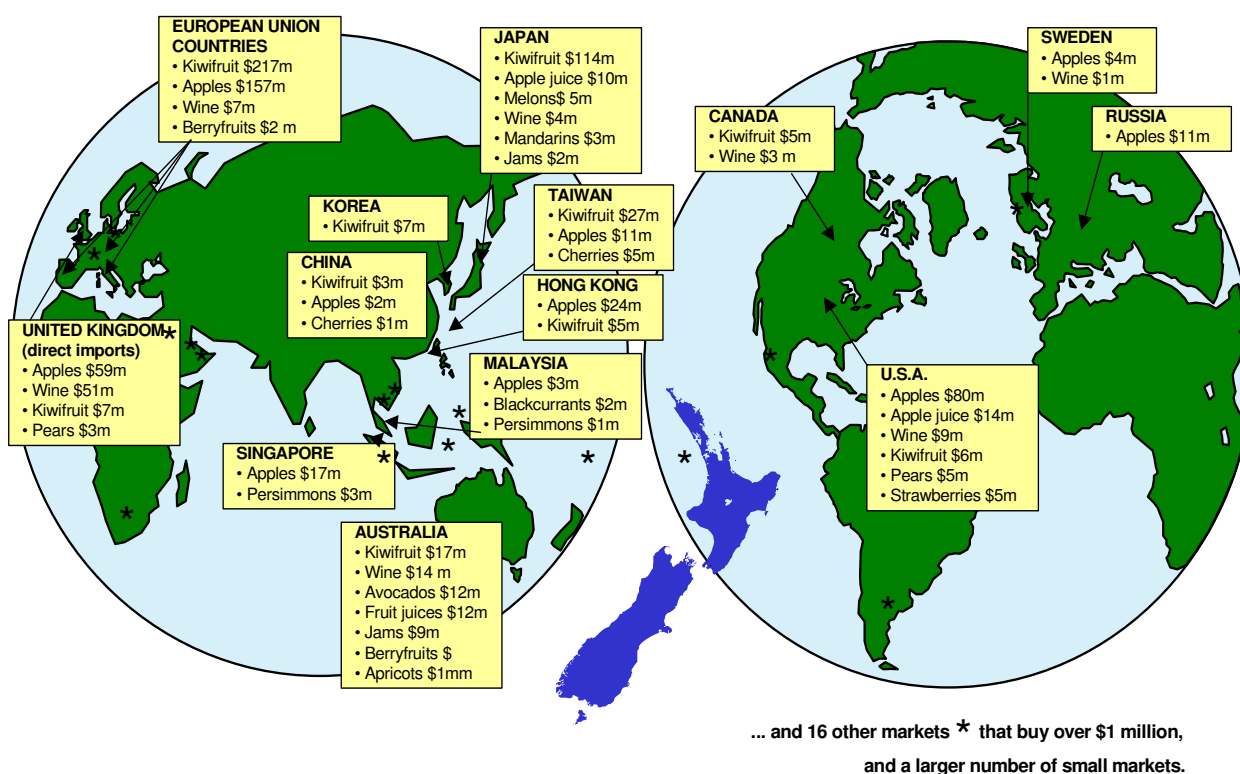
Increasing the PGSF investment in the research, science and technology that underpins the fruit industry to \$23 million per annum by 2010 (from \$19 million in 1997) will provide attractive returns to the Government.

8. National Participation in the New Zealand Fruit Industry

The fruit industry is a vital and significant element of New Zealand's presence on the global scene (refer Figure 3):

- In relation to our size, New Zealand's one percent share of the global fruit market makes the New Zealand fruit industry very successful on a global basis. In practice New Zealand fruit has a much greater presence in several markets - for periods during the year New Zealand kiwifruit may account for over 70% of the kiwifruit sold in specific markets.
- New Zealand is a vital and renowned developer of new varieties and a benchmark supplier of premium quality products such as wine, apples, kiwifruit and several other fruits.
- Fresh fruit and wine carry the New Zealand brand into more than 60 countries around the world, and provide significant opportunity for brand enhancement and leverage by other New Zealand products such as tourism.
- New Zealand kiwifruit, pipfruit and wines are acknowledged global leaders in their markets. The immediate challenge is to expand these sectors and to grow the small fruit sectors that are 'waiting in the wings'.

Figure 0-3: Export Destinations for New Zealand Fruit Products (FOB, 1998)



The industry is a vital and significant component of the New Zealand economy because it:

- is the pre-eminent economic activity of many localised regions in New Zealand and is a significant employer in these regions

- has developed the co-operative and shared resourcing vital for the flexibility required by an internationally competitive industry, although based on many smallholdings
- earns more than \$1.3 billion annually, including \$0.9 billion of export earnings
- currently generates about \$3.0 billion of related economic activity
- employs over 22,000 people in regional New Zealand, and in the key export regions provides employment for between 33% and 53% of the rural workforce
- is a natural partner to a number of other industries providing health, entertainment and other services to local and overseas markets.

9. Achieving the Industry Vision - What needs to be done

To create higher margins, the fruit industry will:

- develop a shared vision for the New Zealand fruit industry
- gain a better understanding of consumers' needs especially in affluent markets
- introduce and exploit new varieties and new products more quickly
- retain advantage of unique products for as long as possible, by developing and using world-wide control mechanisms
- add new value to commodity products
- develop new investment opportunities
- leverage its knowledge and intellectual property.

1. Introduction

There is a growing world-wide demand for food as a result of population growth and increasing levels of disposable income. The growing affluent population is seeking high quality, healthy, convenient, safe and novel products. Rapid expansion of supermarkets is fuelling these changes. Fruit products are a key component of this consumer demand as they are nutritious, convenient and fresh.

At the New Zealand Fruitgrowers Federation Conference in 1996, a group of key industry players attempted to progress the scenario that the fruit industry continue producing and selling products as it has done in the past. After debate, they pronounced the scenario untenable. This realisation prompted the development of a strategic intent for the industry, a visionary but realistic option to inspire discussion, debate and hope.

Under the auspices of the New Zealand Fruitgrowers Federation, the industry sponsored a foresight project called 'Futures for Fruit', which involved interviews with 72 people within all sectors of the fruit industry, a 'Futures for Fruit' workshop of key industry players, and the Fruitgrowers Conferences in 1996 and 1997. A key element of the foresight project was the participation and guidance provided by Nick Marsh and Mike McAllum of the Foresight Institute. They provided the foresight tools, process and strategy and also facilitated the key industry workshops.

