

**OVERVIEW OF THE NEW
ZEALAND APPLE INDUSTRY IN A
GLOBAL CONTEXT**

**Report prepared for
Pipfruit New Zealand**



with funding from the
Ministry of Economic Development



December 2006



Coriolis Research Ltd. is a strategic market research firm founded in 1997 and based in Auckland, New Zealand. Coriolis primarily works with clients in the food and fast moving consumer goods supply chain, from primary producers to retailers. In addition to working with clients, Coriolis regularly produces reports on current industry topics. Recent reports have included an analysis of Retail Globalization: Who's Winning" and an "Overview of the Growth of Foodservice."



The coriolis force, named for French physicist Gaspard Coriolis (1792-1843), may be seen on a large scale in the movement of winds and ocean currents on the rotating earth. It dominates weather patterns, producing the counterclockwise flow observed around low-pressure zones in the Northern Hemisphere and the clockwise flow around such zones in the Southern Hemisphere. It is the result of a centripetal force on a mass moving with a velocity radially outward in a rotating plane. *In market research it means understanding the big picture before you get into the details.*



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PROJECT SCOPE

This report is one of the building blocks for the development of a comprehensive New Zealand pipfruit industry strategy

- Pipfruit New Zealand on behalf of the pipfruit industry, with the assistance of the Ministry of Economic Development has initiated the development of a pipfruit sector strategy
- The strategy will focus primarily on the long term future of the pipfruit industry and will identify the changes necessary for New Zealand to maintain international competitiveness
- Following the terms of reference, the process for developing and deploying the strategy will include:
 1. Consultation widely throughout the pipfruit value chain and associated sectors
 2. A brief examination of the current state of the New Zealand pipfruit industry and the factors onshore and offshore that have generated the current situation
 3. A rigorous analysis of international pipfruit markets and how the New Zealand industry can compete: this will include a competitor comparative analysis and an examination of where NZ's future opportunities lie
 4. An assessment of the changes that are necessary to secure the long-term future of the industry. This will include:
 - Development and testing of future scenarios and analysis of potential outcomes
 - Analysis of potential roadblocks and possible solutions to them
 5. The development of a shared vision for the NZ pipfruit industry
 6. Implementation steps for all major stakeholders
- Innomarc Consulting, in conjunction with Coriolis Research and a consortium of other industry researchers and experts, is developing this strategy under the governance of the Project Steering Group

PROJECT STRUCTURE

This report provides an overview of the current state of the New Zealand pipfruit industry and its competitors and markets

- This report is structured to answer two points from the terms of reference
 1. A brief examination of the current state of the New Zealand pipfruit industry and the factors onshore and offshore that have generated the current situation
 2. A rigorous analysis of international pipfruit markets and how the New Zealand industry can compete: this will include a competitor comparative analysis and an examination of where New Zealand's future opportunities lie

PROJECT LIMITATIONS

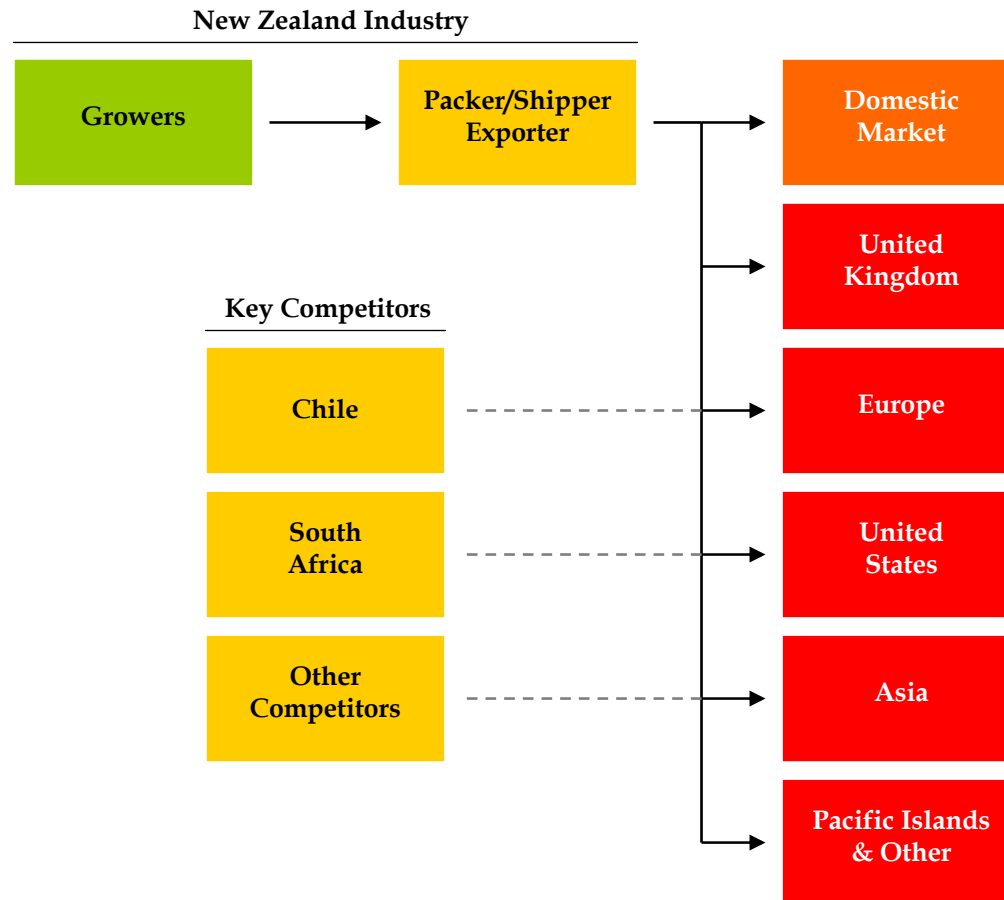
This report has a number of limitations

- Available historical data on the New Zealand pipfruit industry is poor and inconsistent. Government budget cuts in the 1990's and the deregulation of the industry exacerbated this problem.
- The numbers in this section come from a number of sources. While we believe the data is directionally correct, we recognise the limitations in what information is available. In many cases different data sources disagree (e.g. HortResearch vs. MAF vs. Statistics New Zealand). Many data sources themselves incorporate estimates of industry experts.
- We have chosen to primarily focus our limited time and budget more on apples than pears. We have done as we believe that without a successful apple industry and the scale it brings, there is little hope for the pear industry. Pears represent less than 10% of total pipfruit area and take the same amount of time, resources and effort per variable to analyse.
- If you have any questions about the source or meaning of a number in this report, please contact the project leader, Tim Morris at Coriolis Research on (09) 623 1848

DOCUMENT STRUCTURE

This report is structured as follows

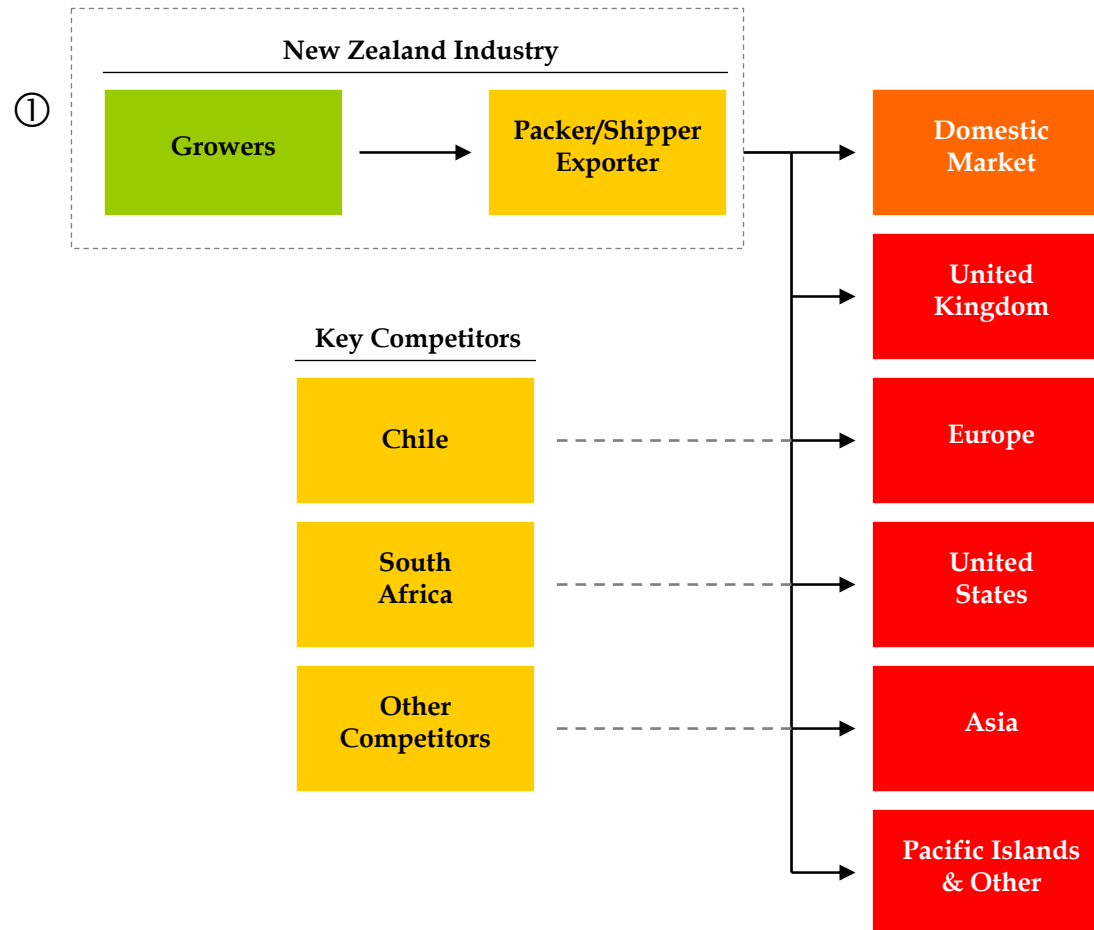
Key players in the supply chain for New Zealand apples
(model)



SECTION 1

The first section of this report looks at the changing structure of the New Zealand industry

Key players in the supply chain for New Zealand apples
(model)



SUMMARY: NEW ZEALAND APPLE INDUSTRY - WHAT HAPPENED?

- **Pre-1995 new apple varieties and the innovation of using medium density rootstock resulted in New Zealand showing strong growth in; the area planted under apples, production, productivity and export prices of apples. This led to New Zealand being regarded as the most competitive supplier in the world. Many new entrants entered the industry seeking high returns. Pipfruit growers numbers more than doubled in the 10 years from 1985 to 1995.**
- **The high did not last. Prices for apples over the past 20 years fluctuated wildly. Prices hit an all time low in 1997, rose again in 2000/2001 following industry deregulation, only to fall back down to almost the lows of the late 90's.**
- **The drop in prices had a dramatic impact on the industry. There was a drop in overall area planted and production. Many growers and pack houses exited the industry. A stronger concentration of production developed in the Hawkes Bay and Nelson as growers exited secondary regions. New varieties are in the pipeline and yields are still increasing but the industry is in 'crisis' as farm gate costs are more than the apple returns.**

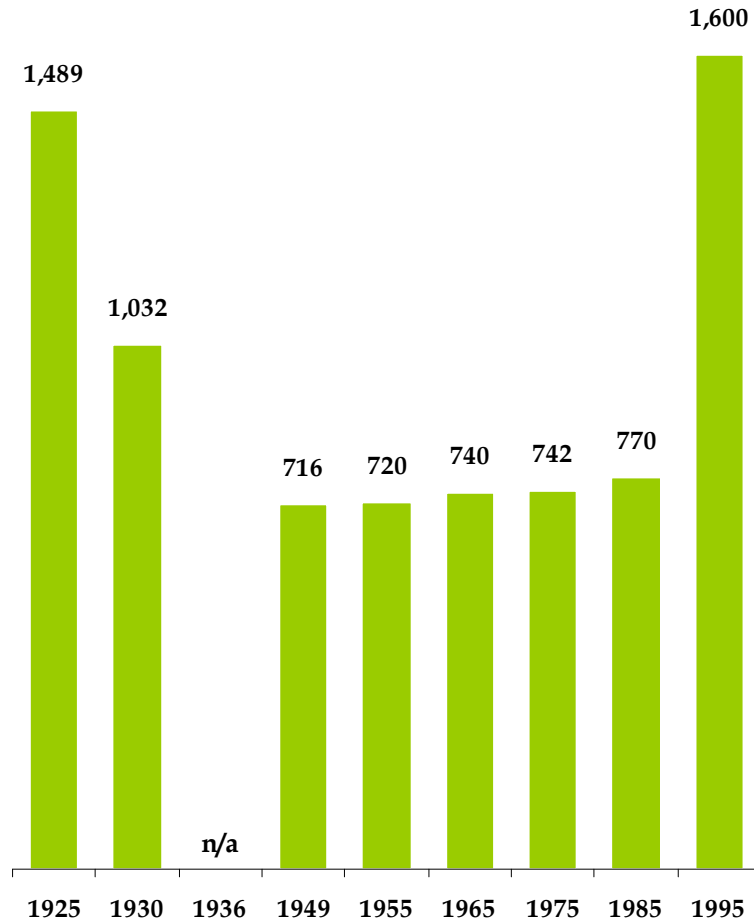
PART 1 – A PAT ON THE BACK

- **The New Zealand pipfruit industry experienced a long period of growth through the post-war period leading to strong production and export volume growth**
- **New Zealand achieved superior export prices for its fruit relative to its competitors (e.g. Chile)**
- **The New Zealand pipfruit industry has a long history of innovation**
- **New Zealand achieved superior production per hectare - when compared with similar developed countries**
- **In 1995 The World Apple Report declared New Zealand to be the most competitive apple supplier in the world**

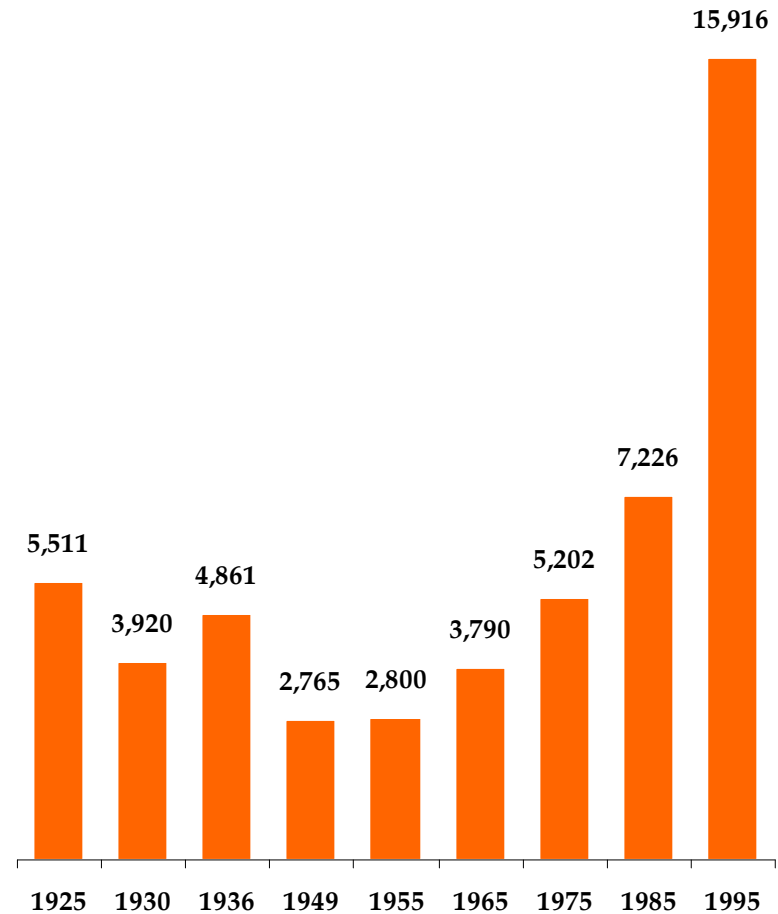
STRONG INPUT GROWTH

The New Zealand pipfruit industry experienced a long period of growth through the post-war period...

Number of pipfruit growers in New Zealand
(growers; 1925-1995)



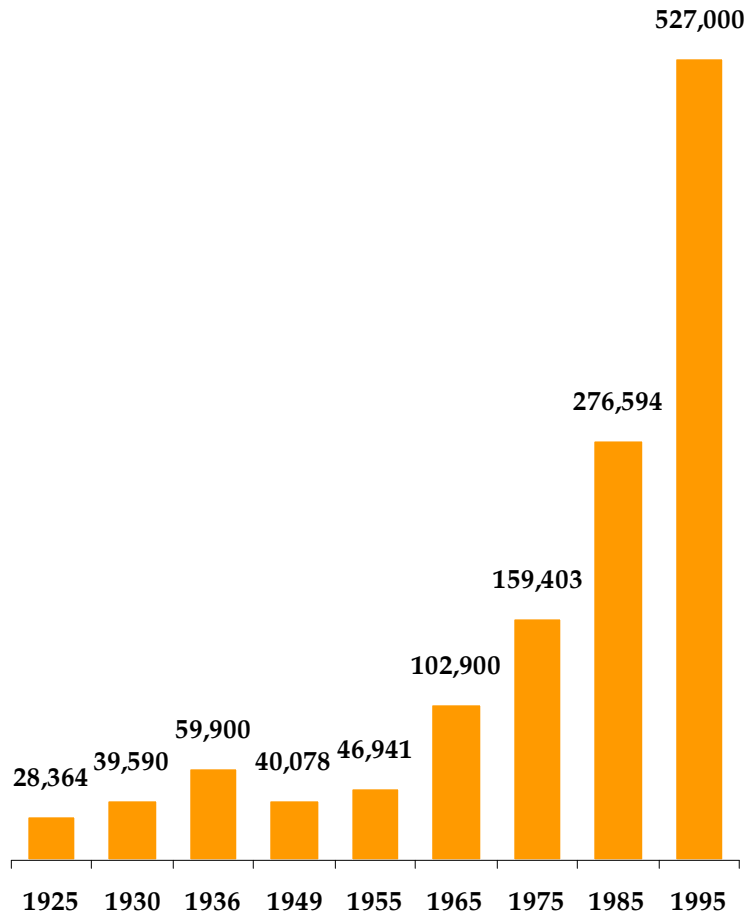
Area planted in apples in New Zealand
(hectares; 1925-1995)



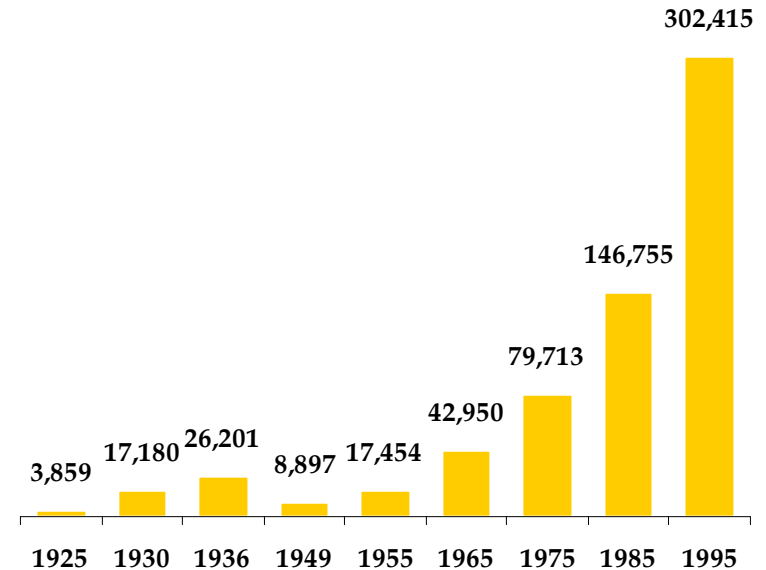
STRONG OUTPUT GROWTH

...leading to strong production and export volume growth

Apple production volume in New Zealand
(tonnes; 1925-1995)



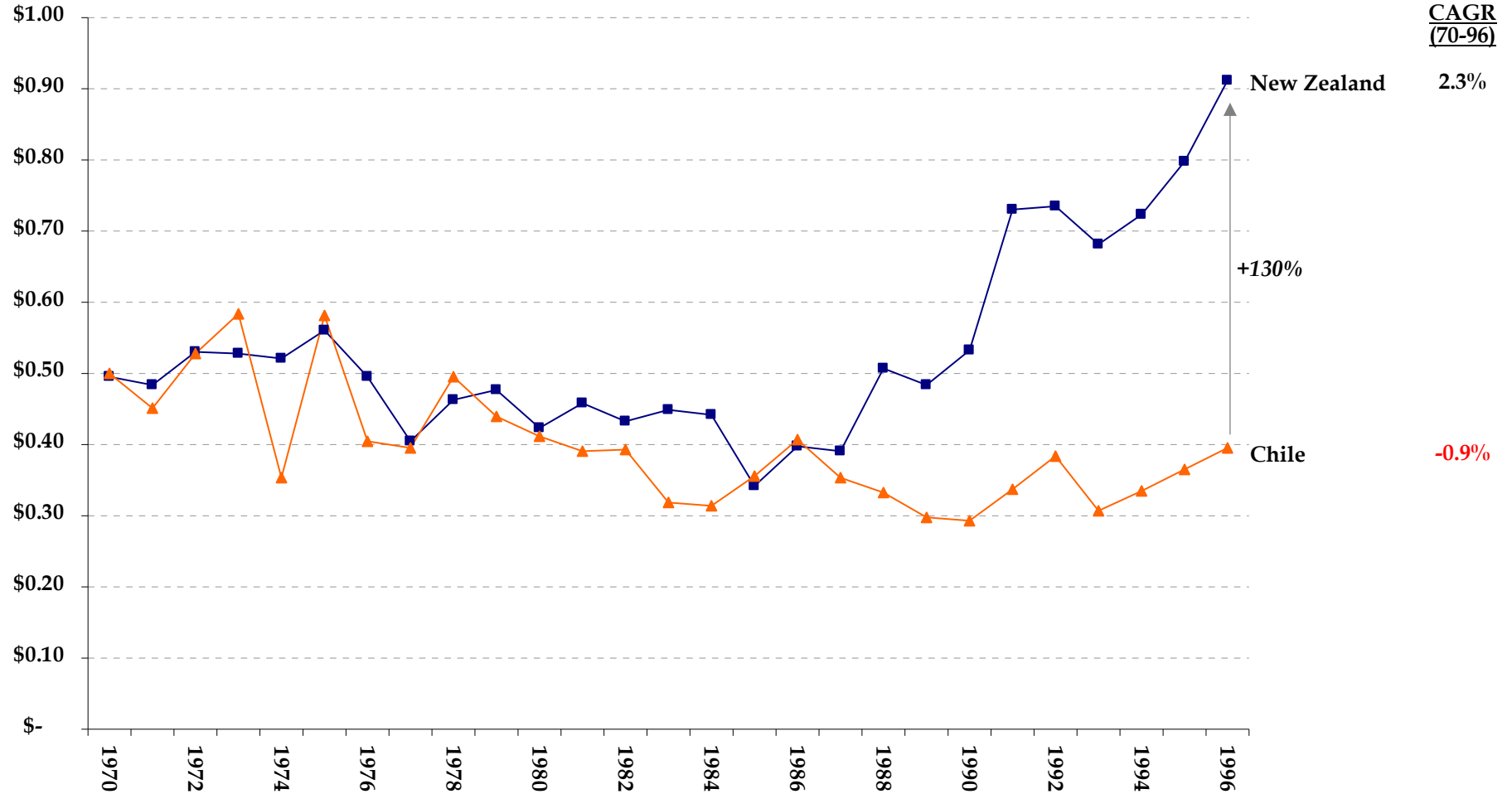
Apple export volume from New Zealand
(tonnes; 1925-1995)



SUPERIOR RETURNS

New Zealand achieved superior export prices for its fruit relative to its competitors (e.g. Chile)

New Zealand FOB export apple price per kilogram
(inflation adjusted 1986 US\$; 1970-1996)



HISTORY OF INNOVATION

The New Zealand pipfruit industry has a long history of innovation

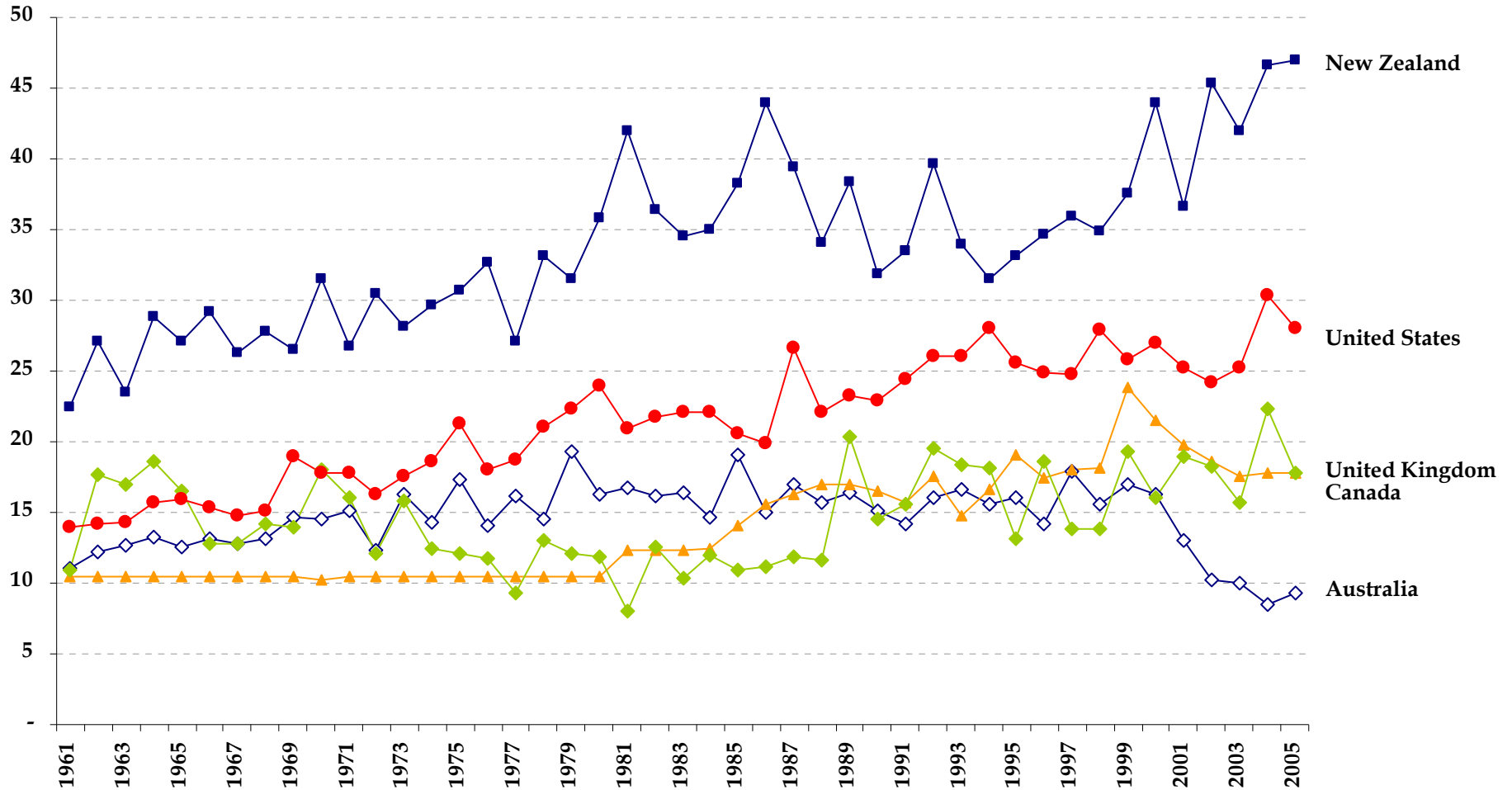
Key events in history of New Zealand pipfruit industry (various)

1814	Group of English missionaries led by Reverend Samuel Marsden introduce apples to New Zealand
1890's	New Zealand begins exporting small quantities of apples and pears
1924	James Hutton Kidd develops Kidd's Orange Red (Cox's Orange Pippin x Delicious) in Greytown, Wairarapa
1930	C.F. Bixley discovers Red Dougherty (sport of Australian Dougherty) in Twyford, Hawkes Bay
1930	Research orchard under DSIR established at Appleby in Nelson
1934	J.H. Kidd develops Gala (Kidd's Orange Red x Golden Delicious) on his property in Greytown, Wairarapa; variety named Gala in 1965 by Dr. D.W. McKenzie, DSIR; derivative Royal Gala named in honour of visit by Queen Elizabeth II to New Zealand
1948	Charles L. Roberts discovers Splendour in garden in Napier
1952	Braeburn discovered on property of O. Moran in Upper Moutere, Nelson; first grown commercially by William Bros., Braeburn Orchards
1956	New Zealand sends first shipment of Granny Smith apples to the United States market
1960's	Don McKenzie proposes adoption of central leader shape and M106 rootstock leading to tree densities increasing from 275 to 670 trees per hectare; industry becomes world leader in production per hectare
1990's	Development of Pacific series and Jazz
2005	HortResearch establishes PREVAR to commercialise new pipfruit varieties and generate a NZ\$2.4m annual income stream to fund fruit research; three other shareholders are Pipfruit NZ, APAL and AIGN

SUPERIOR PRODUCTION PER HECTARE

New Zealand achieved superior production per hectare - when compared with similar developed countries

Apple production per hectare: New Zealand vs. select other developed country producers
(tonnes; 1961-2005)



COMPETITIVE LEADER

In 1995 The World Apple Report declared New Zealand to be the most competitive apple supplier in the world

Competitiveness rankings of major world apple suppliers in 1995
(numerical ranking; 1995)

Overall	Production Efficiency	Infrastructure & Inputs	Financial & Markets
1. New Zealand	1. Austria	1. Chile	1. New Zealand
2. Chile	2. Belgium	2. New Zealand	2. Netherlands
3. Netherlands	3. Netherlands	3. United States	3. Belgium
4. Belgium	4. Brazil	4. Argentina	4. Japan
5. United States	5. New Zealand	5. South Africa	5. United States

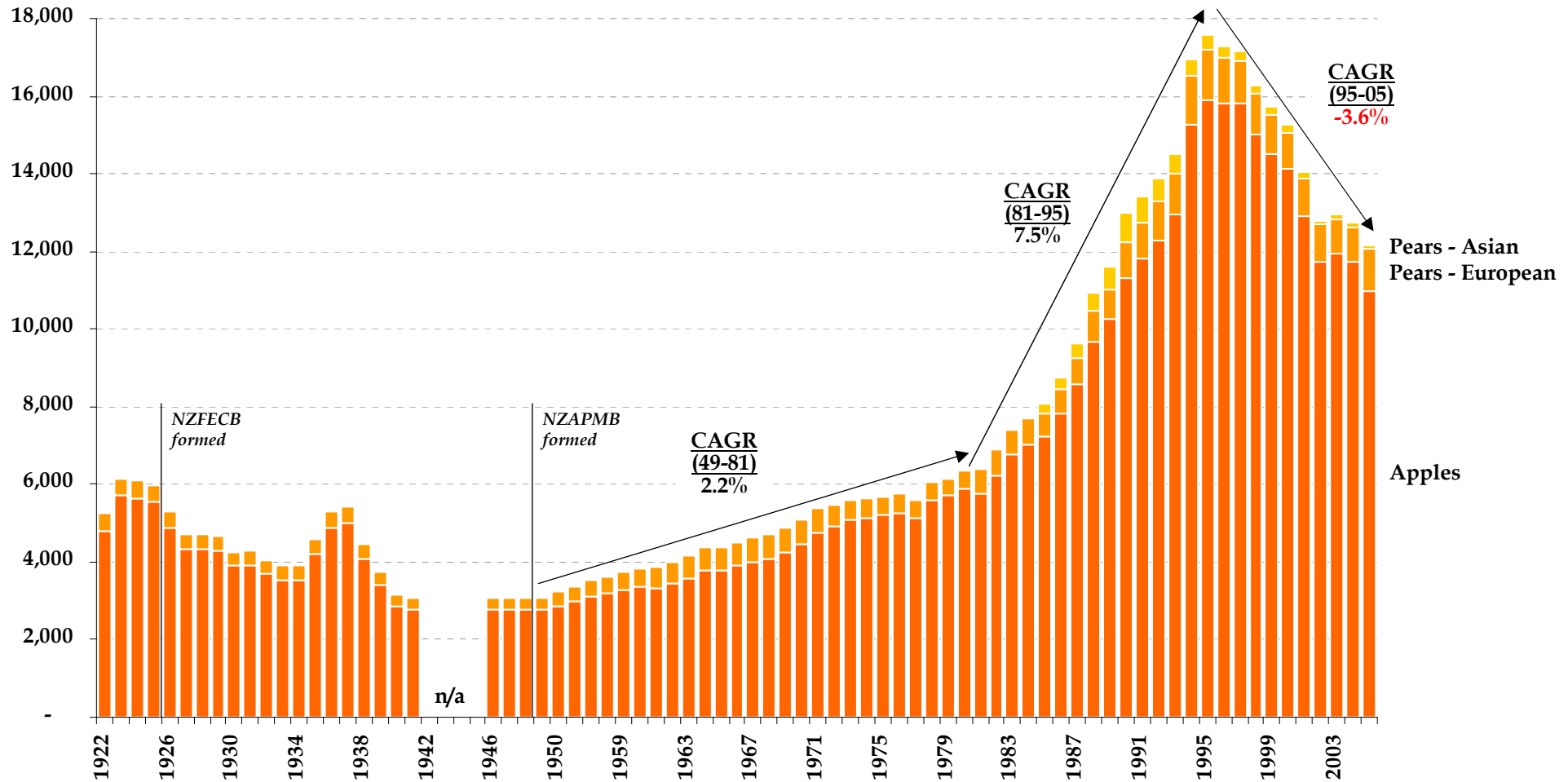
PART 2 – THE DECLINE

- After peaking in 1995, pipfruit area has fallen for the past decade
- Much of this reduction in area has come from secondary regions
 - The two main pipfruit growing regions – Hawke’s Bay and Nelson – are growing their dominance of the industry
- Total pipfruit production has also fallen, though less than area, due to increasing yields
- Prices of major varieties have been trending downward over the past 15 years
- In addition, the New Zealand dollar goes through large cyclical swings which directly impact profitability
- Though when looked at from a more long term perspective, recent price corrections could be seen as a reversion to long-term trends for prices
- The number of growers in New Zealand has fallen rapidly in the past decade
- The number of packhouses in New Zealand has also fallen rapidly
- The apple industry is in crisis
- The MAF monitoring report indicates growers cannot sustain losses like those experienced in the past few years

FALLING PIPFRUIT AREA IN THE PAST DECADE

After peaking in 1995, pipfruit area has fallen for the past decade

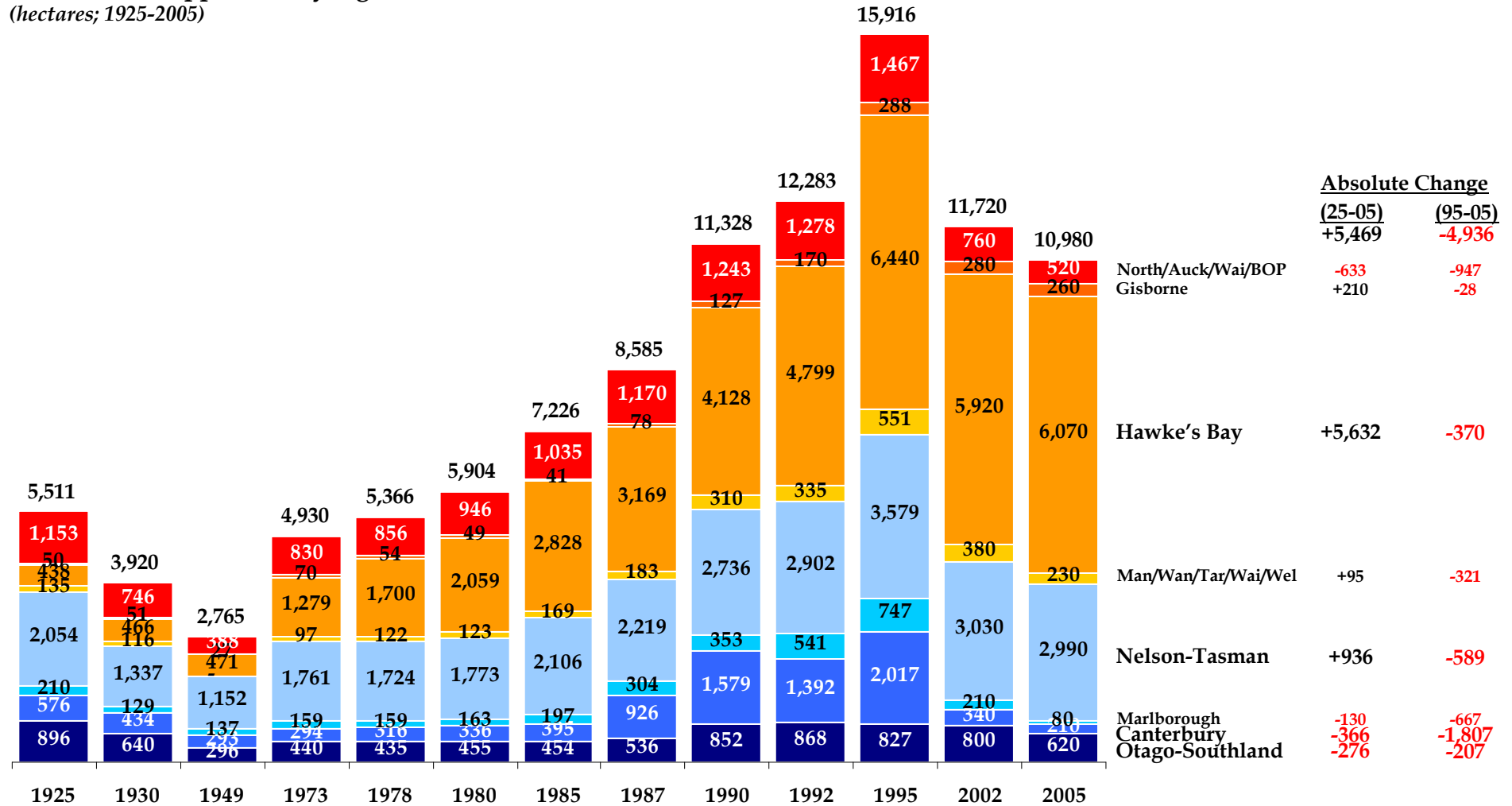
New Zealand pipfruit area by type
(hectares; 1922-2005)



SECONDARY REGIONS FALLING FASTER

Much of this reduction in area has come from secondary regions

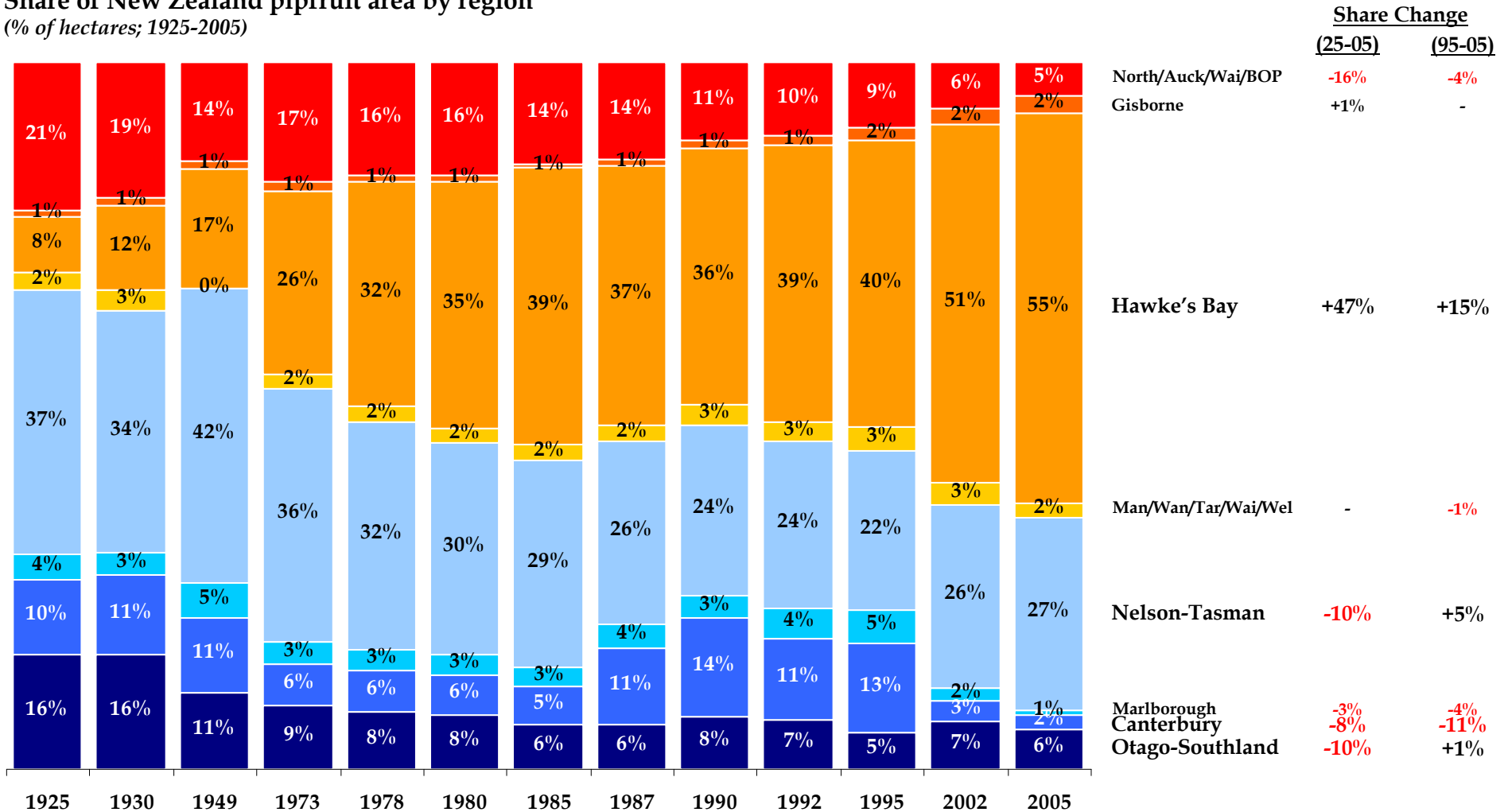
New Zealand apple area by region
(hectares; 1925-2005)



GROWING DOMINANCE OF TWO REGIONS

The two main pipfruit growing regions - Hawke's Bay and Nelson - are growing their dominance of the industry

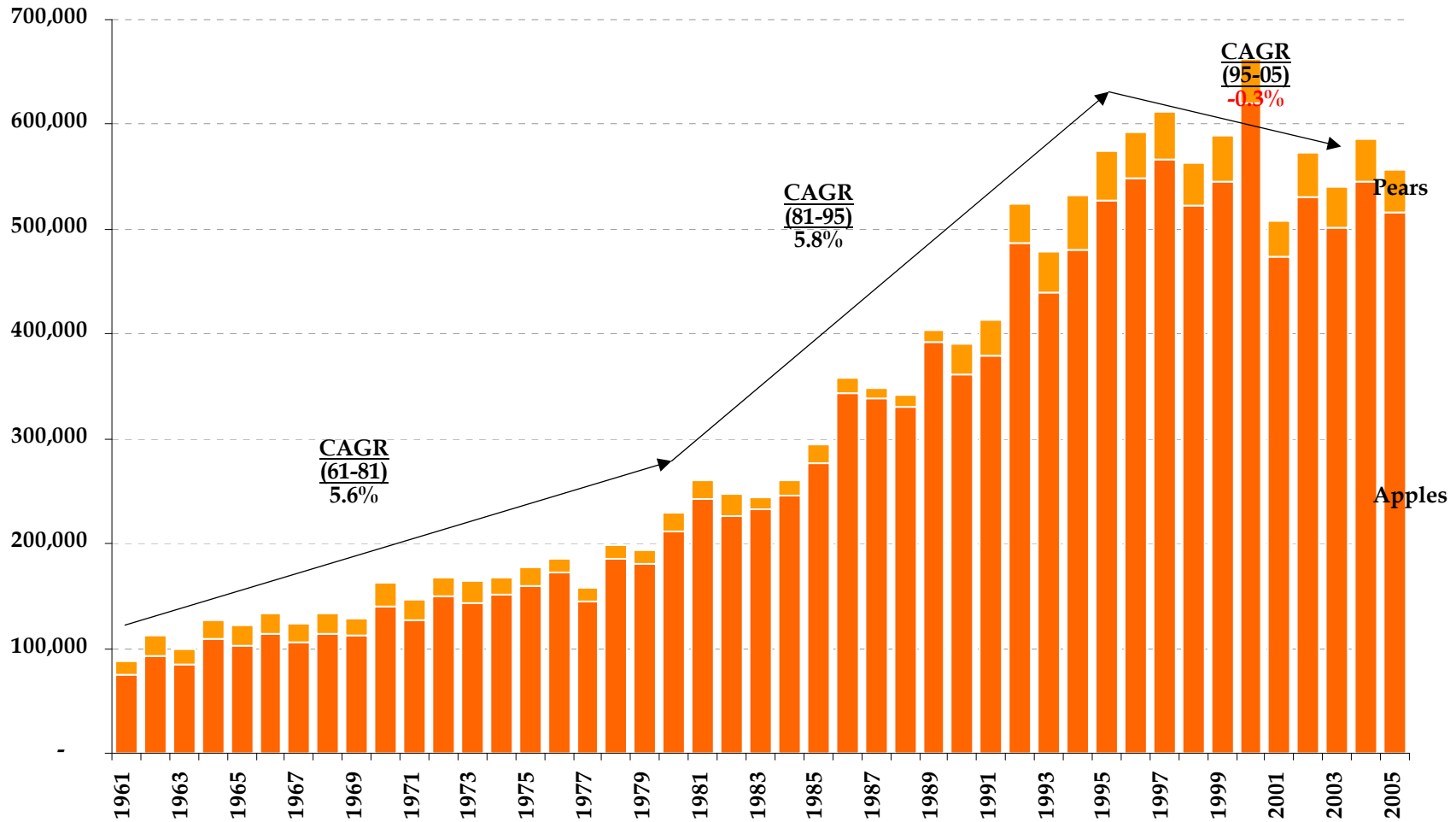
Share of New Zealand pipfruit area by region
(% of hectares; 1925-2005)



PRODUCTION NOT FALLING AS FAST AS AREA

Total pipfruit production has also fallen, though less than area, due to increasing yields

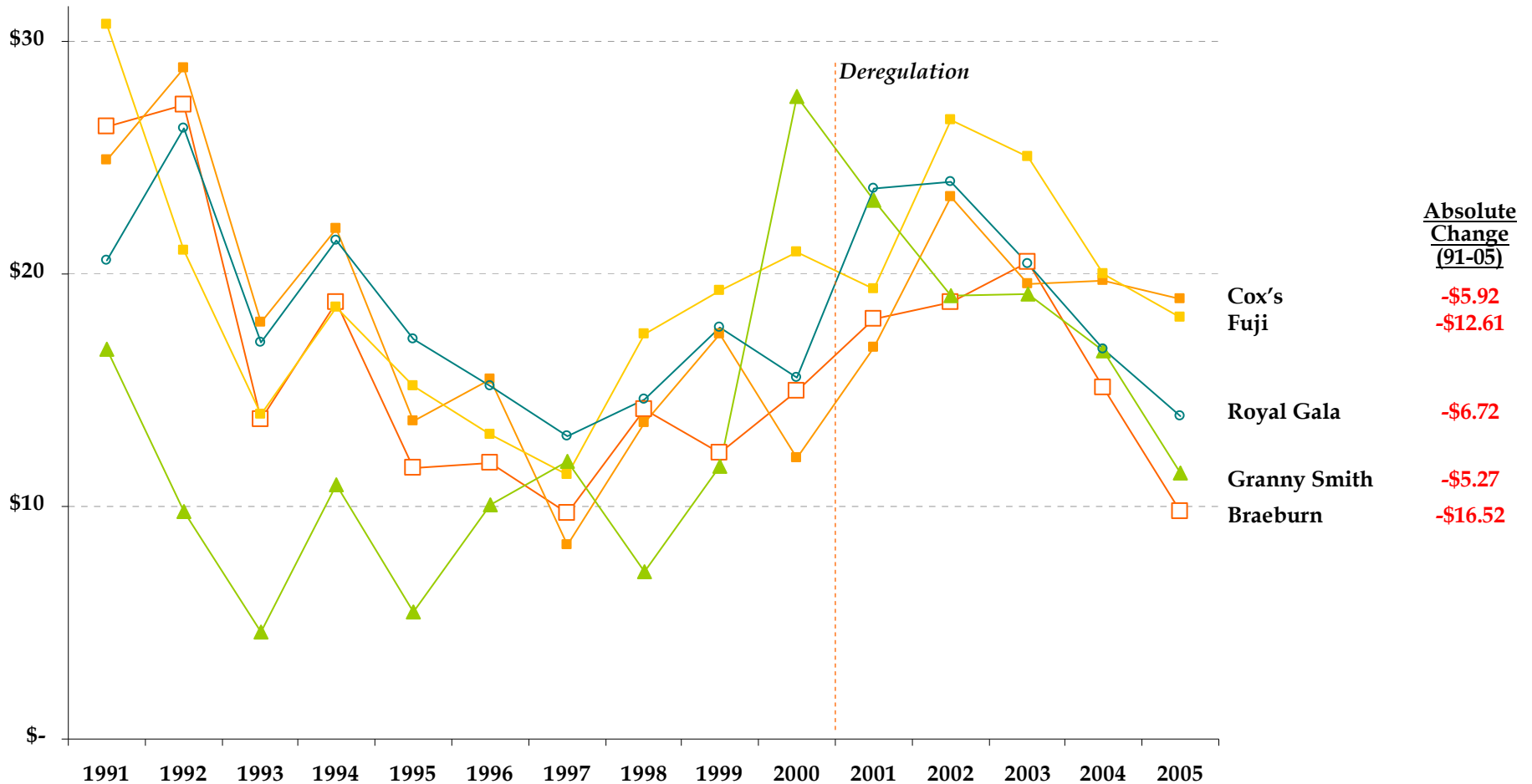
New Zealand pipfruit production by type
(tonnes; 1961-2005)