During 1998 many groups within the industry prepared documents of strategic intent for their own fruit sectors (refer Appendix 4), following the templates prepared by the Foresight Project of the Ministry of Research, Science and Technology and the overarching Industry Strategic Intent. This document provides an opportunity to demonstrate how the fruit industry is able to contribute to the overall outcomes for New Zealand as identified by the Government through Foresight and associated processes.

The New Zealand fruit industry has chosen a growth strategy based on continuing innovation, in the expectation that returns will reflect the impact of fashionable, new and exciting products in niche segments of world markets. However, it requires significant funds to support the research and technology investment needed to supply quality fruit based products to world markets.

This document is intended to assist the industry attract the investment needed to achieve the goals. In 1998 the New Zealand Fruitgrowers Federation facilitated the formation of an Industry Policy Team to co-ordinate and oversee the preparation of this document. The Policy Team acknowledges the assistance of Martech Consulting Group in pulling together all the individual sector plans and strategies and the Industry Strategic Intent.

The Fruit Industry Policy Team comprised:

Peter Silcock (convenor)	CEO, NZ Fruitgrowers Federation.
Ian Warrington	CEO, HortResearch.
Patrick Murray	General Manager Strategic Marketing, ENZAFRUIT
Martin Clements	President, NZ Fruitgrowers Federation.
Malcolm Cartwright	Director, Kiwifruit New Zealand.
Murray Neal	Chairman, NZ Fruit Research Council.

The Executive Team who managed the project included:

Peter Silcock (convenor)	
Sue Pickering	NZ Fruitgrowers Federation
Dorian Scott	HortResearch.

2. The New Zealand Fruit Industry in 2010

The industry has chosen a path to a successful future. This path involves keeping a presence in the premium end of the market with innovative products and creative marketing, realising high margins. The alternative is that the lead from innovation currently held by New Zealand will be eroded, and our products will become part of the low value, commodity end of the market.

The “fruitful future” holds a great deal of promise for New Zealand – the alternative would decimate the industry and have a significant negative impact on the New Zealand economy particularly in several key regions.

Incremental quality and efficiency improvement or removal of costs will not be enough. The industry needs bold strategic initiatives, to provide market leadership - it is prepared and able to take them.

2.1 A Success Scenario

The industry has developed a Strategic Intent for positioning itself in 2010:

The New Zealand fruit industry will be leaders in knowledge and fashionable high value products and services in its key market segments, earning \$4 billion from export and domestic markets by 2010.

An observer looking at the industry in 2010 will find:

- a sophisticated real time market intelligence system which tracks current and future consumer trends, competitors, fashions, channels and technologies,
- international alliances with food fashion experts, branding specialists and market research companies,
- an understanding of fashion and the psyche of the fashion consumer, making it a trend setter and the dominant global influence in the production and marketing of fruit and fruit-based products,
- a global leader in franchising and licensing of fruit and fruit-based products and knowledge systems,
- products with guaranteed quality, consistency and food safety, in strong demand in their chosen markets,
- innovative production, postharvest and processing operations that add value on-shore, and world-leading systems and logistics that minimise cost and maximise customer benefits,
- use of leading environmental management systems as standard practice,
- strong partnerships throughout the value chain, including linkages with the nurseries, growers, packhouses/processors, transport companies, consultants, marketers and researchers,
- co-operation, cohesion, a shared vision and an inspiring strategic plan
- a reputation for being innovative, open, flexible and receptive to new ideas
- an industry that develops and promotes healthy, nutritious and convenient food products and ingredients to the lifestyle and wellness sectors.

Leading players in the industry are able to say:

We understand what it means to romance the customer.

"Our products are diverse and are clearly differentiated in the marketplace. We have a reputation for being stylish forward-thinkers who set the pace. It is the envy of our competitors that the NZ fruit industry has successfully positioned a segment of its industry into the high value fashion food market. We are the leaders that must be followed."

2.2 Industry Significance

By 2010, the industry will have achieved three major goals. It will:

- earn annual revenues from fruit and fruit-based products of \$2.4 billion from exports and \$0.6 billion from local markets (from a 1997 base of \$0.9 billion and \$0.4 billion, respectively.)
- have global fashion leadership in fruit, and earn at least 33% of export revenues in high margin premium fashion goods and services
- derive additional export revenues from leveraged knowledge and intellectual property worth at least \$1.0 billion annually.

In achieving these goals by 2010, the fruit industry will:

- have almost doubled the area of rural land in fruit and wine production
- be the major contributor to local rural economies in terms of employment, community leadership and other economic activity
- have almost doubled employment in regional economies and have generated supporting economic activity up to four times current levels (refer Section 2.9 in the [Appendix 2](#))
- be a major provider of export earnings for New Zealand
- be a prime contributor to New Zealand's international image.

The industry will have become a **cluster of excellence**, with its focus on **rapid innovation** translating into a significant competitive advantage in global markets. It will be spawning related industries into developing their own strong competitive positions internationally.

The current and future financial performance of the industry will be strong enough to attract the private investment needed to support rapid innovation and the ongoing development of the industry. The industry will be demonstrating the outcomes of increased R&D investment by the Government through the PGSF (Public Good Science Fund) and similar schemes.

Growers will be enjoying good returns in an industry with a bright future; confident their industry is running fast enough to stay well ahead of their competition.

2.3 Government Outcomes

The industry will have contributed significantly to a number of the Government outcomes, as presented by MoRST.¹ The fruit industry contributes to several clusters and many Outcome areas (Figure 2-1).

¹ Vision - the Foresight Project Newsletter, Vol 1 no 6, September 1998, MoRST.

Figure 2.1: Sector Clusters (after the Midsight Conference)

Primary Sector	Aggregation into Sectors or Clusters ¹	Outcome Areas for NZ ²	
Flowers		Economic efficiency and productivity	
Fruit		Horticulture	New products and product attributes
Vegetables		Wellness	New and improved services
Meat		Lifestyle Business	New knowledge and innovation
Dairy		Agricultural	Risk, hazard and biosecurity
Wool			Sustainable Ecosystems
Arable			Communities and social connectedness
Seafood		Knowledge Business	Systems and behaviours
Forestry		Social Connectedness	Wellness, lifestyles and health
Food processing			Culture and identity

¹ After Midsight Conference, Foresight Project, 28-29 July 1998

² Vision Vol 1 No 6, Foresight Project, September 1998

Today the industry is primarily a producer of food for consumption, and as such contributes significantly to New Zealand society. However, fruit products have value in other areas as well. Natural products are perceived as being 'better' than manufactured drugs, and many fruits have been found to provide health benefits, thus contributing to wellness. The industry is also naturally attractive to, and a promoter of, tourism.