PRICES TRENDING DOWN

Prices of major varieties have been trending downward over the past 15 years

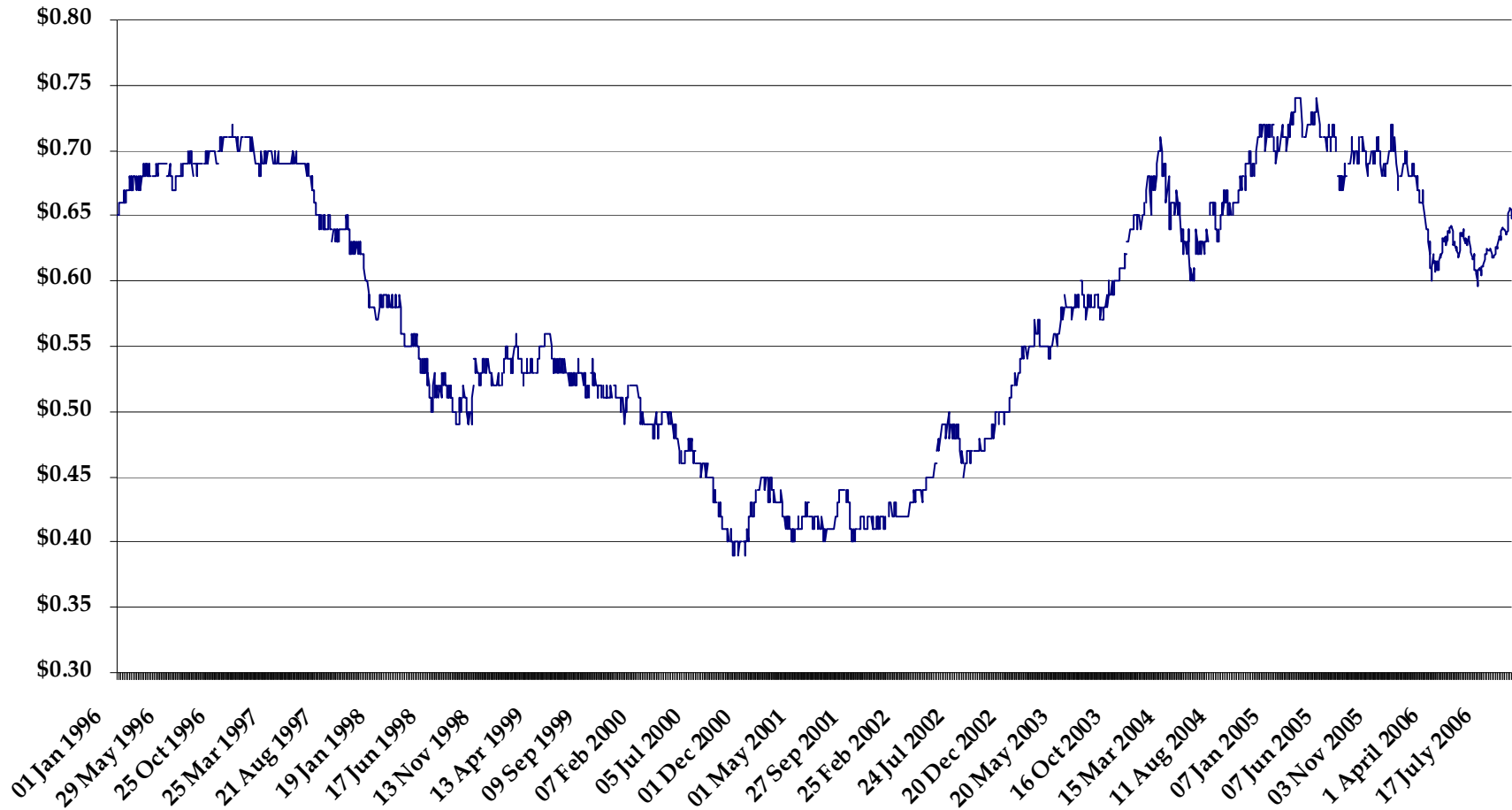
New Zealand weighted average FAS returns per TCE
(NZ\$; nominal; 1991-2005)



HIGHLY VARIABLE EXCHANGE RATE

In addition, the New Zealand dollar goes through large cyclical swings which directly impact profitability

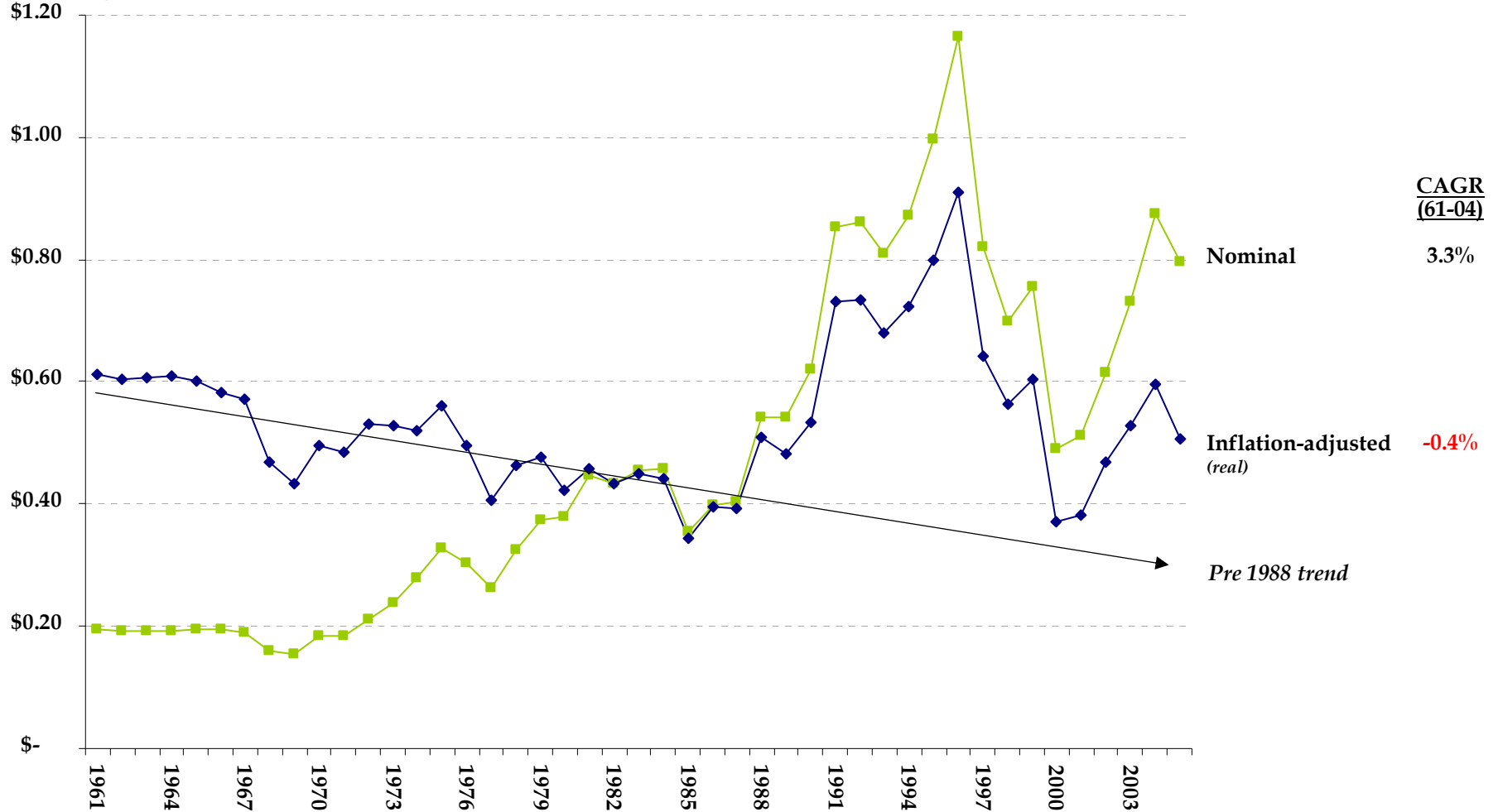
Exchange rate of the New Zealand dollar to the US dollar
(US\$; actual; 1996-2006 current)



PERHAPS A REVERSION TO LONG-TERM TREND

Though when looked at from a more long term perspective, recent price corrections could be seen as a reversion to long-term trends for prices

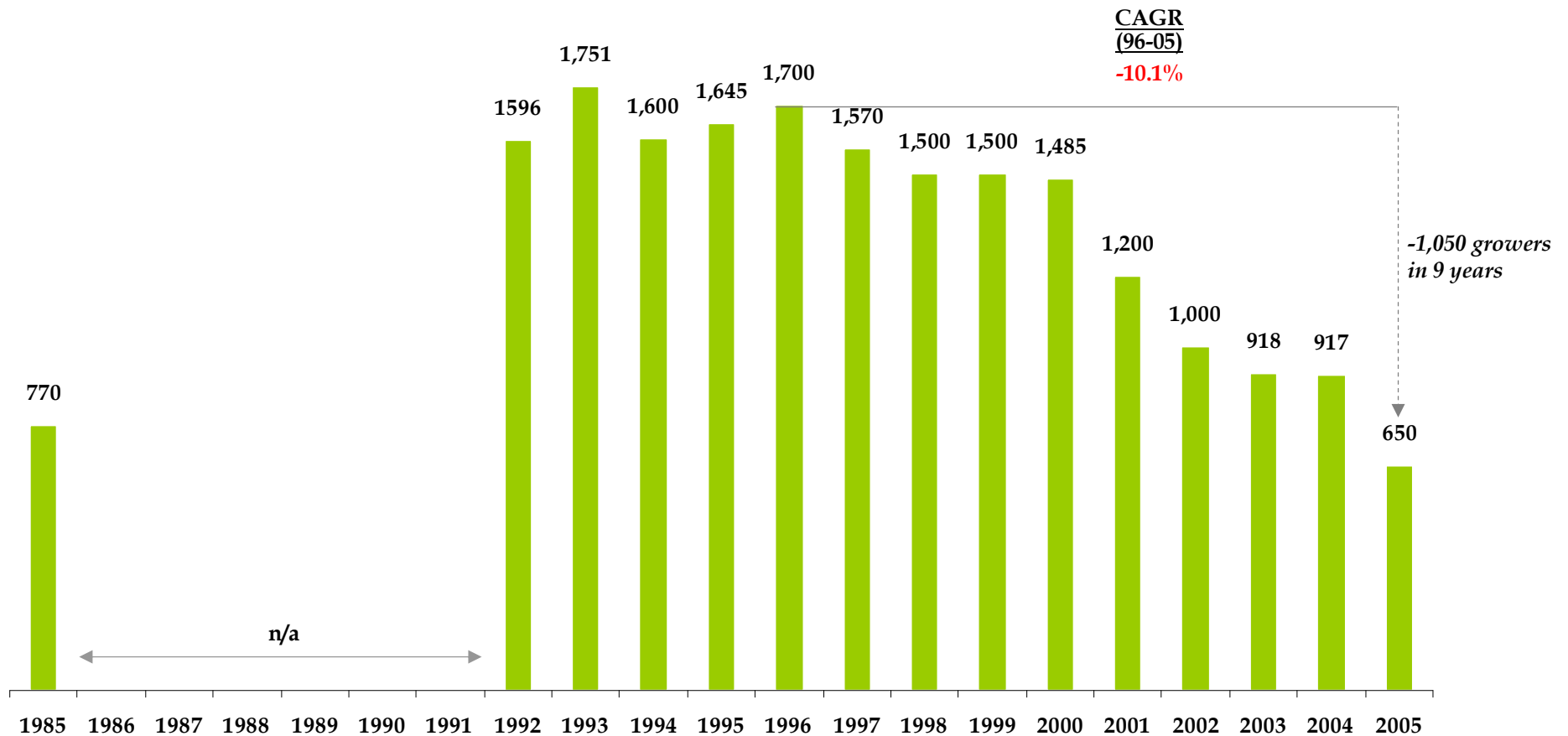
New Zealand FOB export apple price per kilogram in inflation adjusted US\$
 (US\$; inflation adjusted 1986 US\$; 1961-2004)



RAPIDLY FALLING GROWER NUMBERS

The number of growers in New Zealand has fallen rapidly in the past decade

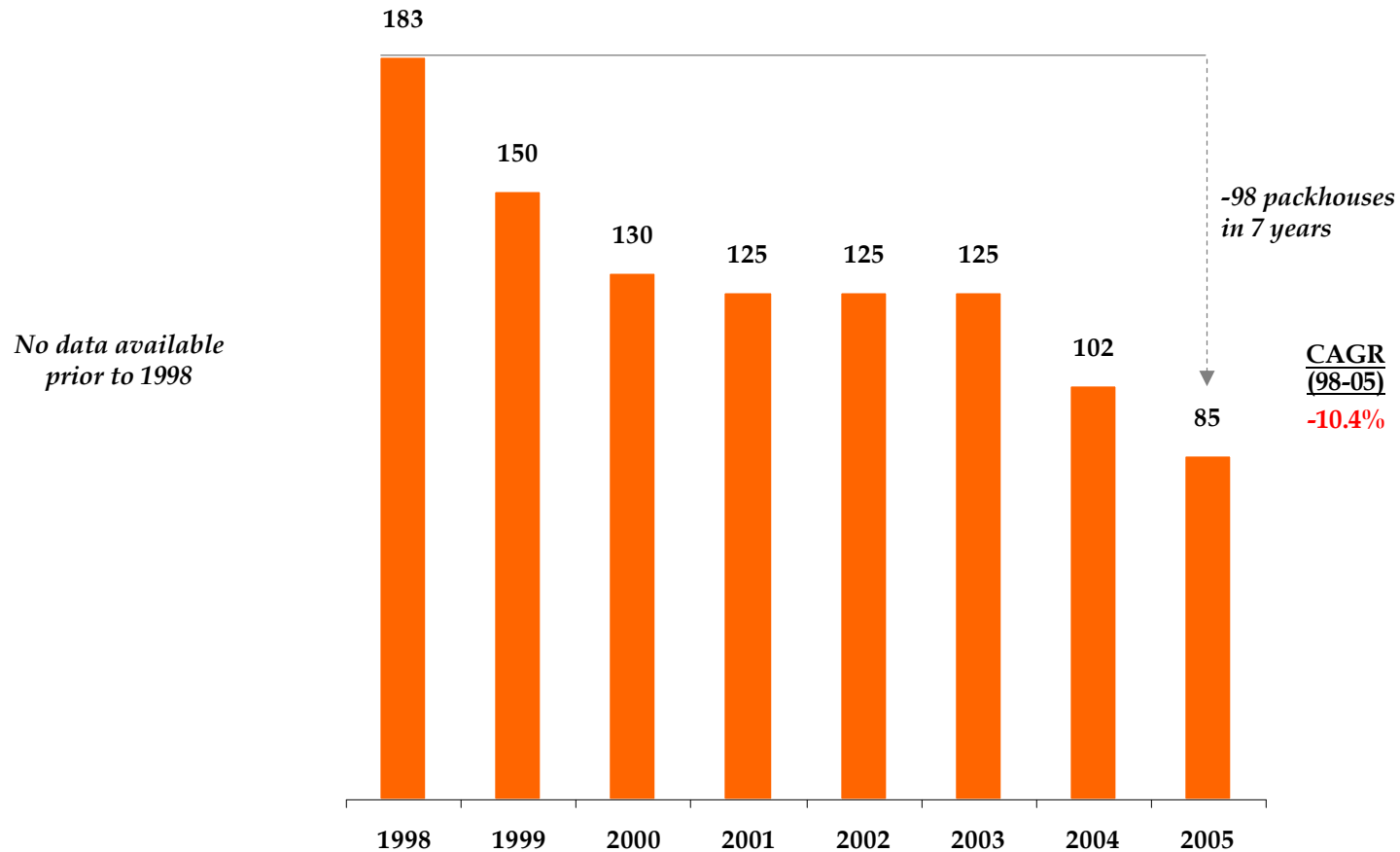
Number of apple growers in New Zealand
(units; actual; 1985-2005)



RAPIDLY FALLING PACKHOUSE NUMBERS

The number of packhouses in New Zealand has also fallen rapidly

Number of apple packhouses in New Zealand
(units; actual; 1998-2005)



INDUSTRY IN CRISIS

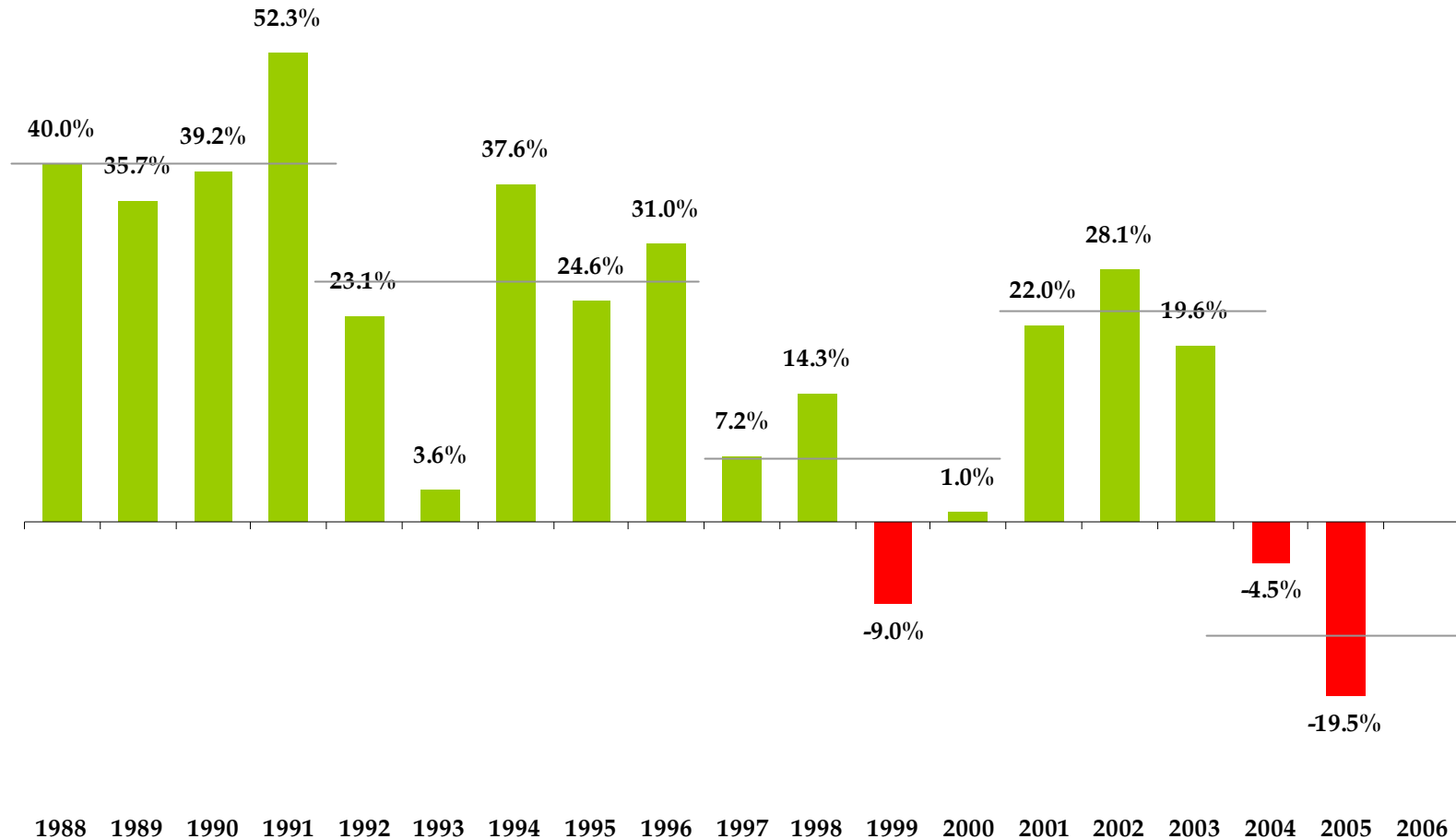
The apple industry is in crisis

- **“Catastrophic. Disastrous. Heartbreaking. Devastating. Shocking. There are as many descriptors of the state of New Zealand's \$400 million pipfruit industry being bandied about as there are apple varieties in the nation's orchards. As the rest of New Zealand was winding down for Christmas, apple growers were discovering the full horror of the 2005 selling season. In any normal year - if such a thing exists in the roller coaster, weather-beaten world of orcharding - growers would, from mid-November onwards, be heading down to the bank to deposit their final export payments. But last year many were instead receiving a bill from their export companies demanding clawbacks of their early season advance payments.**
- **Why? Simply put, their apples cost more to produce than they earned in the marketplace, and few saw it coming at the start of the season. It costs around \$18 to grow, pick, pack and ship a carton of export apples, but last season the average grower earned only \$12.60 per carton (averaged across all varieties). According to MAF figures, that translates to a loss on the average Hawke's Bay orchard of \$189,000. For some growers the situation will be even worse, depending on the mix of varieties they grow. For New Zealand's two key varieties - Braeburn and Royal Gala, which make up 70% of the national crop - the picture is nothing short of dire. Braeburn returned prices of around \$8 a box - less than half the cost of production - and Royal Gala around \$10. So it's not surprising that upwards of 10% of New Zealand's commercial apple trees are thought to have been felled in recent months, and the number of growers in the industry severely pruned from over 900 in 2004 to just 700.” *Unlimited Magazine, February 2006***
- **“The industry is in a hole that it is hard to see a way out of for small growers.” *Interview, Grower, Aug 2006***
- **“We need \$25 - \$27 per TCE on new varieties to make it pay as current costs are \$17.50 to 18.50 per TCE.” *Interview, Grower, Aug 2006***
- **“The industry is being kept afloat by off farm income, by selling the bach or through investing family inheritance in the business. The industry has to become cashflow positive.” *Interview, Banker, Aug 2006***

DECLINING PROFITS

The MAF monitoring report indicates growers cannot sustain losses like those experienced in the past few years

Operating profit margin
(Hawkes Bay; %; 1988-2005)



THE CAUSES

1. **Falling consumption in key markets**
2. **Global overproduction**
3. **Relative competitive strength eroding**
4. **Varieties now commodities; new varieties yet to deliver**
5. **Industry structure in transition**

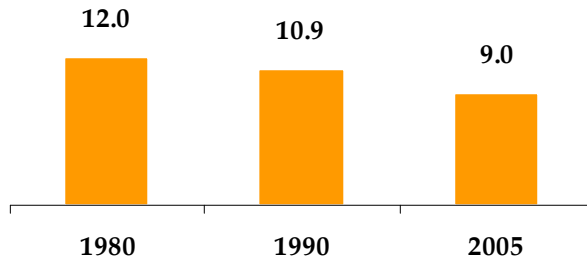
1. Falling consumption in key markets

FALLING CONSUMPTION IN KEY MARKETS

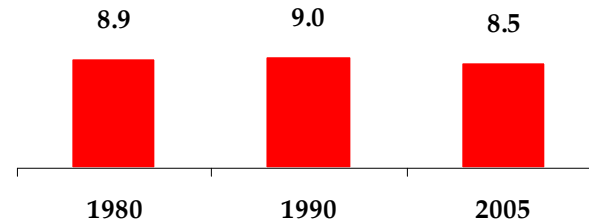
Fresh apple consumption is falling in New Zealand's key markets

Fresh apple consumption per capita in key markets
(kilograms; 1980-2005)

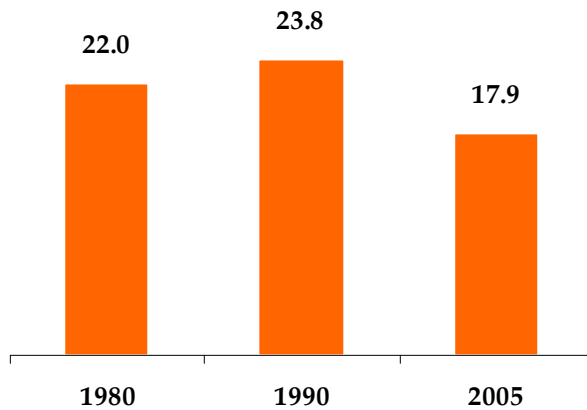
United Kingdom



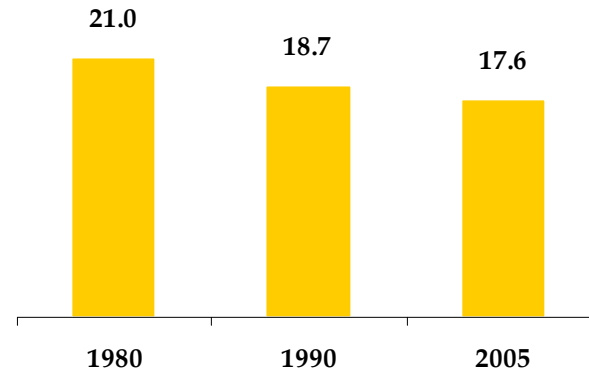
United States



Germany



Europe (EU-11)

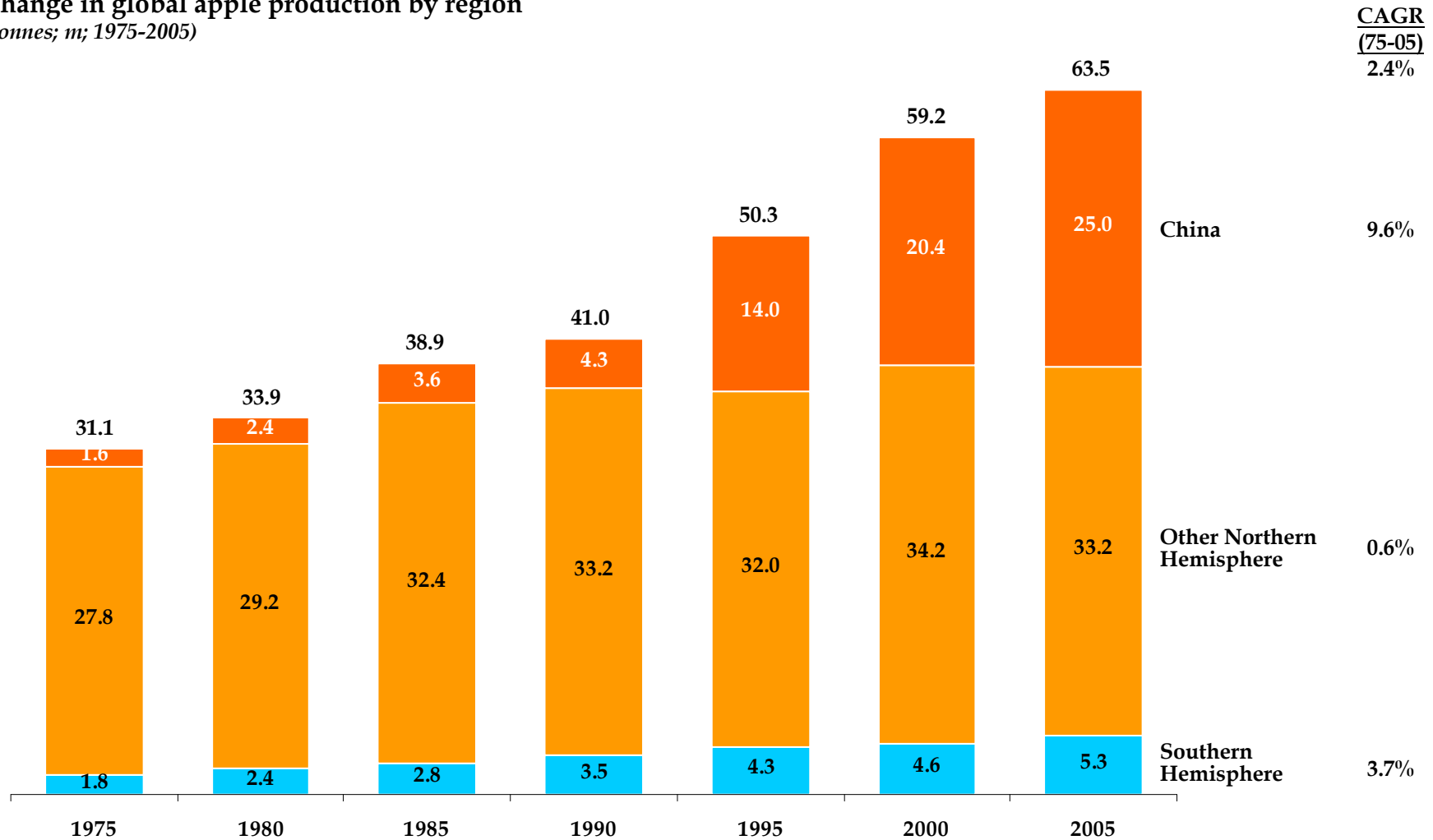


2. Global overproduction

CHINA DRIVING PRODUCTION GROWTH

Global apple production is increasing, driven by China and the Southern Hemisphere (to a much lesser degree)

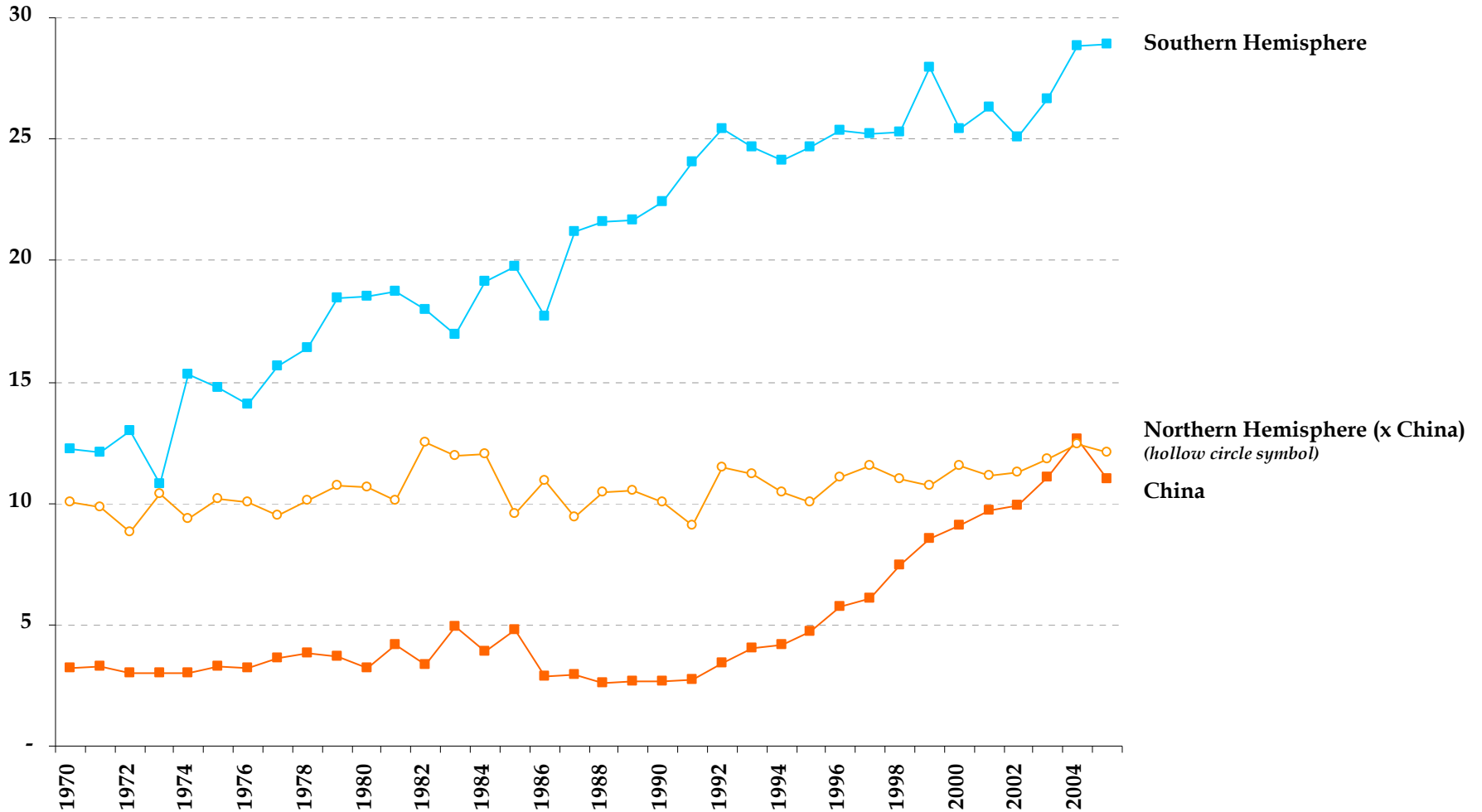
Change in global apple production by region
(tonnes; m; 1975-2005)



STRONG YIELD GROWTH

Much of the growth in production is coming from yield increases, particularly in China and in the Southern Hemisphere

Change in global apple production per hectare by region
(tonnes per hectare; 1970-2005)



TOTAL AREA FALLING

Production growth is no longer being driven by area growth - world apple area actually peaked in 1995 and has been in decline since

Change in global apple area by region
(hectares; 000; 1975-2005)

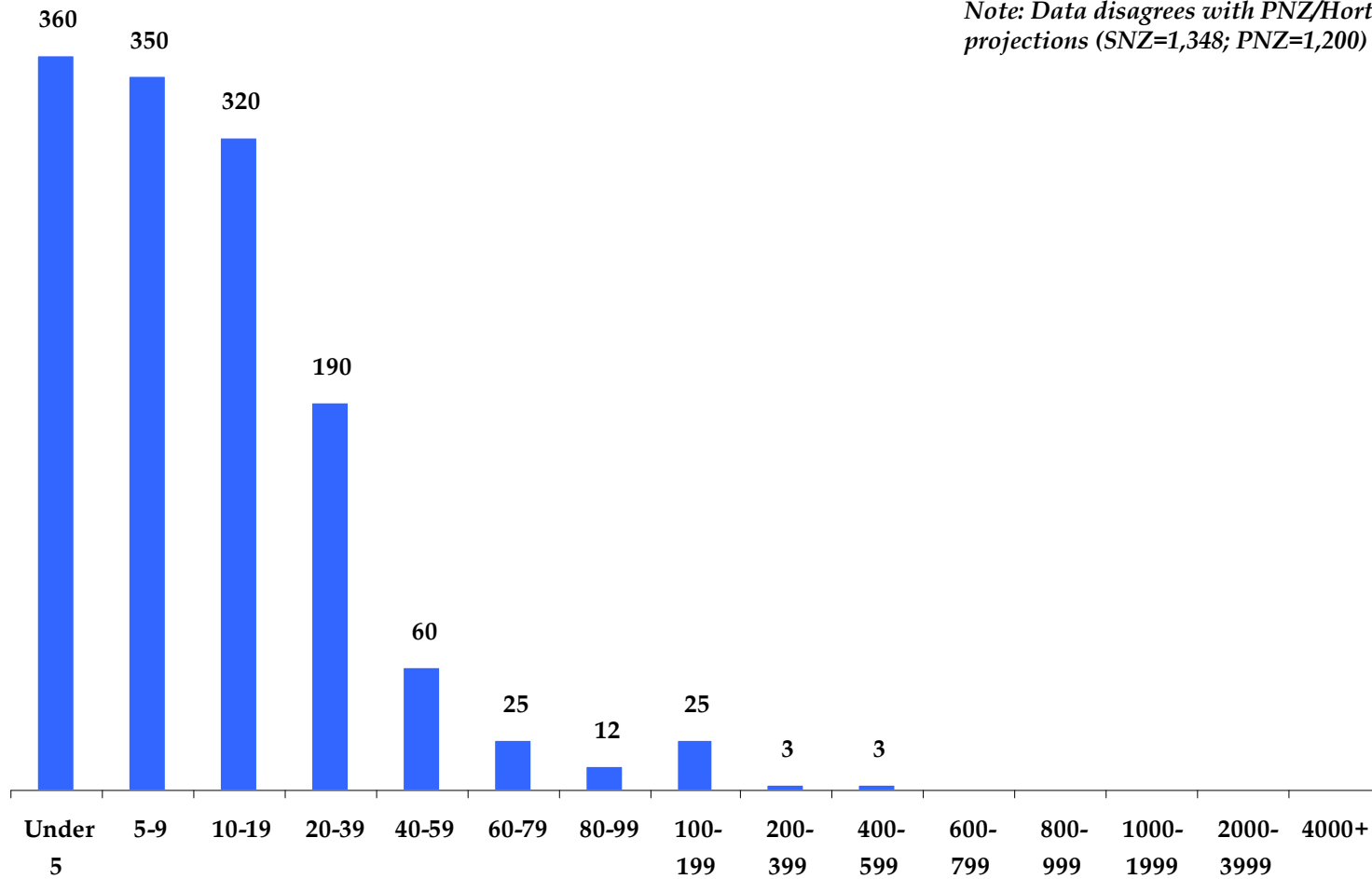


3. Relative competitive strength eroding

STILL PRIMARILY SMALL FARMS

New Zealand pipfruit farms are still primarily small farms

New Zealand pipfruit farms by size
(units; actual; 2002)



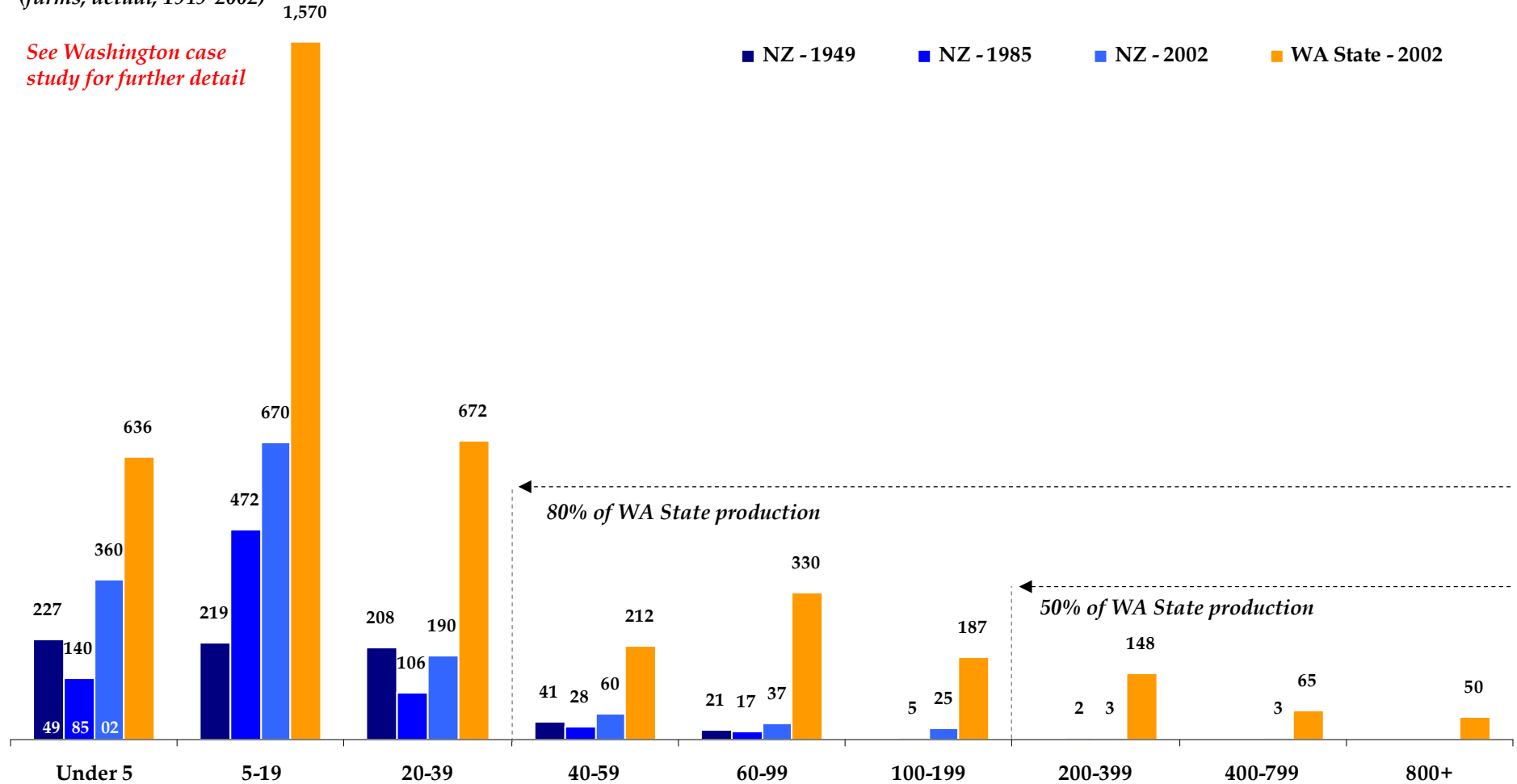
Note: Data disagrees with PNZ/HortResearch projections (SNZ=1,348; PNZ=1,200)

NEED FEWER LARGER FARMS

New Zealand currently has six farms over 200ha – the size that now accounts for 50% of Washington state production

Number of farms by farm size: New Zealand vs. Washington State
(farms; actual; 1949-2002)

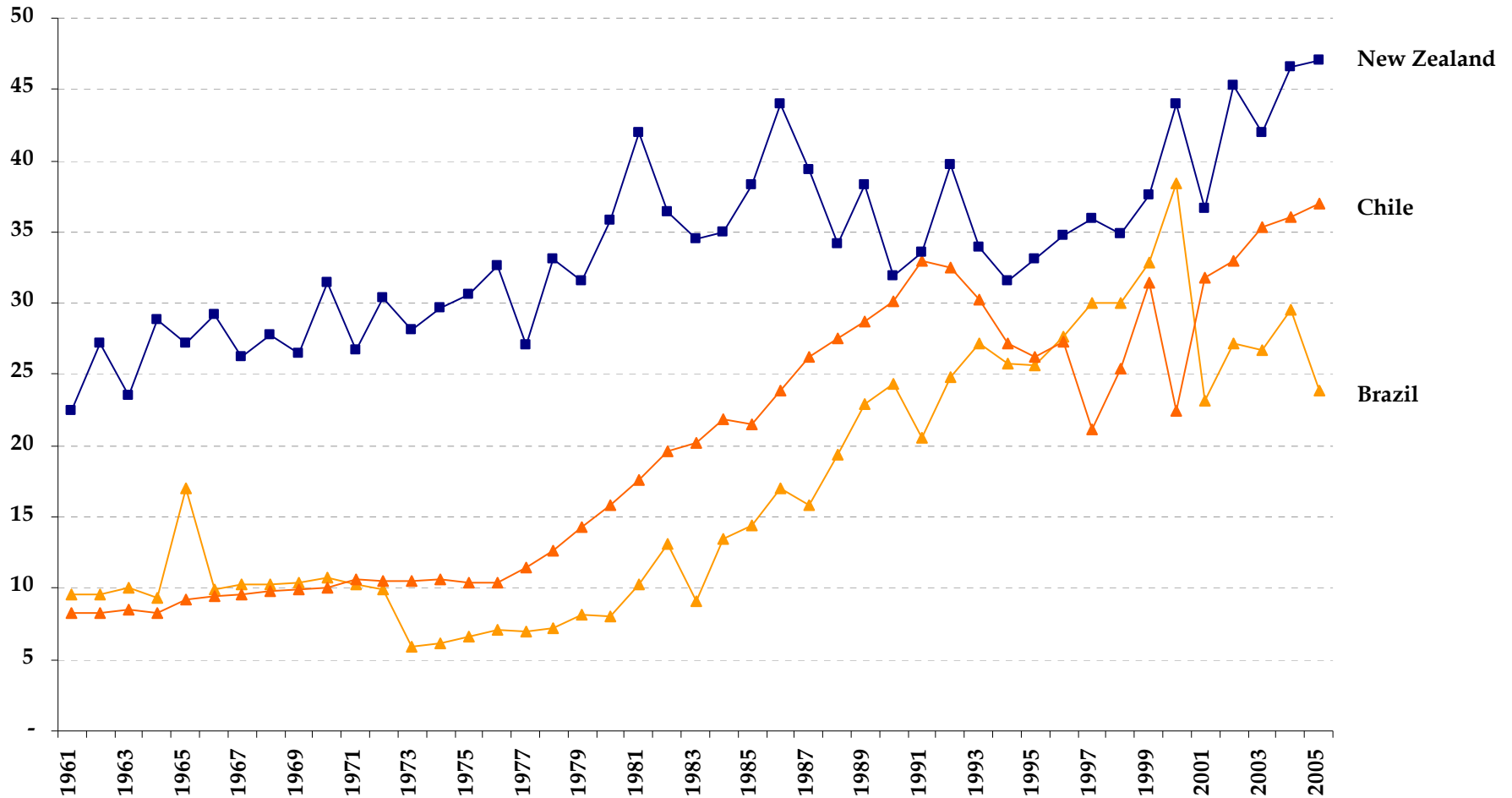
See Washington case study for further detail



COMPETITORS CATCHING UP

New Zealand's historical lead in production efficiency is now being eroded by Chile and Brazil

Apple production per hectare: New Zealand vs. select other developing country producers
(tonnes; 1961-2005)

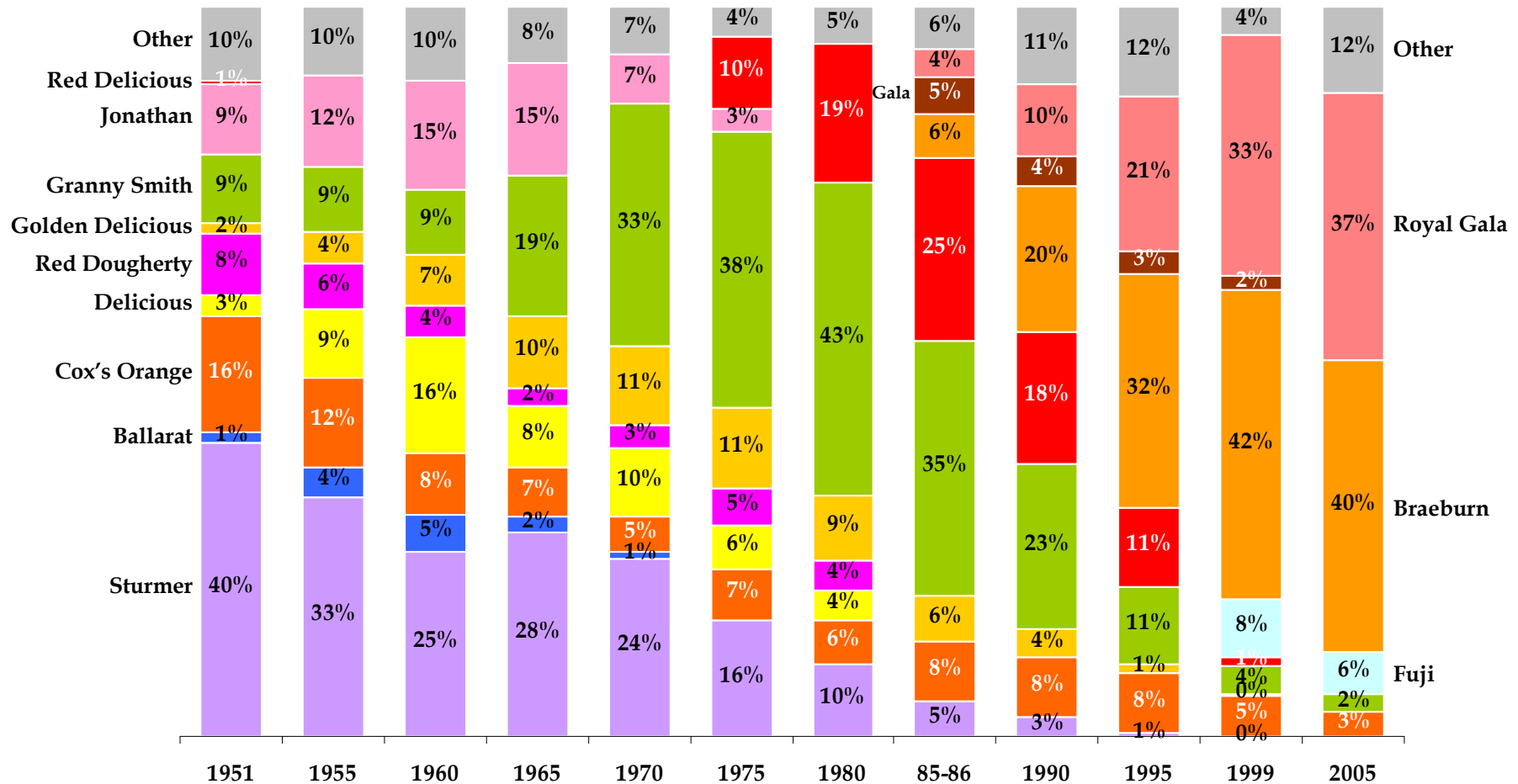


4. Varieties now commodities; new varieties yet to deliver

NEW ZEALAND EXPORTS BY VARIETY

Apple production and export by variety has been in constant change over the past 50 years – with new varieties rising and falling over the decades

New Zealand apple exports by variety
(% of volume; 1951-2005)



NEW VARIETIES

Two of New Zealand's major volume varieties - Braeburn and Gala - were developed at home

Details of major traditional varieties planted in New Zealand
(various)

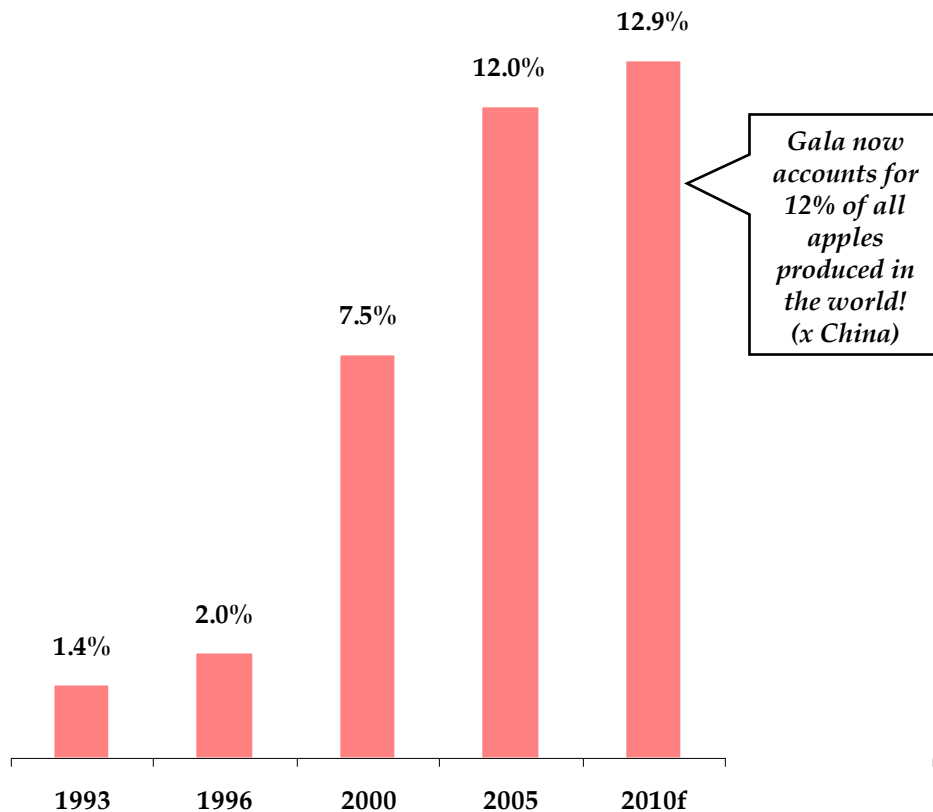
	Plant Patent	Year developed/ production	Origin	Parents	Control
Fuji	-	1938 1958	Tohoku Research Station in Morioka, Japan	Ralls Genet x Red Delicious	<i>none</i>
Braeburn	-	1952 1970	Discovered on the property of O. Moran, Waiwhero, Upper Moutere, New Zealand	Possibly an open pollinated seedling of Lady Hamilton x Granny Smith	<i>none</i>
Gala/Royal Gala	-	1934 1973	J.H.Kidd at Greytown Wairarapa, New Zealand; private breeding program	Kidd's Orange Red x Golden Delicious	<i>none</i>
Golden Delicious	-	1890 1914	West Virginia, USA	Chance seedling of Grimes Golden	<i>none</i>
Cox Orange Pippin	-	1829 1850	Raised from pip by Richard Cox, Colnbrook, England	Chance seeding of Ribston Pippin	<i>none</i>
Granny Smith	-	1850	Seedling raised by Marie Ana Smith in Sydney, Australia; developed in New Zealand in 1930's	Chance seeding of M. domestica x European wild apple	<i>none</i>
Red Delicious	-	1868	Chance seedling found by apple grower Jesse Hiatt in Peru, Iowa, USA	Possibly seedling from Yellow Bellflower	<i>none</i>
Ballarat	-	1870	Ballarat, Victoria, Australia	?	<i>none</i>
Sturmer Pippin	-	1831	Suffolk, England	Ribston Pippin x Non Pareil	<i>none</i>

EMBRACED BY THE WORLD

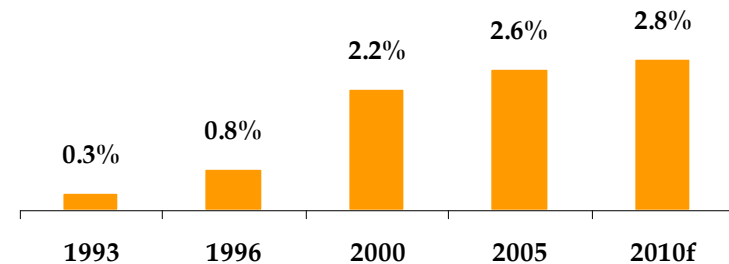
Unfortunately, these two varieties have been embraced by the world and turned into commodities

% of global production (x China) of key varieties developed in New Zealand
 (% of total tonnes; 1993-2010f)

Gala/Royal Gala



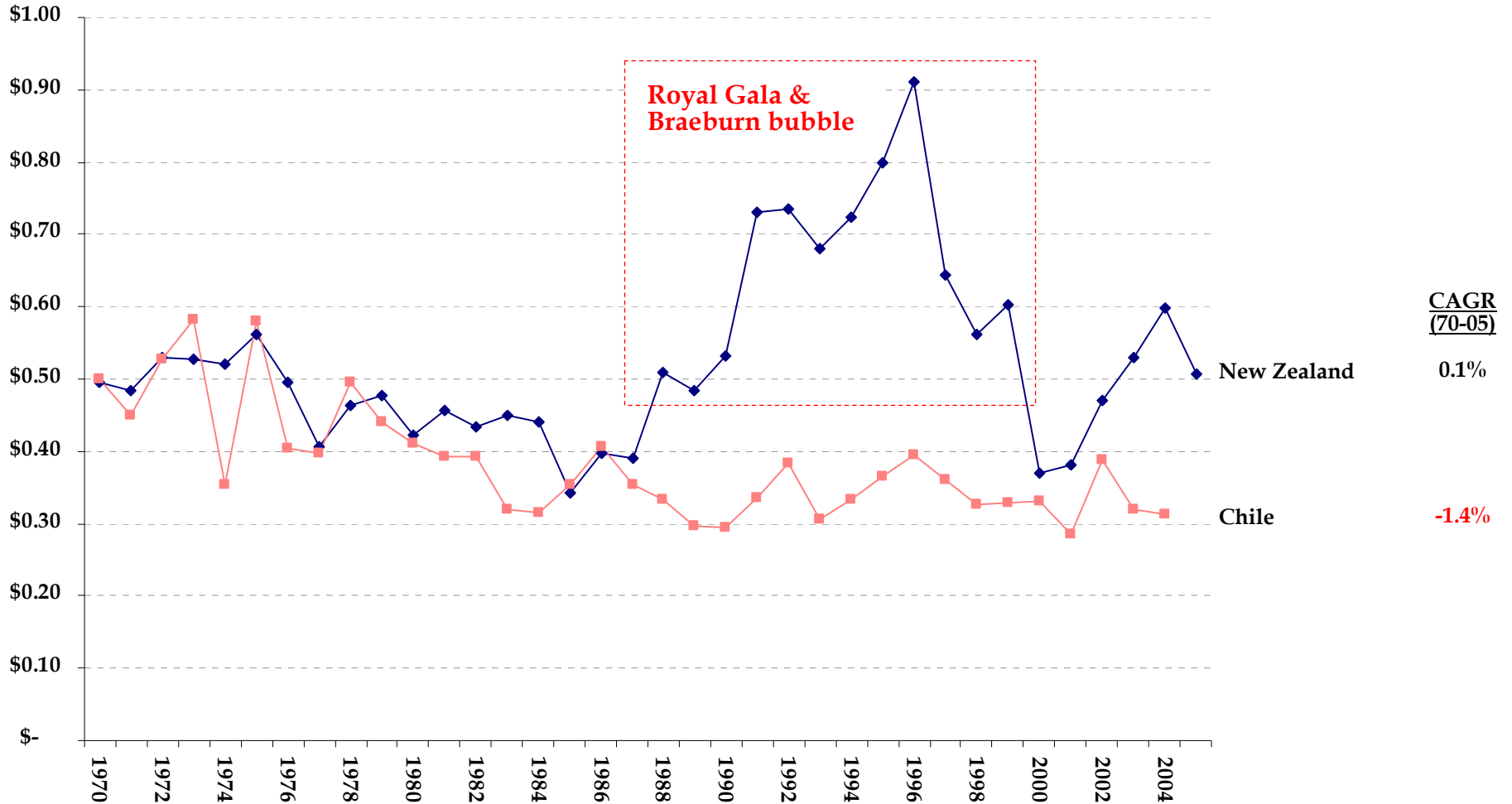
Braeburn



A BUBBLE???

When benchmarked with returns to Chile, the superior returns of the late 80's and early 90's would appear to be a bubble created by Royal Gala and Braeburn

New Zealand FOB export apple price per kilogram
(inflation adjusted 1986 US\$; 1970-2005)



CHILE DRIVING DOWN PRICES

Research by Ignacio Montes at the University of Talca clearly demonstrates that Chile is one of the key reasons for the fall in prices, especially for Gala

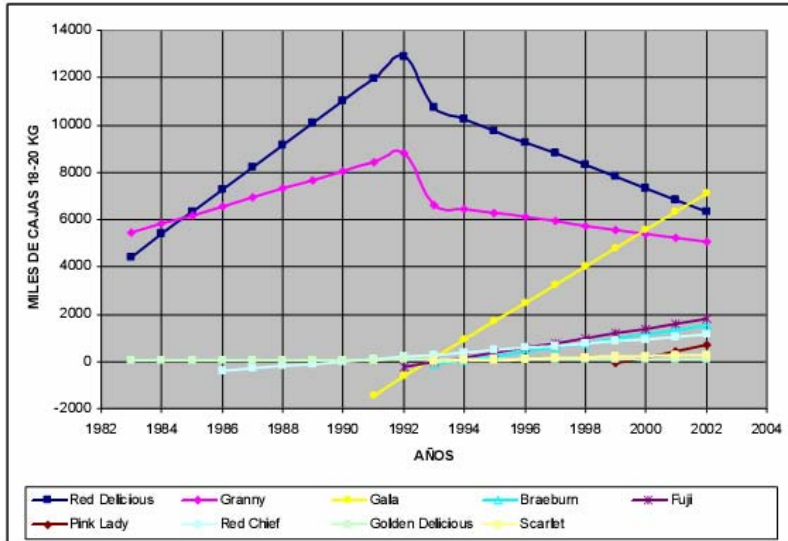


Figura 4.2. Tendencia en los volúmenes exportados en las principales variedad de manzana.

Cuadro 4.3. Tasa de cambio anual en los precios de tendencia; En dólares/caja 18 -20 Kg.

Variedades	Período	Dólares /caja
Red Delicious	1984-2002	-0,571
Granny Smith	1984-2002	-0,502
Royal Gala	1993-2002	-0,923
Red Chief	1995-2002	0,107
Fuji	1996-2002	0,517
Braeburn	1995-2002	0,095

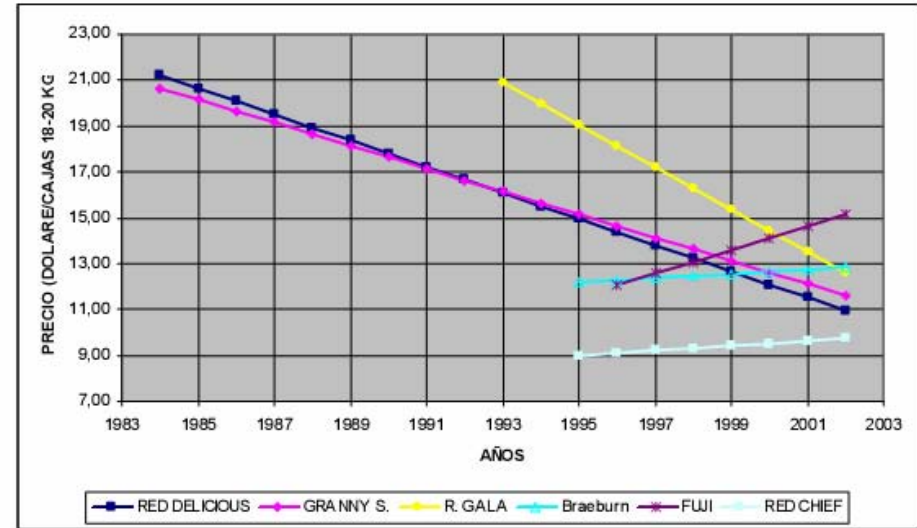


Figura 4.3. Comparación entre las tendencia de los precios de remate en Róterdam para las distintas variedades de manzanas.

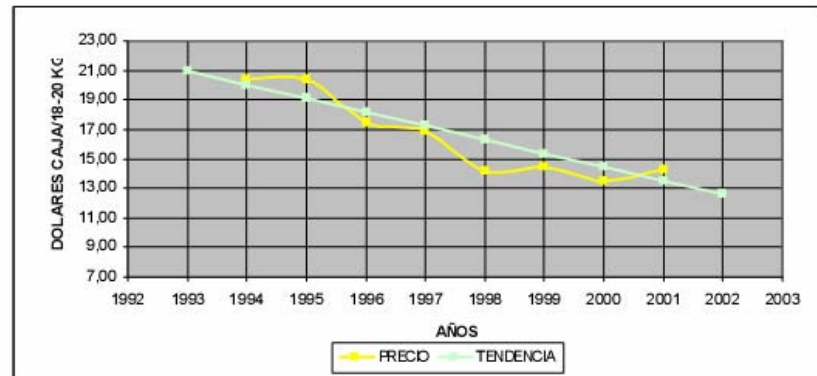


Figura 4.6. Tendencia y ciclicidad en los precios CIF Róterdam para Royal Gala.

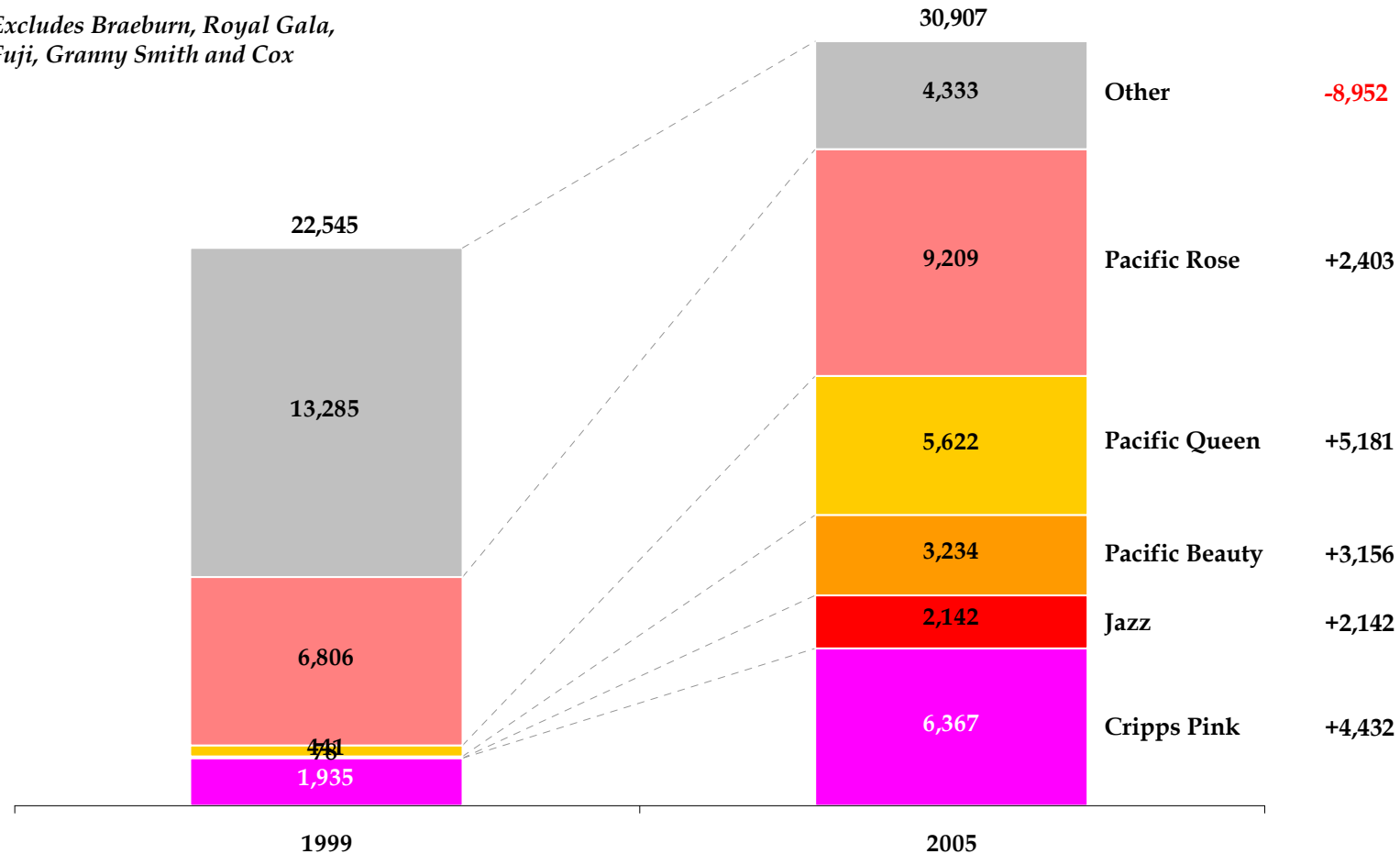
FIVE NEW VARIETIES DOMINATE NON-TOP 5 EXPORTS

Five new varieties are currently competing to be the next Braeburn or Royal Gala

New Zealand export production by non-top 5 variety
(% of volume; 1999 vs. 2005)

Absolute
Change
(99-05)

*Excludes Braeburn, Royal Gala,
Fuji, Granny Smith and Cox*



LEADING NEW VARIETIES

Four of the five leading new varieties being planted were developed in New Zealand

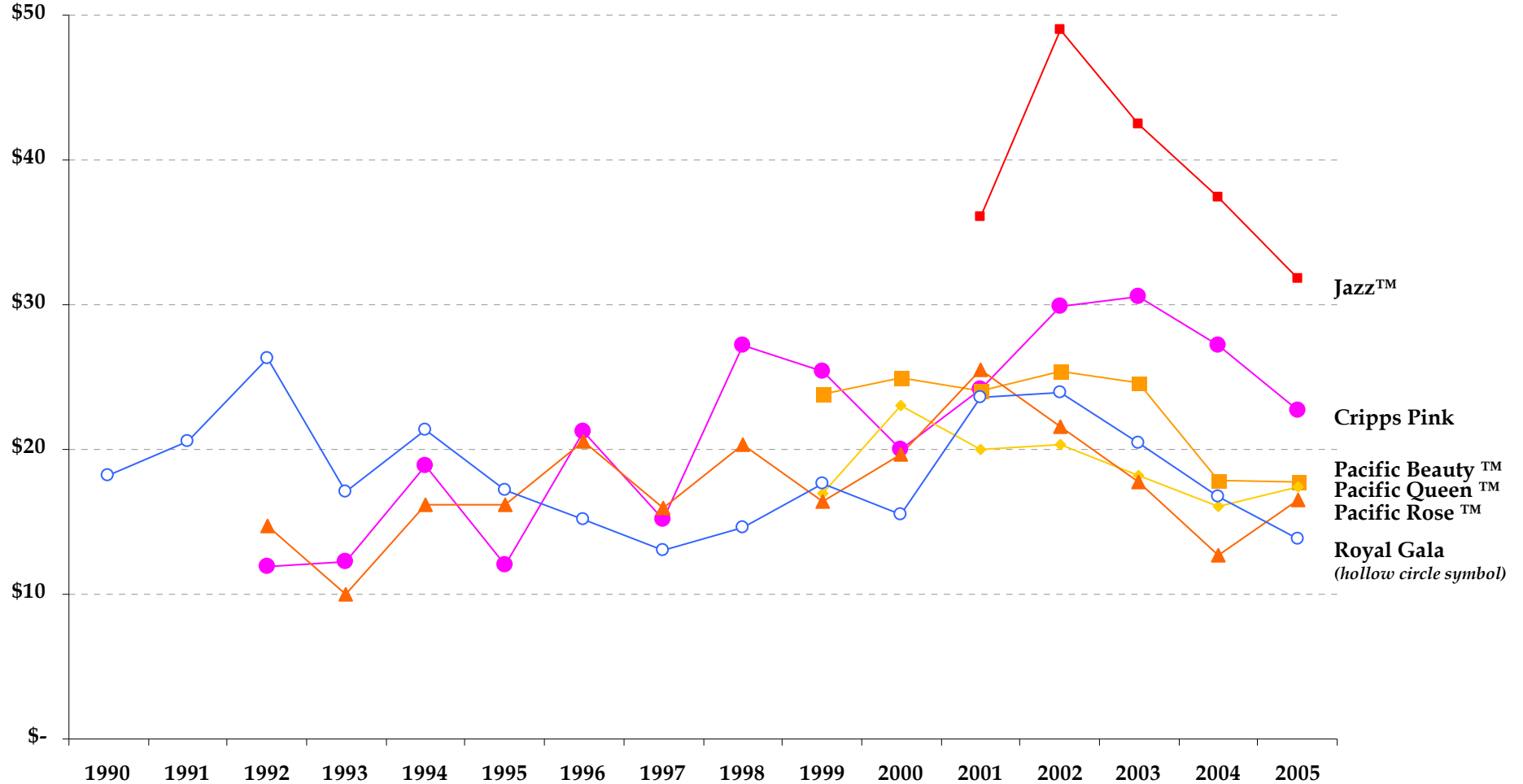
Details of major new varieties being planted in New Zealand
(various)

	US Plant Patent	Year developed/ production	Origin	Parents	Control
Jazz™ (Scifresh)	pending	1986 1996	Allan White at DSIR/Hort Research	Royal Gala x Braeburn	Intl license held by ENZA
Pacific Queen™ NZ Queen (Scired)	Yes	1974 1991	Allan White at DSIR/Hort Research	Gala x Splendour	Intl license held by ENZA
Pacific Beauty™ NZ Beauty (Sciearly)	Yes	1974 1993	Allan White at DSIR/Hort Research	Gala x Splendour	Intl license held by ENZA
Pacific Rose™ NZ Rose (Sciros)	yes	1974 1991	Allan White at DSIR/Hort Research	Gala x Splendour	Intl license held by ENZA; Franchise fee US\$2,000/acre + 11% of FOB
Pink Lady® Cripps Pink	7,880	1973	John Cripps at Western Australia Dept. of Ag. breeding program	Lady Williams x Golden Delicious	Pink Lady is a trademark of Brandt's Fruit Trees, Inc., and is managed by Pink Lady USA.

JAZZ THE ONLY STAR

Of the new varieties, only Jazz stands out for providing superior returns; the Pacific series appears to have failed to deliver to date

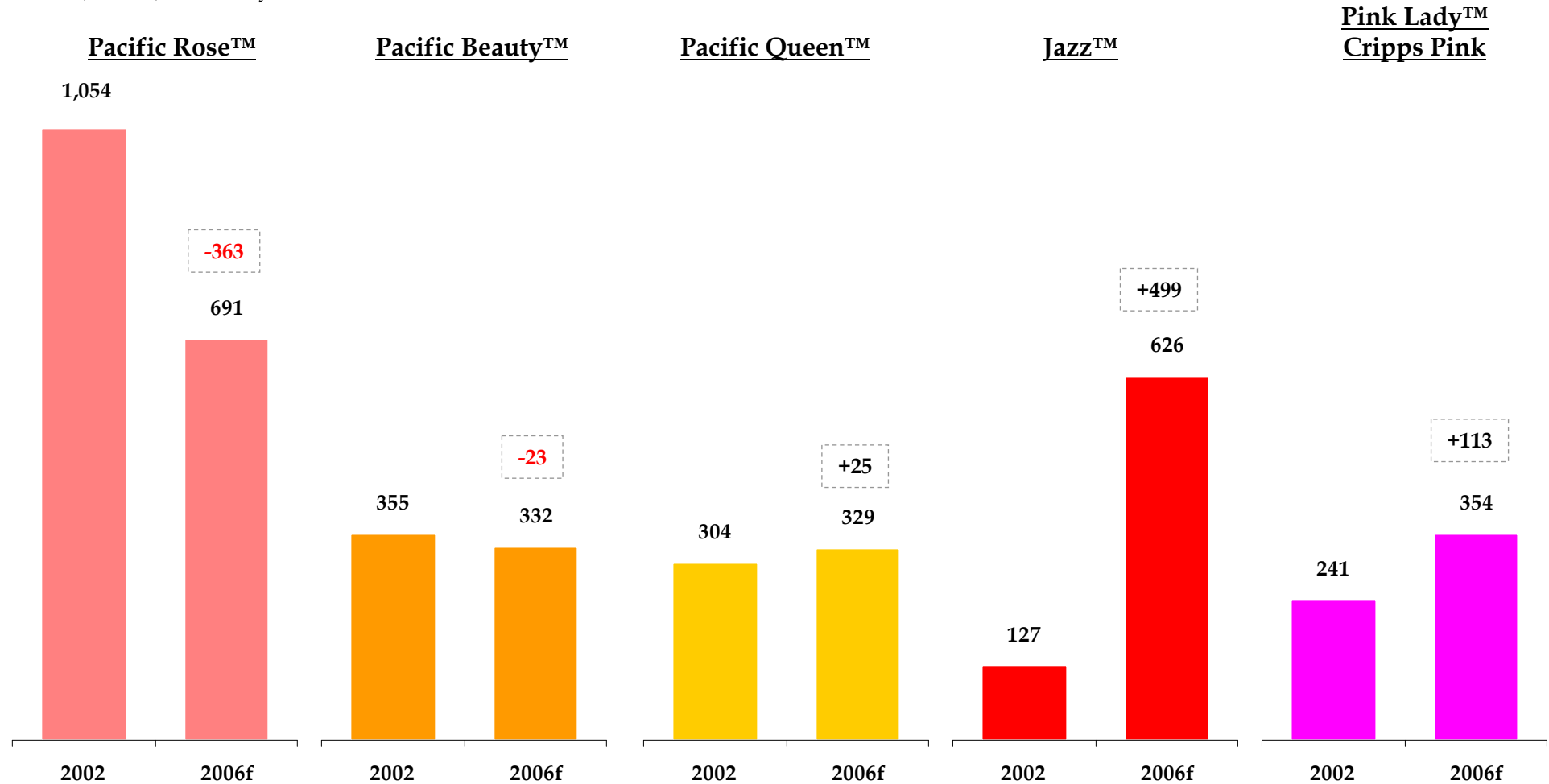
New Zealand weighted average FAS returns per TCE
(NZ\$; nominal; 1990-2005)



ONLY JAZZ AREA GROWING STRONGLY

Growers have responded to these price signals by planting significantly more Jazz and Cripps Pink

Change in area planted in select new varieties in New Zealand
(hectare; actual; 2002-2006f)



“B LIST” NEW VARIETIES

However, there is also a significant “B List” of less successful or emerging varieties planted in New Zealand

Details of secondary new varieties planted in New Zealand recently
(various)

	US Plant Patent	Year developed/production	Origin	Parents	Control
Sweetie™ (prem1a)	pending	1986 2005	Allan White at DSIR/Hort Research	Royal Gala x Braeburn	Tree royalty
Sonya™	?	?	John Nelson, Otago, New Zealand	Gala x Red Delicious	Club variety controlled by Nevis Fruit Company
Sundance™ (Co Op 29)	<i>pending</i>	1990	PRI (Purdue, Rutgers, Illinois Co Op)	Golden Delicious x PRI 1050-201	?
Sundowner® (Cripps II cv.)	8,477	1972	John Cripps at Western Australia Dept. of Ag. breeding program	Lady Williams x Golden Delicious	?
Cameo®	9,068	1987	Chance seedling discovered by Darrel Caudle in Wenatchee, WA	Chance seedling (Red Delicious x Golden Del?)	Cameo Apple Marketing Association
Tentation™ (Delblush)	<i>pending</i>	1979 1990	Delbard Nursery, France	Golden Delicious x Blushing Golden (Grifer ev.)	Club variety licensed in New Zealand by Heartland
Southern Snap™ (Sciglo)	Yes? Lapsed?	1974 1991	Allan White at DSIR/Hort Research	Gala x Splendour	<i>none</i>
GS48 (Sciray)	no	1974 1991	Allan White at DSIR/Hort Research	Gala x Splendour	<i>none</i>
Scigold	yes	1986 ?	Allan White at DSIR/Hort Research	Royal Gala x Braeburn	Prevar
Various high colour mutations of Braeburn	<i>various</i>	<i>various</i>	Joburn/Redfield/Southern Rose™/Red Braeburn™/Aurora™/Mariri Red / Eve™ /others	Braeburn mutants	<i>various</i>
Sansa	6,519	1968 1988	Allan White at DSIR/Hort Research	Gala x Akane	<i>none</i>
Sunrise	no	?	Agriculture Canada, Summerland, BC	McIntosh and Golden Delicious X PCF-3-120	<i>none</i>

GROWTH OF CLUBS

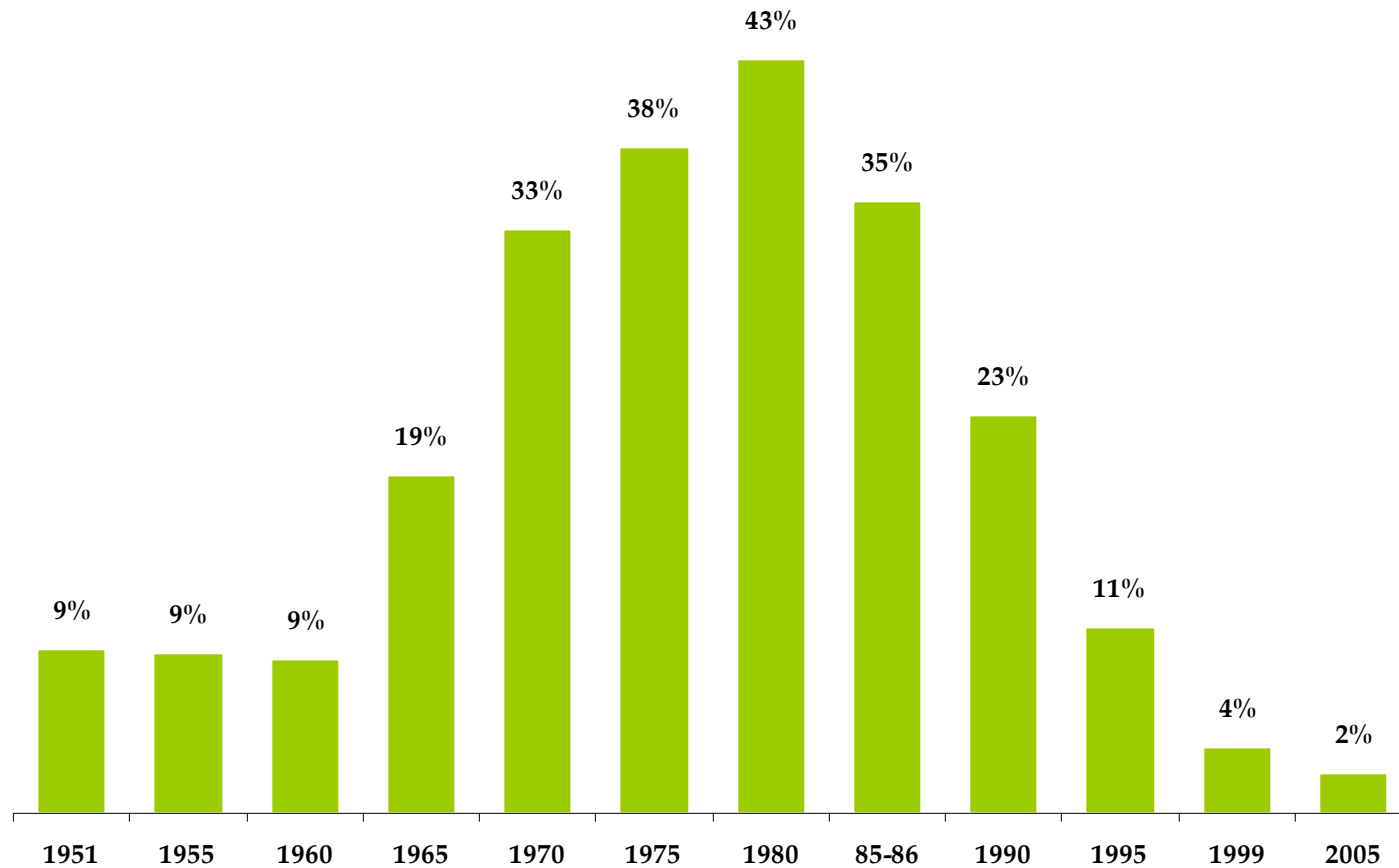
Led by Pink Lady and Jazz, there has been a rise in “club marketing” of varieties

- “In recent years there have been a greater number of restricted access cultivars since ‘Pink Lady’ was marketed under a club concept. The New Zealand program’s Pacific series and ‘Jazz’ are examples of restriction and dual location (New Zealand and Washington State) production. Franchise fees and production-based royalties are also new developments. ‘Delblush’ (‘Tentation’) is another example of a restricted access variety from the Delbard program in France. In North America, we have seen ‘Ambrosia’ become restricted to Canada, even after trees had been planted and harvested in the US. ‘Sonya,’ from the NZ breeding program of John Nelson, is also a club variety in Washington. The most recent restriction is on ‘Piñata,’ trademarked by Stemilt in cooperation with Pepin Heights orchard in Minnesota. ‘Piñata’ will be exclusive to that partnership, which is unusual because ‘Piñata’ was originally introduced as a public variety to the US. This introduction from the Dresden/Pillnitz breeding program in Germany was available to all growers. Its name was first changed to ‘Corail’ and later to ‘Sonata’ for marketing purposes. The trademarked name, ‘Piñata,’ comes from a combination of the names ‘Pinova’ (Pin) and ‘Sonata’ (ata). ‘Ariane,’ a scab resistant apple from the INRA program in Angers, France, is the newest club release. Its pedigree is complex, involving a hybrid of the scab resistant cultivars ‘Florina’ and ‘Prima,’ crossed with a selection derived from ‘Golden Delicious’ open pollinated. This cultivar is the first release by a cooperative program between INRA and French nurseries. Seventeen French nurserymen, with an aim to produce high- quality, disease resistant cultivars, founded the company NOVADI in 1997. This group then partnered with producers and marketers to form POMALIA. The company selects among the best cultivars identified by NOVADI. These groups have already organized the planting of over 95,000 trees of ‘Ariane’ in France.” *New York Fruit Quarterly, Spring 2005*

GRANNY SMITH APPLE LIFECYCLE

While the Granny Smith apple had a 50 year lifecycle, we believe newer varieties will have a much shorter lifecycle

Granny Smith apples as a percent of total New Zealand apple exports by select year
 (% of volume; 1951-2005)



5. Industry structure in transition

HISTORY OF INDUSTRY STRUCTURE

The New Zealand pipfruit industry has had a wide variety of structures imposed upon it

Key events in history of New Zealand pipfruit industry structure

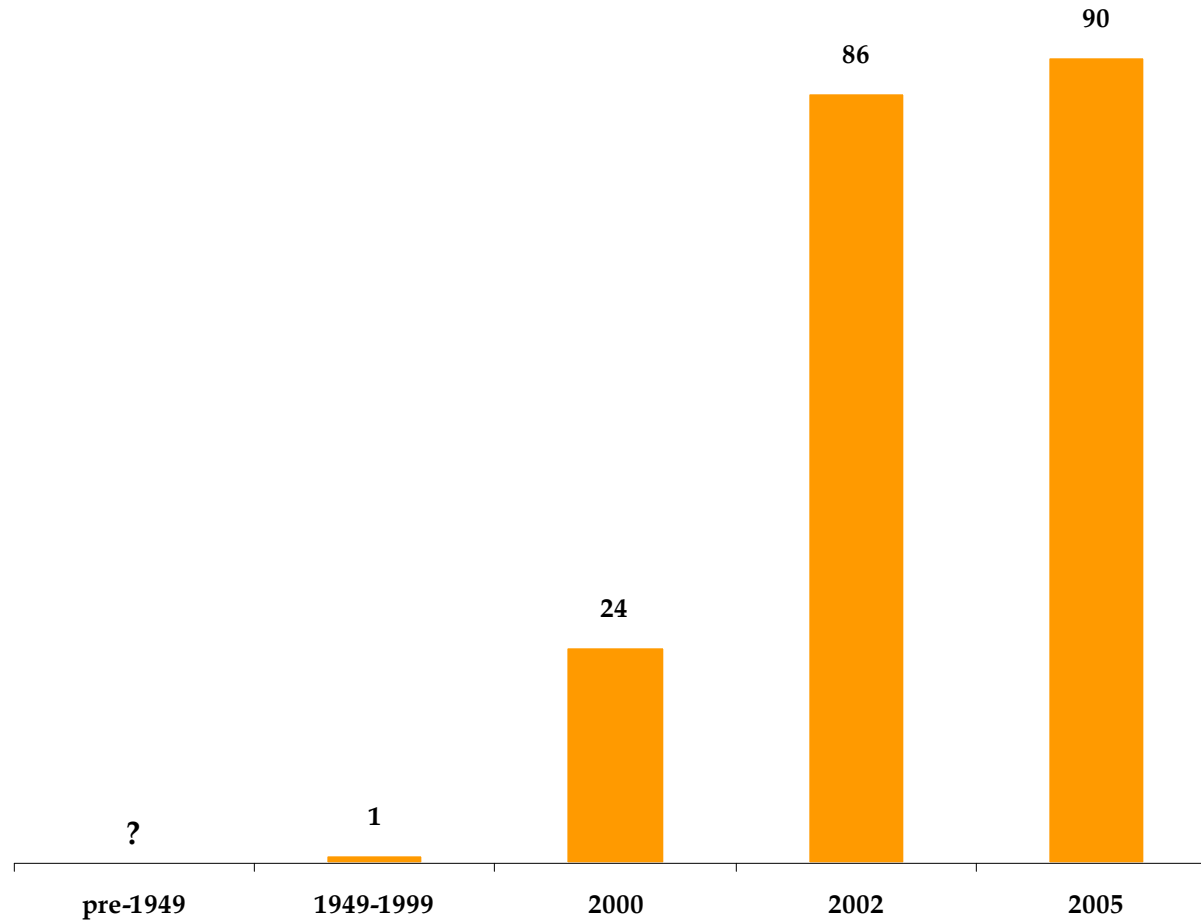
(various)

1814	Group of English missionaries led by Reverend Samuel Marsden introduce apples to New Zealand
1899	S.S. Papanui carries first trial shipment of apples to the United Kingdom in cold storage
1910-1930	Massive expansion of apple orchards, especially around Nelson and Auckland, in response to export demand slowed only by World War 1 (1914-1918); unsuitable areas subsequently abandoned
1916	Local co-operatives and growers' associations come together to form New Zealand Fruitgrowers Federation (NZFF); Parliament persuaded to impose the Orchard Tax Act of compulsory levies payable to the federation
1920	NZFF obtains for growers a government guarantee of 1d per pound against export losses
1926	NZFF convinces government to establish Fruit Export Control Board (FECB), which "took control of all exports"; FECB acts as selling agent in markets; NZFF acts as agents taking charge of assembly and shipping
1935	FECB opens own offices; complicated system of pooling develops, with separate pools for different regions and different markets (e.g. Hawke's Bay to Hawaii) plus government guarantee
1939-1945	World War II decimates apple exports which fall from 57m lbs. to nothing
1948	Low demand for apples in traditional markets still recovering from war; following negotiations between NZFF and government, Apple and Pear Marketing Act creates the Apple and Pear Marketing Board (NZAPMB) which functions as a single desk exporter of apples and pears; fruit purchased from growers and sold on its own behalf
1962	NZAPMB established apple cannery in Nelson to add value to processing grade fruit
1967	APMA amended to establish price fixing authority to set average price paid for all fruit in Feb of each year
1993	Government deregulates domestic sales of apples
1990's	Small amount of non-Board exports by Board approved exporters (e.g. organic)
2000	ENZA/NZAPMB corporatised with shares distributed to 1,500 growers; exporting partially deregulated allowing "approved" exporters
2000+	GPG progressively acquires ENZA and merges it with Turners & Growers
2001	Government ends 52 year statutory monopoly of ENZA on apple exports

EXPLOSION OF EXPORTERS

Following deregulation, the industry has seen an explosion in the number of pipfruit exporters

Number of New Zealand pipfruit exporters
(enterprises; actual; 1949-2005)



INTERNATIONAL MODELS

The experience of other markets suggests potential future structures for the New Zealand industry

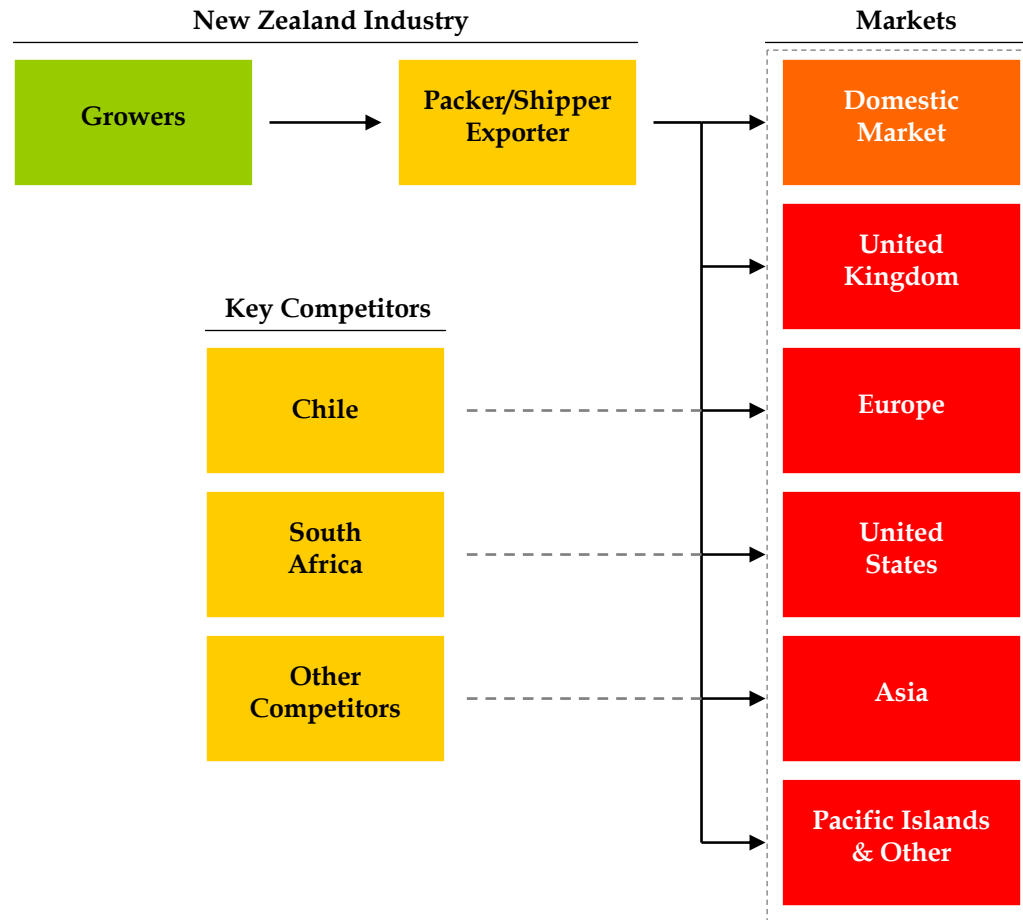
Industry structure of other major deregulated pipfruit producing countries
(various)

Country/Region	Industry Structure	Key attributes of model
South Africa	Former single desk now deregulated	<ul style="list-style-type: none"> - Unifruco (former Deciduous Fruit Board founded in 1939) merged with Outspan to form Capespan taking full range of South African product to the world - Market consists of a strong Capespan (~85% of all fruit exports) and a number of smaller exporters
Washington State (United States)	Free market with regulation and subsidies	<ul style="list-style-type: none"> - Ongoing consolidation underway in packhouse sector to exploit high capital investments in mechanisation - Integrated packer/shippers selling a range of temperate fruit (apples, cherries, peaches...)
Chile	Free market with very limited regulation	<ul style="list-style-type: none"> - Mixture of local offices of banana-centered fruit conglomerates (e.g. Dole, Chiquita, Del Monte) and strong local exporters (e.g. Copefruit, DdC) - All exporting a wide range of produce (e.g. grapes, apples, kiwifruit, etc.)
Brazil	Free market with very limited regulation	<ul style="list-style-type: none"> - Mixture of apple-focused integrated grower/packer/shippers, multi-fruit exporters and regional apple packing cooperatives - 14 exporters of any scale
British Columbia (Canada)	Single desk seller of all export fresh tree fruit	<ul style="list-style-type: none"> - B.C. Tree Fruit Ltd. handles all sales and marketing of all fresh export apples, pears, cherries, apricots & peaches - Supplied by multiple packhouses (both cooperatives and private) - 2 cooperative packhouses pack 75% of apples

2. MARKETS

The second section of this report looks at the markets for New Zealand pipfruit

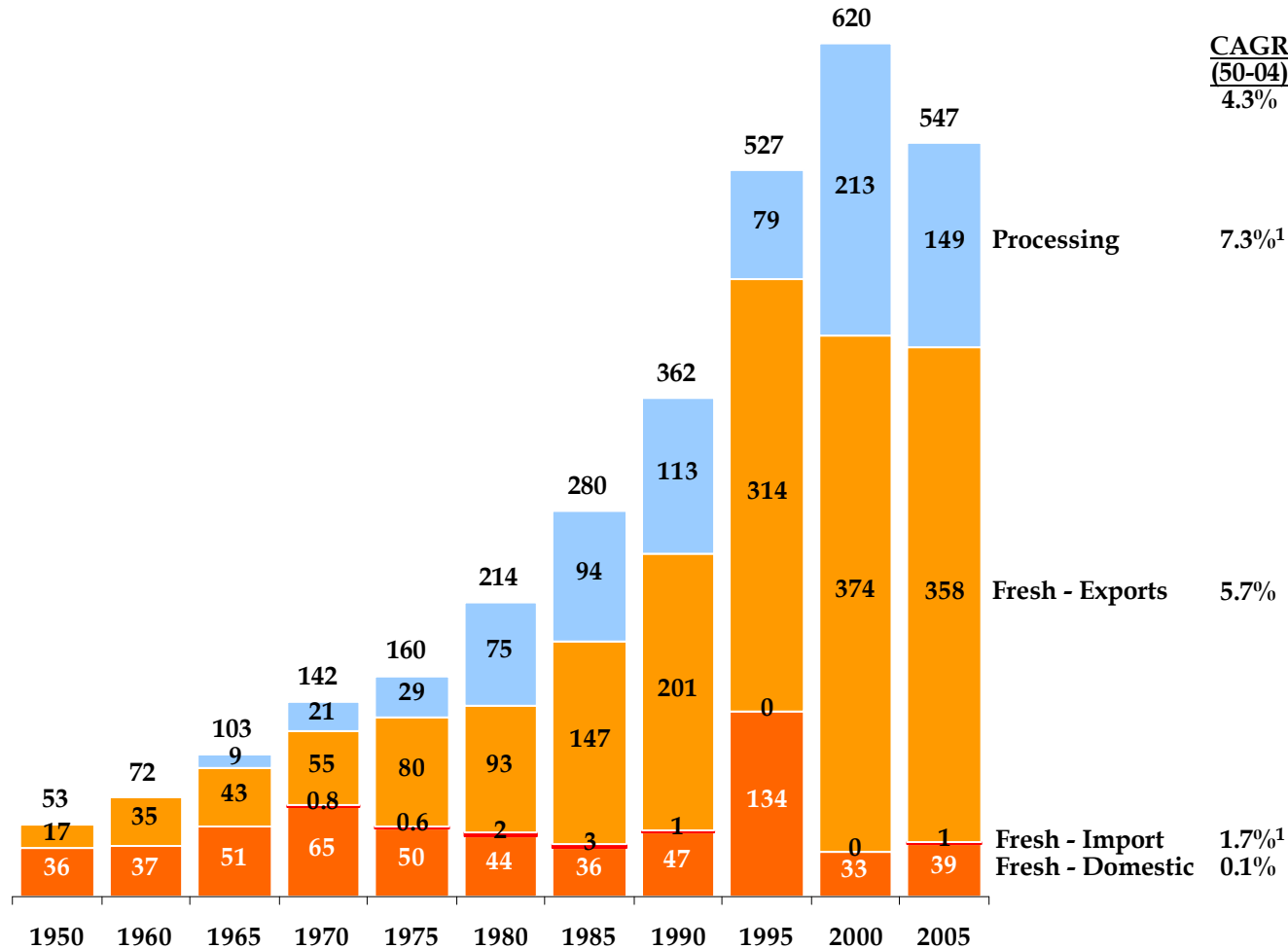
Key players in the supply chain for New Zealand apples
(model)



CROP UTILISATION

The growth of the New Zealand apple industry over the past fifty years has been driven primarily by exports and processing

Utilisation of New Zealand apple crop
(tonnes; 000; 1950-2005)



Discussion Points

- Why is processing falling?