The fruit industry participated in the Food and Fibre Foresight Planning Group, and its key outcomes support those identified by that Planning Group (**Error! Reference source not found.2.2**).

Figure 2.2: Food and Fibre Group Outcomes

<ul style="list-style-type: none"> • Mastery of global lifestyle intelligence to understand the “drivers” of attitudes to purchasing and have the ability to apply this knowledge • Increased efficient use of energy and infrastructure • Optimisation of production efficiency and capacity whilst maintaining environmental sustainability • Preservation and enhancement of New Zealand’s high biosecurity status • Optimisation and enhancement of supply chain integration logistics and smart business systems • Global leaders in the use of delivery systems including storage, transport and packaging • Environmentally sustainable systems 	<ul style="list-style-type: none"> • International leadership in animal health and welfare (issues of animal health and welfare need to be addressed for marketing, competitive and social reasons) • Mastery of biotechnological innovation of relevant products • The development of products which will appeal to consumer needs for advanced wellness and lifestyle • Leading edge manufacturing and processing capabilities • Acceleration of the capture of genetic improvements through the development of animal and plant reproductive techniques • Capture the opportunities afforded by intellectual property creation and rapidly advancing information technologies
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3. The Investment Opportunity

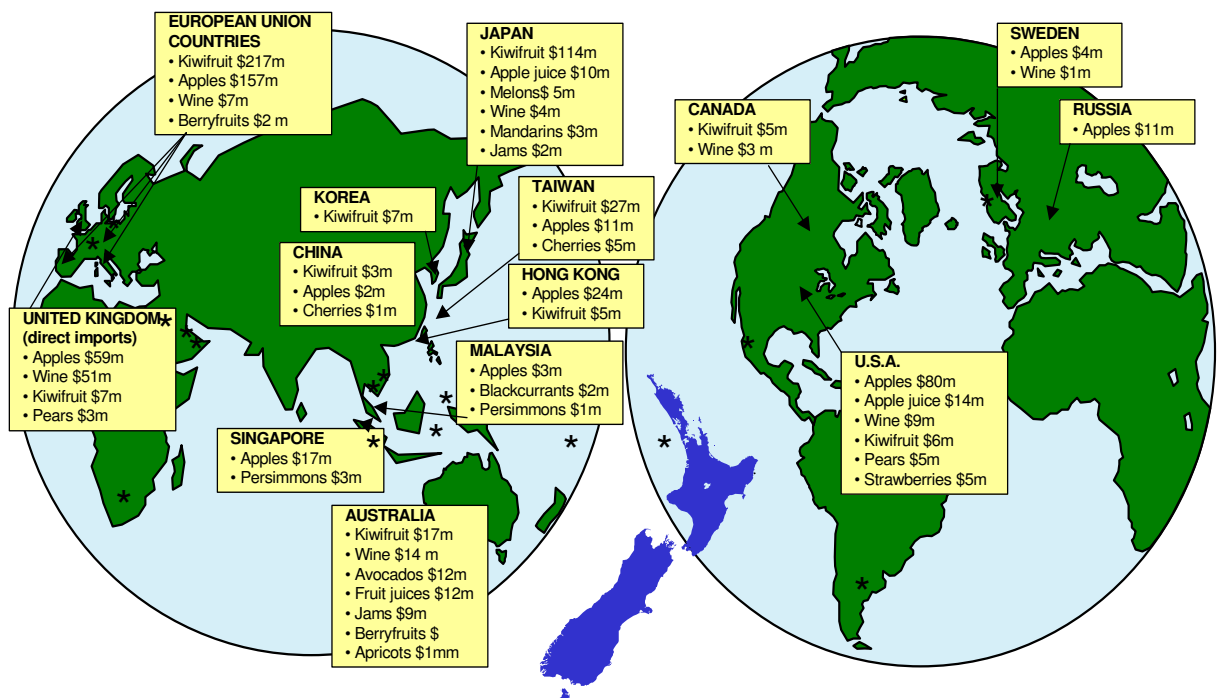
3.1 The New Zealand Fruit Industry

The fruit industry has become a significant export earner and provider of regional employment for New Zealand, and expects to increase significantly in size by 2010, to the extent of providing export and domestic revenues from products and services of \$4 billion. It is an exciting investment opportunity.

There are several key characteristics of the New Zealand fruit industry:

- On a global scale New Zealand is a minor player that produces less than one percent of the world's fruit. However, in relation to our size, New Zealand's one percent share of the global fruit market makes the New Zealand fruit industry very successful on a global basis. In practice New Zealand fruit has a much greater presence in particular markets (e.g. for periods during the year New Zealand kiwifruit may account for over 70% of the kiwifruit sold in specific markets).
- New Zealand is a vital and renowned developer of new varieties and a benchmark supplier of premium quality products such as wine, apples, kiwifruit and several other fruits.
- Fresh fruit and wine carry the New Zealand brand into over sixty countries in all corners of the globe, and provide significant opportunity for brand enhancement and leverage by other New Zealand products, including tourism (Figure 3-1).

Figure 3-1: Export Destinations for New Zealand Fruit Products (FOB, 1998)



... and 16 other markets * that buy over \$1 million, and a larger number of small markets.

- There are many synergies between the fruit industry and other sections of the economy, such as tourism, in developing the economic activity of the regions.
- The value chain from orchardist to consumer consists of many interdependent activities - growing, harvesting, packaging, processing, storing, transporting, distributing, purchasing, and consuming. The performance of each contributes to the final margin (profit contribution) that is available to the whole chain.

- Managing knowledge is a key to industry performance. The provision of New Zealand quality fruit to consumers requires ongoing inputs of knowledge throughout the value chain.
- New Zealand is a successful niche market player.
- The fruit industry is the pre-eminent economic activity of many localised regions in New Zealand and is a significant employer in these regions.
- The industry is based on many smallholdings. Co-operative and shared resourcing is vital to providing the flexibility required by an internationally competitive industry.
- The fruit industry is a highly effective way of deriving enhanced returns from our unique land resource.

It is in the public's interest for the Government to build its investment in R&D for the fruit industry for a number of reasons:

- The future described requires the successful implementation of rapid innovation in the industry. Our wine, pipfruit and kiwifruit sectors are acknowledged global leaders in their markets. The pipfruit sector has a reputation as an international leader in developing and introducing new varieties. Several smaller fruit sectors have yet to establish themselves on any significant scale, but some (such as avocado) are expanding rapidly. Each sector incurs a significant cost in establishing its core infrastructure.
- The industry's current position was obtained as the result of collaborative investment in research and development, successful transfer of technology to growers and other participants in the industry, and successful marketing. In the process, a unique and world-leading research and development capability has been created. This capability must be protected and leveraged further to develop the industry as a whole into a cluster of excellence, with rapid innovation as the cornerstone of its global competitive advantage.
- The existing innovation system has been built up over decades, and has achieved world-wide renown for its abilities. It has substantial value as intellectual capital. This value should not be allowed to dissipate, or to move offshore to the benefit of our competitors. There is an opportunity to leverage this asset across other industries and other countries.
- Successful innovation across an entire industry involves distributed specialist capabilities and close interaction between all participants in the product to market chain. The infrastructure required involves inter-company linkages and industry-wide vision. Industry representative groups are beginning to develop into this role, led by the NZ Fruitgrowers Federation, the Fruit Research Council of NZ, and others. The 'Futures for Fruit' initiative is a good example of industry-wide strategy development.
- The fruit industry has a proven capability for opening up new international markets. On-going investment is needed to maintain market access, prevent trade barriers being erected and protect the biosecurity of New Zealand.
- Knowledge and capabilities developed in the fruit industry have been applied to the benefit of other plant-based industries. A strong capability in plant science enables New Zealand to participate and lead in international science fora and to gain continuing access to new technologies and new knowledge.
- Like other primary industries, the fruit industry is an attraction for tourism. The best example is the wine industry, where winemakers have very successfully presented their properties and products to attract visitors. Other fruit sectors have the potential to support tourism and other downstream industries.

The substantial benefits available to New Zealand will not be achieved without public investment. No sector in the fruit industry has the resources to support all the research and development required. The kiwifruit sector is now expanding after reducing orchard area by 35% in the early 1990s. The pipfruit industry is facing considerable financial pressure and some rationalisation is expected. No other sector is yet large enough to invest from its own resources to the level required.

3.2 Private Sector Investment

The fruit industry will grow as the private sector builds its investment to:

- **expand and diversify the production base**

Land will continue to be purchased and planted in orchards and vineyards. This expansion is taking place with grapes, kiwifruit, citrus and avocados at present and will include pipfruit, as the short-term problems of that industry are resolved.

The diversity of the industry's production base will be increased as investment in the 'sunrise' fruit crops proceeds.

Current orchards will continue to be upgraded from commodity varieties to newer novel, niche or premium varieties.

Investment in production systems offshore will be needed to provide twelve months supply of 'New Zealand' quality fruit to markets.

- **expand the post-harvest resources to handle increased crop volumes**

There will be further investment in pack-houses and cool-stores to handle the increased volumes of traceable fruit and to incorporate improved technologies in the packaging, quality assessment and controlled atmosphere storage and transport of fruit.

Increased grape plantings and market demand for New Zealand wines will require further investment in wineries.

Investment will be needed in other fruit processing technologies that will extend the product range, and provide new and novel products.

- **expand the marketing capability**

During the past decade the individual fruit sectors have assembled a body of knowledge and experience about fruit production and post-harvest technologies, effective industry infrastructures, market development and intelligence that can be shared among the present and emerging fruit sectors.

The kiwifruit, pipfruit and wine industries have built expertise in distribution and brand equity in key offshore markets. This capability is available to be leveraged by the newer sectors as they position themselves at the premium end of the market.

There is considerable potential for the various fruit sectors to combine their products to create innovative products and develop new market niches.

- **expand the research activity and technology transfer**

Innovation is critical to the success of the fruit industry. The effectiveness of leveraging off the PGSF will increase as the fruit industry increases investment in its own research portfolio. This will be achieved both by expanding its 'in-house' research capability and contracting to Crown Research Institutes, Universities and other science providers both within New Zealand and overseas.

The industry has many years' experience in sourcing the appropriate set of research skills, either in New Zealand or overseas and contracting R&D to a range of science providers.

Further investment in technology transfer between the industry and the science providers will contribute to innovation within the industry. Industry and Government will jointly fund some of this activity. Both have an interest in leveraging benefits from the PGSF. The ability of many sectors of the industry to raise funds for R&D will be reliant on the existence of mechanisms such as the Commodities Levies Act.

- **expand the 'soft technology' industry infrastructure and share experiences among the sectors**

The industry will need to expand its investment in education and training programmes in order to expand the base of educated growers and the size of the skilled labour force. There will be a need to continually attract talented people into all components of the industry throughout the value chain. Many of these programmes will be continued in partnership between industry and Government.

Industry will need to invest in the development and evolution of structures that are appropriate for the 21st Century.

Investment will be required in the knowledge-based assets that determine the ultimate value and performance of the fruit industry. This investment may involve some partnerships with the Government sector.

The potential benefits of the investments already made in the fruit industry will only be fully captured as New Zealand expands the range of export fruit products and technologies, builds on its international reputation for innovation and excellence, and leverages its knowledge.

3.3 Government Investment

By building its R&D investment in the fruit industry the Government will be able to:

- **ensure the industry's continued viability**

The fruit sectors need to develop the technologies that will maintain their position in the market. Essential research input is needed across all sectors to guarantee the continued viability of the individual fruit sectors. The research will focus on the production and post-harvest technologies that impact on food safety and the 'best management practices' that are required by the end customer/consumer. It will address the biosecurity, food safety and market access issues raised in the post-GATT environment.

- **enhance its competitiveness**

The fruit sectors need to develop new fruit varieties and technologies that allow New Zealand to expand its markets. This research investment leads to new fruit products and services where a payback can be expected, such as new cultivars that earn export revenue through the flow of royalties (or similar payments) on plants and/or fruit. The contribution of public funds to this research will ensure that the basic fruit germplasm is retained in the public arena, and not locked up by individual companies and organisations.

- **spread risk to the industry and the economy**

The fruit industry must diversify with new products into new markets. During the 1970s, the fruit industry was dominated by pipfruit. During the 1980s kiwifruit

became a second major revenue earner. During the 1990s wine has emerged as the third significant revenue earner.