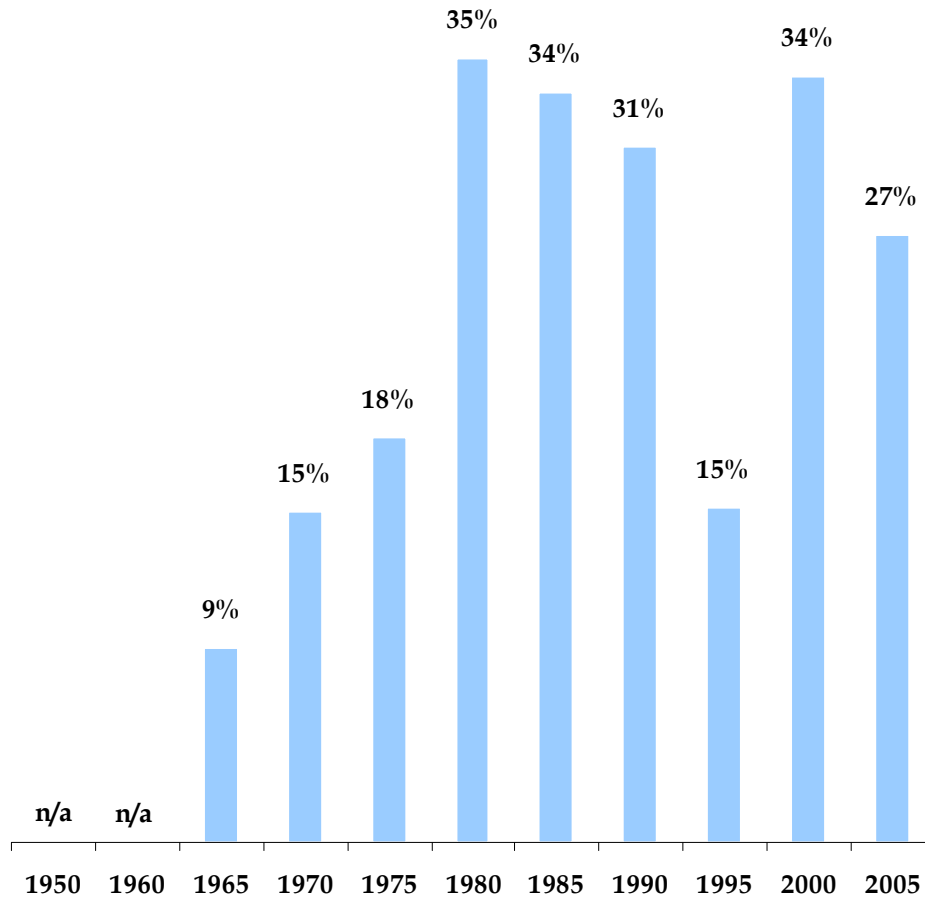
Notes

- Processing (and therefore fresh - domestic) 1995-2005 uses PNZ data
- Fresh domestic 1995 looks anomalous but this is what the data implies; data may include wastage (cf Peter Bevin)
- Reliability of recent New Zealand data is low; multiple credible sources exist and disagree. For example, New Zealand apple production in 2005:
 - UN FAO: 516,000
 - HortResearch: 474,000
 - MAF SONZAF: 546,000
 - WAPA: 505,577

APPLE PROCESSING IN DECLINE

After peaking in the mid 1980's, the apple processing industry appears to be in decline, partially due to more second grade fruit being exported

Percent of New Zealand apple production that is processed
(% of tonnes; 1950-2005)



Discussion Points

- Role of lower grade standards for export fruit?
- New Zealand has begun importing apple juice concentrate
- Role of China?
- Long-term prognosis

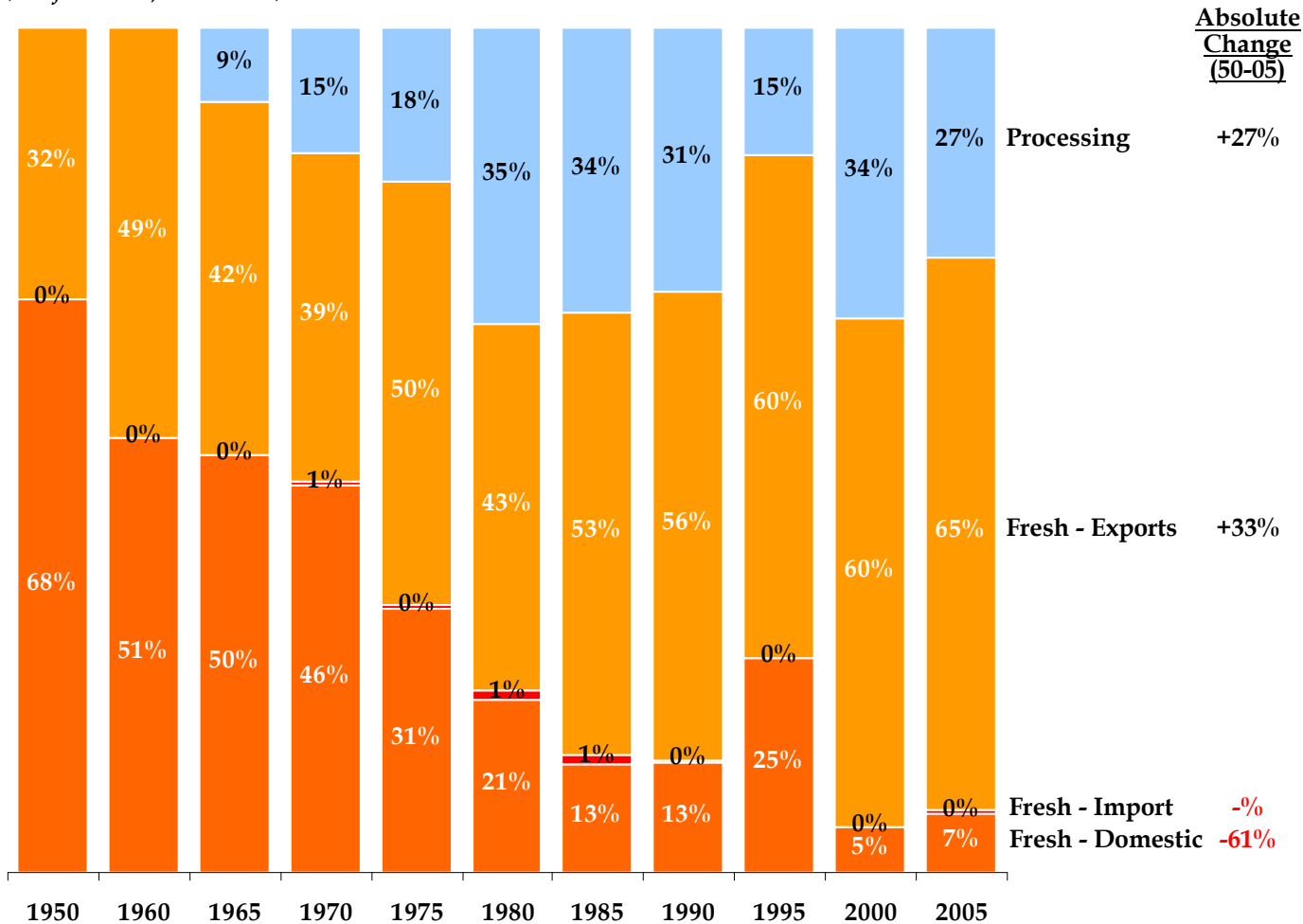
Notes

- Based on data given on previous page

CROP UTILISATION

Two thirds of New Zealand apple production goes to export markets and this percent is trending upwards

Share of crop by utilisation
(% of volume; 1950-2005)



Discussion Points

- Increased production is going primarily to export
- Declining role of domestic market

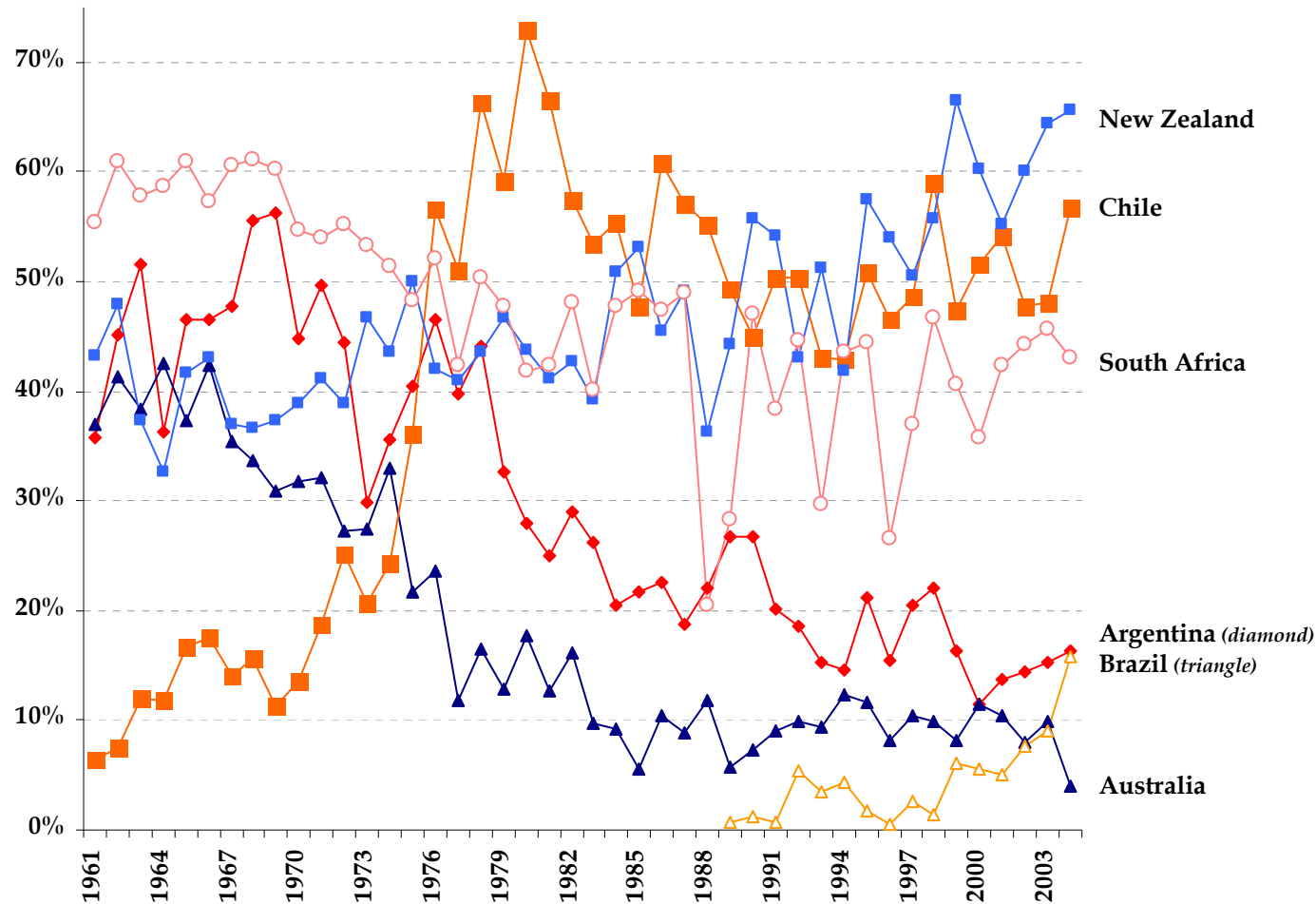
Notes

- Based on data given on Market page 2

FRESH EXPORTS AS A % OF CROP

New Zealand sends a greater percent of its crop to export than its key competitors

% of apple production which is exported fresh
(% of tonnes; 1961-2004)



Discussion Points

- Implications for relative quality

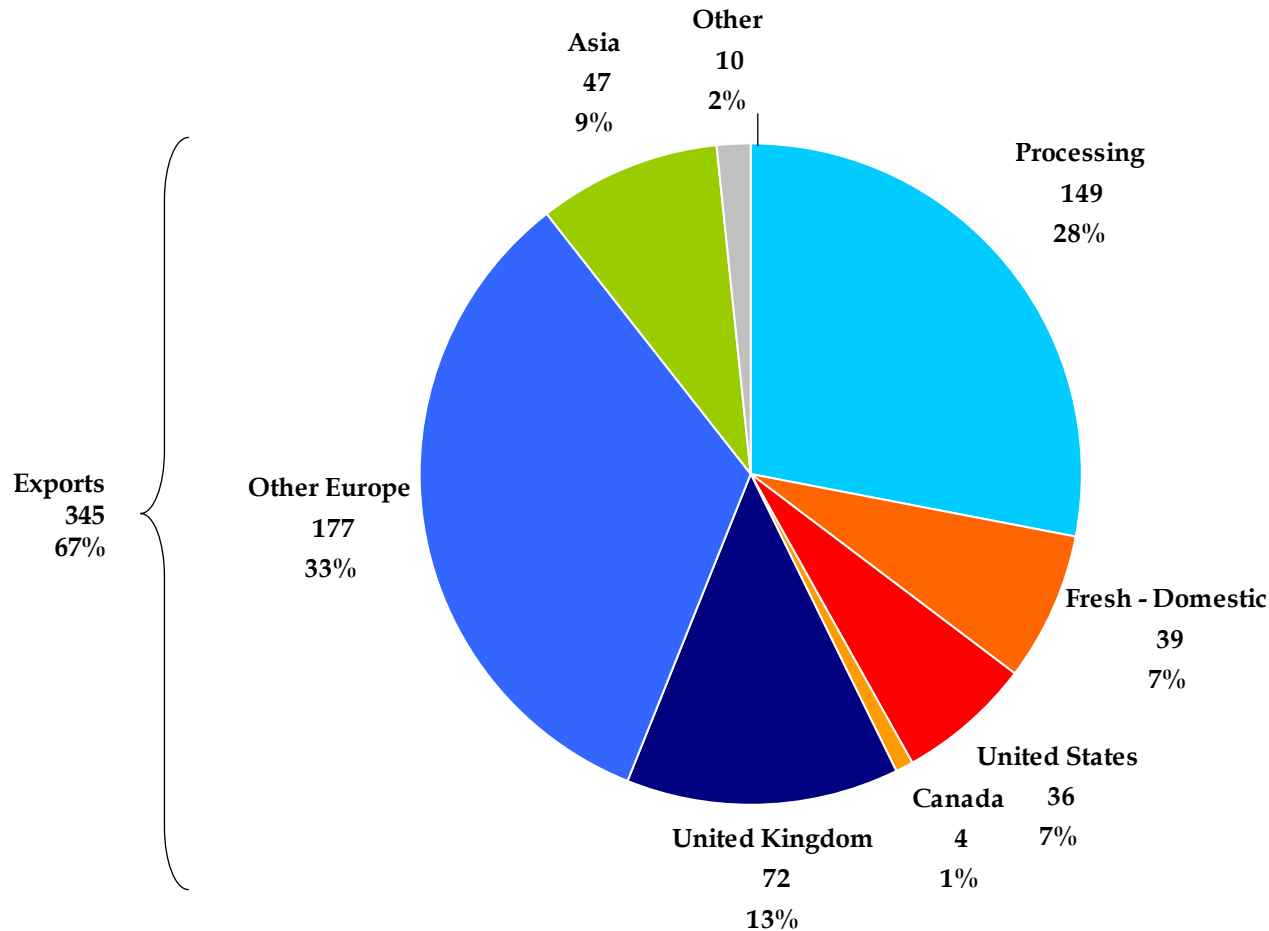
Notes

- 1995 uses FAO not PNZ data for exports for consistency with other data sources

MARKETS FOR APPLE CROP

The New Zealand apple crop goes to a wide range of destinations

Markets for New Zealand apple crop by destination
(tonnes; 000; % of tonnes; 2005)



Discussion Points

- Relatively minor importance of domestic market

Notes

- Exports here (345t) do not match those on Markets p2 (358t) due to differing sources (UN/FAO vs. UN/Comstat); address issue with them

SMALL DOMESTIC & REGIONAL MARKETS

Compared with its key competitors New Zealand has a small domestic market and very limited population in logical regional markets

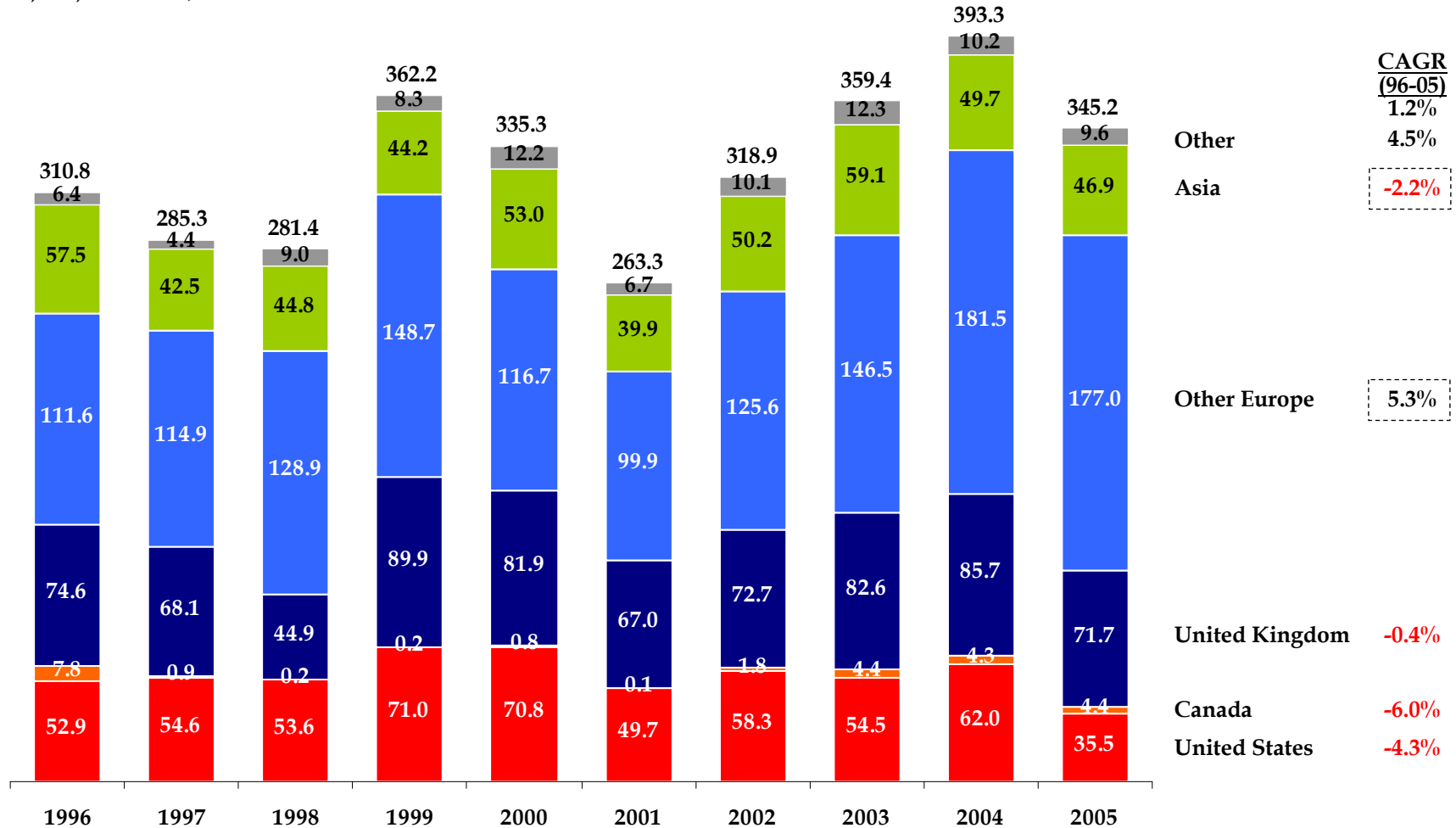
Key competitor country metrics
(various)

Countries	Domestic Market		Regional Markets	
	Population (m; 06)	Per capita fresh apple consumption (kg/capita; 05)	Logical regional markets	Total population of these markets
New Zealand	4.1m	9.7 ²	- [Australia 19.9] - Pacific islands 2.8	2.8
Australia	20.3m	6.47	- New Zealand 4.0 - Pacific Islands 2.8	6.8
Chile	16.1m	8.53	- Argentina 38.9 - Chile 16.0 - Brazil 180.7	
Brazil	188.1m	3.64	- Peru 27.6 - Bolivia 9.0 - Ecuador 13.2 - Colombia 44.9	365.9
Argentina	39.9m	6.62	- Venezuela 26.2 - Paraguay 6.0 - Uruguay 3.4	
South Africa	44.2m	4.08	- Zimbabwe 12.9 - Botswana 1.8 - Namibia 2.0 - Mozambique 19.2 - Zambia 10.9	46.8
Washington State	5.9m/290m	8.50	- Canada 31.7 - Mexico 104.9 - Cent. America 39.6	176.2

NEW ZEALAND EXPORT VOLUME GROWTH

Over the past decade, New Zealand's volume growth has come from Europe - our traditional markets of the United Kingdom and the United States are flat to down, as is Asia

Change in New Zealand fresh apple export volume by country
(tonnes; 000; 1996-2005)



BENCHMARKING MARKET ATTRACTIVENESS

While there are opportunities for growth, we would recommend an initial focus on defending New Zealand's strong position in key developed markets

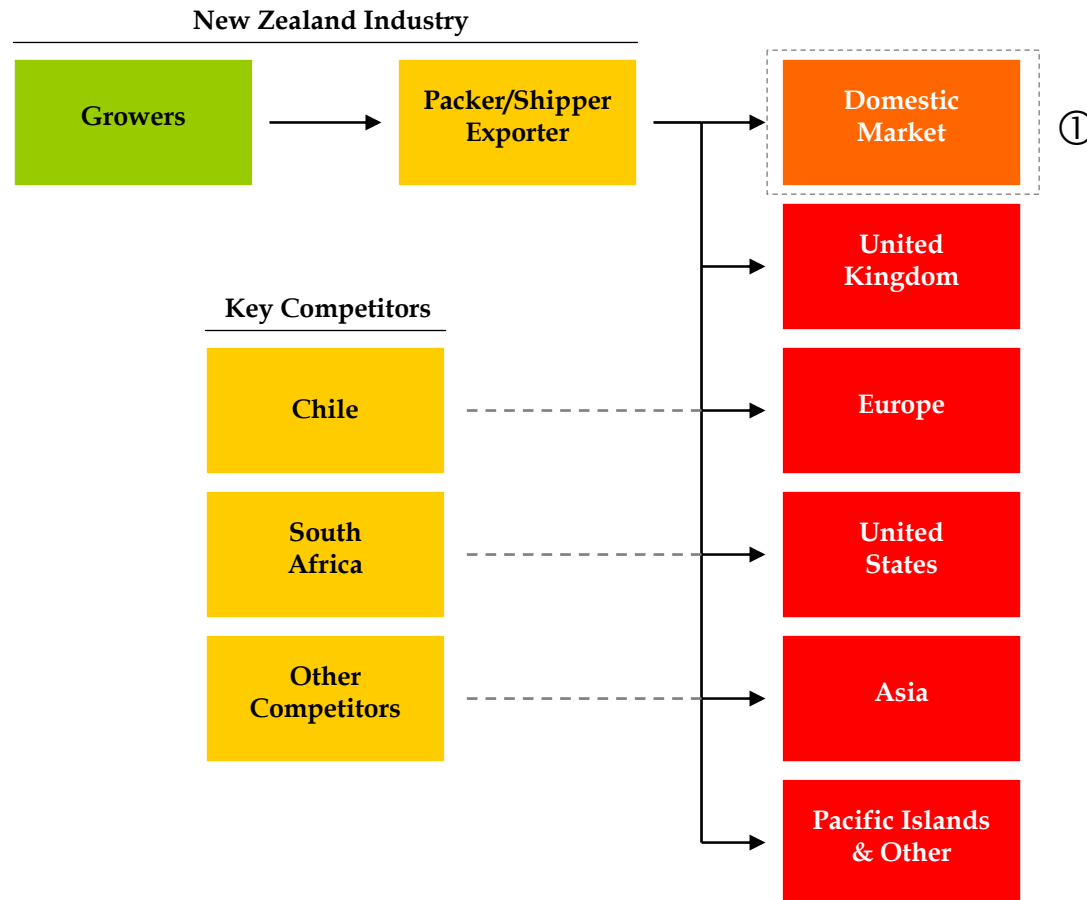
Attractiveness of select markets
(forced ranking)

	Indicated strategy	Are they apple eaters?	Do they produce apples?	Do they import lots of apples?	Are apple imports growing?	Are they willing to pay a premium for quality?
Domestic Market	Cash cow	●	●	n/a	n/a	◐
United Kingdom	Defend position	●	●	●	○	●
Western Europe	Defend position	●	●	●	◐	●
Eastern Europe	Develop	●	●	◐	◐	◐
United States/Canada	Defend position	●	●	◐	○	●
East Asia	Focus on high value markets	●	●	◐	●	◐
South East Asia	Focus on high value markets	○	○	◐	●	○
Indian Subcontinent	Secondary market	◐	◐	○	●	○
Middle East/North Africa	Develop	◐	◐	◐	◐	◐
Pacific Islands	Good if you have it	○	○	○	○	◐

MARKETS - NEW ZEALAND

The domestic market is an important market for New Zealand pipfruit

Key players in the supply chain for New Zealand apples
(model)



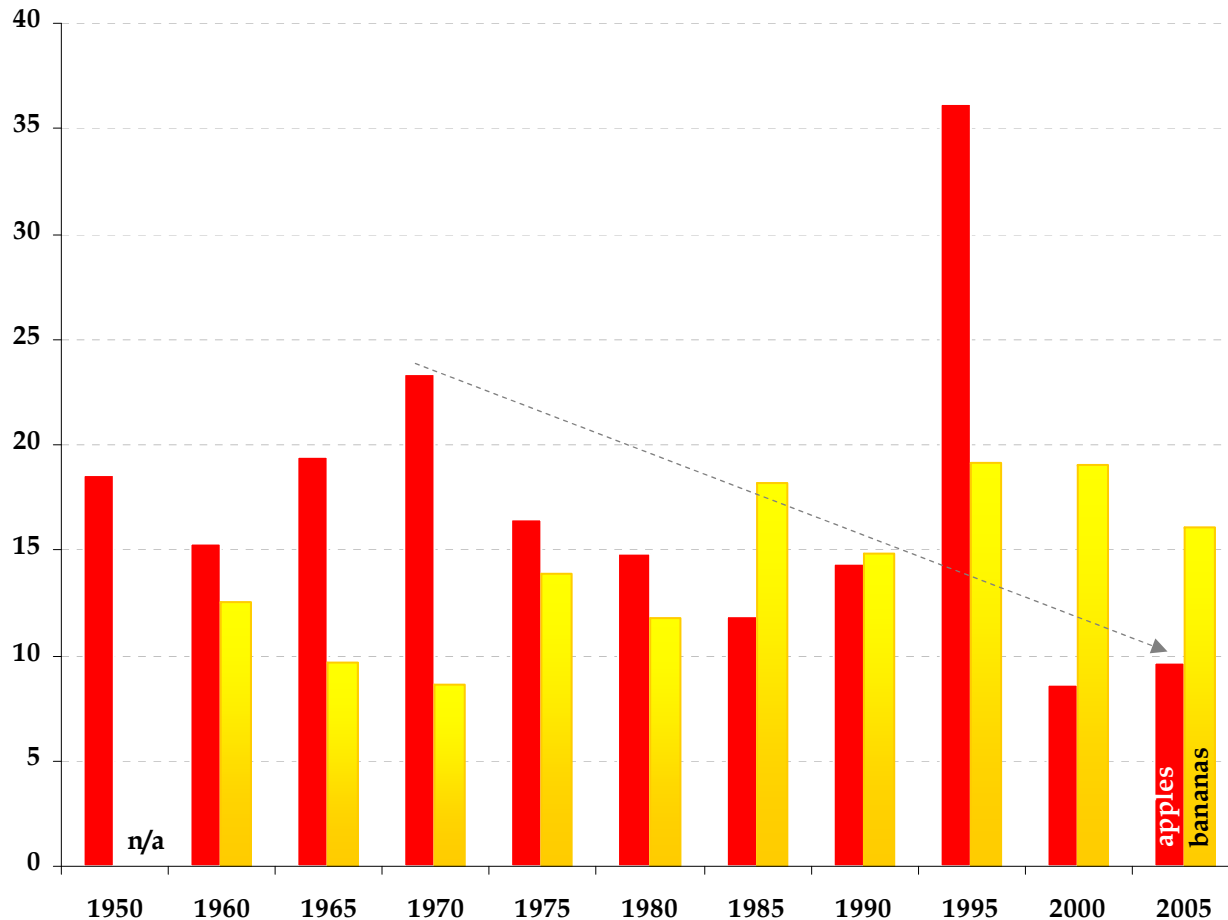
KEY CONCLUSIONS – DOMESTIC MARKET

- From the limited data available, we believe domestic apple consumption has been growing
- Supermarkets account for almost 50% of New Zealand’s “primarily food and beverages” retail sales
- The New Zealand domestic supermarket market is now highly consolidated
- While the number of greengrocers in New Zealand is declining, their turnover is increasing, driven by more sales per outlet

DOMESTIC CONSUMPTION GROWTH

From the limited data available, we believe domestic apple consumption has been falling

New Zealand fresh consumption per capita: apples vs. bananas
(kg/capita; 1950-2005)



Discussion Points

- Are bananas a substitute for apples? (“lunchbox” fruit)
- See markets p2 for 1995 data discussion

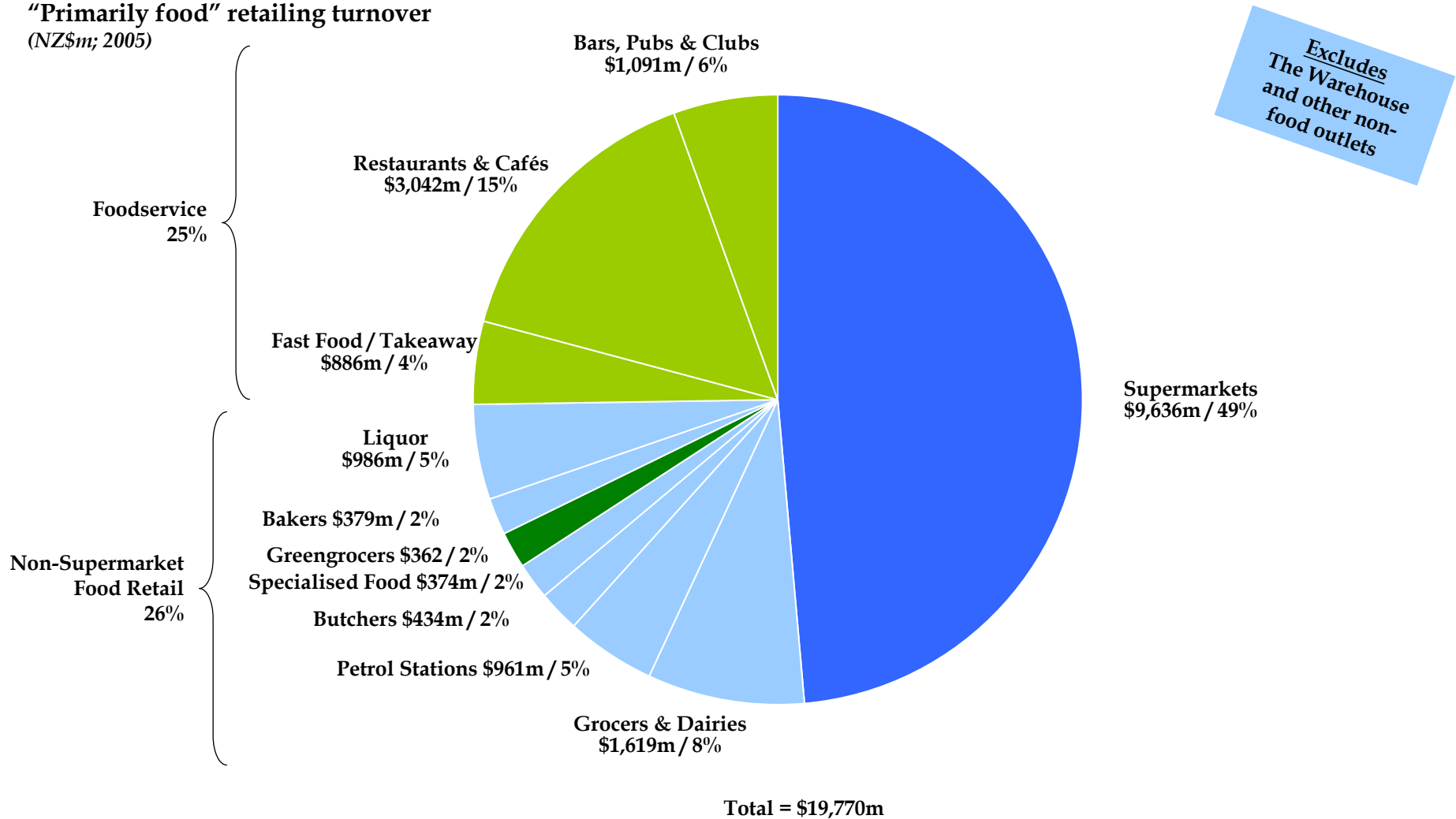
Notes

- Processing (and therefore fresh – domestic) 1995-2005 based on PNZ supplied data
- Uses imported banana volume; assumes no domestic banana production

MARKET STRUCTURE

Supermarkets account for almost 50% of New Zealand’s “primarily food and beverages” retail sales

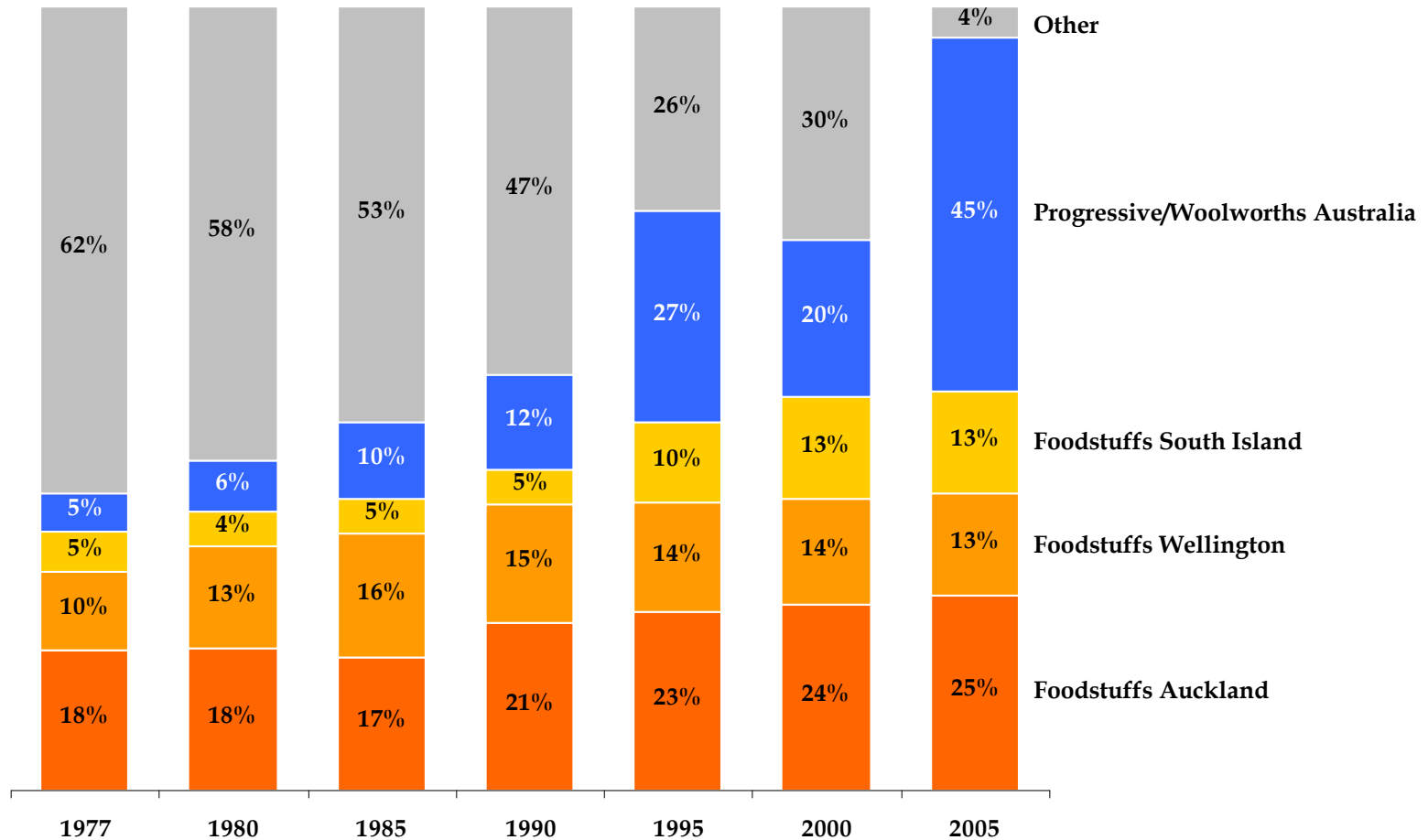
“Primarily food” retailing turnover
(NZ\$m; 2005)



CONSOLIDATED MARKET

The New Zealand domestic supermarket market is now highly consolidated

Changing New Zealand supermarket market share by chain
(% of sales; 1978-2005)



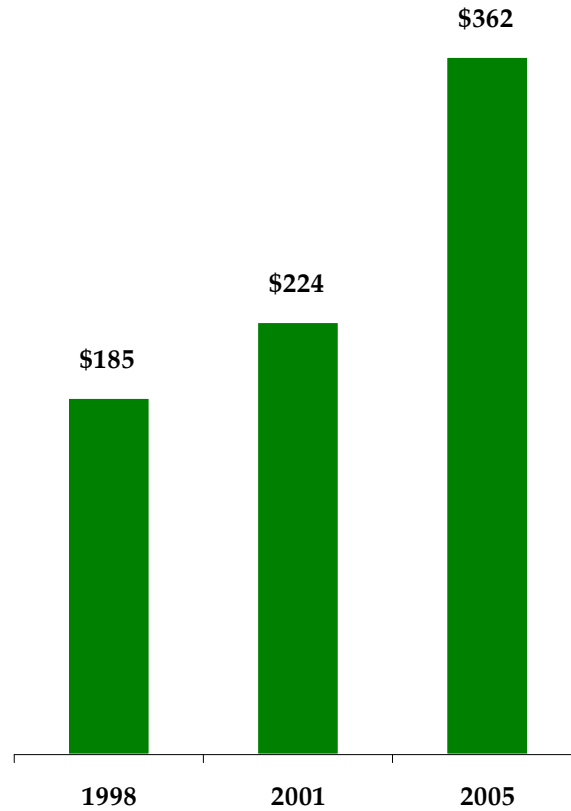
FEWER BUT MORE SALES

While the number of greengrocers in New Zealand is declining, their turnover is increasing, driven by more sales per outlet

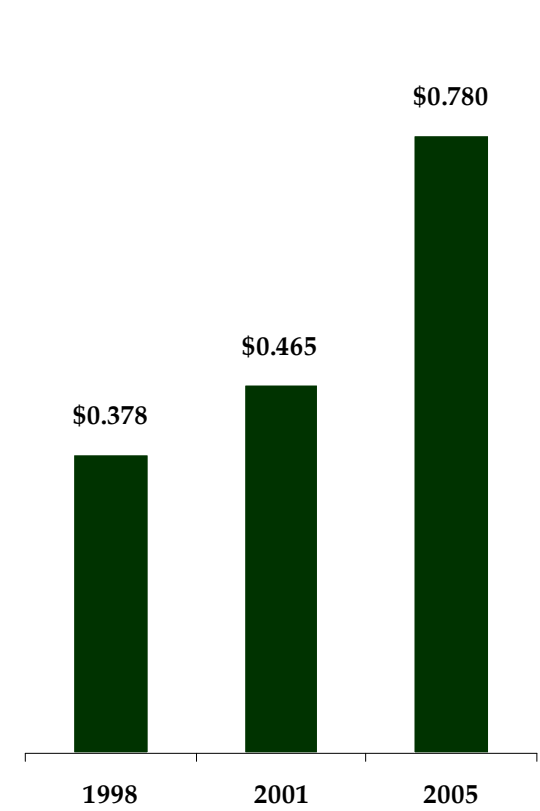
Number of greengrocers
(units; actual; 1998-2005)



Total turnover of greengrocers
(NZ\$m; 1998-2005)



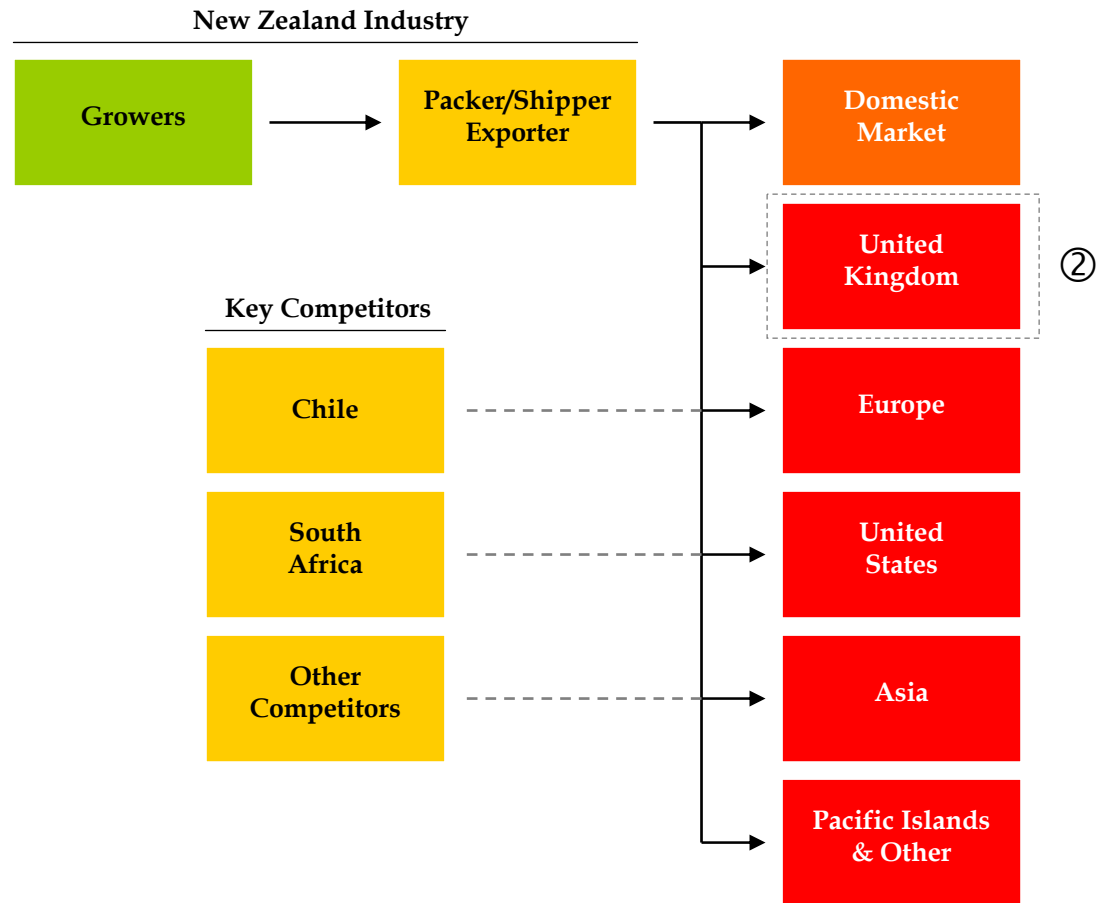
Turnover per greengrocers
(NZ\$m; 1998-2005)



MARKETS - UNITED KINGDOM

The United Kingdom is a very important market for New Zealand pipfruit

Key players in the supply chain for New Zealand apples
(model)



KEY CONCLUSIONS - UNITED KINGDOM MARKET

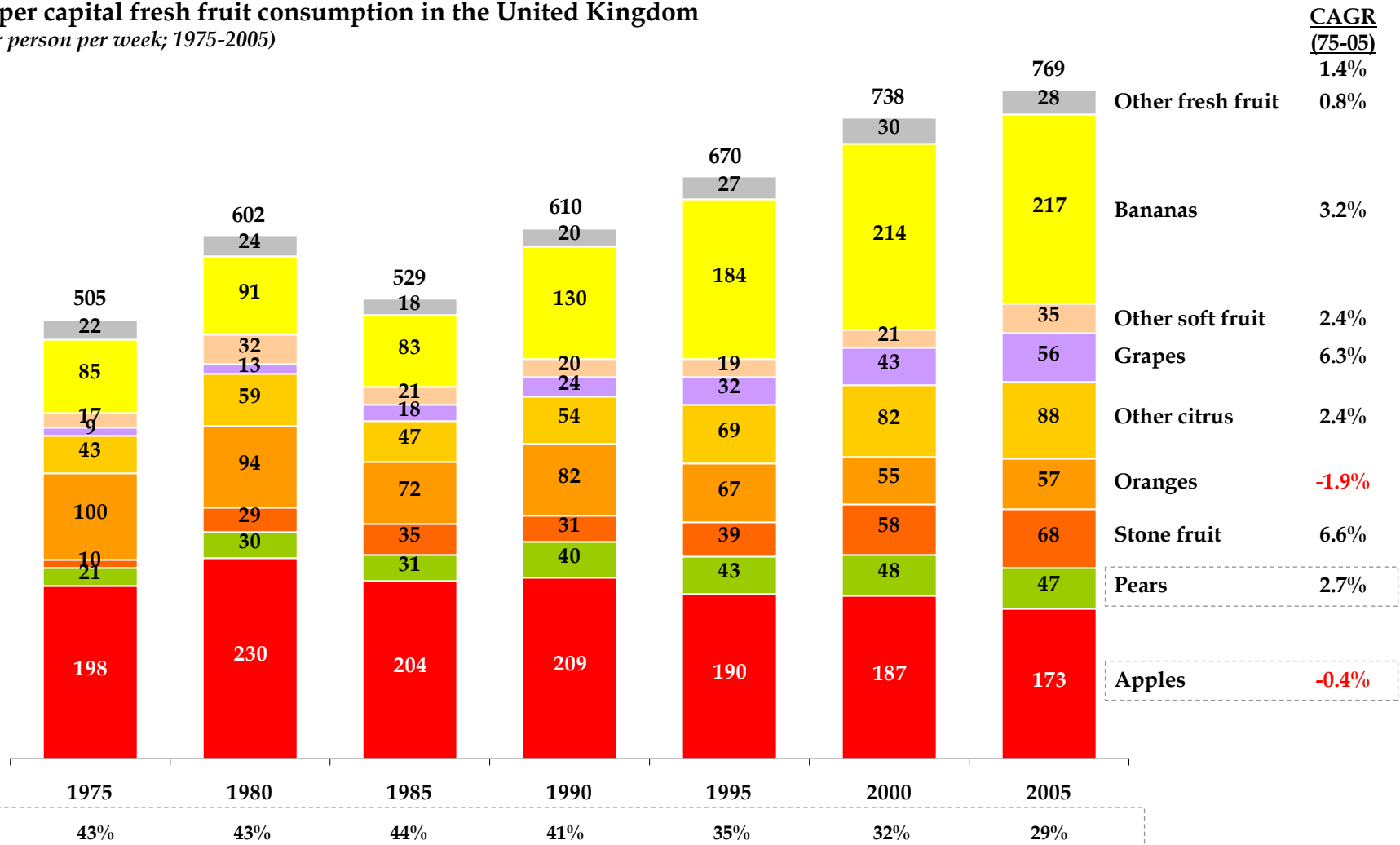
The UK is a low growth, developed market that pays a premium for New Zealand apples

- **Domestic sector**
 - In the United Kingdom, while both total fresh fruit and fresh pear consumption are growing, fresh apple consumption is falling
 - The domestic British pipfruit industry is in decline with both area and production falling dramatically over the past thirty years
 - Imports of both fresh apples and pears have been growing
- **Retail sector consolidation**
 - There are two key “primarily food” retailing segments in the United Kingdom: retail food (supermarkets and convenience stores) and foodservice
 - The retail food segment has a strong presence of large chains
 - Within the supermarket segment, there has been strong consolidation over the past 20 years
 - The produce department - including apples - accounts for about 7% of the average UK supermarket’s turnover
- **Competition coming on strong**
 - New Zealand is one of five major Southern Hemisphere suppliers to the UK market
 - New Zealand & South Africa are the key Southern Hemisphere players in the United Kingdom
 - New Zealand receives a premium in the United Kingdom market
 - The United Kingdom is declining in importance for the New Zealand apple industry

FALLING APPLE CONSUMPTION IN THE UNITED KINGDOM

In the United Kingdom, while both total fresh fruit and fresh pear consumption are growing, fresh apple consumption is falling

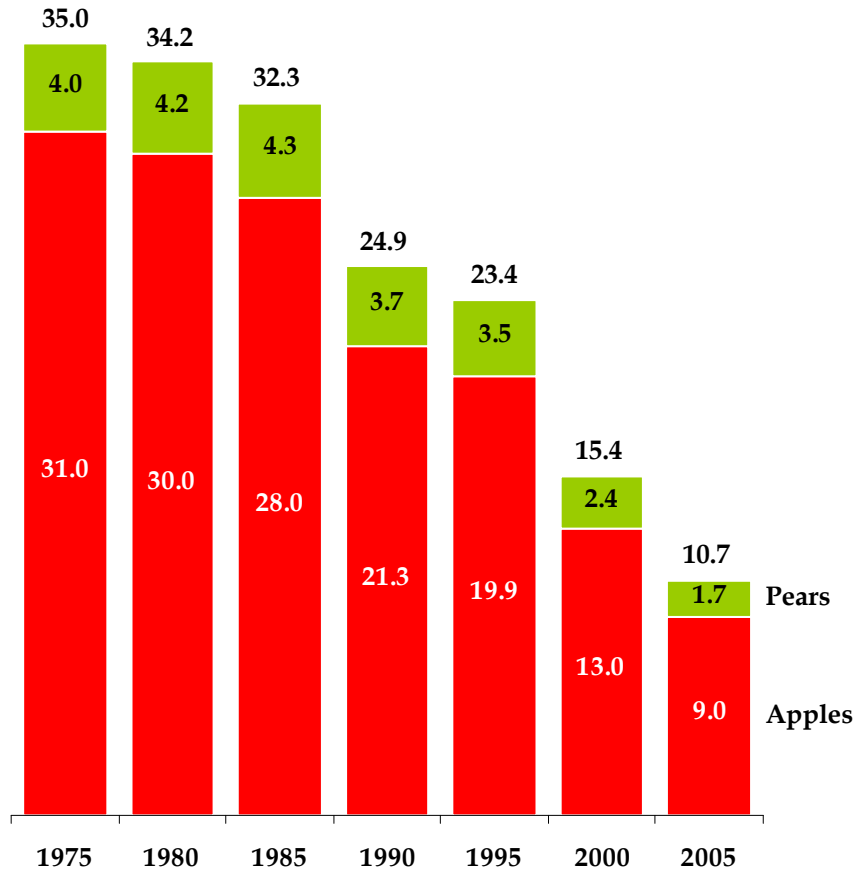
Weekly per capital fresh fruit consumption in the United Kingdom
(grams per person per week; 1975-2005)