Other fruit sectors such as summerfruit, citrus, avocado, persimmons, berryfruit and olives are now positioned to make significant contributions to both the domestic and export markets. These emerging sectors have systematically established their own industry infrastructure, technological competence, and market intelligence to provide a base on which to grow. Growth in the New Zealand fruit industry is being achieved by both expanding the more established sectors, and by the continuing development of new sectors.

The fortunes of the individual fruit sectors change from year to year - climate and market factors have cyclical impacts on the profitability of fruit production. Having several major sectors in the fruit industry can spread the risk to the national economy, so that a negative impact on one sector is mitigated by a possible strong performance by another. This happened during the 1990s between the pipfruit, kiwifruit and wine sectors, where a weak performance by one crop was compensated by a stronger performance from another. Encouraging crop diversification within the fruit industry will help to dampen the adverse impacts of climates and markets on annual export returns and on regional economies.

The Asian crisis has shown that not all sectors are affected by an economic downturn in our trading partners. While exports of some categories of products (such as wood or wool) to Japan decreased by nearly 30% in the first seven months of 1998, fruit and vegetable exports to Japan increased by 8%.²

- **examine alternative options for the future**

The fruit industry needs to continually evaluate and review the alternative options for new crops and technologies. Base information is needed about potential new products before they can be considered for new markets. R&D investment in examining options is a high risk because many of the options explored will prove to be non-starters. The costs of comprehensively evaluating the performance of new fruit crops are high. However, the industry track record shows that the long-term benefits arising from the successful development of new crops have provided significant regional employment and export earnings for New Zealand.

- **Maintain and build key scientific resources and capabilities**

The fruit industry investment needs to be underpinned through building key scientific capabilities such as plant molecular biology, plant and consumer sciences in order to maintain New Zealand's competitive position. New Zealand must also maintain credibility with the international science community and so continue to access overseas scientific discoveries and innovations.

Significant economic, environmental and social outcomes are available to Government through continued support of the fruit industry by investment in research and development. Public investment in the industry now will facilitate achievement of the Strategic Intent, ensure a viable industry in 2010, and provide a base for future growth.

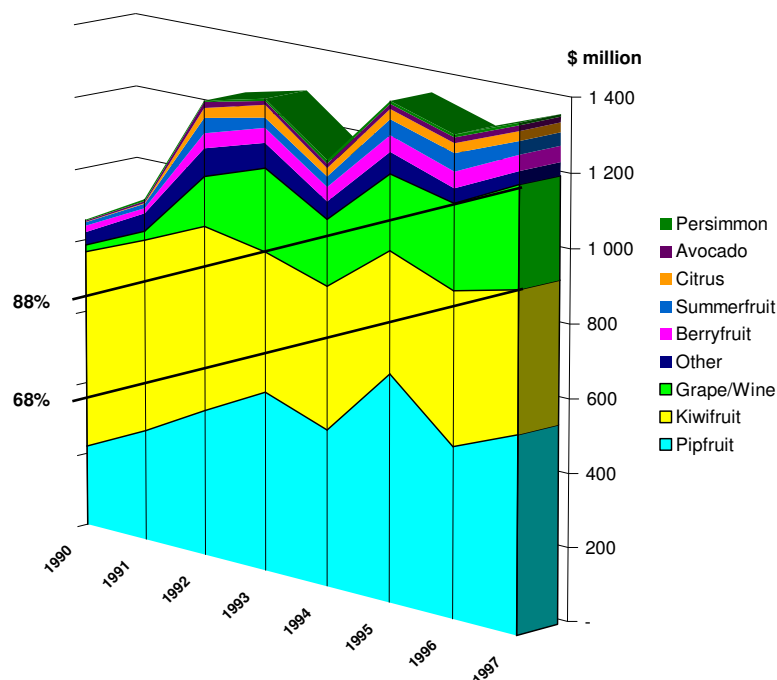
² Personal correspondence, Trade NZ, Tokyo, September 1998

4. Characteristics of the New Zealand Fruit Industry

This section summarises the more important characteristics of the New Zealand fruit industry, to demonstrate its achievements to date, and to illustrate its potential. A more detailed review is presented as Appendices 2 and 3.

The industry had annual revenues in excess of \$1.3 billion in 1997, 88% of which was due to pipfruit, kiwifruit and grapes/wine (Figure 4-1). Nearly 70% of total production was exported, mostly as fresh fruit but also increasingly as wine.

Figure 4-1: Fruit Industry Revenues (current \$'s, fob)



The industry:

- is a very successful niche market player and benchmark supplier of quality fruit and fruit products, which carry New Zealand into more than 60 countries around the world, providing a valuable image of New Zealand that can be leveraged by other exporters (refer Appendix 2).

While New Zealand trades 25% of global kiwifruit (and 67% in our season), our share of global markets for other fruits is generally tiny. In relation to our size, New Zealand's one percent share of the overall global fruit market makes our industry very successful on a global basis.

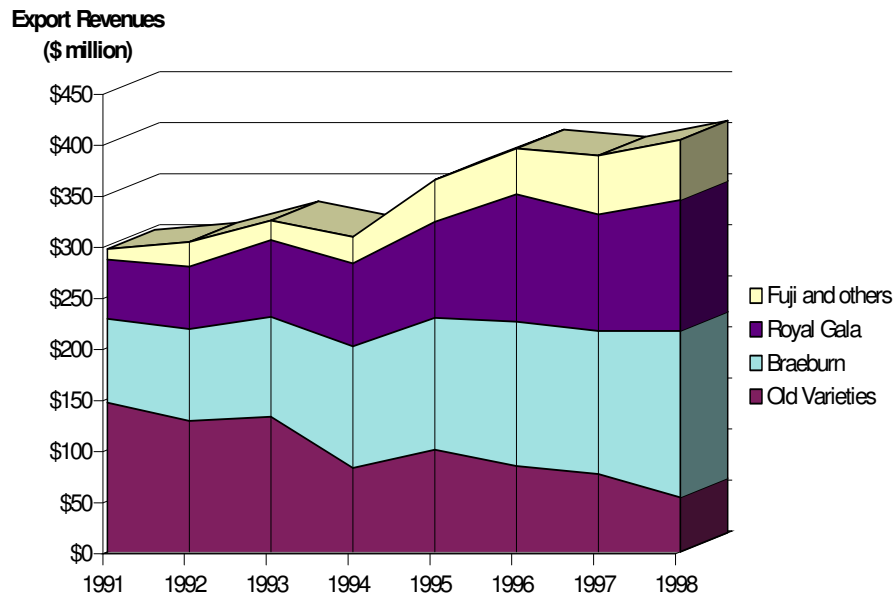
- has global leadership in the development of new fruit varieties, and consistently achieves price premiums over other suppliers

The industry has strong research capability, and an excellent track record in terms of rapid and successful adoption of new technologies. For example:

- The Braeburn apple was introduced during the late 1970s and early 1980s. Within ten years it was achieving premiums of more than 100% over the older 'commodity' varieties
- Our investment in planting new varieties of apples (Figure 4-2) has contributed to New Zealand's consistent top ranking in a prominent annual review of apple producing nations. Export revenues from old varieties fell by half over the five years to 1996.