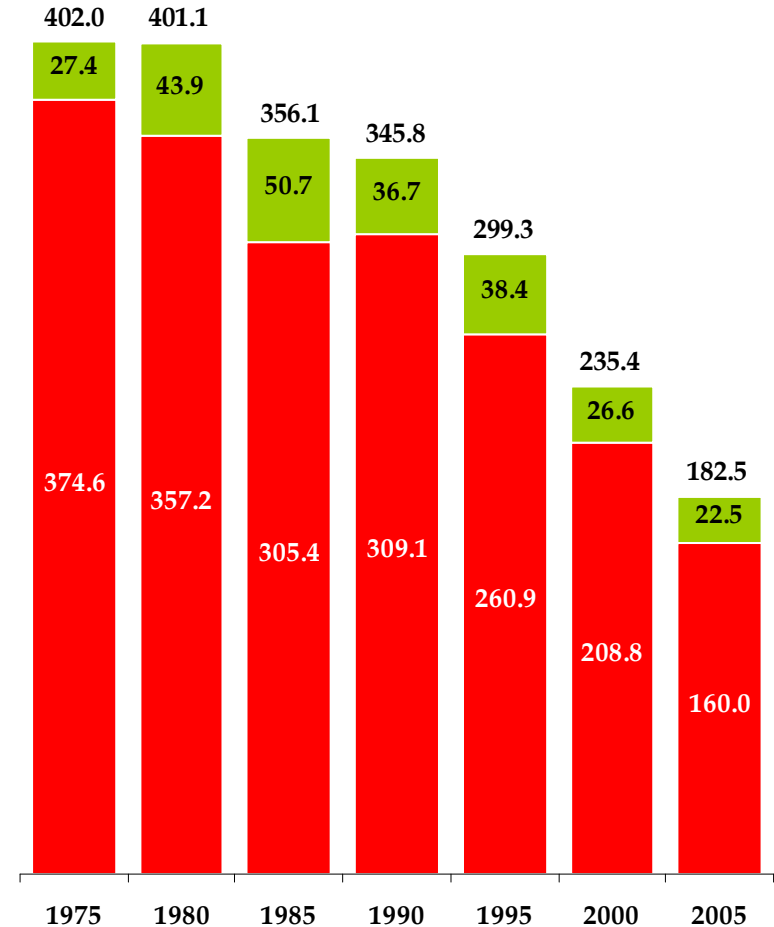
DOMESTIC INDUSTRY IN DECLINE

The domestic British pipfruit industry is in decline with both area and production falling dramatically over the past thirty years

Area planted in pipfruit in the United Kingdom
(hectare, 000, 1975-2005)



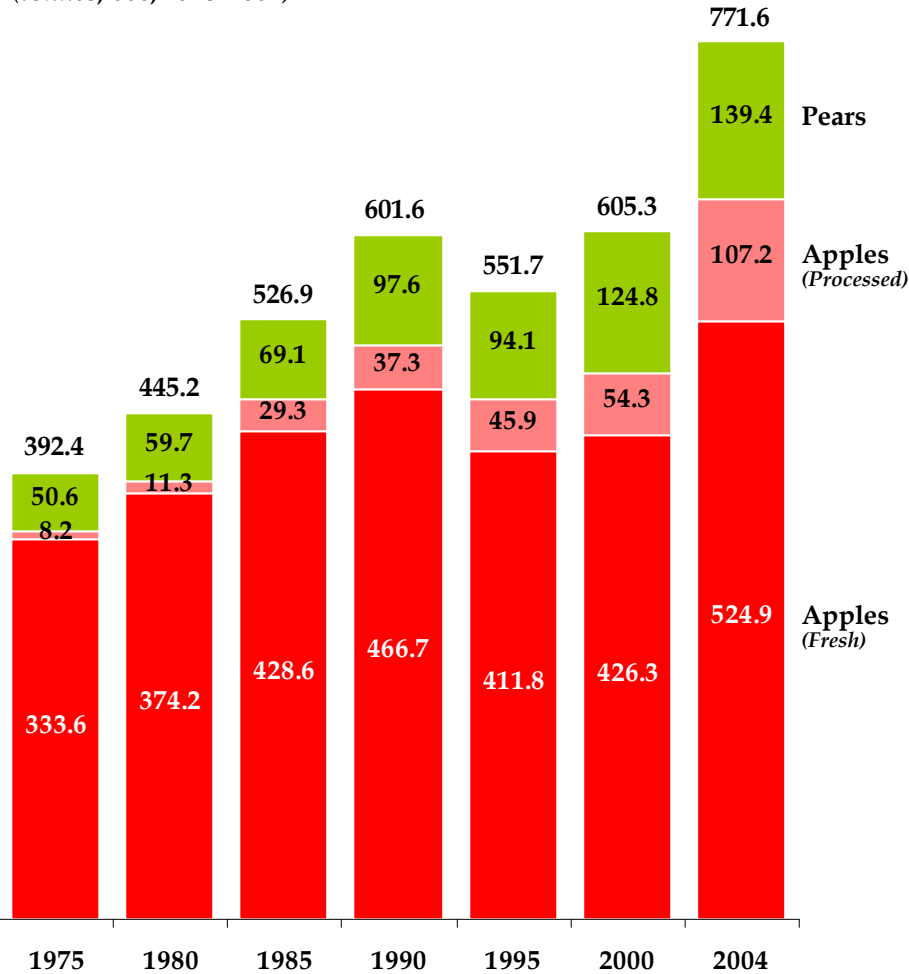
Production of pipfruit in the United Kingdom
(tonnes, 000, 1975-2005)



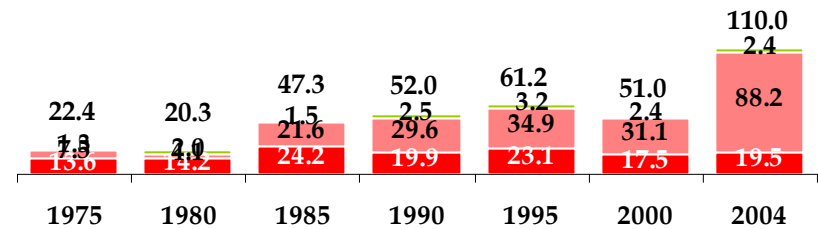
GROWING PIPFRUIT IMPORTS

Imports of both fresh apples and pears have been growing

Imports of pipfruit into the United Kingdom
(tonnes, 000, 1975-2004)



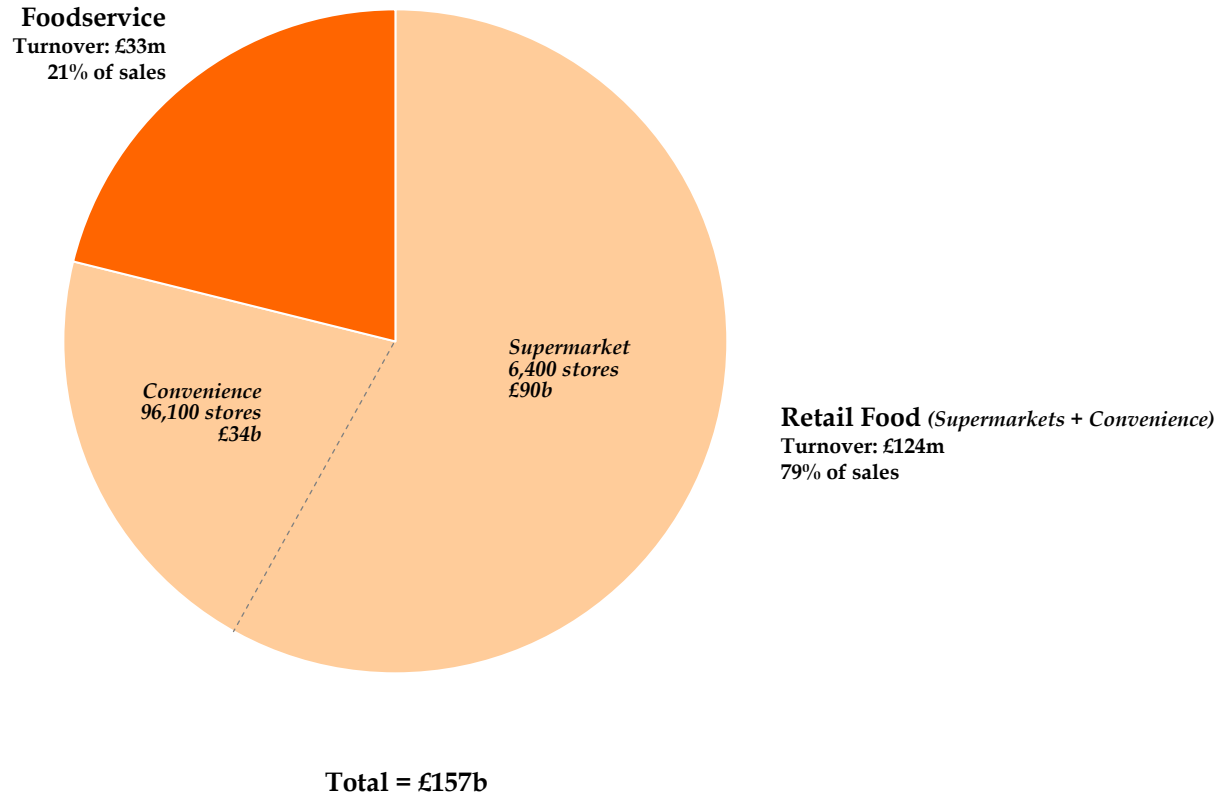
Exports of pipfruit from the United Kingdom
(tonnes, 000, 1975-2004)



TWO PRIMARY MARKET SEGMENTS

There are two key “primarily food” retailing segments in the United Kingdom: retail food (supermarkets and convenience stores) and foodservice

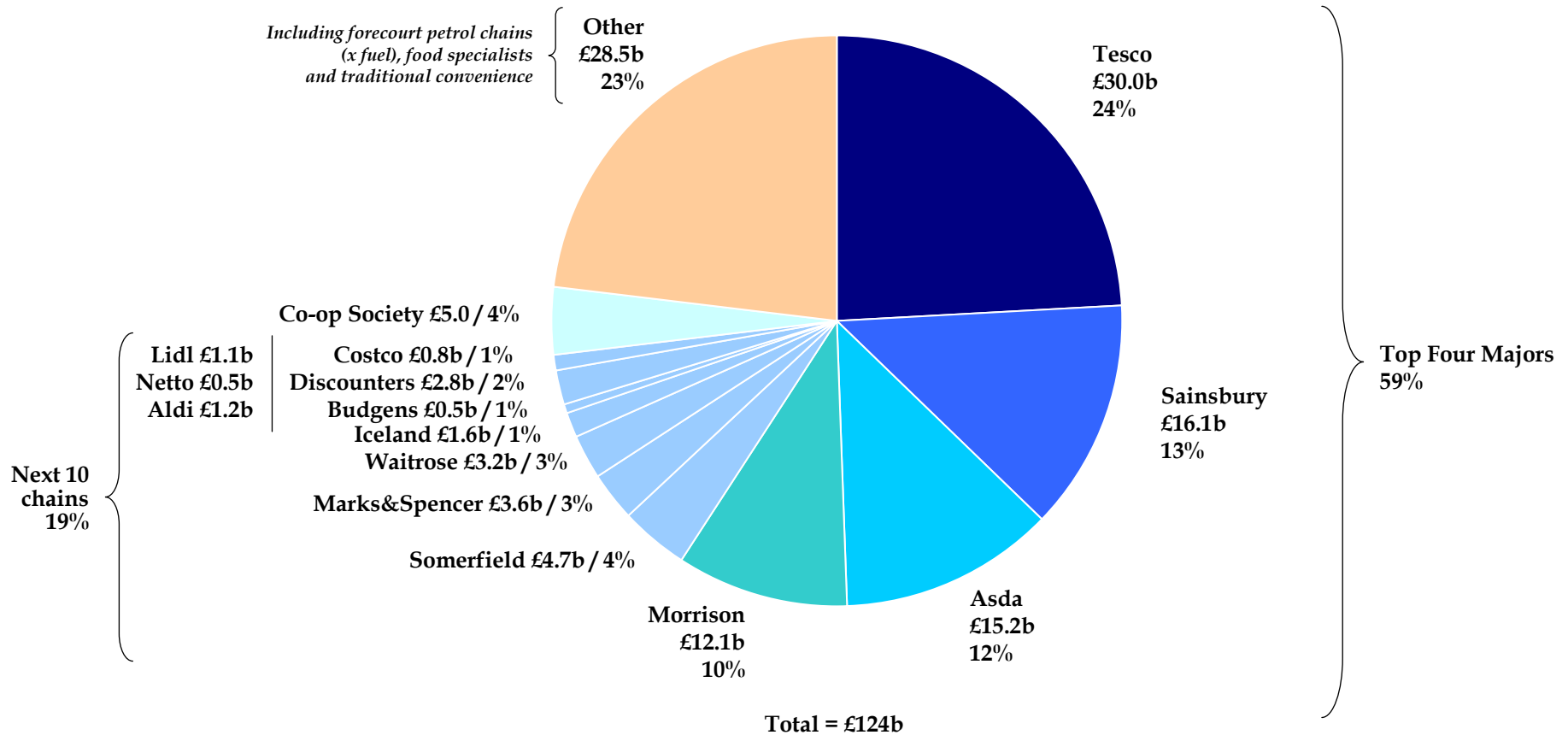
Size of segments of food retailing/foodservice in the United Kingdom
(£b, 2005)



LARGE PLAYERS IN RETAIL FOOD

The retail food segment has a strong presence of large chains

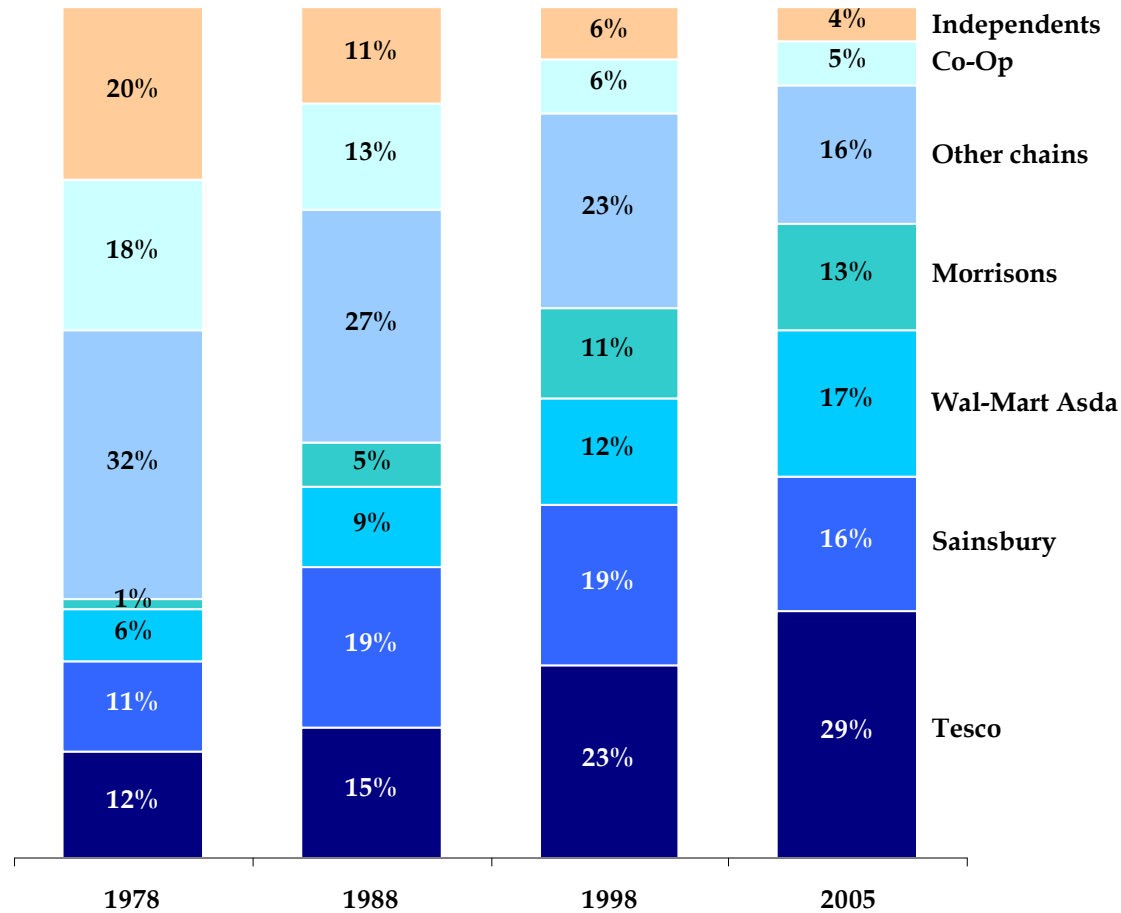
Key players and share in total food retail market in the United Kingdom
(%, sales, 2003)



CONSOLIDATION IN SUPERMARKET SHARE

Within the supermarket segment, there has been strong consolidation over the past 20 years

Changing supermarket/superstore market share in the UK by chain
 (% of sales; 1978-2005)

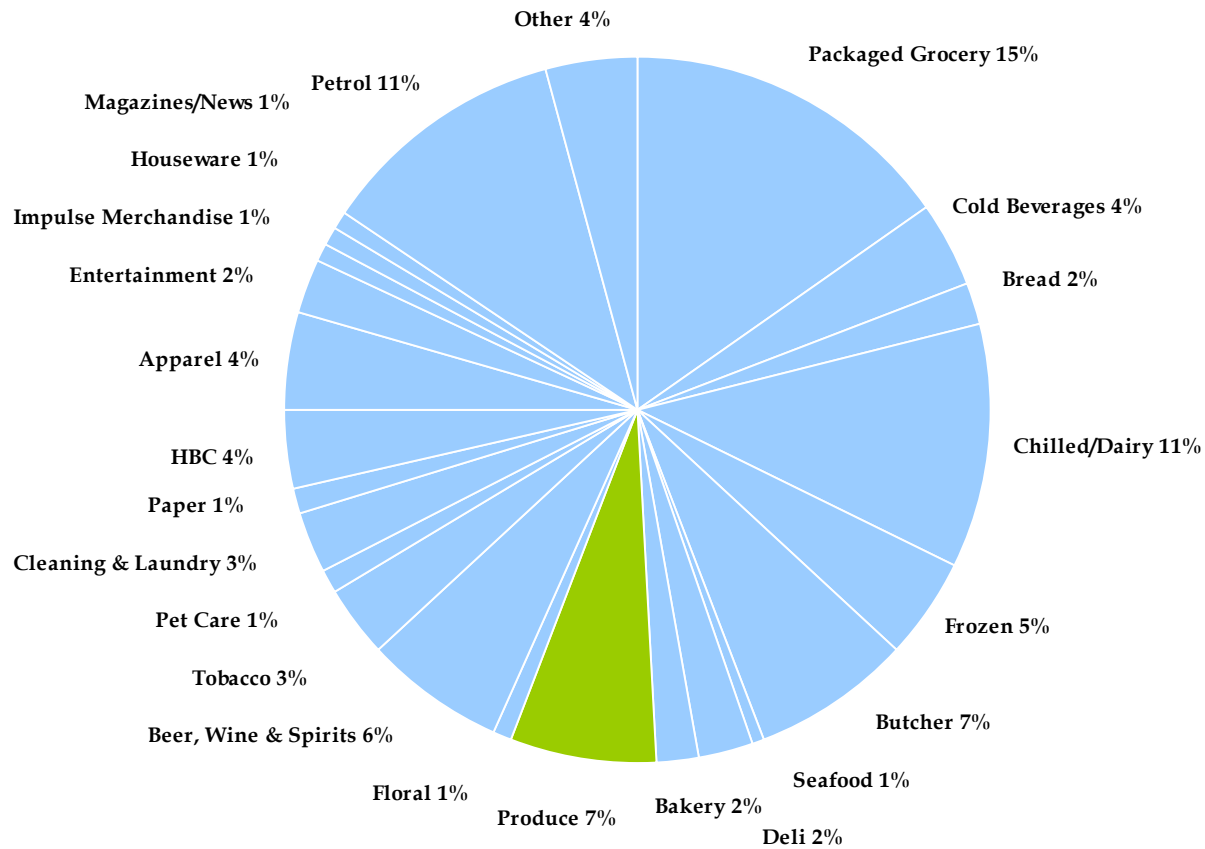


Supermarket share only not all food retail like page prior

PRODUCE AN IMPORTANT DEPARTMENT

The produce department - including apples - accounts for about 7% of the average UK supermarket's turnover

Average UK supermarket sales by department
(%, sales, 2003)

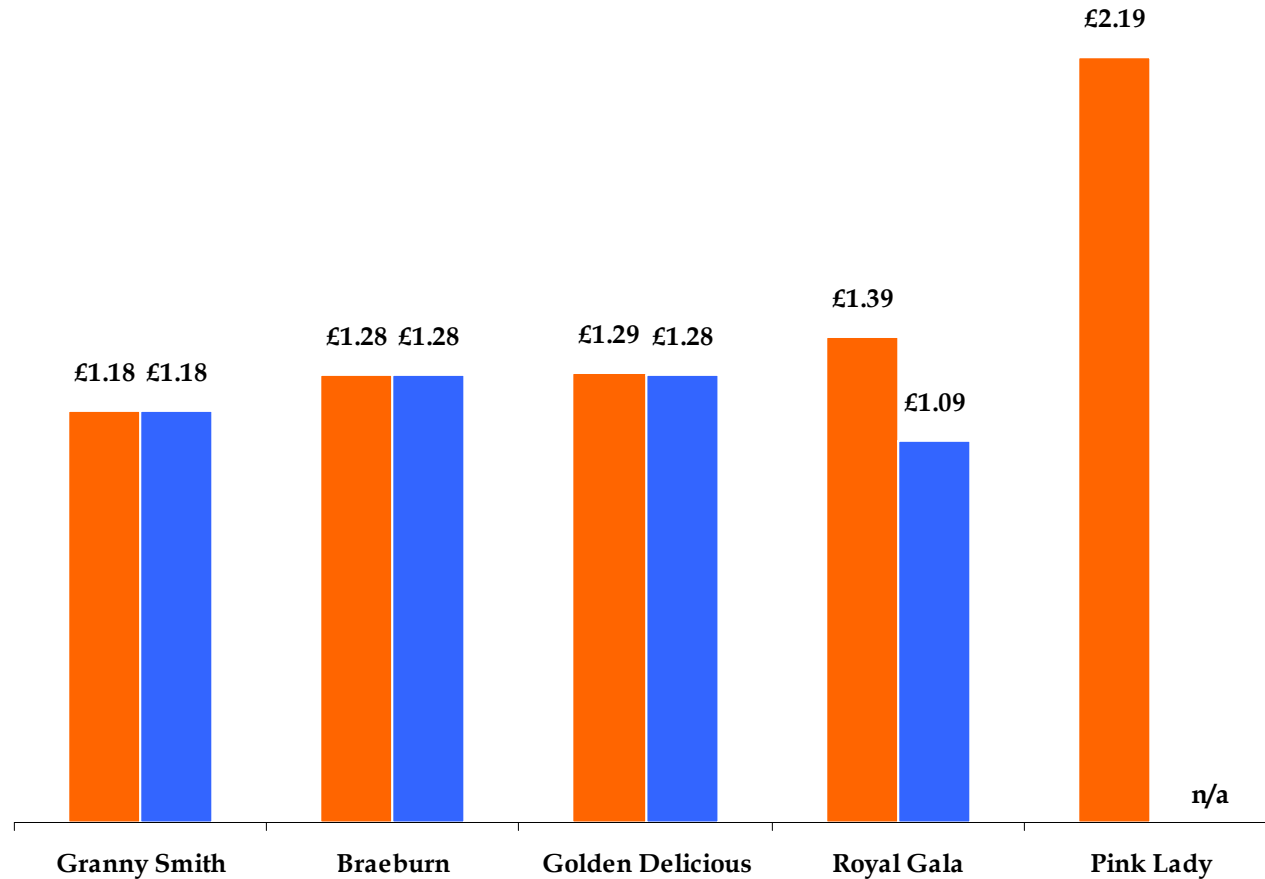


TOTAL = 100% of sales

CHAINS TRACK EACH OTHER

The major UK retailers track each other closely on pricing

Sample loose apple prices: Tesco and Sainsbury
(£, Sept 2006)



THREE TIERS: GOOD, BETTER, BEST

British retailers think about merchandising everything they sell (including apples) across three pricing tiers - good, better, best

Sample apple prices by variety and form: Waitrose
(£, Sept 2006)

Good - Pre-pack



Royal Gala
6 pack £1.49
£0.25/each



Early Windsor
6 pack £1.59
£0.30/each

Better - Mainstream Varieties Loose



Gala Loose
£1.39/kilo
£0.22/each



Braeburn Loose
£1.49/kilo
£0.24/each



Early Windsor Loose
£1.59/kilo
£0.25/each



Golden Del. Loose
£1.39/kilo
£0.22/each



G. Smith Loose
£1.49/kilo
£0.24/each

Best - Premium New Varieties



Estivale
4 pack £1.99
£0.50/each



Jazz
4 pack £1.99
£0.50/each



Suffolk Pink
4 pack £1.99
£0.50/each



Pink Lady
£2.99/kilo
£0.62/each

CONSUMER WILL PAY A PREMIUM

British consumers will clearly pay a premium for taste, quality and convenience

Range of fresh apple pricing: Sainsbury
(£, Sept 2006)



Sainsbury Basics
6 pack £0.72
£0.12/each



Royal Gala
7 pack £1.42
£0.20/each



Gala Loose
£1.39/kilo
£0.22/each



Royal Gala
Organic
5 pack £1.99
£0.40/each



Pink Lady
4 pack £2.49
£0.62/each



Pink Lady
Snack pack £0.59
£7.38/kilo

+417%/apple

UK MARKET - KEY SOUTHERN HEMISPHERE SUPPLIERS

New Zealand is one of five major Southern Hemisphere suppliers to the UK market

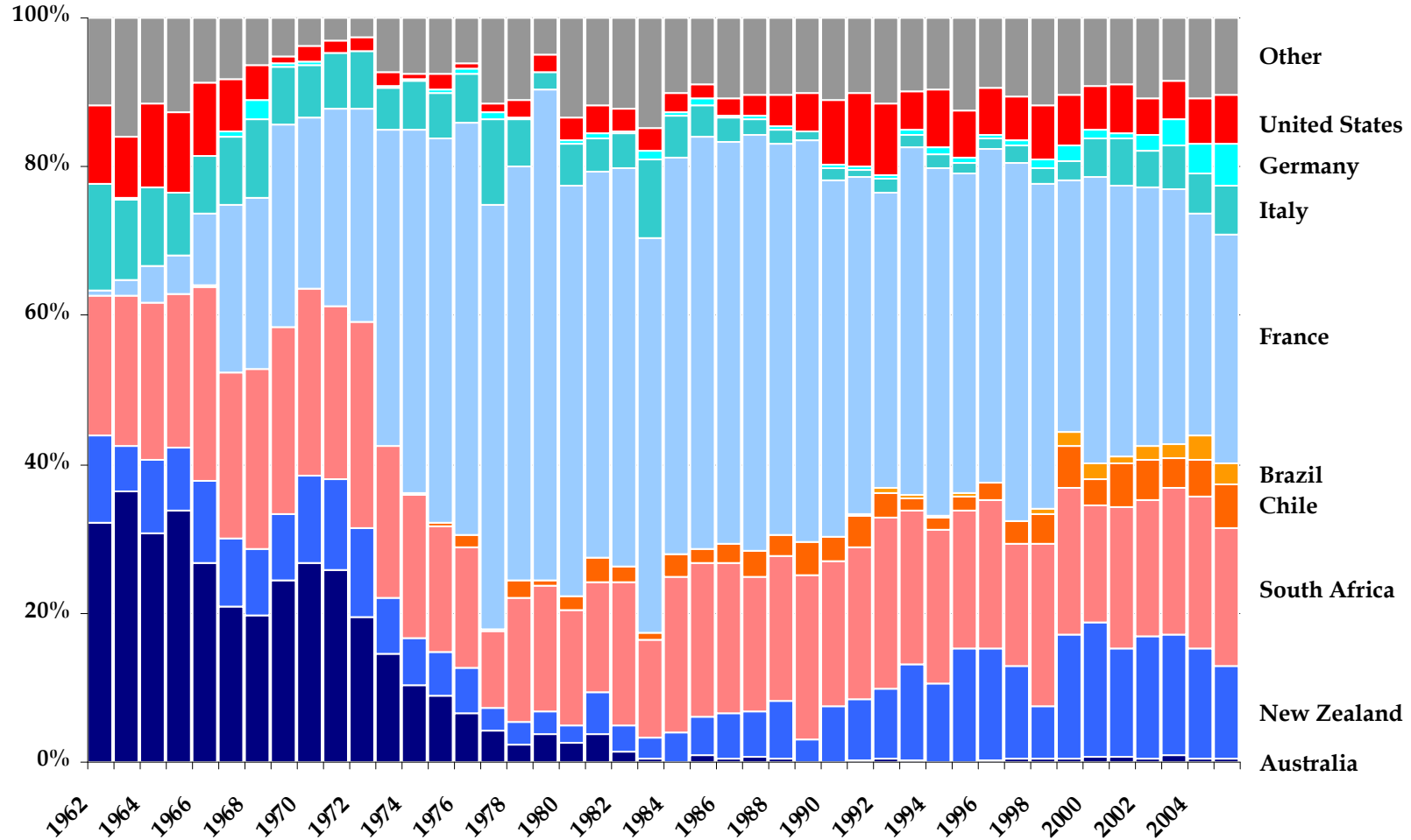
Profiles of key Southern Hemisphere pipfruit suppliers into the United Kingdom
(2005)

Country	Apples			Key varieties	New Varieties	Key companies	Comments
	Value (US\$m; 2005)	Volume (kg; m; 2005)	\$/kilo (US\$; import)				
South Africa	\$101.8m	95.7m	\$1.06	Braeburn Royal Gala Golden Delicious Granny Smith	African Carmine Pink Lady	Capespan Europe	Capespan/Fyffes JV
New Zealand	\$80.2m	63.8m	\$1.26	Braeburn Royal Gala Fuji Granny Smith	Jazz Pacific series	ENZA	
Chile	\$27.3m	29.8m	\$0.92	Royal Gala Granny Smith Red Delicious	Pink Lady	Dole Unifrutti	
Brazil	\$12.8m	15.1m	\$0.84	Royal Gala	-		
Australia	\$3.0m	2.1m	\$1.38	?	Pink Lady		

NZ & SOUTH AFRICA KEY SOUTHERN PLAYERS IN UK MARKET

New Zealand & South Africa are the key Southern Hemisphere players in the United Kingdom

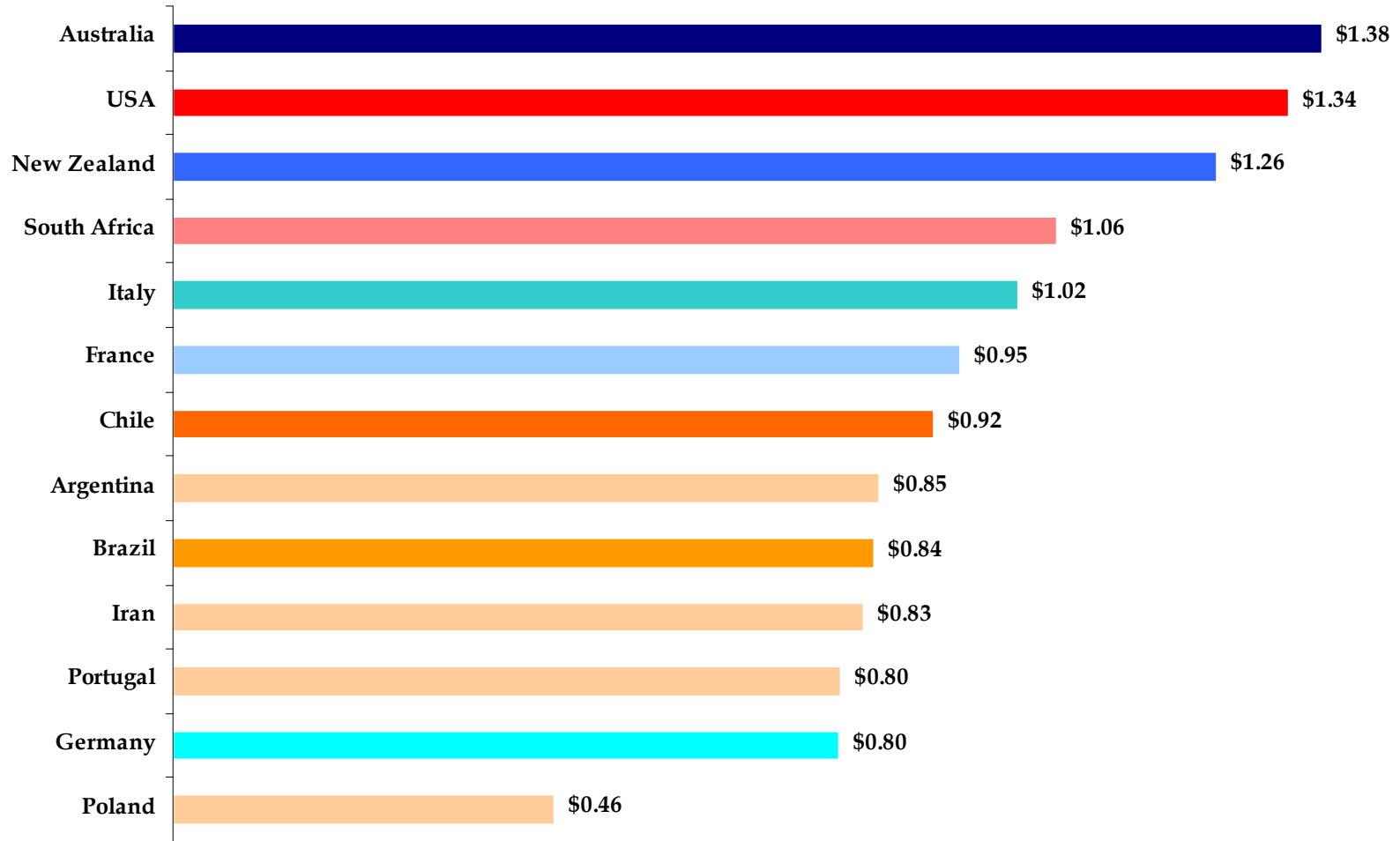
United Kingdom apple import market share by volume by select country
 (% of tonnes; 1962-2005)



NZ DEMANDS HIGH PRICES IN UK MARKET

New Zealand receives a premium in the United Kingdom market

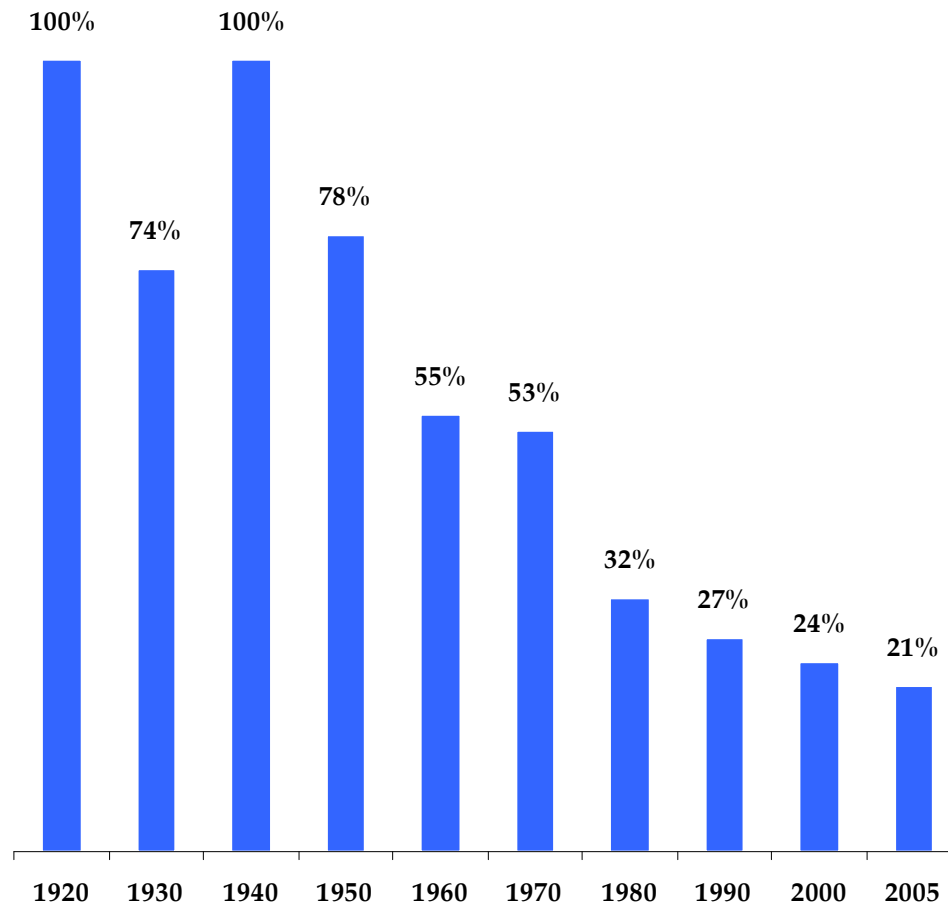
United Kingdom apple import price per kilogram by select country
 (US\$/kilo; 2005)



DECLINING IMPORTANCE

The United Kingdom is declining in importance for the New Zealand apple industry

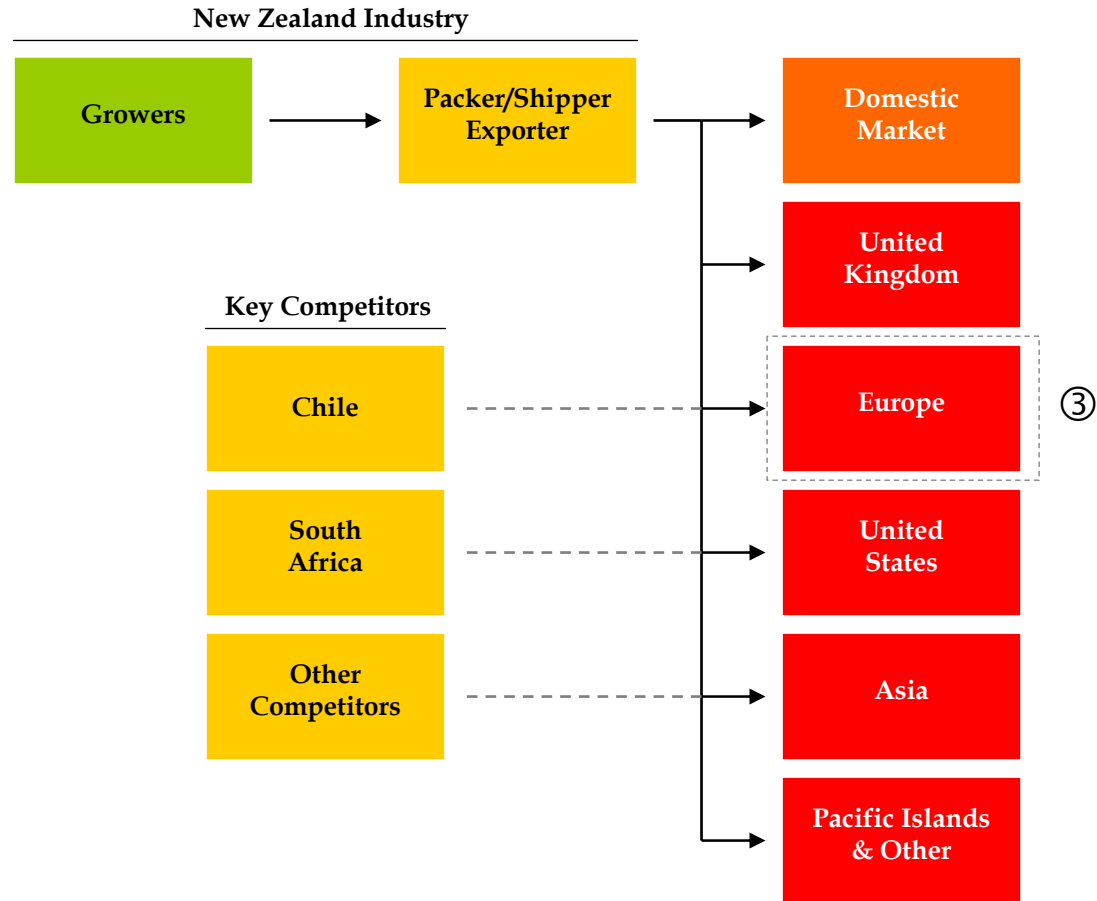
Percent of New Zealand apple volume going to the United Kingdom
(% of tonnes; 1920-2005)



MARKETS - EUROPE

This section of this report looks at the market for pipfruit in Europe

Key players in the supply chain for New Zealand apples
(model)



KEY CONCLUSIONS – EUROPEAN MARKET

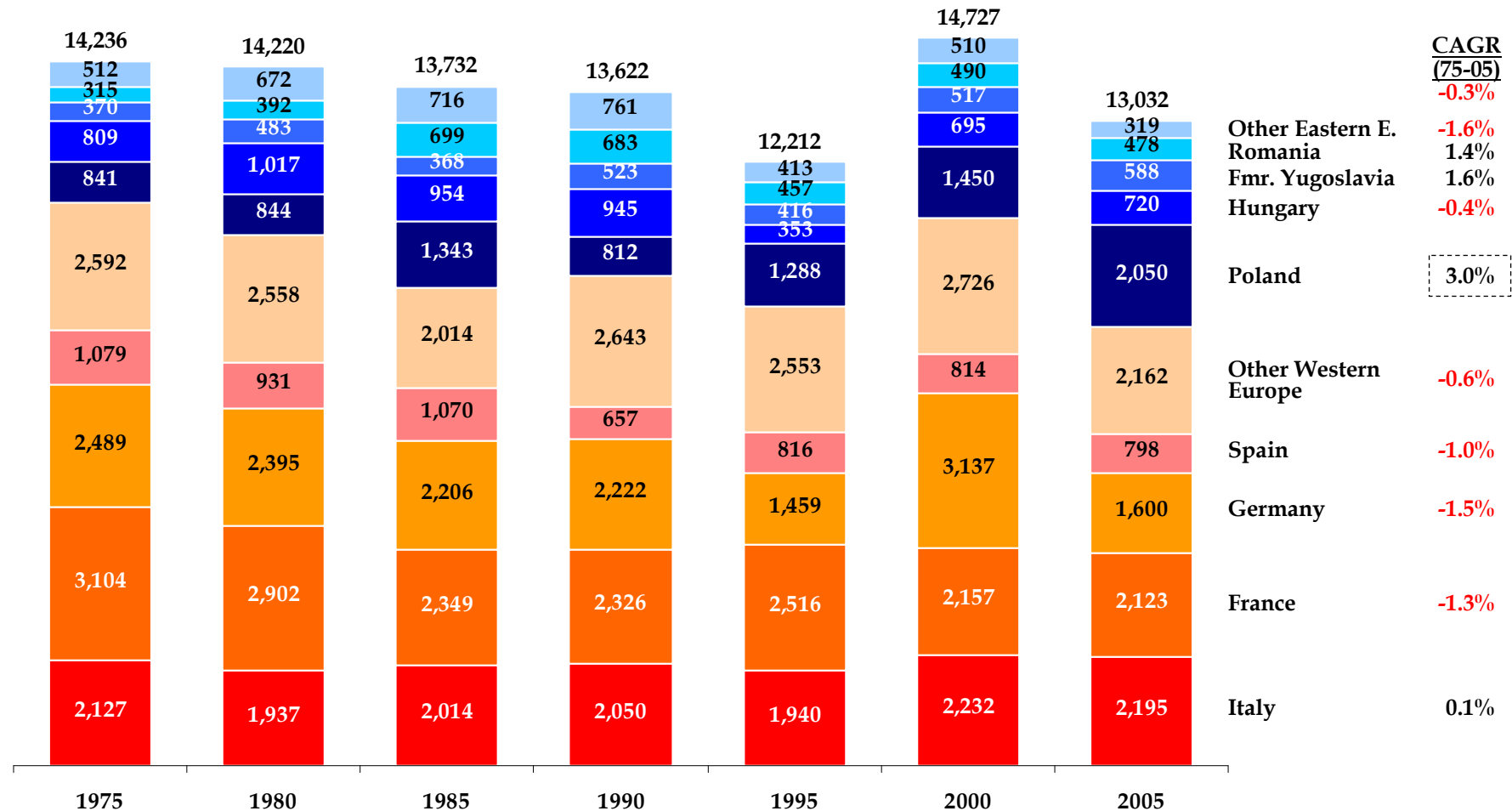
While Europeans are major apple consumers, consumption and production growth is coming from the lower income East

- European apple production is flat to declining, with Eastern Europe growing at the expense of Western Europe Retail sector consolidation
- Western European growers are moving to new varieties
- As an example, Gala production has grown strongly, driven by the five largest apple producing countries
- Total apple import volumes are showing moderate growth across Europe
- Western Europe is a major apples producer, importer and exporter as well as being the home to 330 million high income / high consumption apple consumers
- More than a decade out of communism, Eastern Europe is emerging as both a major apple producer and a growing consumer

EUROPE SHOWING NO NETT PRODUCTION GROWTH

European apple production is flat to declining, with Eastern Europe growing at the expense of Western Europe

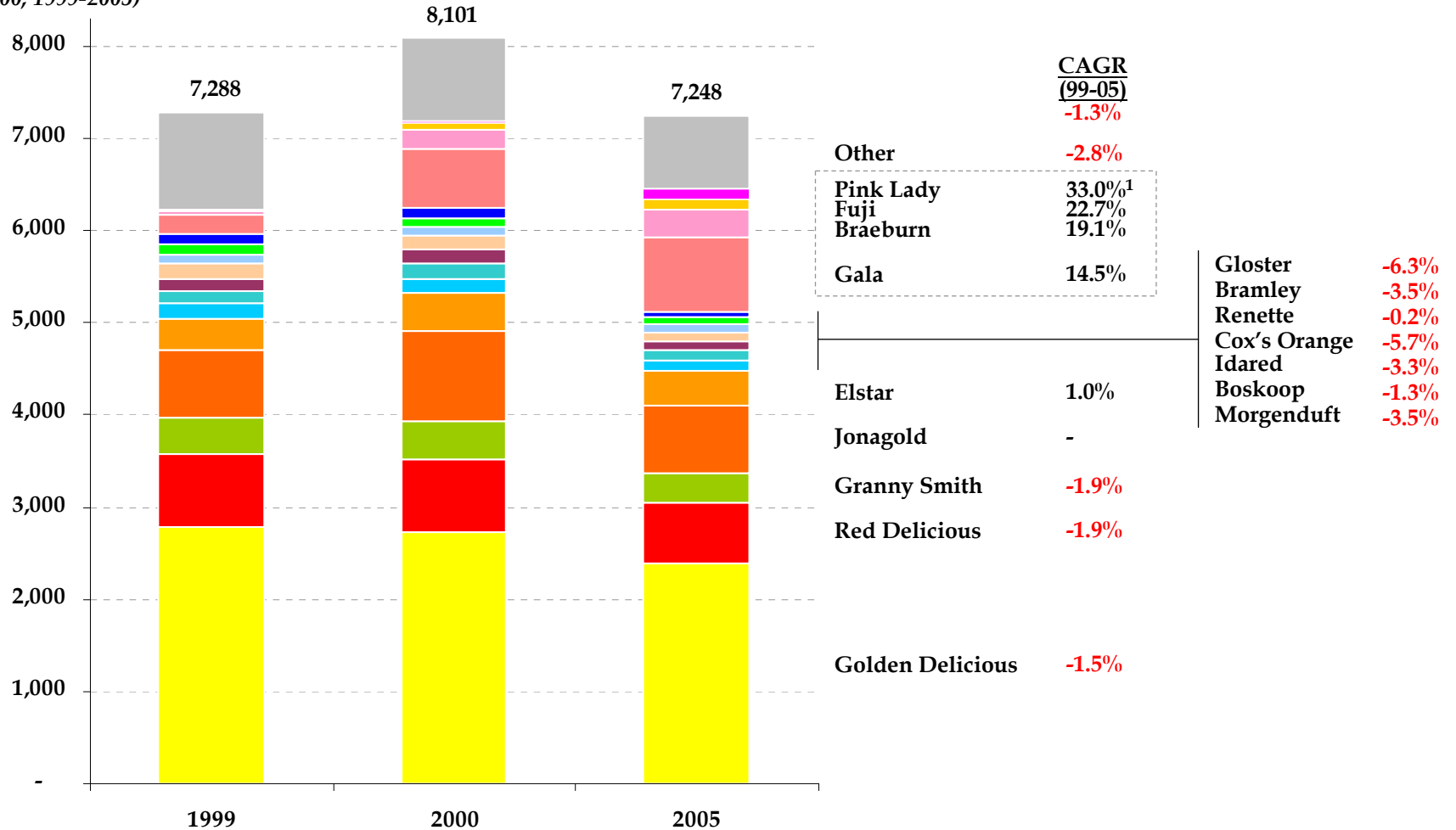
Change in European apple production by country
(tonnes; 000; 1975-2005)