- As a result of this and other innovations in the apple industry, New Zealand achieved mean prices for its apples of more than twice those achieved by its Southern Hemisphere competitors
- The Hort16A kiwifruit, bred by HortResearch, debuted into the market with substantial premiums over existing varieties
- Blueberry varieties developed in New Zealand are achieving outstanding success in Europe and Japan.

Figure 4-2: Revenues from Apple Exports, by Variety (constant 1991 NZ\$, FOB)



There are many other examples of successful innovation. Research into new varieties and improved processes is continuing, and there are several excellent prospects in the pipeline.

- has suppliers who are themselves becoming significant on a global scale

A variety of specialist suppliers to the industry have established their own niche markets offshore, selling such things as advanced sorting technology, disinfestation equipment, labels, spray application technology and stainless steel fittings.

- has efficient producers of high yielding, high quality fruits.

While New Zealand faces high transport costs due to its distance from the main markets, it makes up for this with an emphasis on yield and quality control. Our apple industry was assessed (in the World Apple Review) as having the highest yield per hectare of all global producers, and the lowest variability of production.

The price premiums obtained by New Zealand fruit are a result of an emphasis on quality through advanced orchard systems, integrated fruit production technology, and the deliberate strategy of only exporting high quality fruit.

- has long term and well-developed relationships with leading wholesalers and retailers in chosen markets.

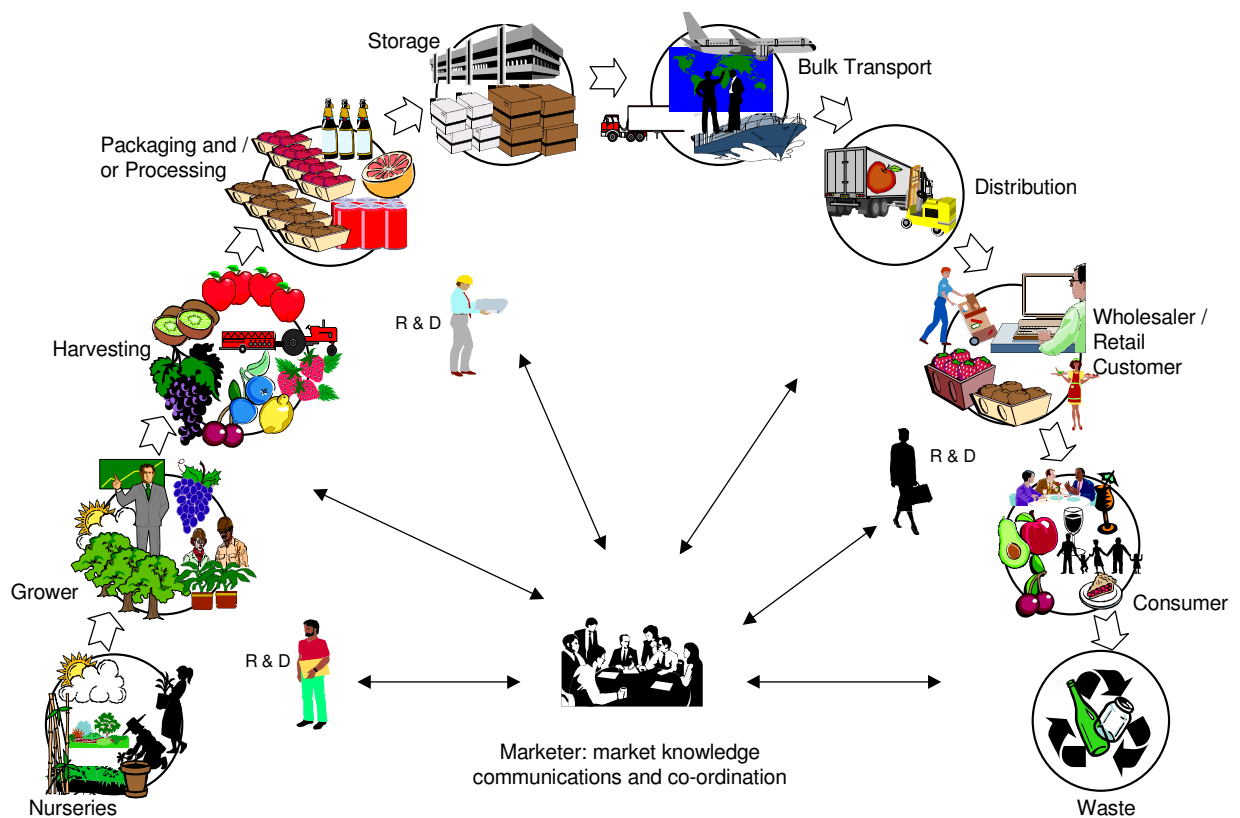
The larger sectors have strong marketing bodies which co-ordinate marketing efforts world-wide on behalf of the participants in their sectors, and which have developed strong brands in their own right. For the smaller fruit sectors, the Horticultural Export Authority provides a mechanism for each product sector to determine its export rules for each season by vote, maintain export quality standards, and provide funding for research.

Strong relationships have been developed with retailers in our main markets in an attempt to balance their increasing size, power and sophistication. In the UK for example, Zespri International (for kiwifruit) has leveraged the relationship built up by Enza (for pipfruit) with a prominent local distributor, which has increased marketing power in the UK for both organisations.

- is a major employer and contributor to regional economies in New Zealand.

Fruit is grown in rural areas all over New Zealand, and in the principal fruit growing regions of Hawkes Bay, Bay of Plenty and Tasman, it directly employs between 35% and 54% of the local workforce. In total the industry employs about 22 000 people, and it has been estimated that the industry supports at least twice its revenues in further economic activity - nearly \$3 billion worth.

Figure 4-3: Orchard to Market Chain



- is well organised, with integrated production and marketing infrastructures.