MOVE TO NEW VARIETIES

Western European growers are moving to new varieties

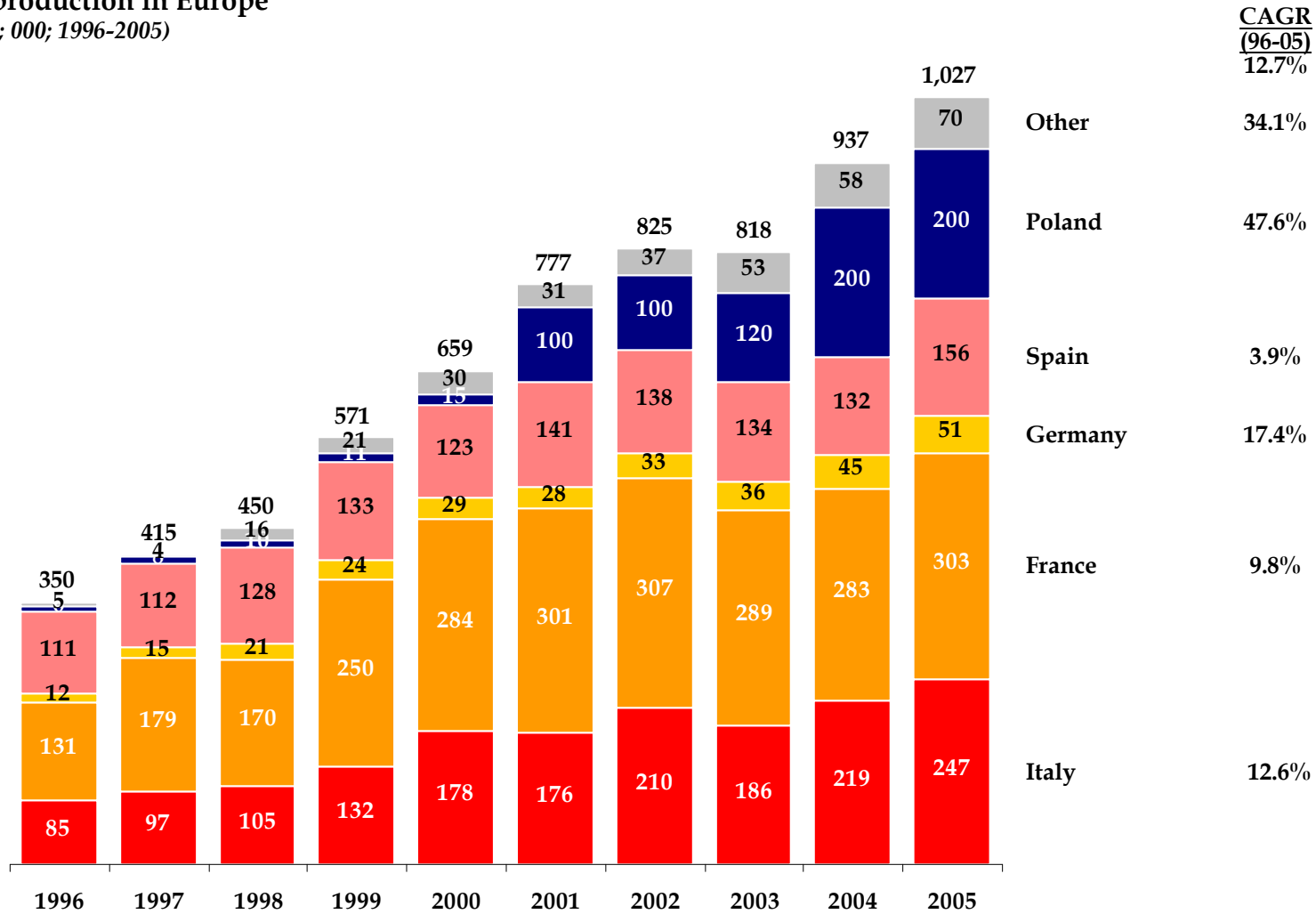
European Union apple production by variety
(tonnes; 000; 1999-2005)



EXAMPLE: GALA

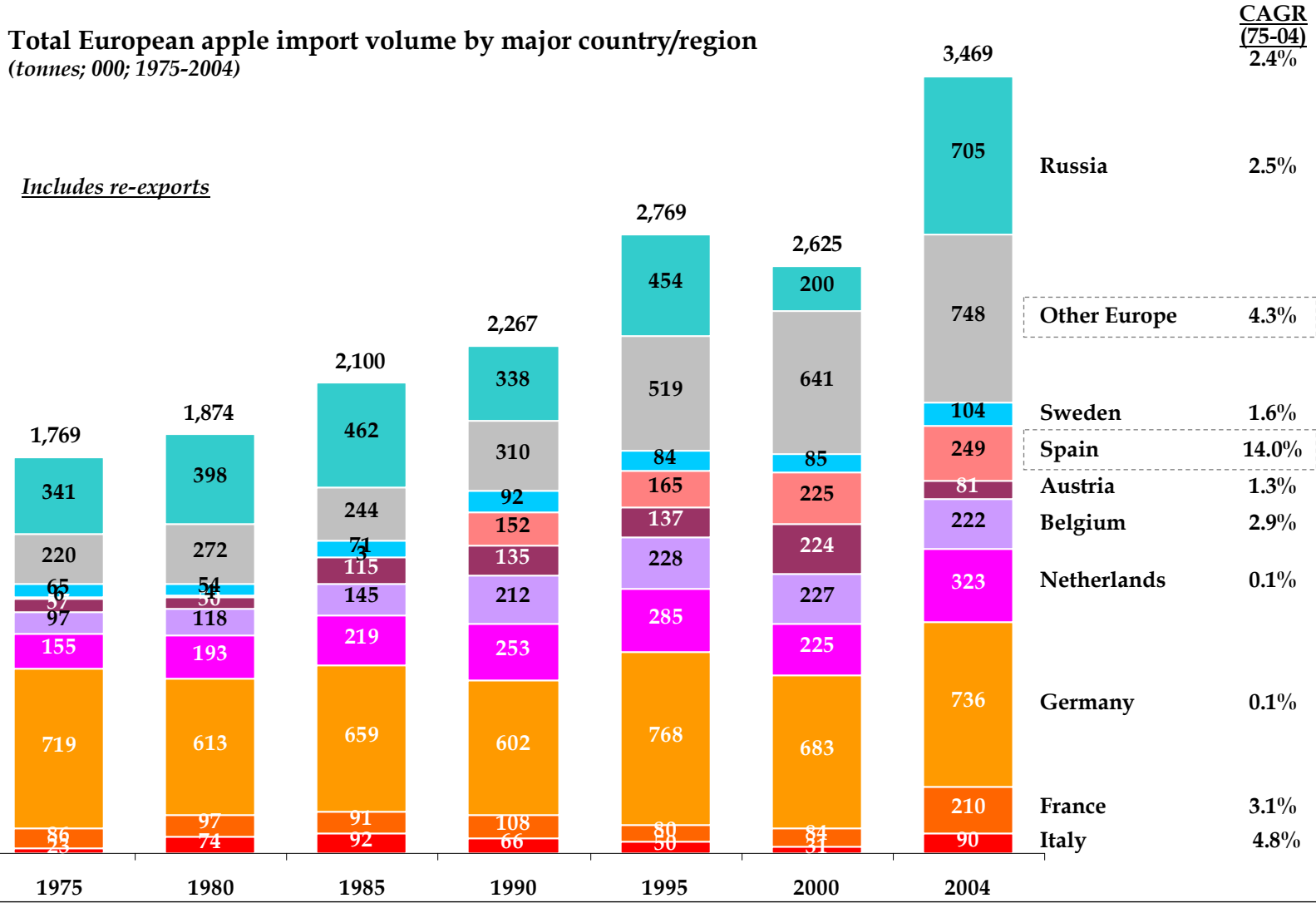
As an example, Gala production has grown strongly, driven by the five largest apple producing countries

Gala production in Europe
(tonnes; 000; 1996-2005)



TOTAL EUROPEAN IMPORT VOLUME

Total apple import volumes are showing moderate growth across Europe



PROFILE: WESTERN EUROPEAN MARKETS

Western Europe is a major apples producer, importer and exporter as well as being the home to 330 million high income / high consumption apple consumers

Brief profile of Western European markets

(various; 2004/2005)

	Population	Supermarket Sales (€b)	Fresh apple consumption per capita	Apple Production (t; 000; 05)	NZ Apple Imports* (t; 000; 05)	Key supermarket groups
Germany	81.8m	€222.3b	17.9	1,600.0	77.0	Edeka, Rewe, Metro, Tengelmann, Aldi, Lidl, Spar
France	60.4m	€191.5b	18.2	2,222.4	14.2	Carrefour, Intermarche, Leclerc, Casino, Auchan
Italy	57.5m	€146b	20.3	2,192.0	0.6	Coop Italia, Conad, Carrefour, Esselunga, Rinascente
Spain	40.2m	€10.9b	18.7	797.7	2.6	Carrefour, Mercadona, Eroski, El Corte Ingles, Auchan
Netherlands	16.1m	€72.4b	20.9	436.0	18.7	Ahold, Casino, Schuitema, Metro, Aldi
Greece	10.7m	€6.7b	23.0	259.6	0.1	Carrefour, Delhaize/A-B, Sklaventis, Atlantik
Portugal	10.4m	€17.6b	?	246.0	0.1	Sonae, Ahold, Intermarche, Auchan, Carrefour
Belgium	10.3m	€31.3b	18.3	324.9	55.7	Carrefour, Delhaize, Colruyt, Aldi, Metro
Sweden	8.9m	€29.4b	15.9	19.3	0.001	ICA/Ahold, Coop Sweden, Axfood
Austria	8.1m	€20.4b	25.2	452.6	1.2	Rewe, Spar, Aldi, Edeka, Metro
Switzerland	7.3m	€27.9b	?	263.0	1.6	Migros, Coop Schweiz, Rewe, Manor, Denner
Denmark	5.4m	€18.2b	21.0	32.0	-	CoopNorden, Dansk, Dagrofa, Edeka
Finland	5.2m	€14.5b	?	2.8	0.1	Kesko, S-Group, Tradeka/Elanto, Spar, Wihuri
Norway	4.5m	€15.1b	15.1	11.2	2.3	NorgesGruppen, Ahold, CoopNorge, Reitan
Ireland	3.9m	€10.9b	?	15.0	4.3	Tesco, SuperQuinn, Musgrave, Dunnes, Lidl
	330.0m					

PROFILE: EASTERN EUROPEAN MARKETS

More than a decade out of communism, Eastern Europe is emerging as both a major apple producer and a growing consumer

Brief profile of Eastern European markets

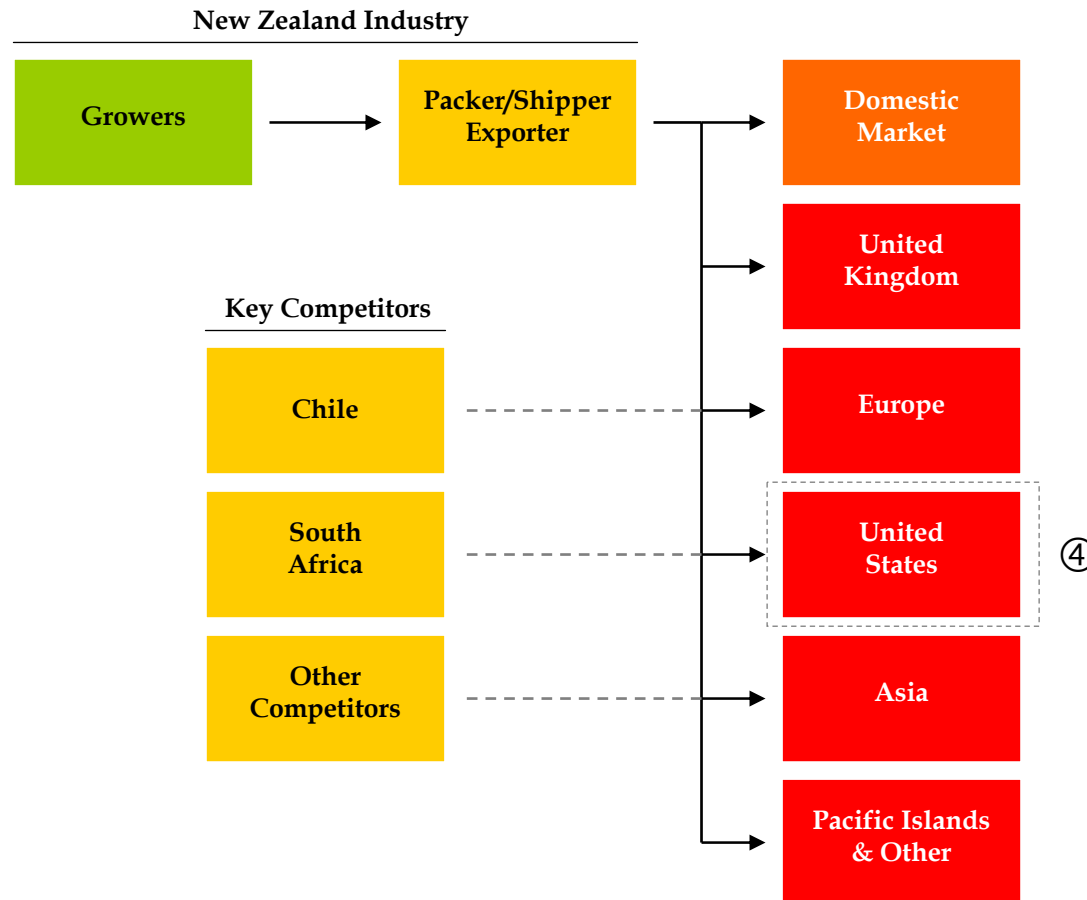
(various; 2004/2005)

	Population	Supermarket Sales (€b)	Fresh apple consumption per capita	Apple Production (t; 000; 05)	NZ Apple Imports* (t; 000; 05)	Key supermarket groups
Poland	38.5m	€16.5b	13.1	2,050.0	0.02	Metro, Ahold, Tesco, Auchan, Carrefour, Rewe
Romania	22.3m	€4.8b	13.3	478.1	0.07	Selgros, Metro, Carrefour, Delhaize, Rewe
Czech Rep.	10.2m	€11b	?	240.0	0.11	Metro, Ahold, Lidl & Schwarz, Rewe, Tesco
Hungary	10.0m	€10.1b	14.3	486.3	-	Coop Hungary, CBA, Tesco, Spar, Auchan
Serbia	9.4m	?	12.0	188.0	-	C Market, others
Bulgaria	7.4m	€2b	4.1	40.0	-	Metro, Rewe, Ramstore, Ena
Slovakia	5.4m	€5b	9.0	51.5	0.09	Tesco, Rewe, Lidl & Schwarz, Metro
Croatia	4.5m	€2.6b	?	58.0	0.01	Konzum, Getro, Rewe, Lidl & Schwarz, Metro
Bosnia	4.5m	€0.4	11.9	35.0	-	Mercator, Interex, Velpro, Konzum
Albania	3.6m	?	?	16.0	-	?
Lithuania	3.6m	€2.1b	?	93.9	-	VP Market, Ahold/Rimi, IKI, Norfos
Latvia	2.3m	€0.8b	?	37.5	-	Ahold/Rimi, VP Market, Mego, Nelda, Beta
Slovenia	2.0m	€2.5b	?	225.0	-	Mercator, Spar, Zivila Kranj, Emona, Engrotus
Macedonia	2.0m	?	?	82.4	-	?
Estonia	1.3m	€0.6b	?	2.2	0.03	Kesko, Ahold/Rimi, ETK, Selver, Prisma
Malta	0.4m	?	?	0.1	0.14	?
	127.4m					

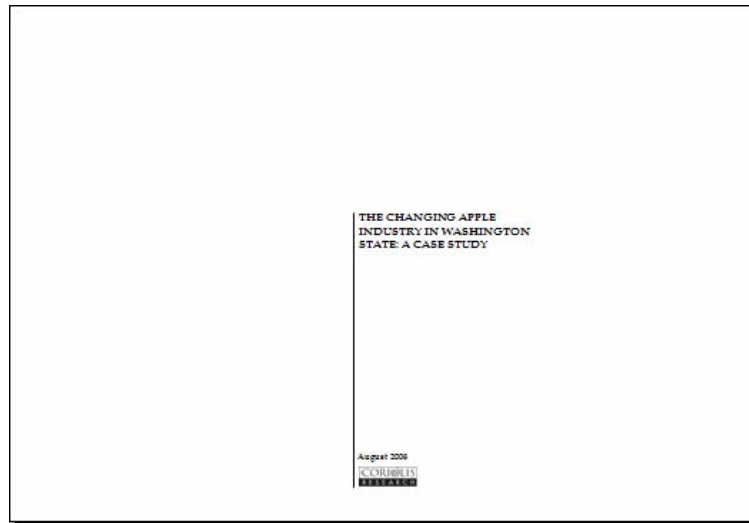
MARKETS - UNITED STATES

This section of this report looks at the market for pipfruit in the United States market

Key players in the supply chain for New Zealand apples
(model)



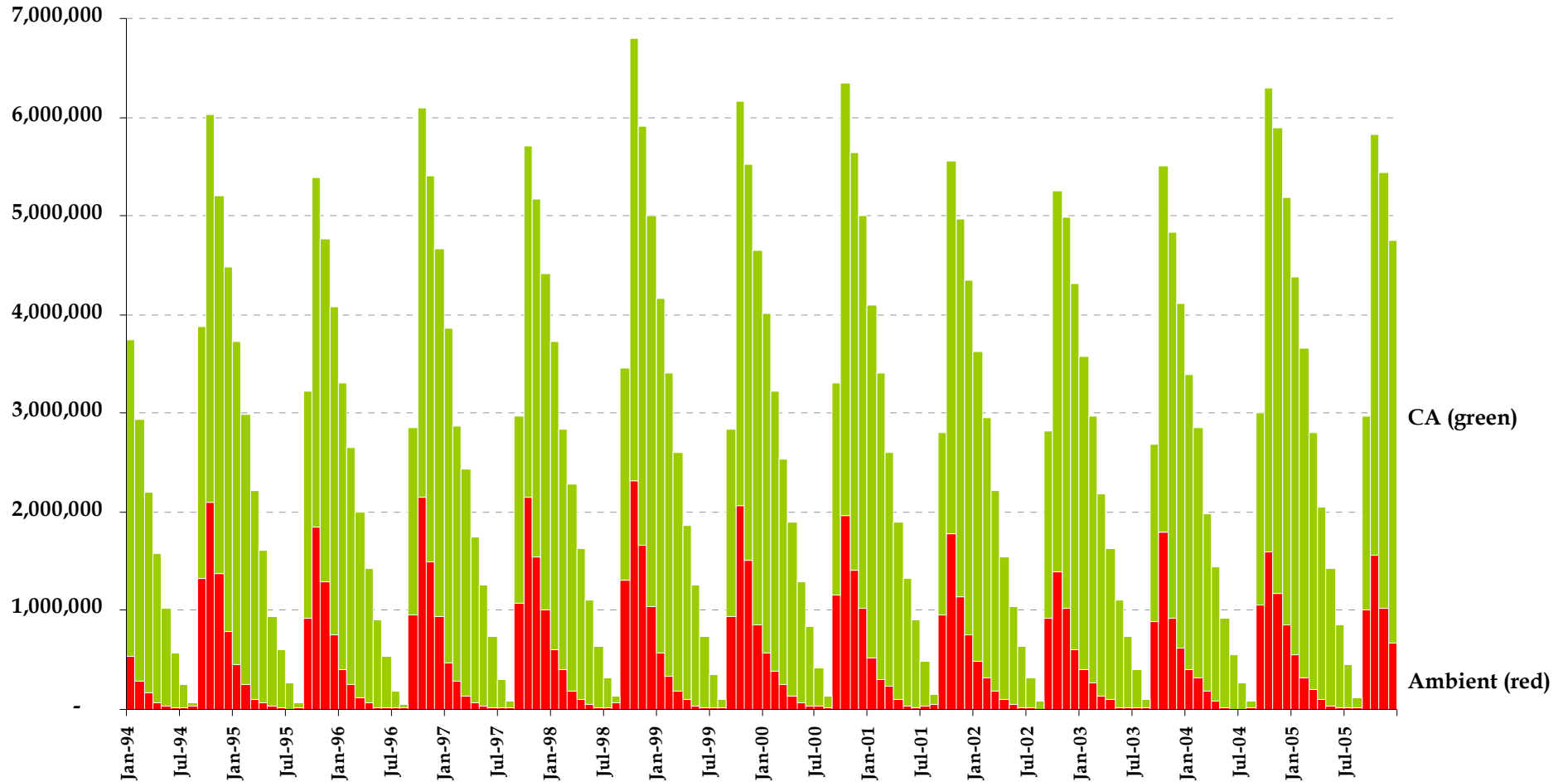
This section should be read in conjunction with our Washington State case study which provides important context on the changing United States market



US CROP IN STORAGE

Much of the US fresh market apple crop goes into cold storage; fruit is withdrawn as it is sold but before the strength of Southern Hemisphere

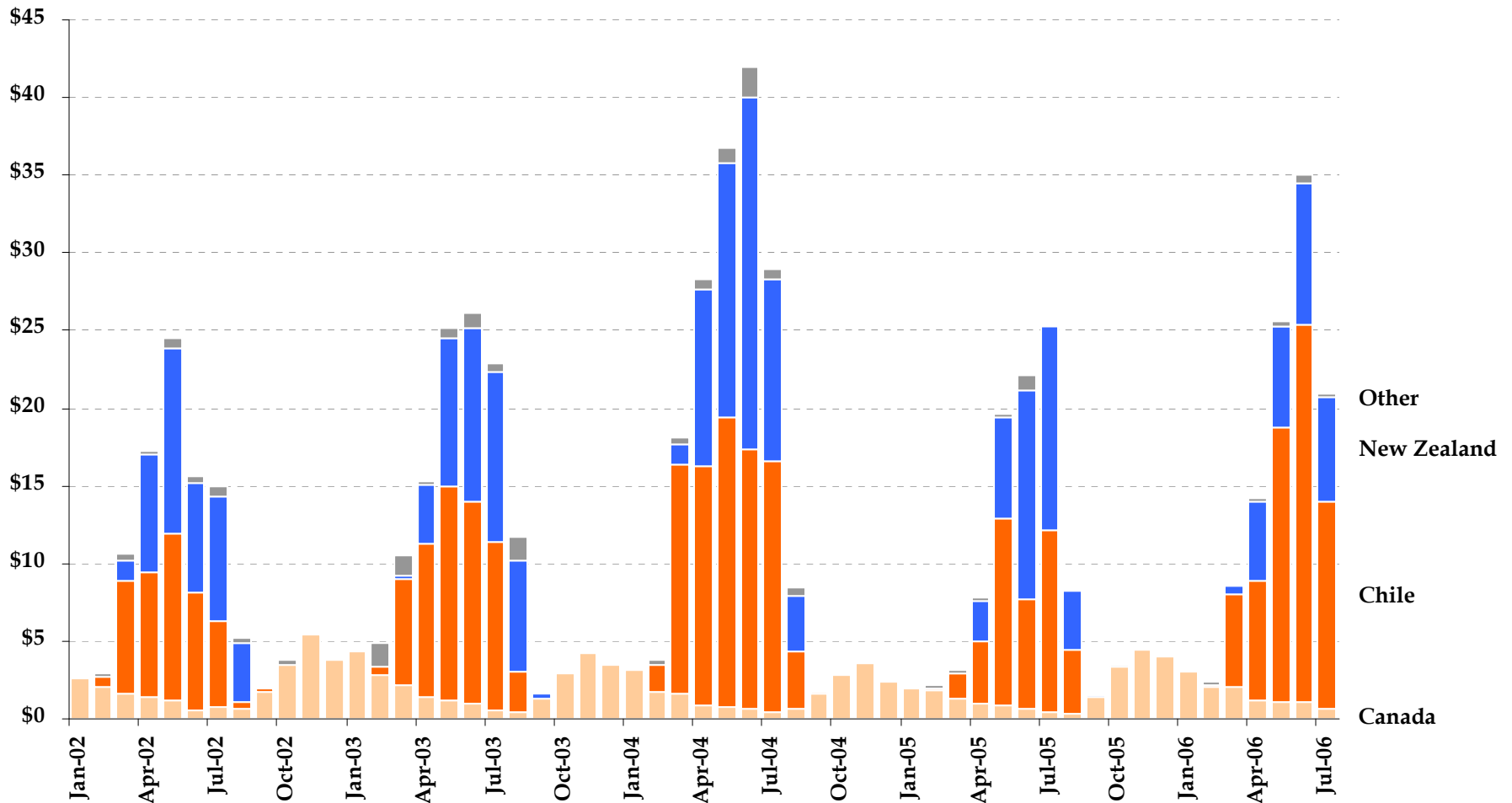
United States apple crop in storage: ambient v. controlled atmosphere
(pounds; 000; 1994/1-2005/12)



IMPORT VALUE BY COUNTRY

US imports from Chile and New Zealand peak during the March-July period, with New Zealand coming on slightly later

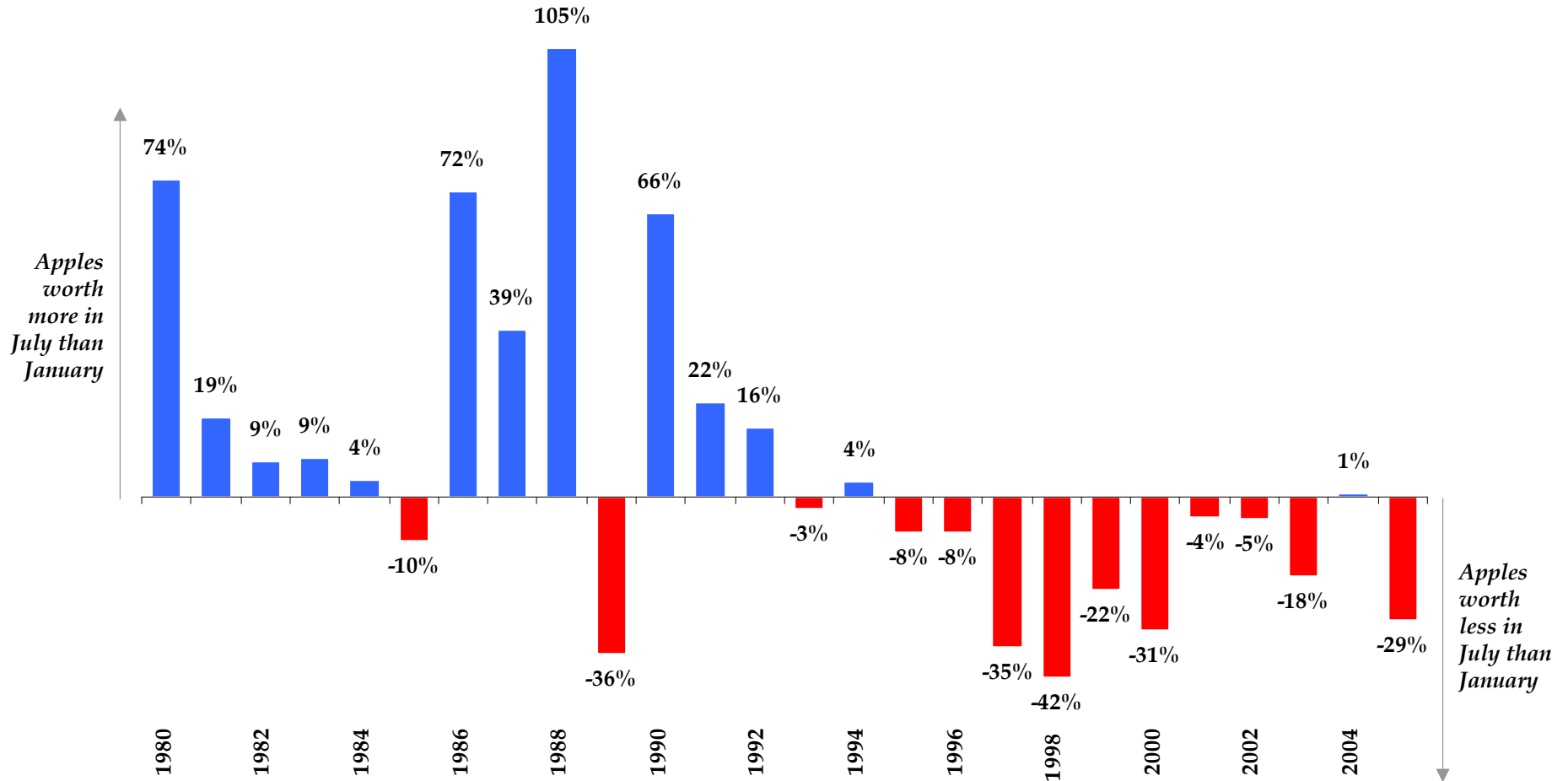
Value of United States apple imports by month by country
(US\$m; 2002/1-2006/7)



NO LONGER RECEIVE A PREMIUM

Unlike in the past, the wholesale price of apples now falls during the Southern Hemisphere season

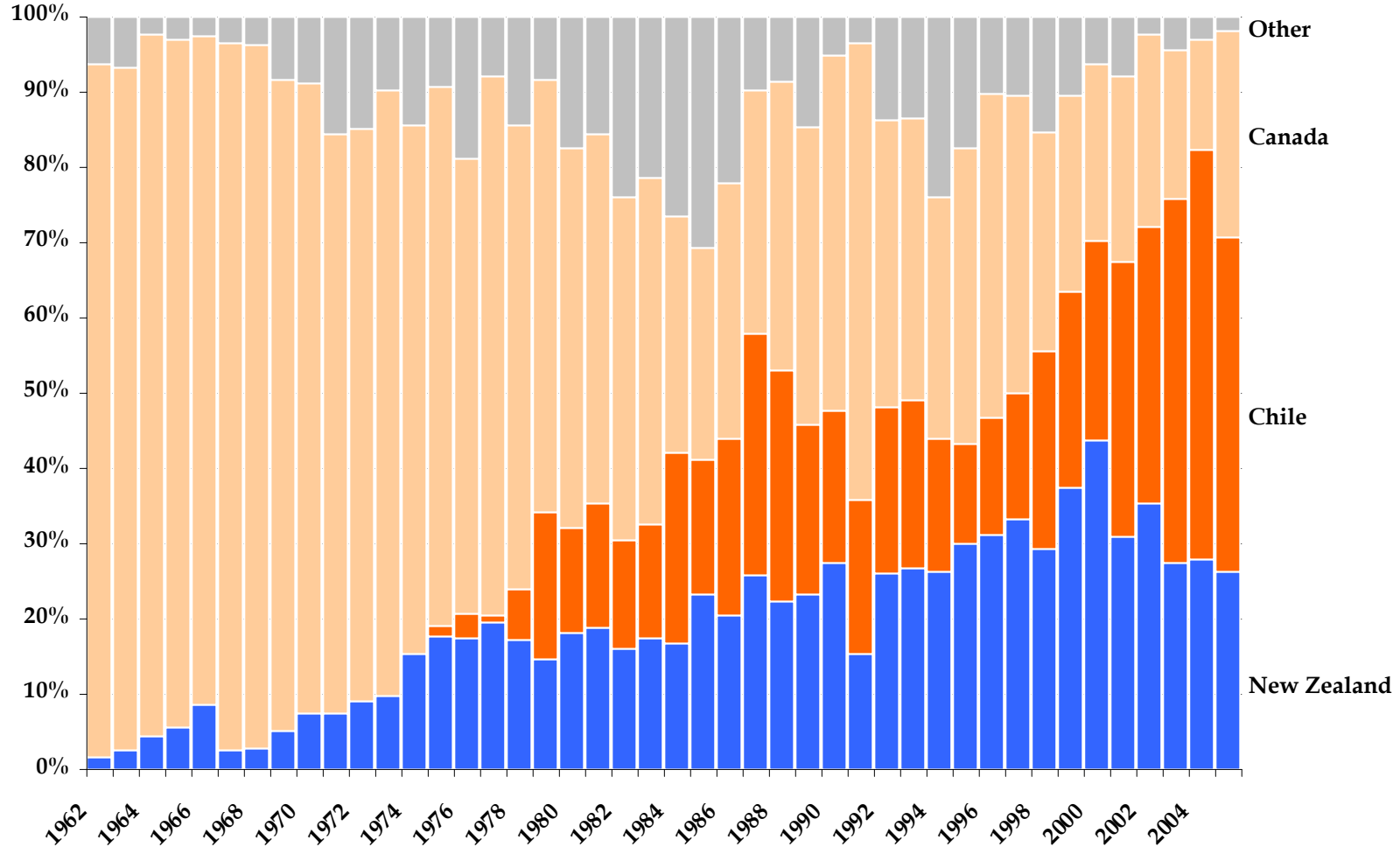
United States wholesale price of apples: July as a % of January
 (% of US\$/pound; 1980-2005)



ONLY THREE KEY PLAYERS IN THE UNITED STATES MARKET

New Zealand is one of only three key players who export fresh apples to the United States

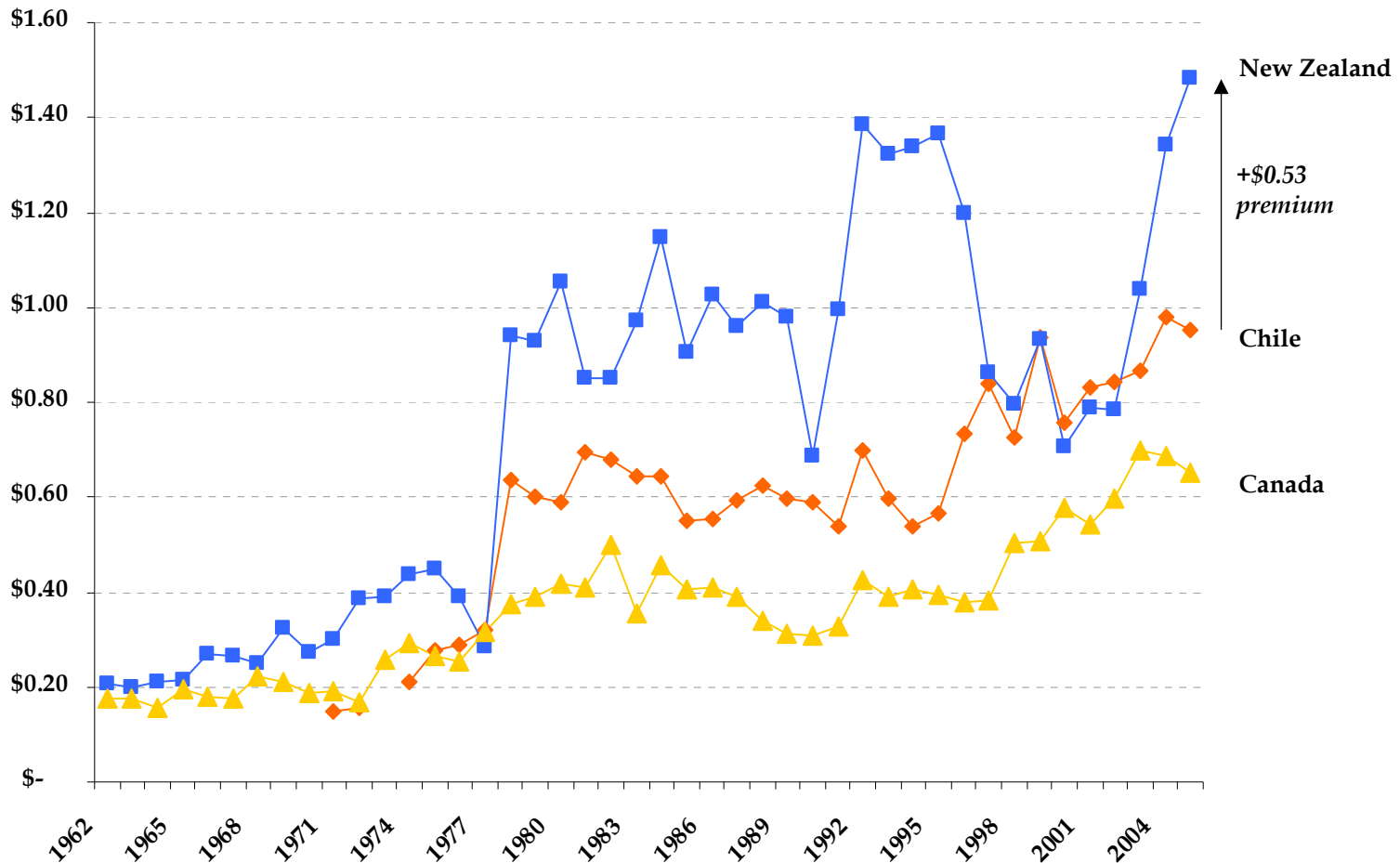
United States fresh apple import market share by volume by select country
 (% of tonnes; 1962-2005)



NZ DEMANDS HIGH PRICES IN US MARKET

New Zealand has historically received a large premium to Chile on a dollar per kilogram basis

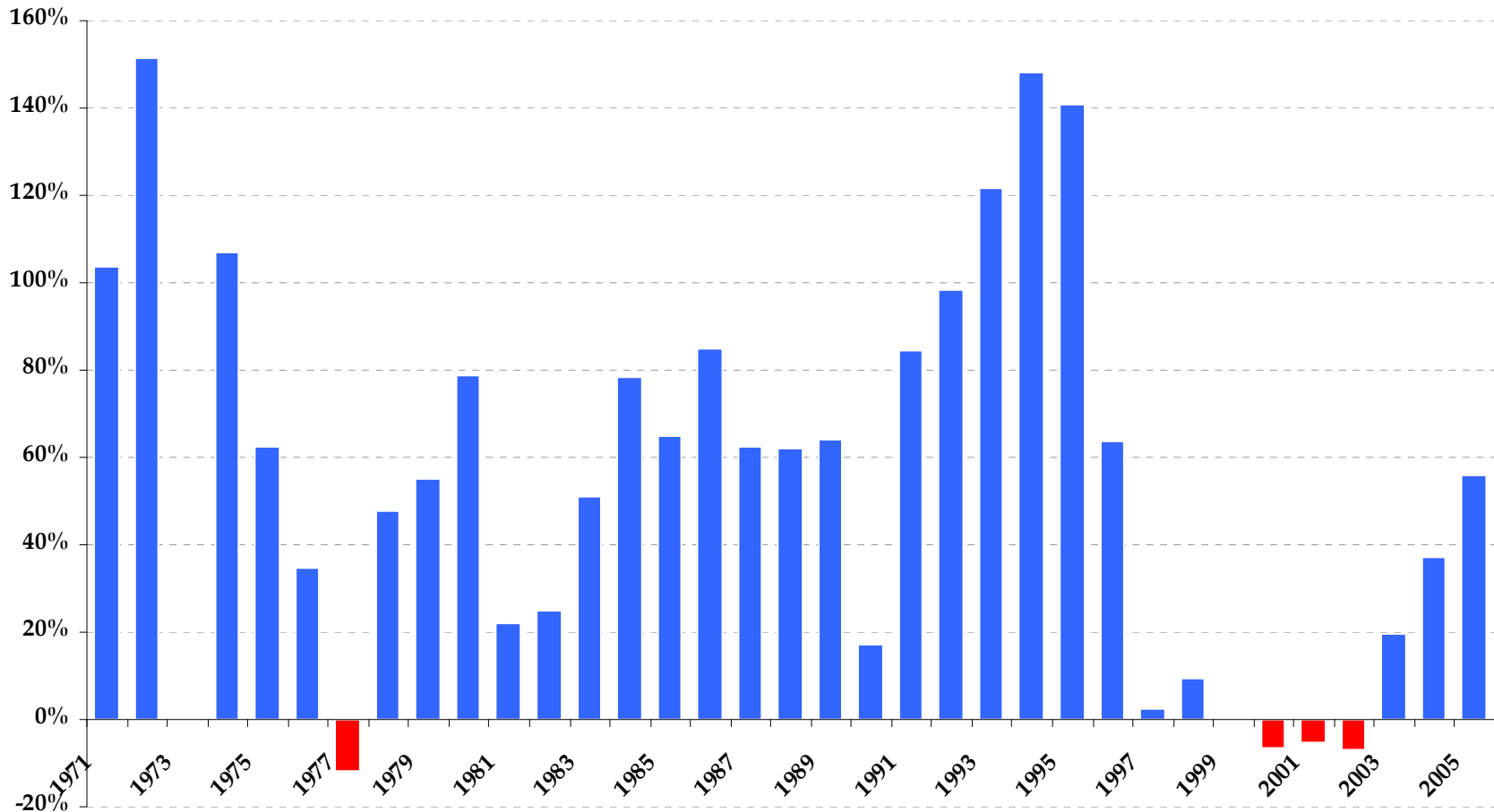
United States fresh apple import price per kilogram by select country
(US\$/kilo; 1962-2005)



NZ HISTORICALLY DEMANDS A PREMIUM OVER CHILE

However, the size of this premium has diminished

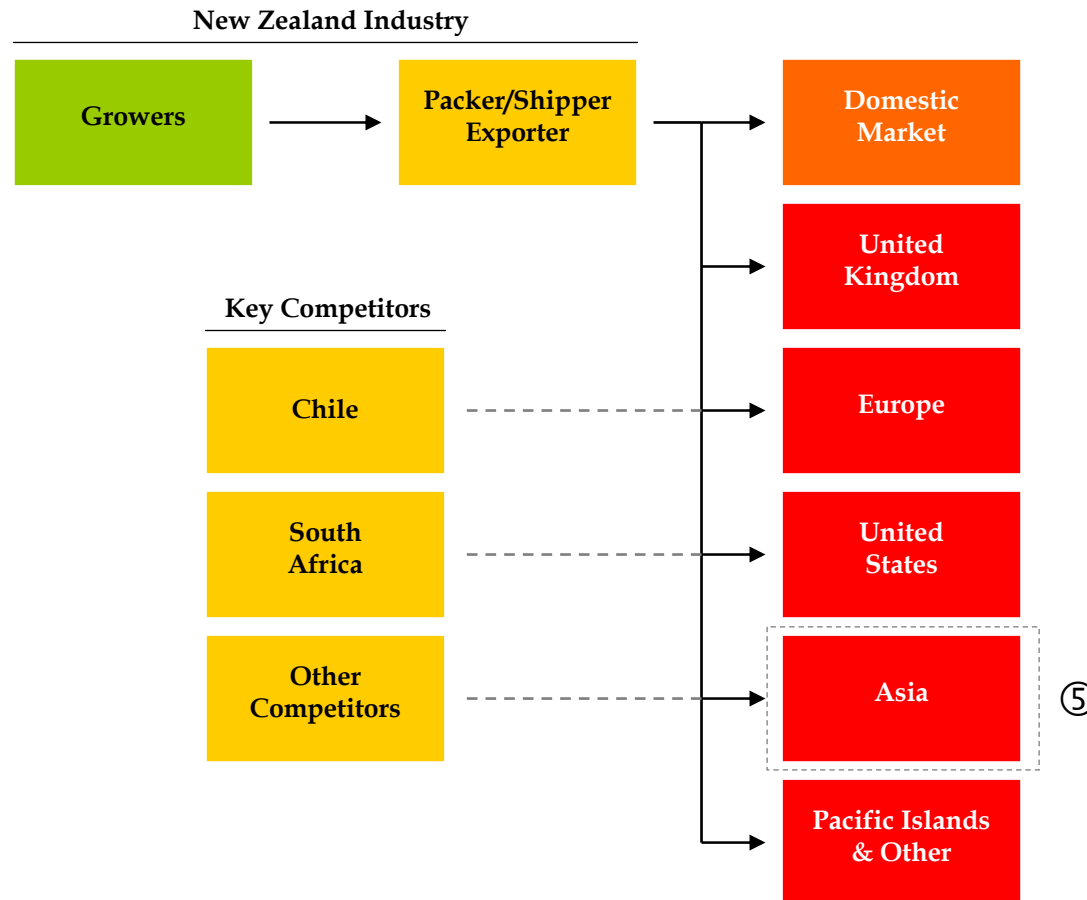
New Zealand import price premium over Chile in the United States market
 (%; 1971-2005)



MARKETS - OTHER

This section of this report looks briefly at the market for New Zealand pipfruit in Asia

Key players in the supply chain for New Zealand apples
(model)



KEY CONCLUSIONS – ASIAN MARKET

- **The Asian market can be divided into an apple producing and consuming North and a tropical fruit consuming south**
- **Apple production in Asia is growing rapidly, driven by China**
- **Total apple imports into East Asia are growing driven by Hong Kong and Taiwan**
- **South East Asia's apple imports have taken off**
- **The Indian subcontinent has shown strong apple import growth recently driven by India and Bangladesh**
- **However, despite this rapid growth, it is important to keep in mind that these are still relatively small markets and China appears to be getting the lion's share of the growth through low prices which appear to be pulling down the total market**

MARKET STRUCTURE

The Asian market can be divided into an apple producing and consuming North and a tropical fruit consuming south

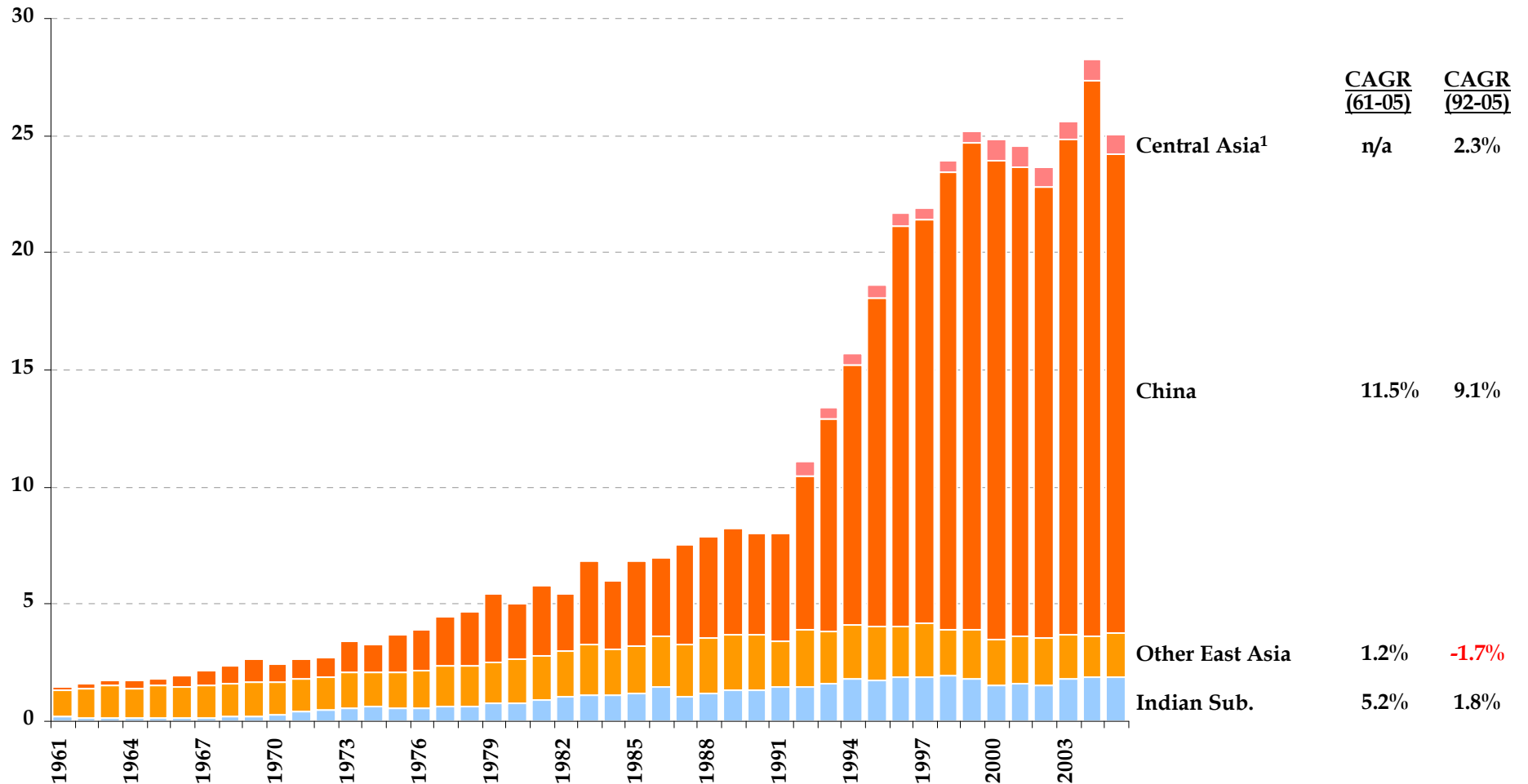
Brief profile of Asian markets
(various; 2004/2005)

	Population	Supermarket Sales (US\$b)	Fresh apple consumption per capita	Apple Production (t; 000; 05)	NZ Apple Imports* (t; 000; 05)	Key supermarket groups	
North Asian	China	1,307m	\$33b	13.1	23,681.5	2.8	Lianhua, Beijing Gome, Wu-Mart, Hualian
	Singapore ¹	4.2m	\$2.2b	9.9	-	3.8	NTUC, Dairy Farm, Delhaize, Carrefour
	Hong Kong	6.7m	\$6.3b	7.7	-	4.8	Dairy Farm, Park'n Shop, CRC, Dah Chong
	South Korea	48.7m	\$12b	7.4	357.2	-	E Mart, Kims Club, Tesco, Carrefour
	Japan	127.8m	\$380b	5.6	754.6	-	Daiei, Ito-Yokado, Jusco, Wal-Mart/Seiyu, Mycal, Uny
	Taiwan	22.8m	\$17b	5.2	6.5	?	Carrefour, RT Mart, Makro, Dairy Farm
Indian Subcontinent	Brunei	0.4m	?	3.9	-	0.3	?
	Malaysia ²	24m	\$2.4b	3.3	-	5.1	Dairy Farm, The Store, Carrefour, Tesco, Jusco
	Bhutan	2.3m	?	2.4	6.0	-	?
	Pakistan	163m	\$1.4b	2.3	351.9	-	Utility Stores, Shezan Bakers, Tes-Mart, Value
	Nepal	28m	?	1.8	34.0	-	?
	India	1,077m	\$0.4b	1.4	1,470.0	2.7	MarginFree, Dairy Farm, Subhiksha, Nilgris
	Thailand	65m	\$7.0b	1.4	-	0.8	Tesco, Casino, Carrefour, Makro, Delhaize
	Vietnam	84m	\$0.8b	1.2	-	-	Metro, CoopMart, Maximart, Casino
	Sri Lanka	22m	?	0.8	-	0.1	?
	South-East Asian	Indonesia	245m	\$2.2b	0.5	-	1.5
Philippines	87m	\$2.0b	0.5	-	-	Uniwide, Rustans, Makro, SM, South	
Myanmar	43m	?	0.5	-	-	?	
Bangladesh	142m	\$0.1b	0.3	-	-	Total of 30 supermarkets in country	
Laos	6m	?	0.2	-	-	?	
Cambodia	13m	?	0.1	-	0.2	?	

ASIAN PRODUCTION GROWTH

Apple production in Asia is growing rapidly, driven by China

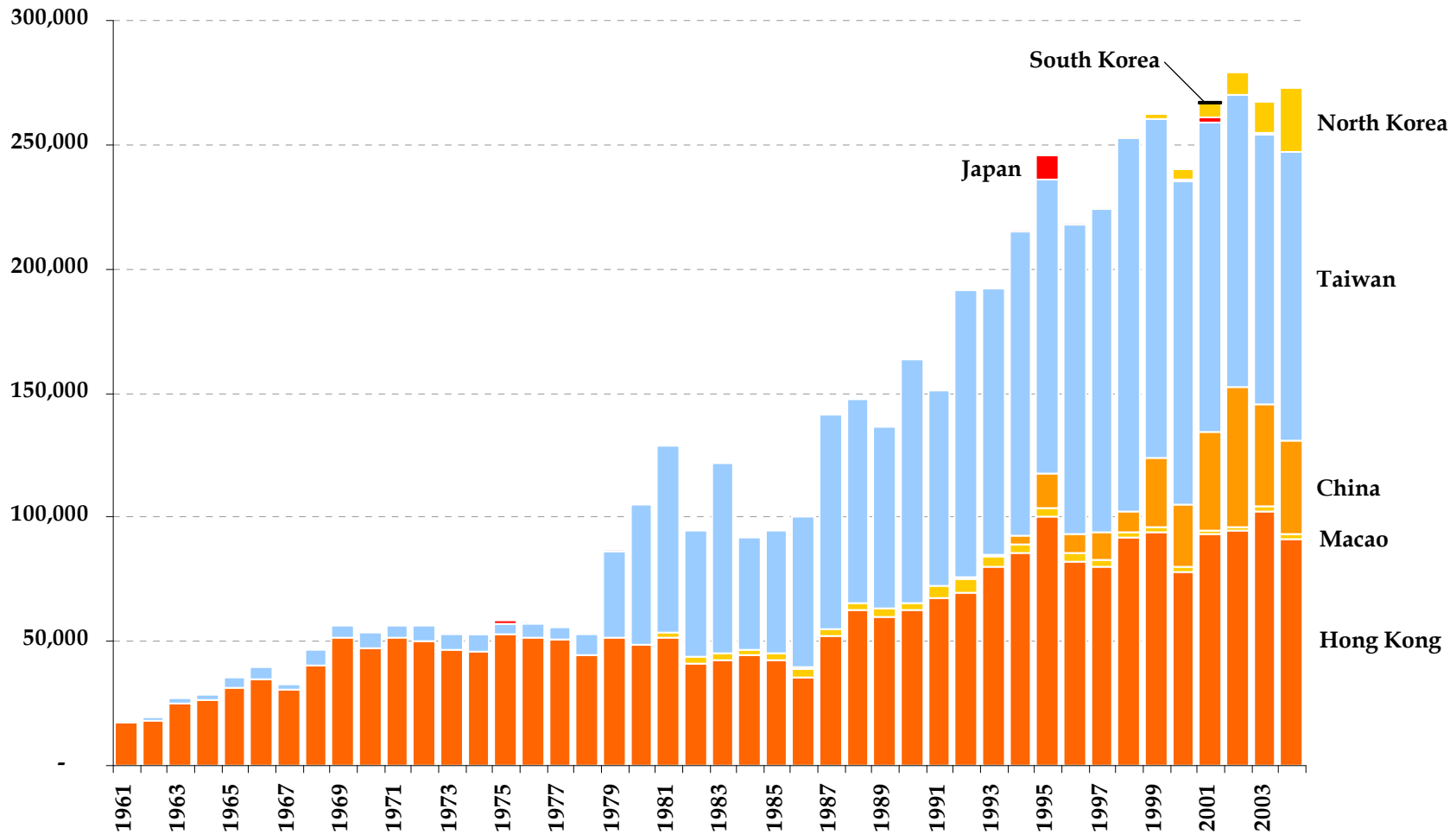
Apple production in Asia by region
(t; millions; 1961-2005)



EAST ASIAN IMPORTS DRIVEN BY CHINA & TAIWAN

Total apple imports into East Asia are growing driven by Hong Kong and Taiwan

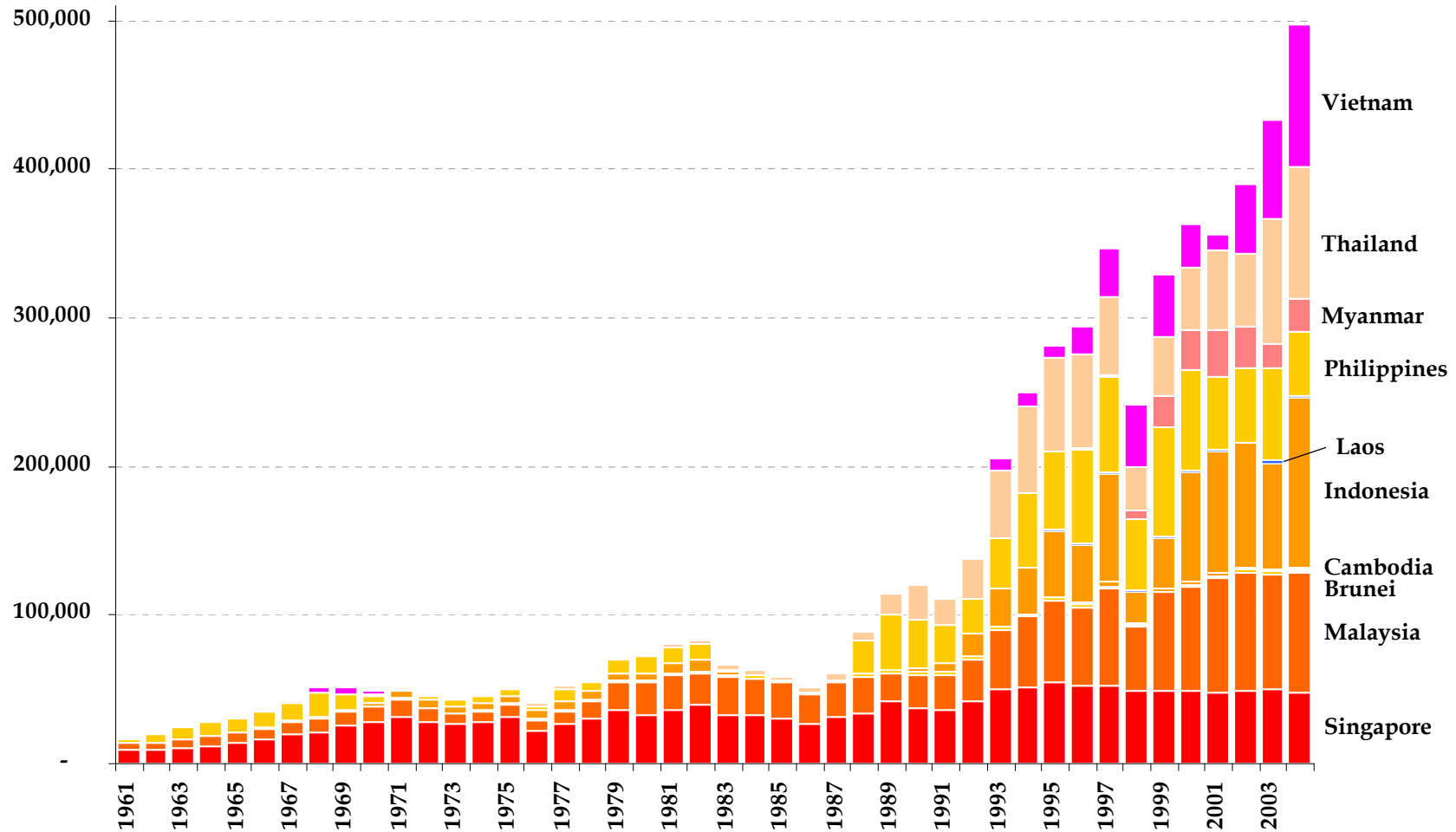
Fresh apple import volume in East Asia by country
(t; 1961-2004)



SOUTH-EAST ASIAN IMPORT GROWTH ACROSS THE BOARD

South East Asia's apple imports have taken off

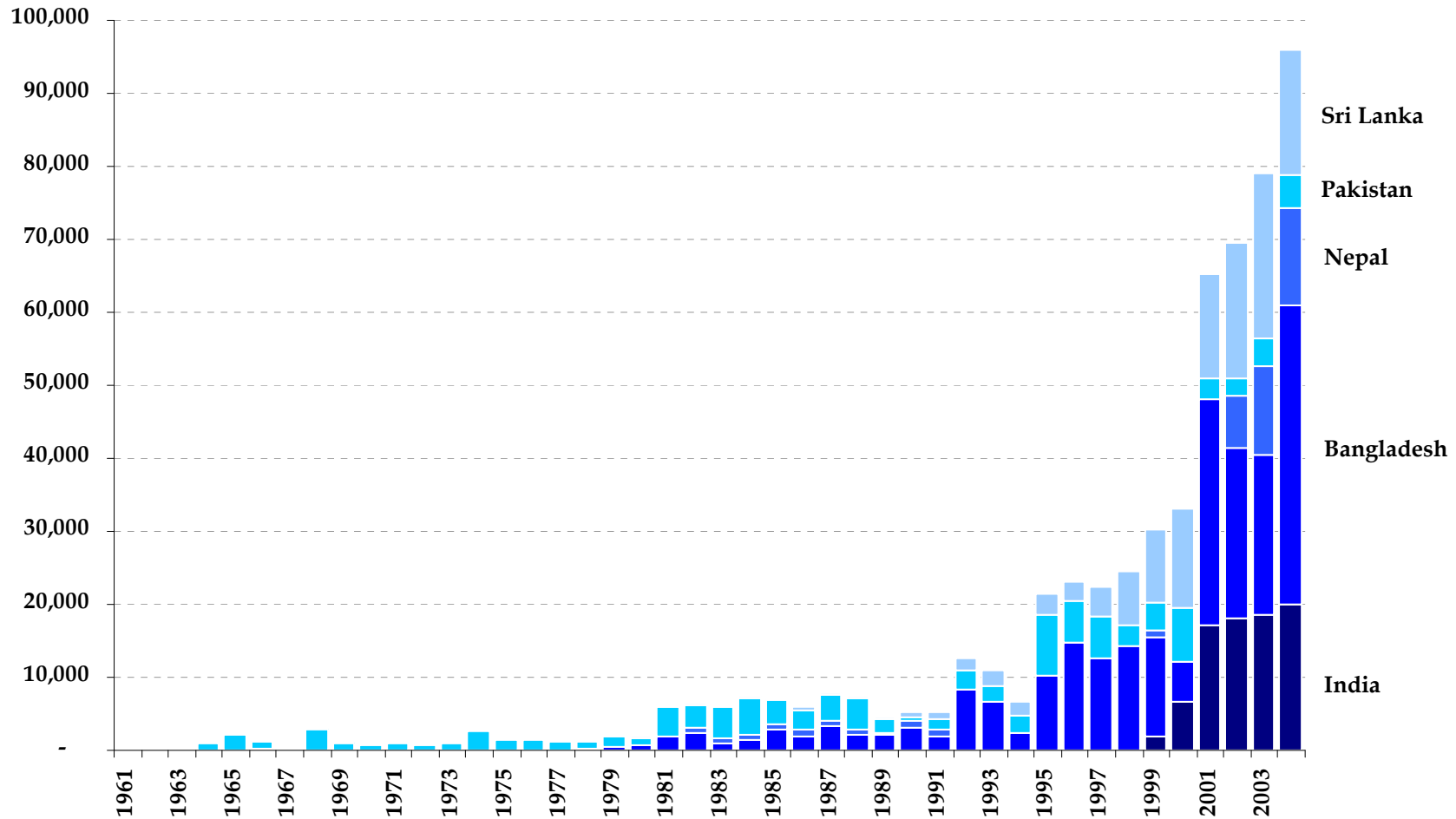
Fresh apple import volume in South-East Asia by country
(t; 1961-2004)



INDIAN SUBCONTINENT IMPORT GROWTH

The Indian subcontinent has shown strong apple import growth recently driven by India and Bangladesh

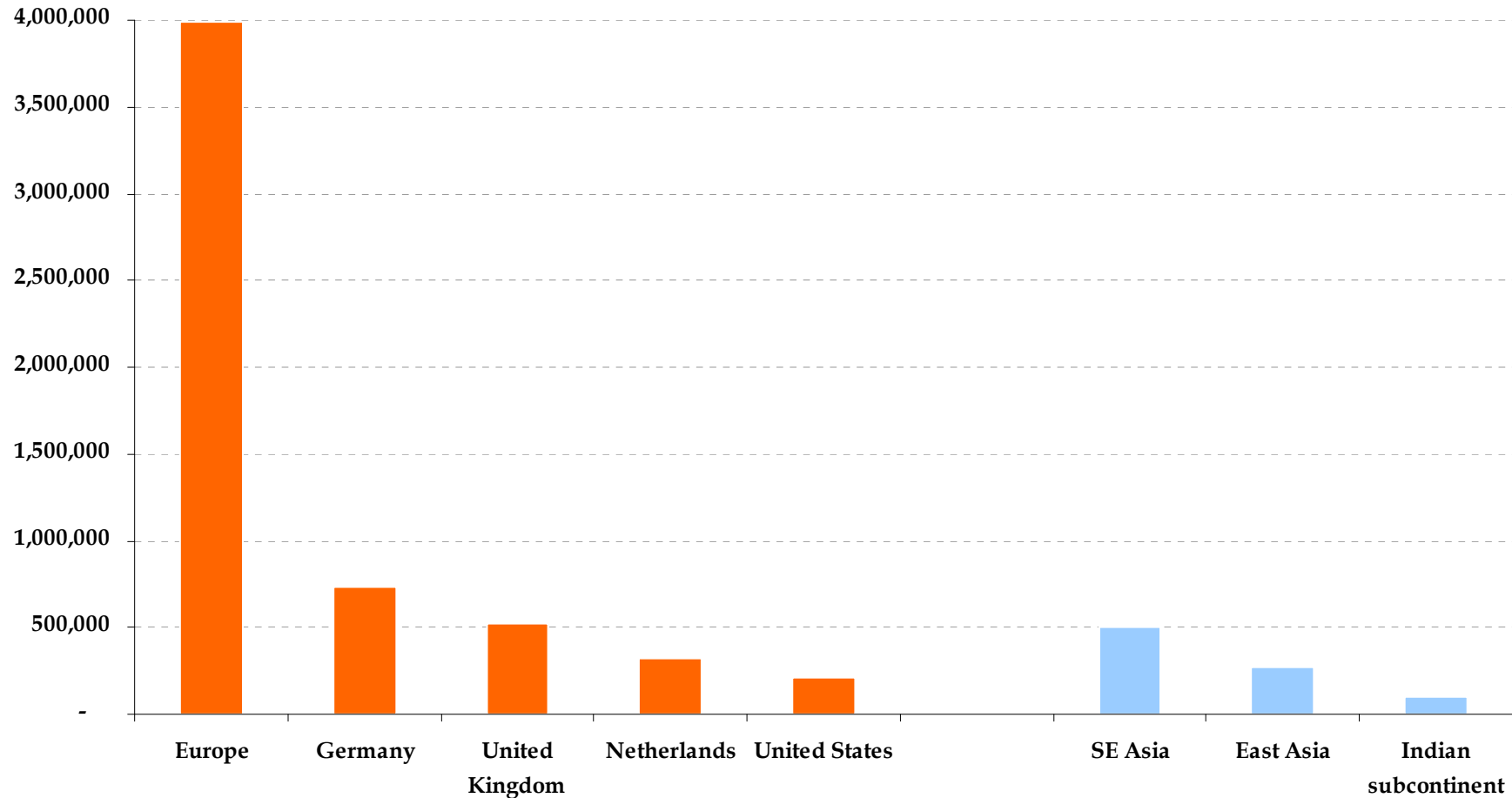
Fresh apple import volume in the Indian subcontinent by country
(t; 1961-2004)



STILL RELATIVELY SMALL

However, despite this rapid growth, it is important to keep in mind that these are still relatively small markets...

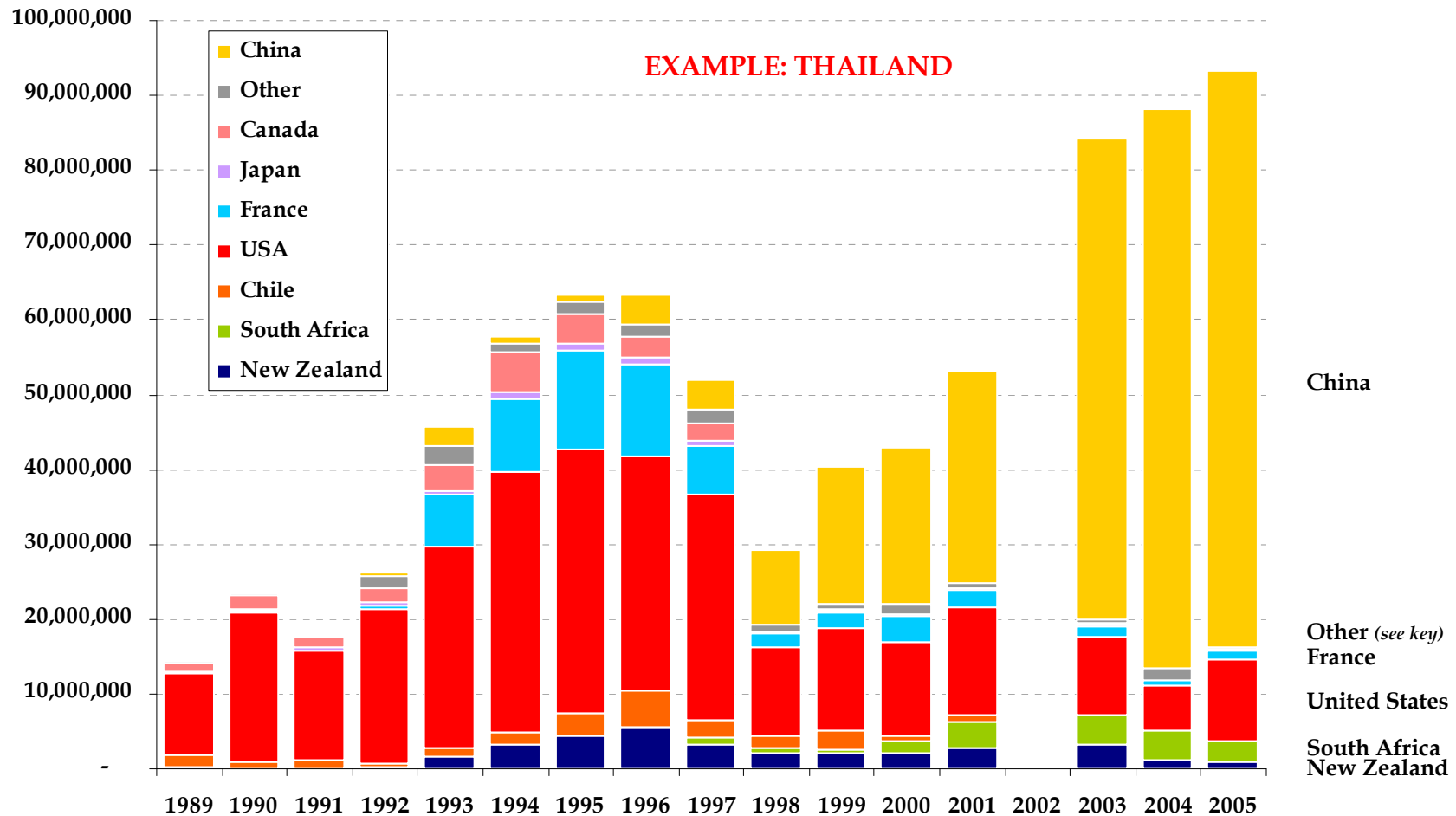
Fresh apple import volume by country/region
(t; 2004)



CHINA DRIVING GROWTH

... and China appears to be getting the lion's share of the growth...

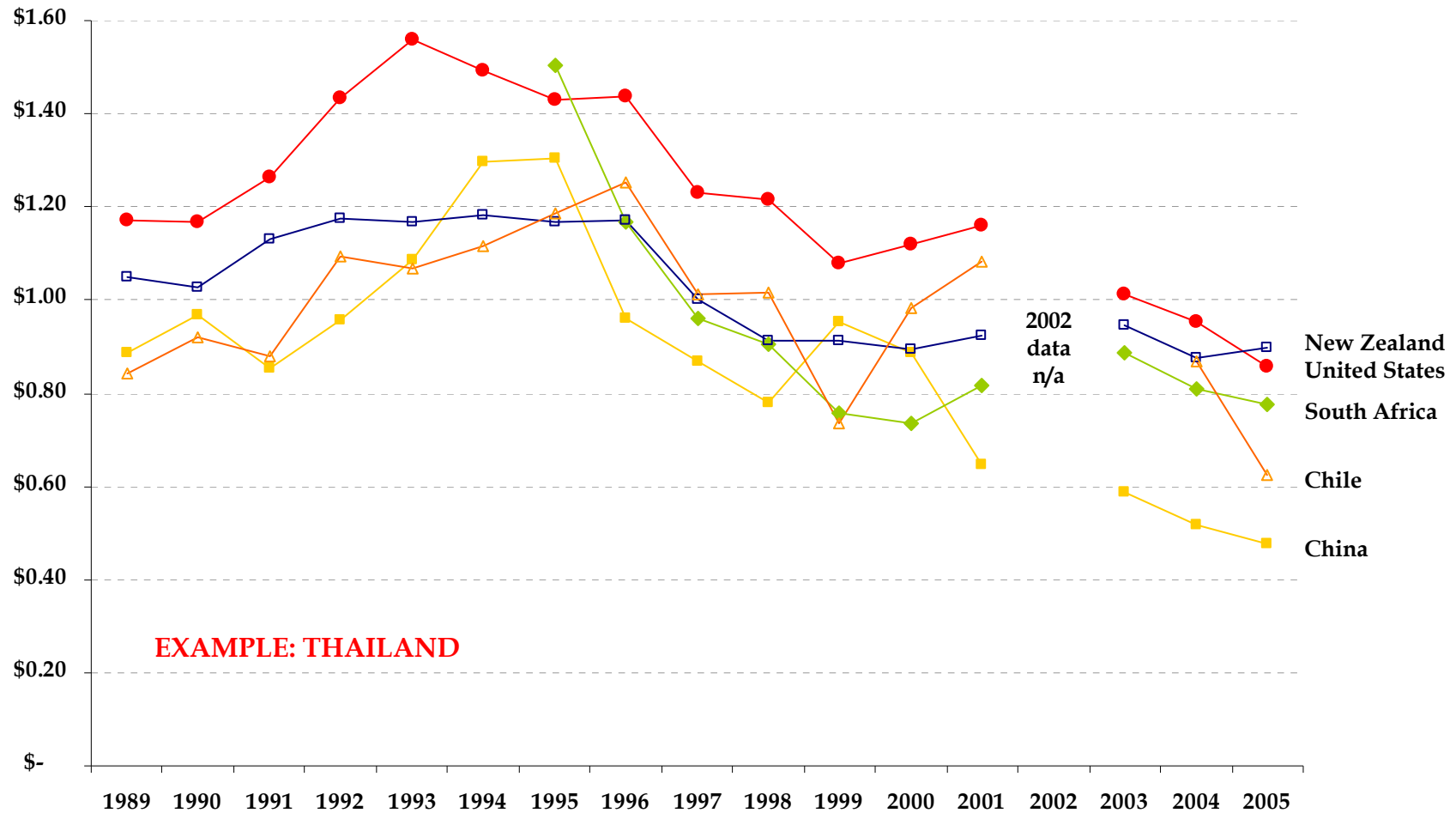
Fresh apple import volume by Thailand
(t; 1989- 2005)



PRICES FALLING

... through low prices which appear to be pulling down the total market

Fresh apple import value per kilogram by Thailand
(US\$/kilogram; nominal; 1989-2005)



EXAMPLE: THAILAND

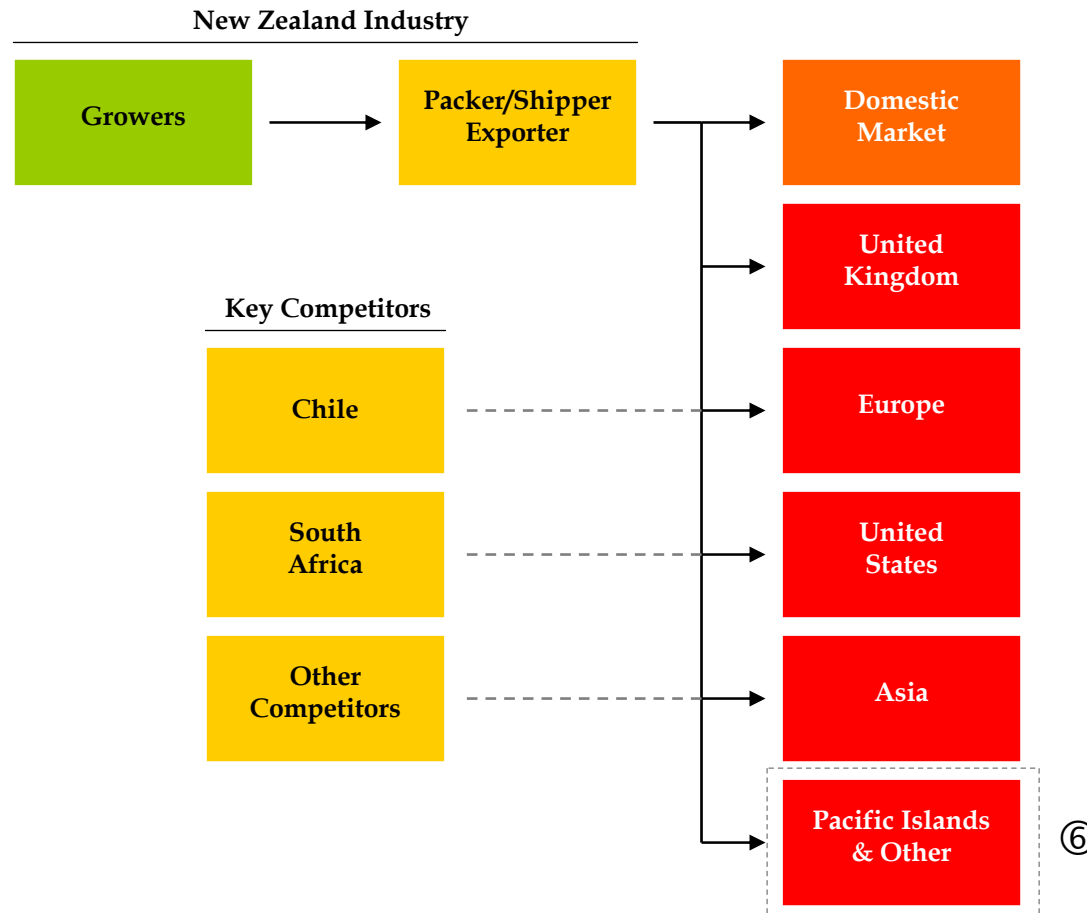
2002 data n/a

- New Zealand
- United States
- South Africa
- Chile
- China

MARKETS - OTHER

This section of this report looks briefly at other market for New Zealand pipfruit

Key players in the supply chain for New Zealand apples
(model)



PACIFIC ISLANDS

STRONG NEW ZEALAND SHARE

New Zealand achieves a strong market share in the relatively small Pacific Island markets

Brief profile of Pacific Island markets

(various; 2004/2005)

	Population (000)	GDP/capita (US\$,ppp) (2005)	Fresh apple consumption per capita ¹	Total Apple Imports (t; 2004)	NZ Apple Imports* (t; 04)	NZ volume share	Average NZ\$/kg for NZ apples
Papua New Guinea	5,471.2	\$2,600	0.1	784	333	42%	0.65
Fiji	823.3	\$6,000	2.0	1,686	1,609	100%	0.68
Solomon Islands	439.4	\$1,700	?	?	41	?	0.81
French Polynesia	239.8	\$17,500	5.8	1,378	965	70%	0.89
New Caledonia	229.3	\$15,000	6.5	1,500	1,441	96%	0.82
Vanuatu	199.6	\$2,900	0.7	140	118	84%	0.66
Samoa	175.0	\$5,600	1.0	168	180	100%	0.85
Guam	159.9	\$15,000	?	n/a	100	n/a	0.94
N. Mariana	82.5	\$12,500					
American Samoa	57.8	\$5,800					
Marshall Islands	53.2	\$2,300					
Micronesia	110.7	\$3,900	?	?	-	-	
Tonga	101.1	\$2,300	0.8	83	56	67%	0.83
Kiribati	86.9	\$800	0.5	39	14	36%	0.85
Palau	19.9	\$5,800	?	-	-		
Cook Islands	17.9	\$5,000	2.4	42	44	100%	1.00
Wallis & Futuna	14.7	\$3,800	?	?	38	?	1.05
Nauru	11.9	\$5,000	?	-	-	-	
Tuvalu	10.1	\$1,100	?	?	1.5	?	1.11

MIDDLE EAST/NORTH AFRICA

MARKET STRUCTURE

New Zealand is a relatively small player in the Middle East and North African markets

Brief profile of Middle East/North African markets

(various; 2004/2005)

	Population (000)	GDP/capita (US\$, PPP) (2005)	Fresh apple consumption per capita	Apple Production (t; 2005)	Total Apple Imports (t; 2004)	NZ Apple Imports* (t; 05)	NZ volume share	Average NZ\$/kg for NZ apples
Egypt	73.4m	\$3,600	n/a	550,000	49,084	-	-	-
Iran	69.8m	\$8,300	n/a	2,400,000	-	-	-	-
Algeria	32.3m	\$7,200	n/a	135,000	59,354	-	-	-
Morocco	31.1m	\$4,200	n/a	393,140	6,376	-	-	-
Iraq	25.7m	\$3,400	n/a	64,000	76,798	-	-	-
Afghanistan	24.9m	\$800	n/a	17,500	1,273	-	-	-
Saudi Arabia	24.9m	\$12,800	n/a	-	128,092	141	0.1%	\$0.81
Yemen	20.7m	\$900	n/a	2,900	6,541	-	-	-
Syria	18.2m	\$3,900	n/a	215,000	502	-	-	-
Tunisia	9.9m	\$8,300	n/a	130,000	7	-	-	-
Israel	6.6m	\$24,600	n/a	153,050	2,267	-	-	-
Libya	5.7m	\$11,400	n/a	20,000	1,732	-	-	-
Jordan	5.6m	\$4,700	n/a	41,136	17,851	-	-	-
Lebanon	3.7m	\$6,200	n/a	115,000	1,338	-	-	-
UAE	3.0m	\$43,400	n/a	-	78,048	2,740	3.5%	\$0.71
Oman	2.9m	\$13,200	n/a	-	26,381	21	0.1%	\$0.61
Kuwait	2.6m	\$19,200	n/a	-	17,292	514	2.9%	\$0.77
Bahrain	0.7m	\$23,000	n/a	-	6,356	-	-	-

CLOSED MARKETS

MARKET STRUCTURE

Three key markets – Japan, South Korea and Australia – are closed to apple imports, including those from New Zealand; they is clearly an opportunity

Brief profile of key closed markets

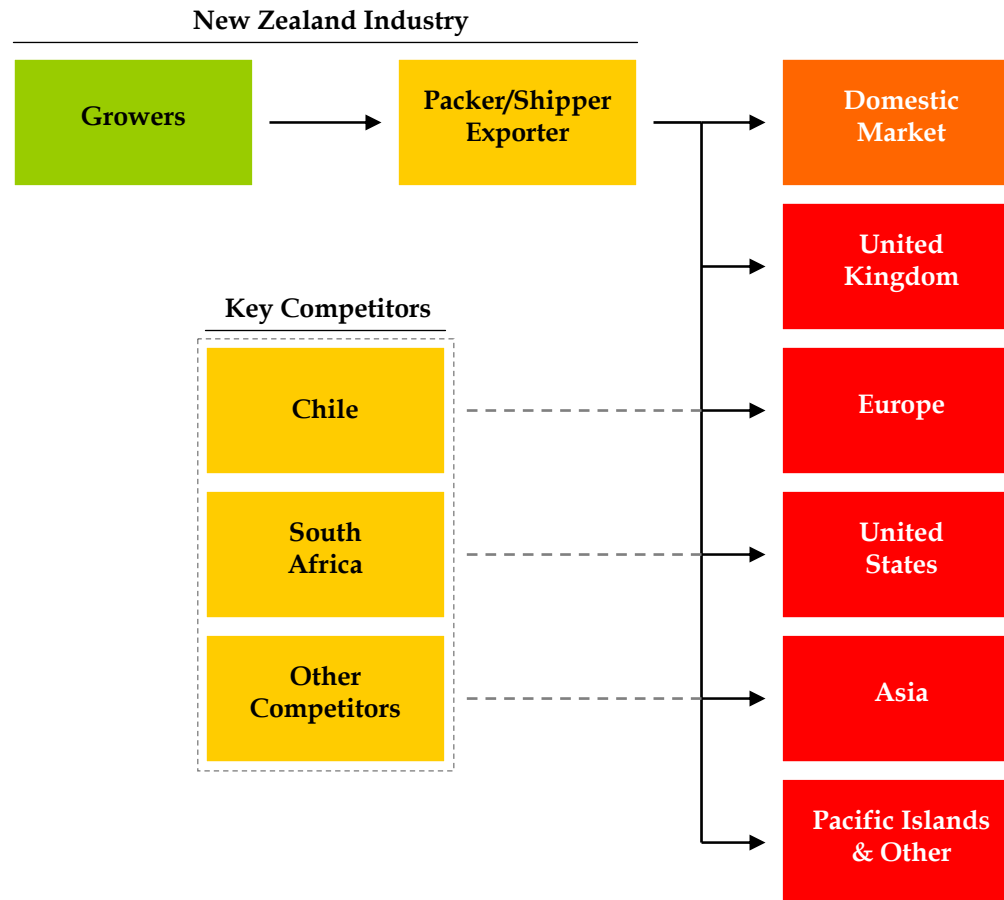
(various; 2004/2005)

	Population (2005)	GDP/capita (US\$; PPP) (2005)	Fresh apple consumption per capita (kg/capita)	Apple Production (t; 2005)	Total Apple Imports (t; 2004)	NZ Apple Imports (t; 05)	NZ volume share
Japan	127.8m	\$31,500	5.6	870,000	18	-	-%
South Korea	48.0m	\$20,400	7.4	380,000	-	-	-%
Australia	19.9m	\$31,900	6.5	280,000	16	-	-%

3. THE COMPETITION

The third section of this report looks at the competition facing the New Zealand pipfruit industry

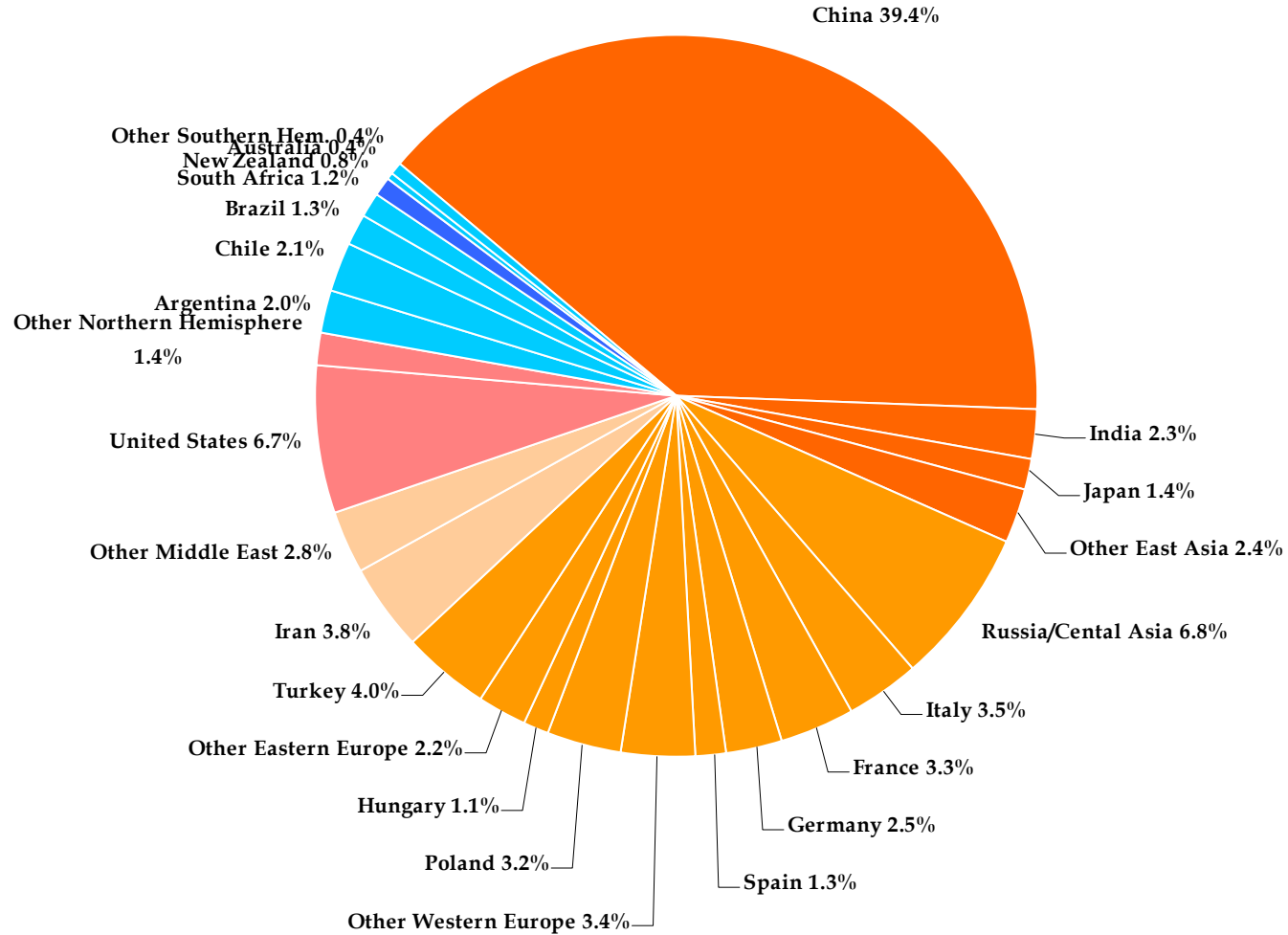
Key players in the supply chain for New Zealand apples
(model)



PRODUCTION BY REGION

New Zealand is a small player in the global apple industry – accounting for less than 1% of production

Apple production and exports by country/region
(% of volume; 2005)



THREE LEVELS OF COMPETITOR

New Zealand faces three levels of competition - primary, secondary and emerging - this report focuses only on the primary competitors, those from the Southern Hemisphere

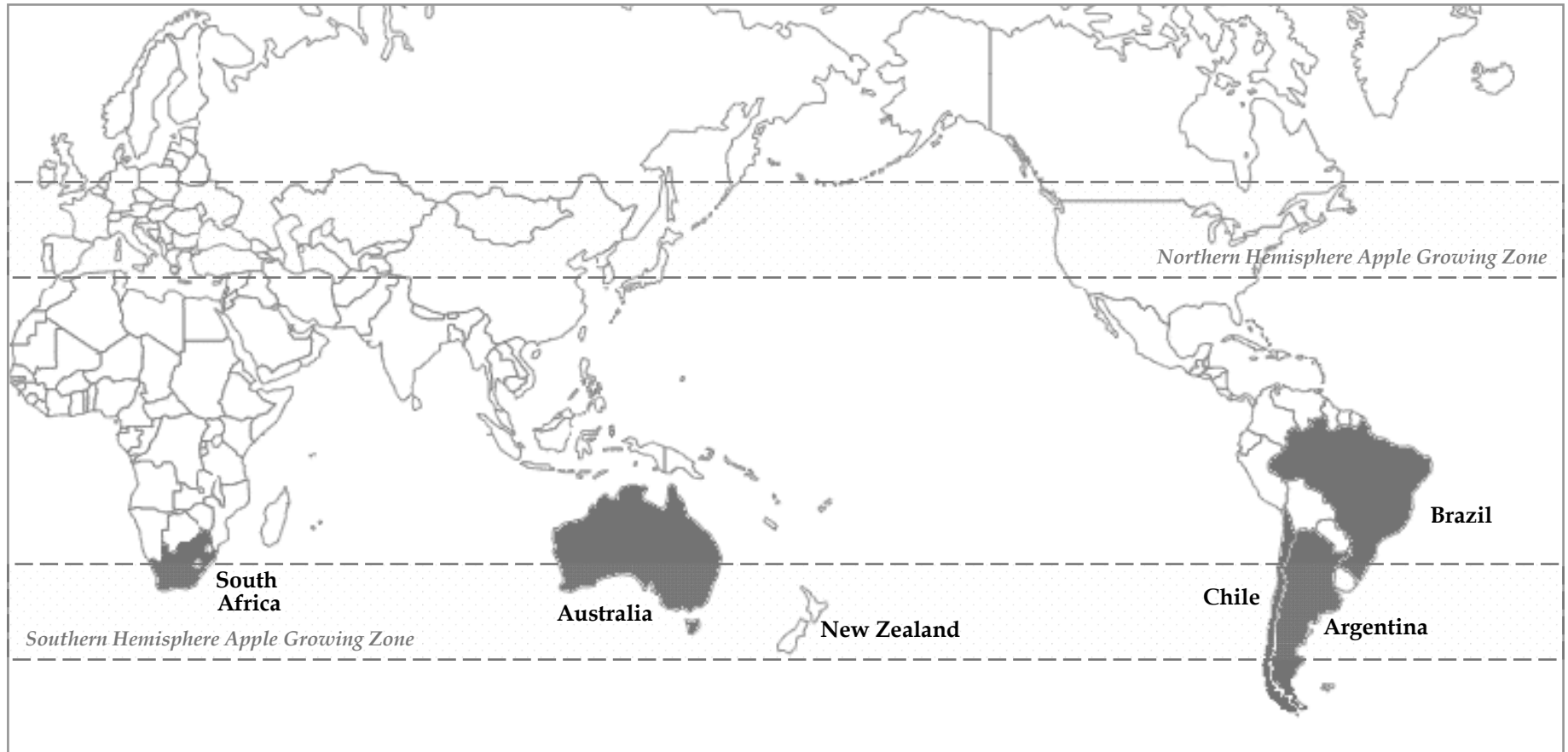
Key competitor groups (model)

	Primary Competition (Southern Hemisphere - Fresh)	Secondary Competition (Northern Hemisphere - Fresh)	Emerging Competition (Northern Hemisphere - Processed)
Nature of competition	<ul style="list-style-type: none"> - Same time, same varieties, same markets - Compete throughout New Zealand fresh season 	<ul style="list-style-type: none"> - At edges of New Zealand fresh season - Hangover from large northern hemisphere seasons out of CA 	<ul style="list-style-type: none"> - Lower grade fruit for processing
Key variable	<ul style="list-style-type: none"> - Quality vs. price 	<ul style="list-style-type: none"> - Storage cost vs. falling price as southern hemisphere fruit come into market 	<ul style="list-style-type: none"> - Production cost - Supply vs. demand
Key Characteristics	<ul style="list-style-type: none"> - Southern Hemisphere - Lower wage costs - Focus on fresh exports - Major players - Growing share - Have close regional markets for secondary fruit - Distant from key Northern Hemisphere markets 	<ul style="list-style-type: none"> - Northern Hemisphere - Higher wage costs - High value domestic market - Close to high value markets 	<ul style="list-style-type: none"> - Low quality - Lower overall costs - Potential to improve quality and become major fresh players - Focus on apples for processing
Strategic Direction	<ul style="list-style-type: none"> - Moving into newer varieties - Improving quality - Improving yields through rootstocks and management - Bringing new land into production 	<ul style="list-style-type: none"> - Developing new IP controlled varieties - Increasing efficiency through scale and consolidation - Improving yields through rootstocks and management - Renovating existing orchards 	<ul style="list-style-type: none"> - Moving into higher quality/higher value fresh - Improving quality - Improving yields through rootstocks and management - Bringing new land into production
Examples	<ul style="list-style-type: none"> - South Africa - Chile - Brazil - Argentina 	<ul style="list-style-type: none"> - United States - Canada - France - Italy - Germany 	<ul style="list-style-type: none"> - China - Iran - Turkey

PRIMARY COMPETITION - THE SOUTHERN HEMISPHERE

New Zealand's primary competition comes from other Southern Hemisphere countries in the apple growing zone

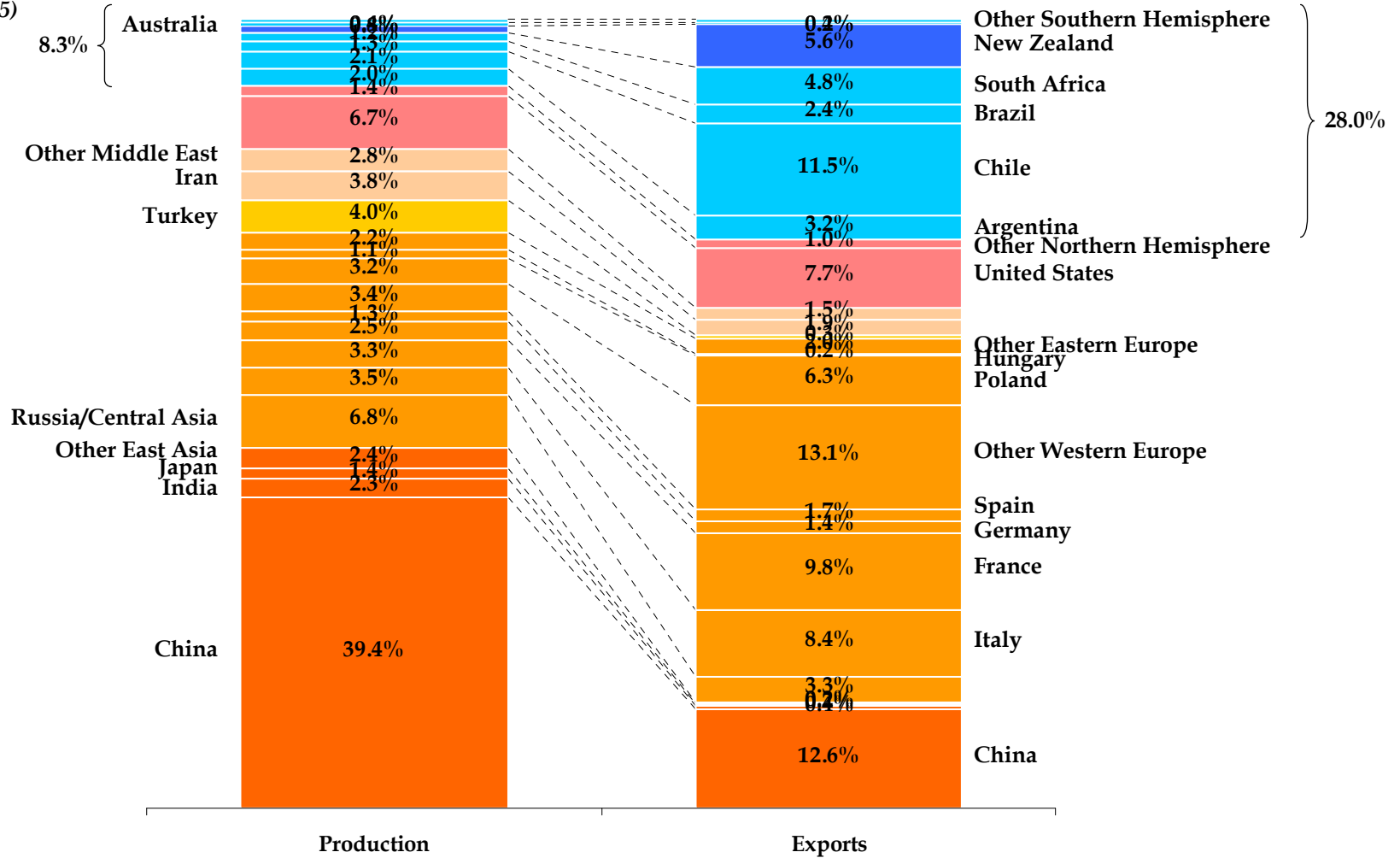
Key Southern Hemisphere competitor countries