The fruit industry is made up of a complex cluster of organisations (Figure 4-3), and relies on a wide range of supportive products and services. The activities of all participants are increasingly co-ordinated through national growers' groups and joint marketing organisations. Most of these come under the umbrella of the NZ Fruitgrowers Federation, which set up the Fruit Research Council of NZ to collate and co-ordinate the research and technology views and desires of all parts of the industry. Success in the industry depends to a significant extent on effective utilisation of specialist capabilities such as HortResearch, the main supplier of research expertise to the industry.

The industry structure serves as a very good base to build a cluster of excellence, where all the major players have close and intense interaction amongst them, and where the industry as a whole is able to learn and adapt rapidly to developments in technology or its markets. The pipfruit and kiwifruit sectors in particular have close links between their marketing bodies and HortResearch. A characteristic of the fruit industry is the close links that all fruit sectors have with HortResearch as their primary science provider.

- has sectors at different phases of development.

The industry expanded to its current size by developing new varieties in the main sectors, and by building up one fruit sector after another: the pipfruit industry first became an international force in the 1970s; the kiwifruit industry followed in the 1980s, and in the 1990s the wine/grape industry has become more significant.

These three sectors are currently in different positions of their growth cycles:

- The pipfruit industry is in danger of beginning a decline phase, with global supply increasing at twice the rate of demand, and prices trending downward. Costs reduction will not be enough to maintain performance – past successes with the introduction of new varieties must be repeated so that the industry can continue to attract substantial price premiums
- The kiwifruit industry has been through a cycle of growth and decline, and is now on a new growth curve, based on the introduction of new varieties, brand development and marketing, better quality management, better packaging, and more effective management practices
- The wine/grape industry has also been through a decline phase, but with the development of world-class wines and the positioning of these at the top of global markets, the industry has a significantly better profile compared to a decade ago, and is now experiencing strong growth.

These main sectors were developed one after the other, building on expertise and market position gained, and as a result the fruit industry has become better able to cope with climate or market risk affecting any one particular sector.

The ability to introduce and develop new sectors is a major strength of the industry. There are several sectors with potential to continue this development, including:

- Avocado, citrus (especially lemons and easy-peel mandarins), summerfruit and some berry fruits that are internationally competitive, such as blueberries and boysenberries are positioned to expand.
- Persimmon with improving returns from increased yields, and tamarillo, feijoa and olives with improving price trends also have potential for growth.

5. Industry Strategy

5.1 Vision

The industry, influenced by the Foresight project of the Ministry of Research, Science and Technology, initiated the 'Futures for Fruit' project. During this project, each sector articulated its vision of the future and identified key outcomes and the competencies required to achieve their visions (refer to Appendix 4).

The NZ Fruitgrowers Federation, as the main representative group for all fruit growers, has worked with growers in all sectors to develop a business strategy for the industry. The principal elements of this strategy include:

- Statement of Intent:

The New Zealand fruit industry will be leaders in knowledge and fashionable high value products and services in key market segments earning \$4 billion from exports by 2010.

- Goals:

The industry will, by 2010 earn annual revenues from:

- fruit and fruit-based products of \$3 billion, including \$2.4 billion from export and \$0.6 billion from local markets, with at least 33% of revenues coming from high margin fashion goods and services
- leveraged knowledge and intellectual property of a further \$1.0 billion annually.

By achieving these goals, the industry will have:

- stimulated regional economies by about \$8 billion (about twice its revenues), and substantially increased employment in the regions
- further enhanced New Zealand's international image, to the benefit of other exports and tourism
- provided New Zealand consumers with healthy, nutritious options for dietary improvement, leading to increased wellness, through a vibrant domestic market for fruit which will have replaced imported fruits
- improved its environmental integrity through more sustainable practices, restoration of ecosystems and amelioration of negative impacts.

5.2 Scenarios

The 'Futures for Fruit' project developed a set of four possible scenarios for the future, following the Foresight process, for debate at the 1996 NZ Fruitgrowers Federation Conference. The scenarios,³ developed as a prompt for thinking and discussion, were each based on a particular key trend:

- "Fashion Foods" – product focus, diversity, fads
- "McFruit" – distribution focus, alliances, consistency
- "Go Asia" – market focus, growing markets
- "Grow and Sell" – production focus, sell wherever we can.

The Conference rejected the last scenario as unsustainable. After consideration, the industry developed a set of key strategies with which to achieve its goals.

³ Analysis of Interviews, Futures for Fruit, October 1996.

5.3 Strategies

The industry's key strategies include:

- Gaining a better understanding of consumers needs through foresight and consumer research on global lifestyle trends, consumer needs and product functionalities.
- Increasing the rate of turnover of new products, investing in new varieties and deliberately relinquishing older varieties as they lose their market advantage and become commodities.
- Retaining the advantage of unique products for as long as possible, by protecting the intellectual property in new varieties, and using appropriate introduction strategies.
- Adding new value to commodity products, focusing on high value fashion uses and developing new niche markets.
- Developing opportunities that will attract new investment and diversify the present investment portfolio.
- Investment in innovation along entire value chain.
- Leveraging our knowledge and intellectual property, by managing a controlled spread of valuable NZ-developed technology around the world and deriving revenues through licensing and franchising of fruit-related software, equipment and handling processes.
- Developing a shared vision for the New Zealand fruit industry for all stakeholders, and undertaking on-going strategy development and planning to move the industry towards this vision.
- Improving co-ordination with other horticultural and food-related sectors through collaboration and by taking opportunities for joint leadership and representation.
- Developing industry benchmarks to ensure continuous improvement in environmental performance, product quality and integrity, health and safety, public awareness and support.
- Developing leadership in the controlled offshore production of New Zealand owned varieties for 12 months' fruit supply.

5.4 Competencies

Four fundamental competencies are required to achieve these goals. These are:

- **Innovation** - the ability to anticipate and create future needs, manage the development of innovative products and create the image of fashion leadership
- **Green Value** - the ability to develop value-based propositions based on leadership in adoption of clean, green and ethical practices.
- **Knowledge systems** - the capability to develop significant new revenue from the industry through leveraging knowledge and intellectual property globally.
- **Connectivity** - the development of a cohesive fruit industry with vision and leadership that creates alliances and joint ventures to maximise margins to New Zealand.

5.5 Action Plans

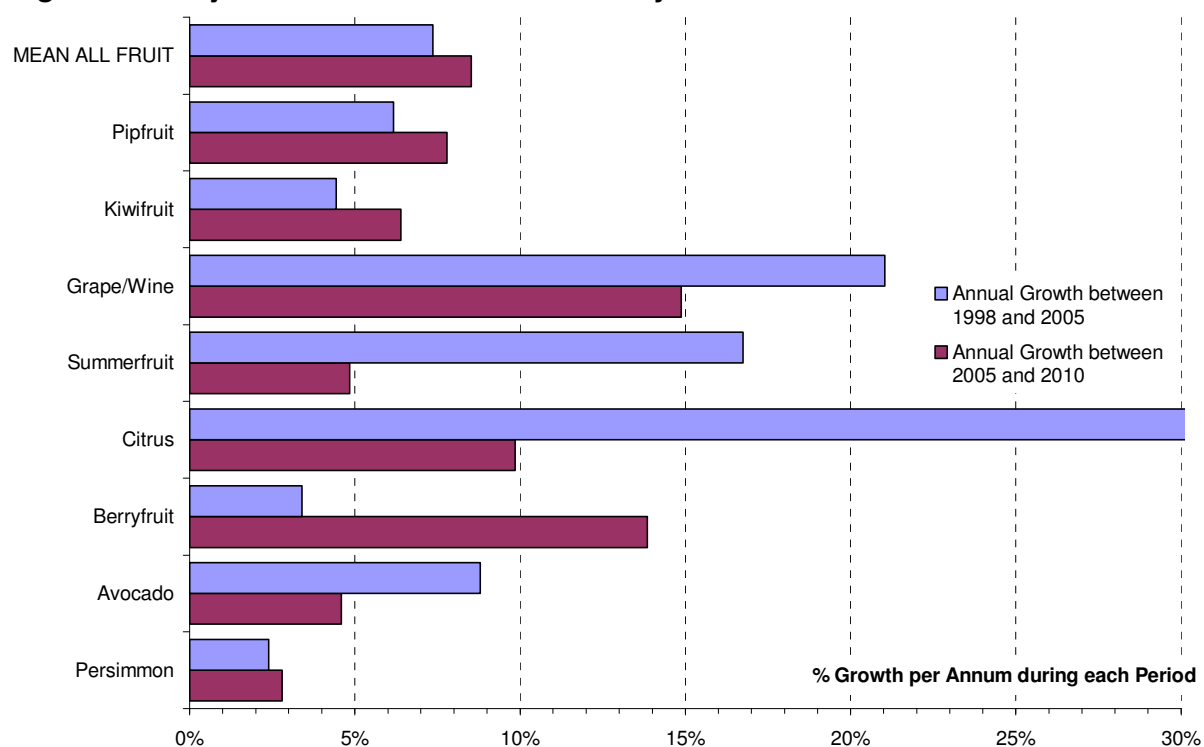
A set of industry-wide action plans is being developed by the NZ Fruitgrowers Federation in conjunction with exporters, and will include new initiatives and cross-sector projects to deliver the intent. These plans include:

- the development of an appropriate industry structure with representation from all parts of the value chain
- the development of an industry Research and Technology Plan under the Fruit Research Council of NZ, to provide greater detail on capabilities and R&D investment plans
- the establishment of a 'partnership' with the Crown by developing a close interaction with Government R&D purchase agents such as the Foundation for Research, Science and Technology, and R&D providers, to ensure a free flow of information about needs, performance and outcomes
- a commitment to on-going foresight and strategic leadership, and the fostering of communication and co-operation within the industry
- closer interaction with other industries to leverage opportunities and synergies.

Action plans to implement these strategies are also being developed at individual sector levels (refer Appendix 4). Similarly, New Zealand's largest fruit processing company (Fruco Processors (NZ) Ltd) has recently undertaken foresight and scenario planning in order to position themselves for the future, and to reduce their dependence on a commodity market for apple juice concentrate.

Each sector expects their action plans to lead to revenue growth as their contribution towards the industry's Strategic Intent. Projected growth rates by sector are shown in Figure 5-1, with the sectors listed from top to bottom in decreasing order of size.

Figure 5-1: Projected Revenue Growth Rates by Sector



5.6 Investment

R&D in the fruit industry was funded to \$32.7 million in 1997, representing 2.4% of total revenues in that year. Of this, \$11.1 million (34%) was provided by the industry itself. The industry's plans to achieve its 2010 revenue targets are based on expected gains from current and future innovative activity.

The industry believes that it should be possible to maintain its own annual spending on R&D at an average of 0.8% of its annual revenues, as the industry grows to its challenging new targets. This will be supplemented with additional income from royalties and with funding from Technology New Zealand.

The industry proposes that the Government increases its contribution slightly through the PGSF from its 1997 level of \$19.2 million to \$23.1 million by 2010. This will support the underpinning strategic research, science and technology development that is required to achieve strategic renewal of the fruit industry as outlined in its Strategic Intent.

The industry's projected R&D funding requirements are presented in Figure 5.2 and further data are presented in Appendix 3.6.

This Government funding will:

- leverage the additional industry investment
- build core competencies
- maintain and enhance an effective and efficient innovation system
- provide integration of research across other industries, such as vegetables and other foods
- develop and maintain critical science capabilities that will underpin future successes
- provide an attractive environment for on-going recruitment and retention of excellent scientists and technologists within New Zealand.

Figure 5-3: Projected R&D Funding Requirements (\$ million)

	1997		2005		2010	
	\$	% Rev.	\$	% Rev.	\$	% Rev.
Industry Revenues	\$1 336		\$2 090		\$2 993	
Government R&D						
PGSF ¹ Sector	\$15.1	1.1%	\$17.0	0.8%	\$19.0	0.6%
PGSF Generic	\$4.1		\$4.1		\$4.1	
NSOF ²	\$1.3		\$1.3		\$1.3	
Technology NZ ³	\$0.4		\$0.6		\$0.8	
Total Government R&D	\$20.8	1.6%	\$23.0	1.1%	\$25.2	0.8%
Industry R&D	\$10.23	0.8%	\$16.3	0.8%	\$22.9	0.8%
Royalties, etc	\$0.8	0.1%	\$3.5	0.2%	\$5.0	0.2%
Total R&D	\$31.9	2.4%	\$42.8	2.0%	\$53.0	1.8%

Notes:

1. PGSF - Public Good Science Fund
2. NSOF - Non-Specific Output Fund
3. Technology NZ's - Funding for 'Technology for Business Growth'
(All administered by the Foundation for Research, Science and Technology)