SOUTHERN HEMISPHERE IS EXPORT FOCUSED

The Southern Hemisphere accounts for only 8.3% of global apple production but 28% of fresh apple exports

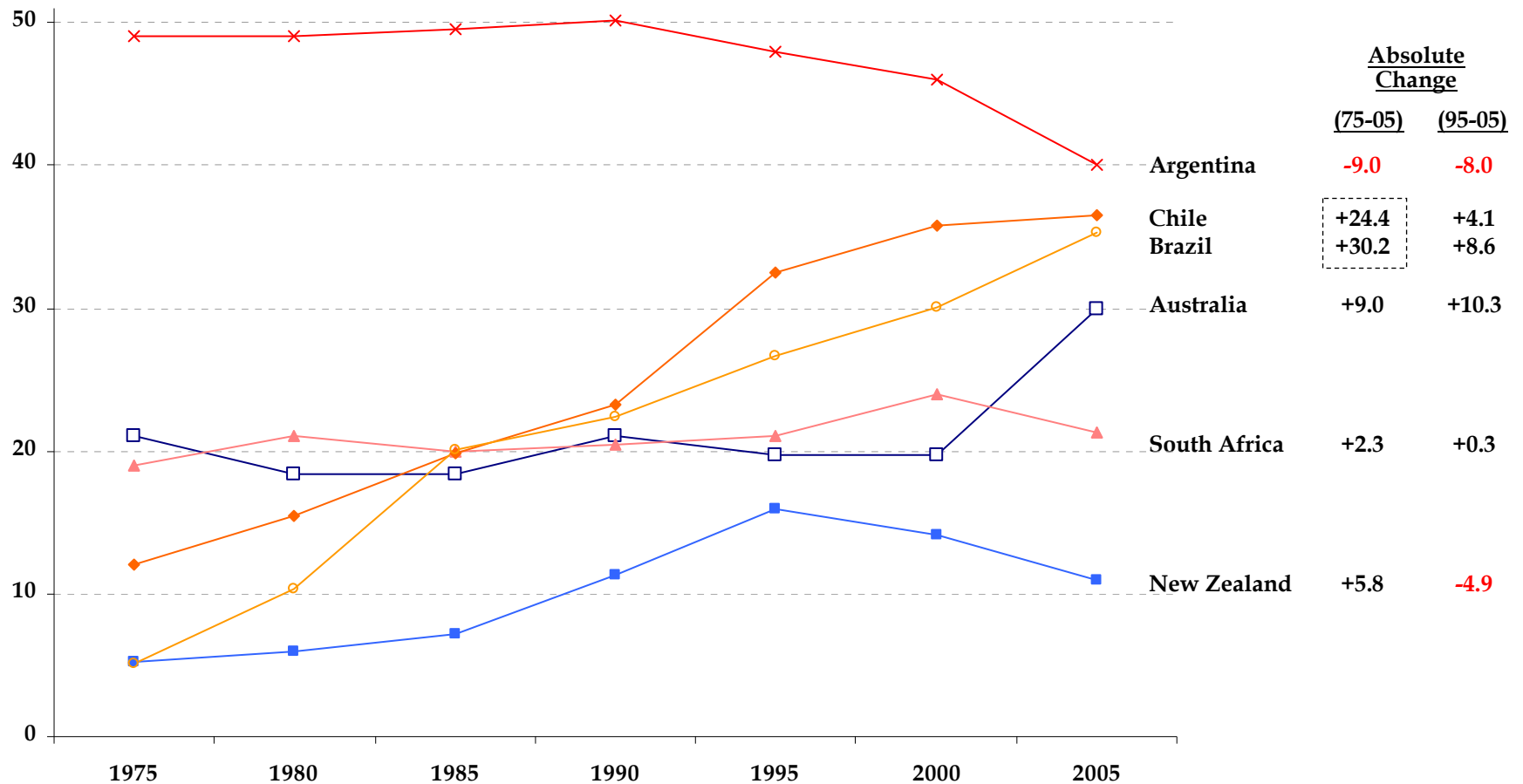
Apple production and exports by country/region
(% of volume; 2005)



BRAZIL & CHILE DRIVING

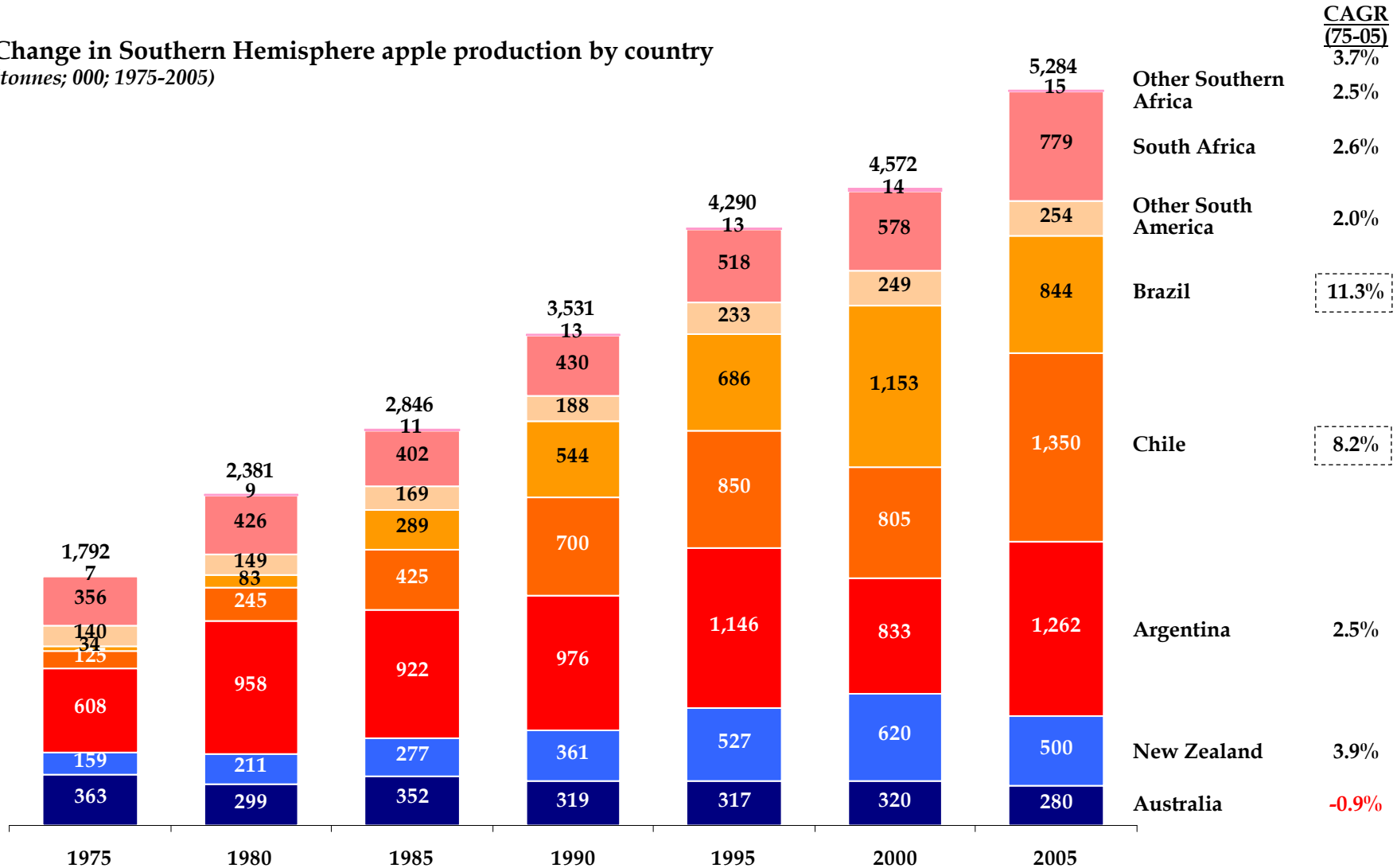
Brazil and Chile are driving Southern Hemisphere apple area growth...

Change in Southern Hemisphere apple area by country
(hectare; 000; 1975-2005)



BRAZIL & CHILE DRIVING ...and apple production growth

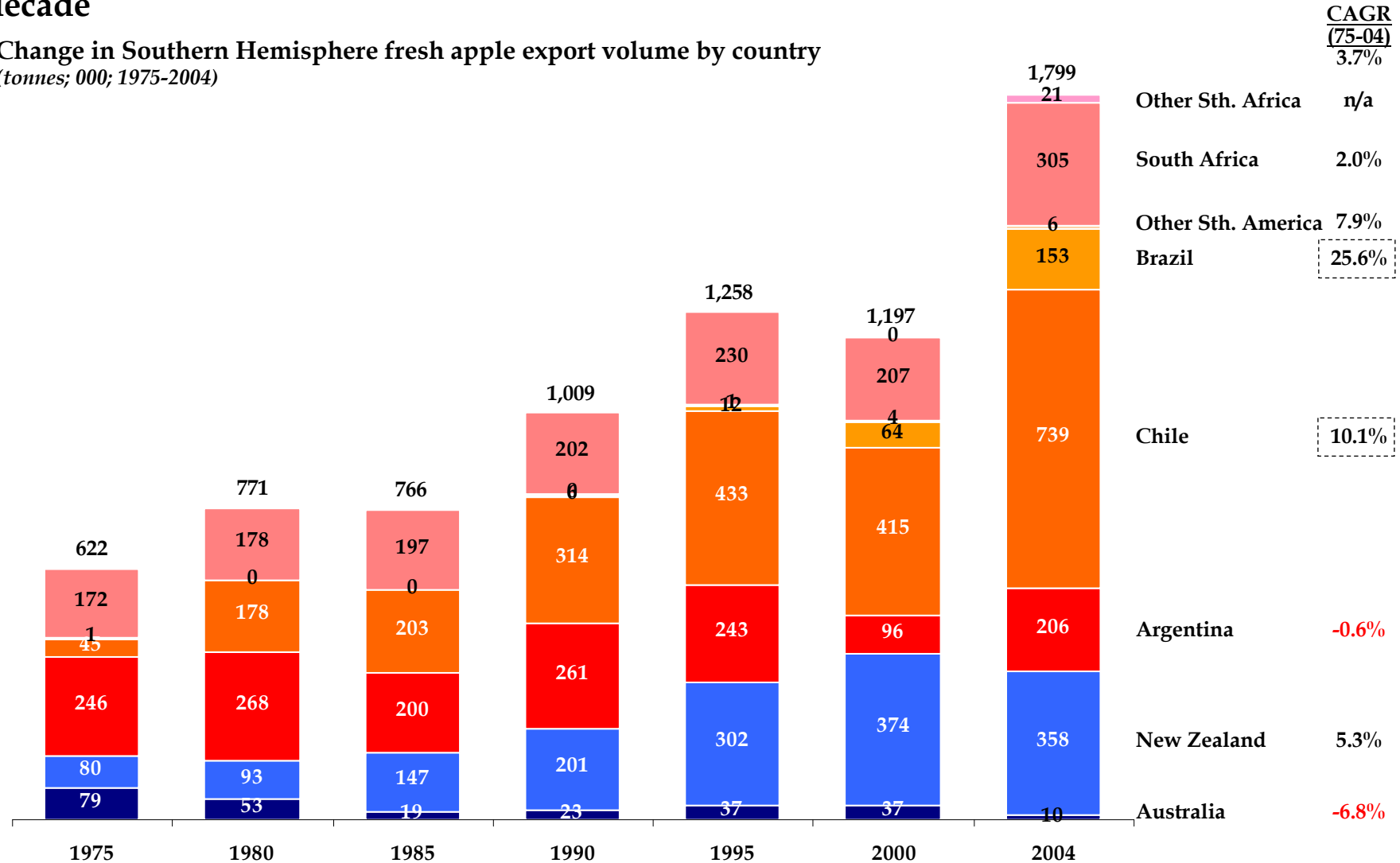
Change in Southern Hemisphere apple production by country
(tonnes; 000; 1975-2005)



BRAZIL & CHILE DRIVING SOUTHERN HEMISPHERE EXPORT VOLUME GROWTH

Brazil and Chile have driven Southern Hemisphere apple export volume growth over the past decade

Change in Southern Hemisphere fresh apple export volume by country
(tonnes; 000; 1975-2004)



BENCHMARKING – THE NUMBERS

Based on the numbers, Chile stands out as New Zealand's strongest competitor

Key competitor country apple industry metrics
(various)

	Area (ha; 05)	CAGR Area (00-05)	Production (t; 000; 05)	Production CAGR (00-05)	Yield (t/ha)	Yield CAGR (00-05)	Export volume (t; 000; 04)	Export value (US\$m; 04)	Export value (US\$/ kg)	change in export value (\$US; 00-04)	Exports % of prod	GDP (b; 05; ppp ¹)	GDP/ capita (05; ppp)
New Zealand	11,000	-4.9%	500	-4.2%	45.5	0.7%	358.3	\$314.0	\$0.88	+\$130.3	72%	\$102	\$25,200
Australia	30,000	8.8%	280	-2.6%	9.3	-10.5%	10.2	\$11.6	\$1.14	-\$12.1	4%	\$640	\$31,900
Chile	36,500	0.4%	1,350	10.9%	37.0	10.5%	739.0	\$337.9	\$0.46	+\$156.2	55%	\$187	\$11,300
Brazil	35,325	3.3%	844	-6.1%	23.9	-9.1%	153.0	\$72.6	\$0.47	+\$41.8	18%	\$1,556	\$8,400
Argentina	40,000	-2.8%	1,262	8.7%	31.6	11.7%	206.0	\$90.7	\$0.44	+\$36.4	16%	\$518	\$13,100
South Africa	21,326	-2.3%	779	6.1%	36.5	8.7%	305.2	\$181.0	\$0.59	+\$113.7	39%	\$533	\$12,000

BENCHMARKING

Based on more subjective criteria, Chile again stands out as New Zealand’s strongest competitor

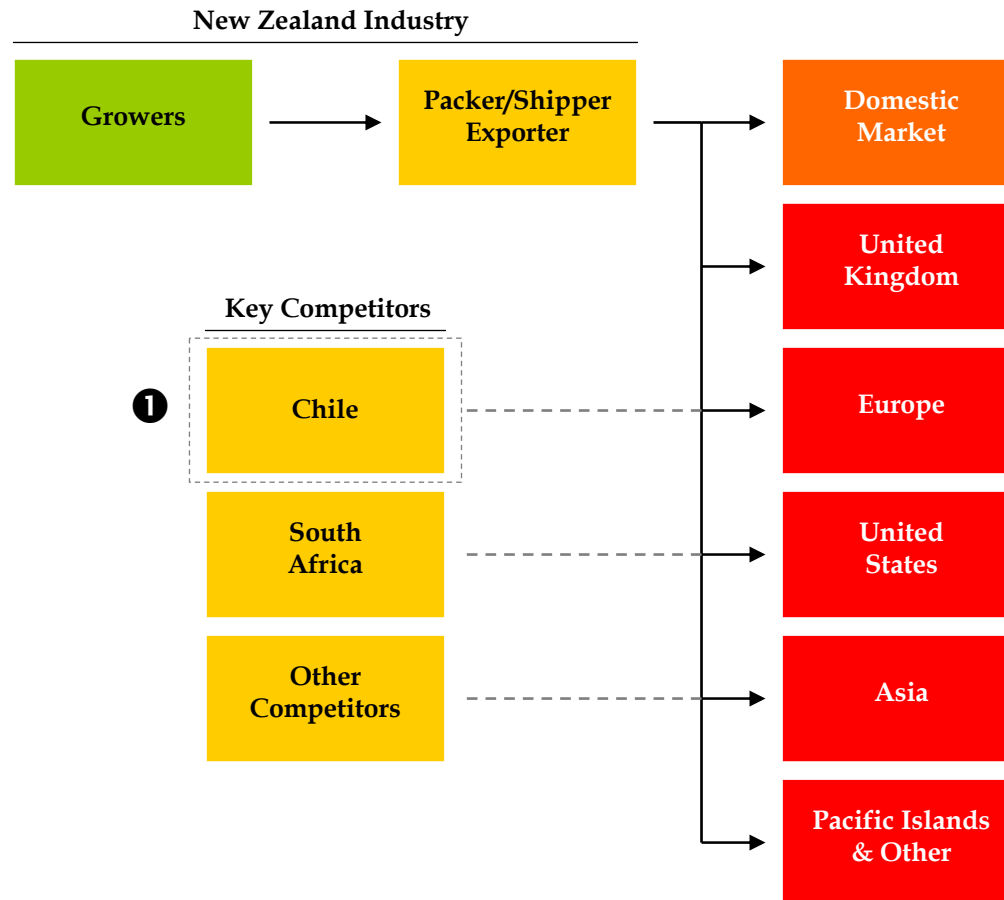
Competitive environment of select competitor countries
(forced ranking)

	Newer variety producer ¹	New variety pipeline	Labour		Production efficiencies			Stable experienced well financed exporters	Exchange rate stability	Political & economic stability	Large domestic market	Large regional market
			Low cost	Product-ivity	Orchard	Packhouse	Infra - structure					
New Zealand	●	◐	◐	●	●	◐	●	◐	◐	●	○	○
Australia	◐	●	○	●	○	○	◐	○	●	●	◐	○
Chile	◐	○	●	◐	●	●	●	●	◐	●	◐	●
Brazil	●	○	●	◐	◐	◐	◐	◐	○	◐	●	●
South Africa	◐	○	●	◐	◐	◐	●	◐	○	◐	●	◐
Washington State	◐	◐	○	●	◐	◐	●	●	●	●	●	●

COMPETITOR PROFILE 1 - CHILE

This report now develops a more detailed profile of Chile, New Zealand's strongest competitor into the United States and Europe

Key players in the supply chain for New Zealand apples
(model)



CHILE - KEY CONCLUSIONS

Chile is a major competitor to New Zealand and the cause of many of its current problems

- Chile is a highly efficient commodity producer showing strong growth, but with little ability to escape the commodity cycle
- Chile represents the largest single threat to the New Zealand pipfruit industry
 - Chile is increasing its apple production through farming more land - though the rate of area growth has slowed recently
 - Chile has also improved its production per hectare to near New Zealand levels
 - Chile's apple export volumes have been growing for thirty years
- Over the last decade, Chile has moved rapidly into New Zealand's key varieties
 - Chile is expected to continue to move into newer varieties
 - Research by Ignacio Montes at the University of Talca in Chile clearly demonstrates that Chile is one of the key reasons for the fall in prices, especially for Gala. This research also shows the return to earth of New Zealand prices
- More than 50% of Chile's total apple production is exported in a fresh form
 - Chile has a voluntary system of export quality standards supported by the industry
 - Chile exports apples to a wide range of countries, with North America and Europe being critical markets
- A small group of Chilean fruit exporters dominate the Chilean industry
 - Chilean fruit is primarily exported by large scale exporters who offer a wide range of products - not just apples - spreading their fixed costs and reducing risk.
 - As an example, Dole exports a wide range of fruits and vegetables from Chile, of which apples accounts for only 34%.
- Even Chile suffered during the 2005 season

CHILE – SWOT ANALYSIS

Chile is a highly efficient commodity producer showing strong growth, but with little ability to escape the commodity cycle

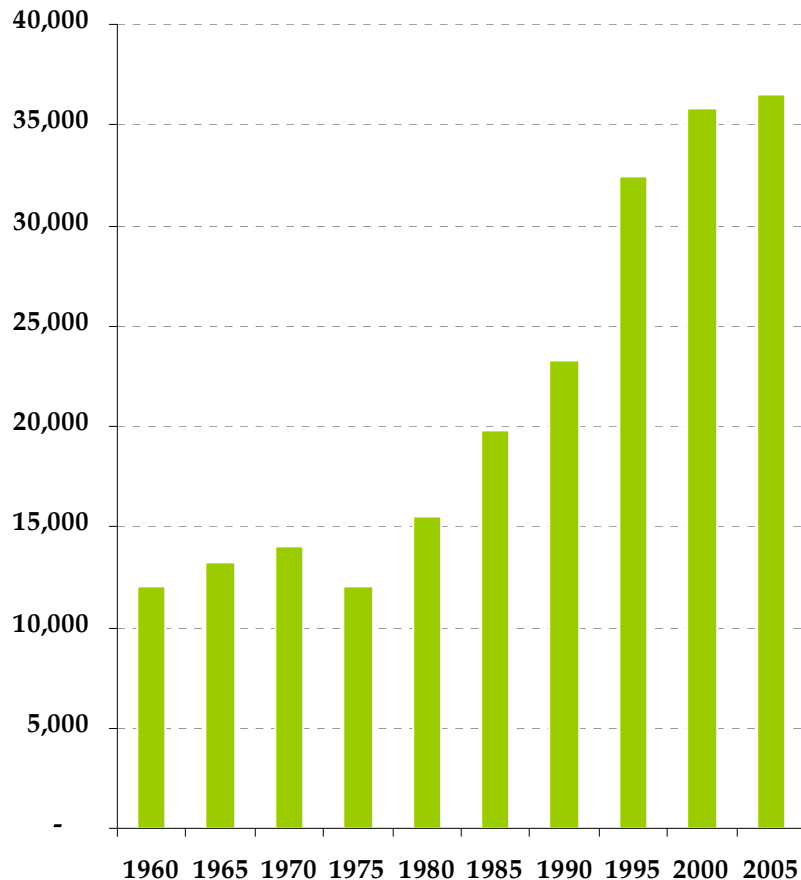
SWOT analysis for Chilean apple industry

Strengths	Weaknesses
<ul style="list-style-type: none"> - Highly efficient industry that grew and developed in a free market economy - Strong presence of global fruit companies (e.g. Dole, Del Monte, Chiquita) able to patch Chilean apples into global sales networks - Strong group of regional markets for second grade fruit (e.g. Columbia, Ecuador) - Relatively low labour costs - Large, efficient packhouses close to the port - Export a mixture of fruit spreading the export costs - Younger Gala and Braeburn trees than New Zealand (higher quality) 	<ul style="list-style-type: none"> - No history in new variety development - Currency appreciation driven by copper prices - ‘Peasant’ farmer + commodity market + global multinational = lower returns to farm gate - No longer a low cost producer and losing share in processing to China - Follower on new varieties (historically enter new varieties just as they become commodities)
Opportunities	Threats
<ul style="list-style-type: none"> - Quick adoption of emerging club varieties (e.g. Pink Lady) - New planting systems and production technologies further increasing production efficiencies - Continued South American marketing integration (MERCOSUR – full members: Argentina, Brazil, Paraguay, Uruguay, Venezuela; associate members: Chile, Bolivia, Peru, Colombia, Ecuador) 	<ul style="list-style-type: none"> - Brazil’s growth with new varieties and highly efficient production systems - Chinese production increasing impacting the processing sector - SmartFresh 1-MPC increasing hangover of Northern Hemisphere fruit into Southern Hemisphere season

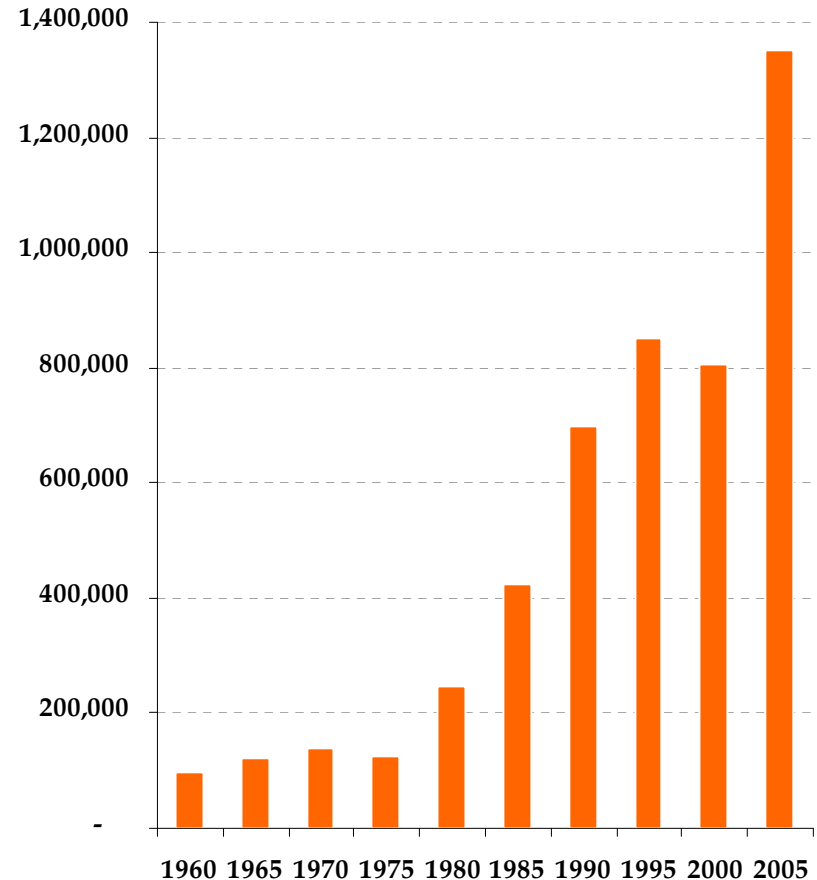
GROWING PRODUCTION ON LIMITED GROWTH OF AREA

Chile is increasing its apple production through farming more land – though the rate of area growth has slowed recently

Change in Chilean apple area
(hectare; 1960-2005)



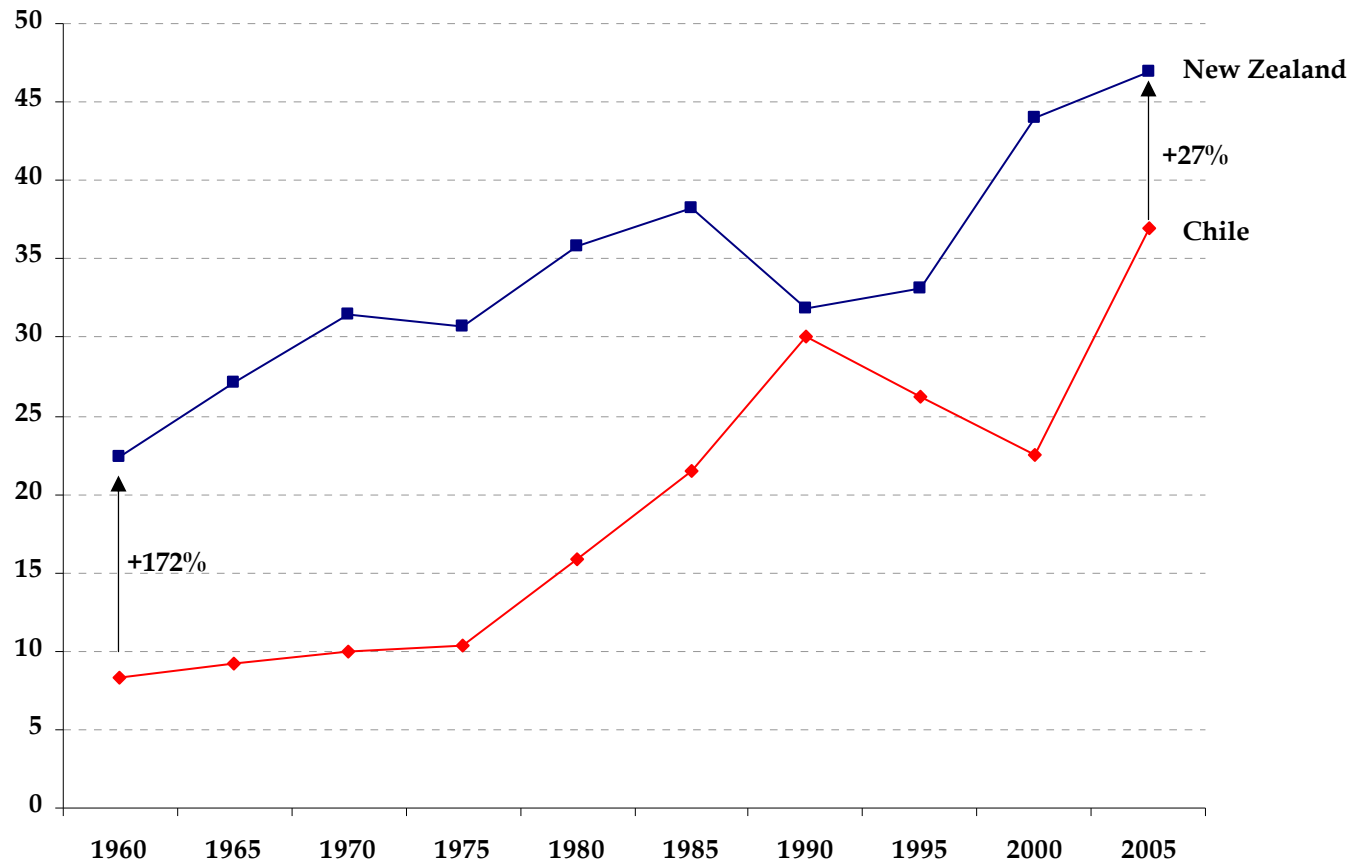
Change in Chilean apple production
(tonnes; 1960-2005)



IMPROVING LAND PRODUCTIVITY

Chile has also improved its production per hectare to near New Zealand levels

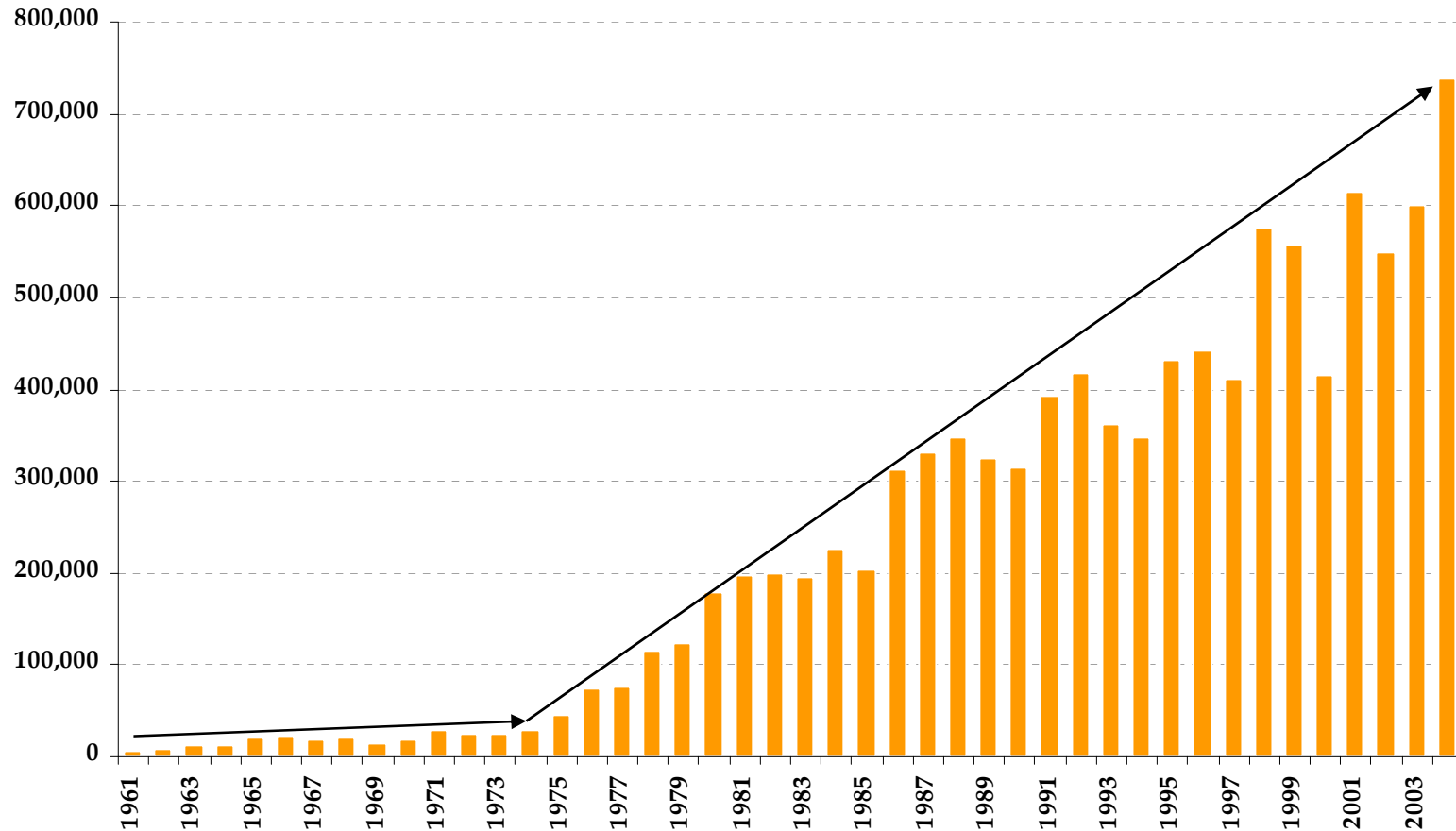
Change in Chilean apple production per hectare
(tonnes/hectare; 1960-2005)



EXPORT VOLUMES GROWING

Chile's apple export volumes have been growing for thirty years

Apple export volume from Chile
(tonnes; 1961-2004)



CHILE RAPIDLY MOVING INTO NZ VARIETIES

Over the last decade, Chile has moved rapidly into New Zealand's key varieties

Chile apple exports by variety
(% of export volume; 1983-2005)



CONTINUED MOVE INTO NEW VARIETIES

Chile is expected to continue to move into newer varieties

- “Producers continue to diversify their orchards by planting new and more popular varieties, i.e., Fuji, Gala, Jonathan, Braeburn, Pink Lady and Galaxies. Traditional varieties, such as Red Delicious and its variations (i.e., Richard Red, Starking, etc) are being uprooted and replanted with newer varieties. Red apple varieties still constitute about 70 percent of total output and are grown mainly for the European and the Middle Eastern markets. The principal green variety, Granny Smith, is used both for fresh export (mainly to Europe and the United States) as well as for concentrated apple juice production.” *Luis Hemicke, United States Foreign Agricultural Service, January 2006*

CHILE DRIVING DOWN PRICES

Research by Ignacio Montes at the University of Talco clearly demonstrates that Chile is one of the key reasons for the fall in apple prices, especially for Gala

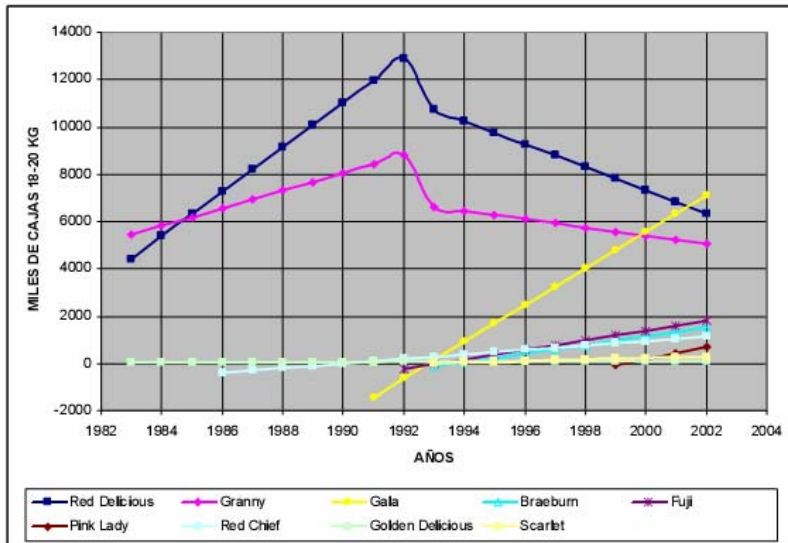


Figura 4.2. Tendencia en los volúmenes exportados en las principales variedad de manzana. (Export Volume by variety, thousands of boxes, Chile)

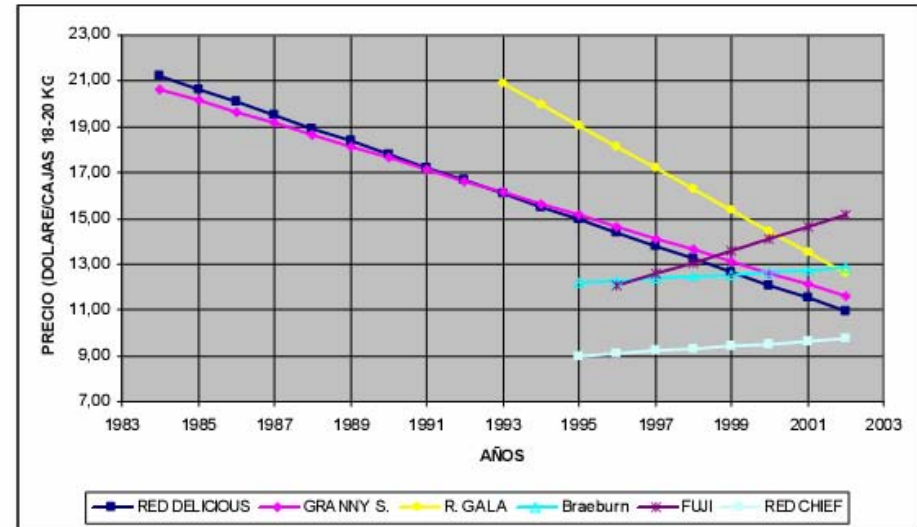


Figura 4.3. Comparación entre las tendencia de los precios de remate en Róterdam para las distintas variedades de manzanas. (Comparison between the prices in Rotterdam by variety)

Cuadro 4.3. Tasa de cambio anual en los precios de tendencia; En dólares/caja 18 -20 Kg.

Varietades	Período	Dólares /caja
Red Delicious	1984-2002	-0,571
Granny Smith	1984-2002	-0,502
Royal Gala	1993-2002	-0,923
Red Chief	1995-2002	0,107
Fuji	1996-2002	0,517
Braeburn	1995-2002	0,095

(Rate of annual change in prices for Chilean apples; \$ per box)

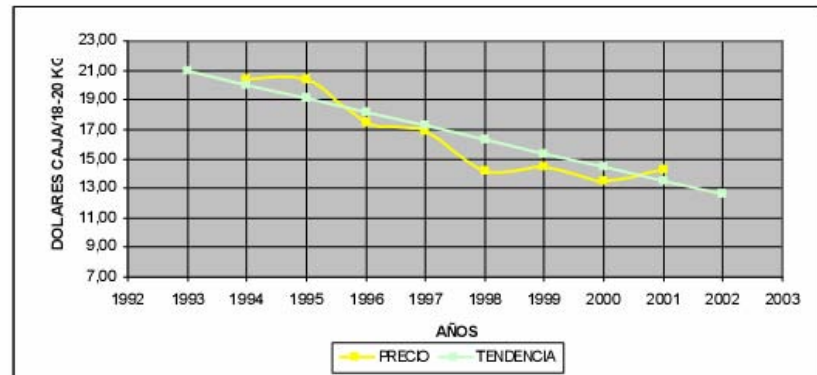


Figura 4.6. Tendencia y ciclicidad en los precios CIF Róterdam para Royal Gala. (Changes in prices for Royal Gala)

CHILE DRIVING DOWN PRICES

This research also shows the return to earth of New Zealand prices

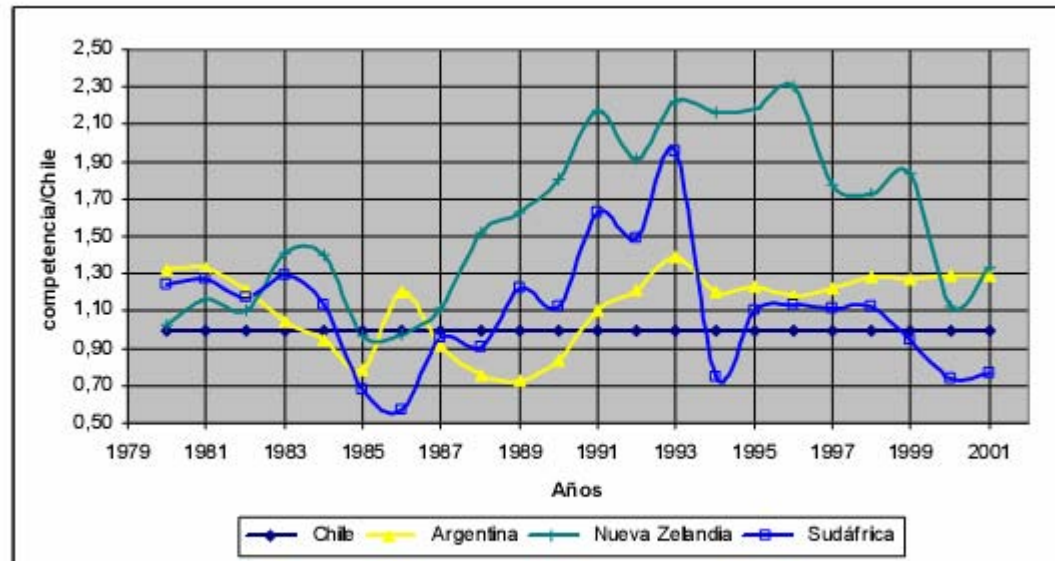
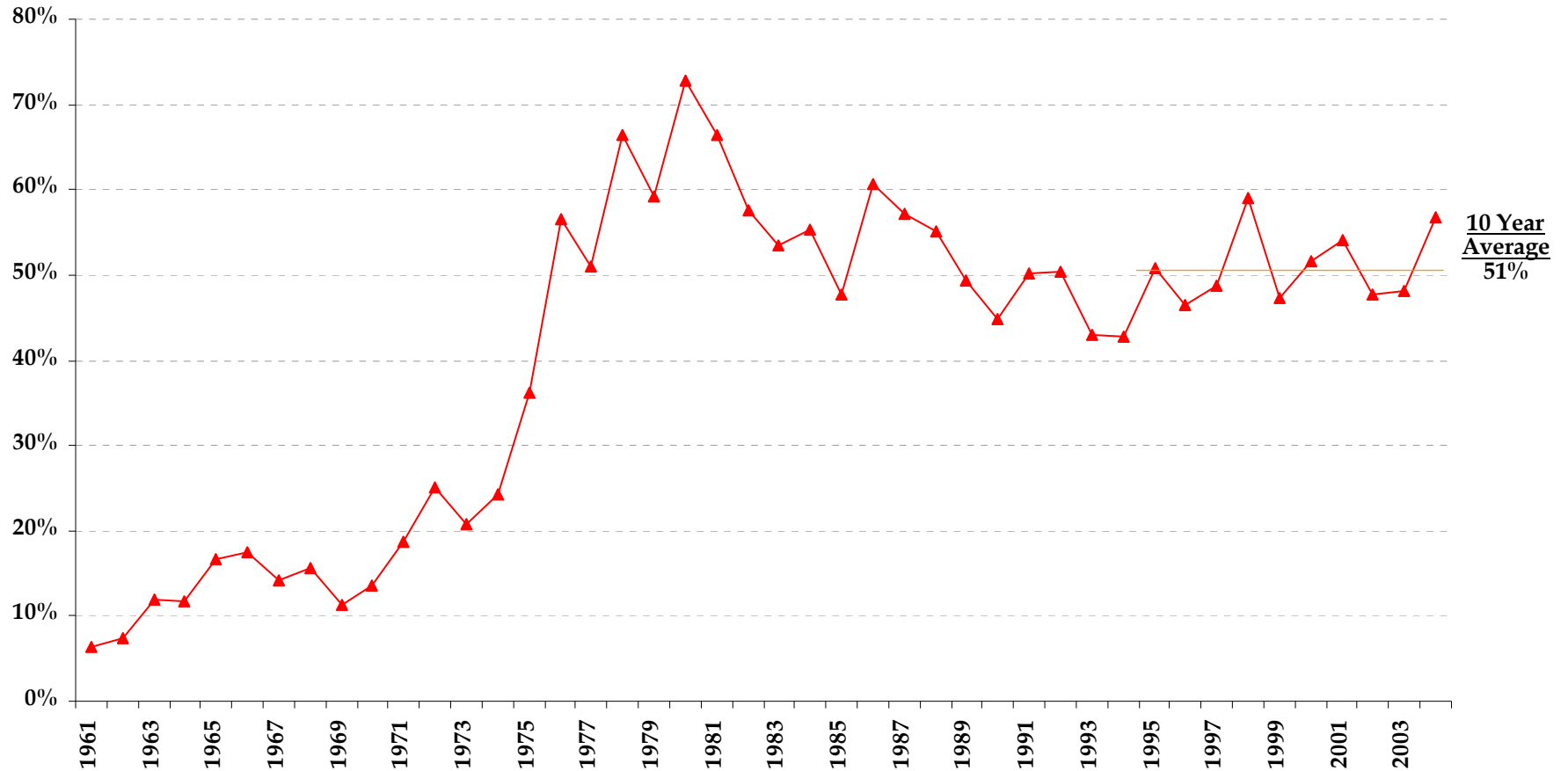


Figura 4.11. Índice de comparación de precios entre Chile y la competencia en el hemisferio Sur (Index comparing prices of fresh apples competition vs. Chile (Chile = 1))

MORE THAN 50% EXPORTED

More than 50% of Chile's total apple production is exported in a fresh form

Fresh apple exports as a percent of total Chilean production
(% of tonnes; 1961-2004)



VOLUNTARY QUALITY STANDARDS

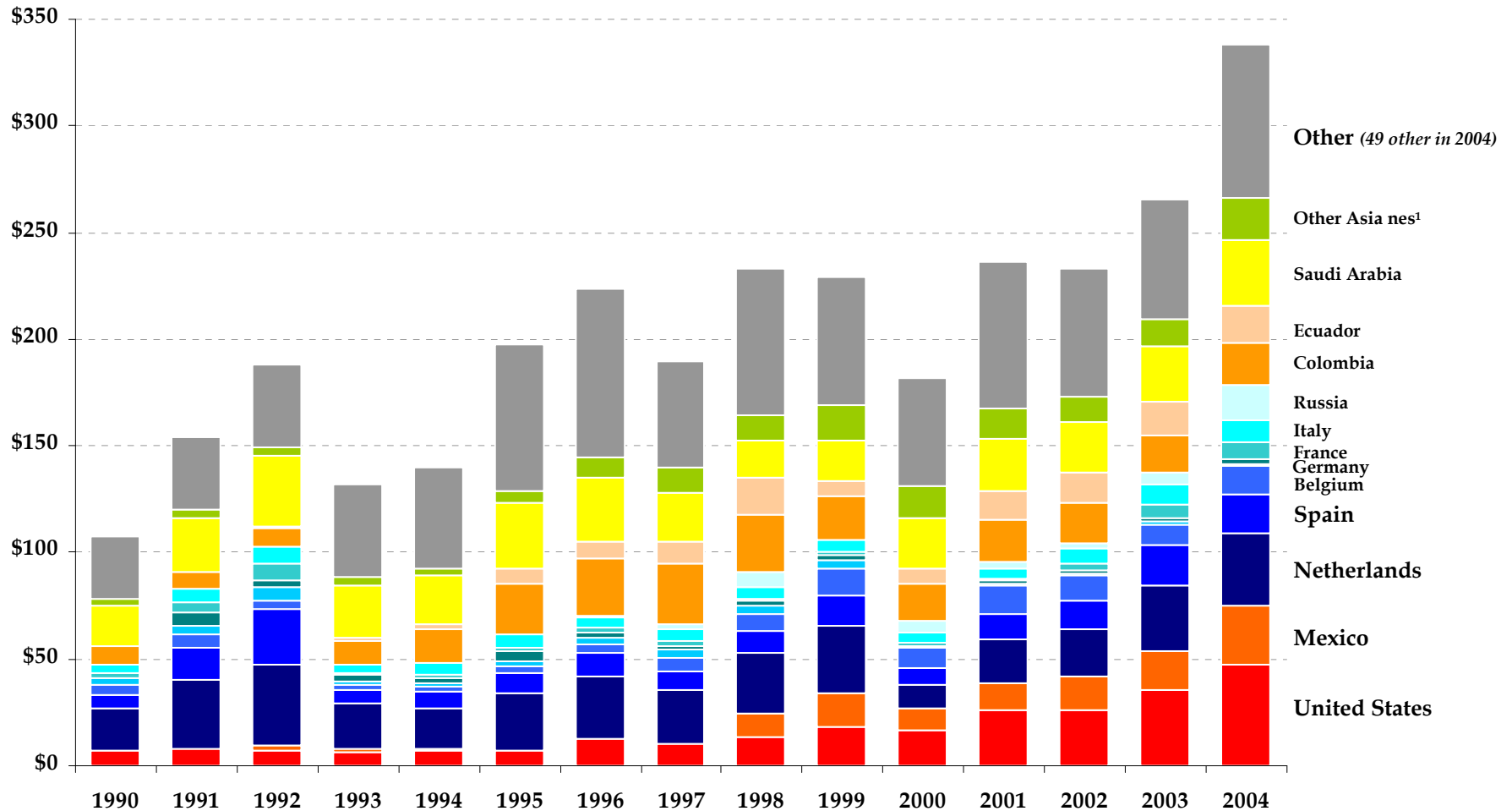
Chile has a voluntary system of export quality standards supported by the industry

- **“Chile’s fruit sector has a voluntary export quality program for apples, table grapes, stone fruit and kiwis shipped to the United States and Europe. Nearly 80 percent of Chile's exports to these two markets are under the auspices of this quality program. The minimum standards are voluntary and will remain the same in 2006 as those applied in 2005. Currently growers and exporters limit the quality control only to fruit maturity. There are no requirements related to the size of the fruit or to the volumes exported. Normally the market sets these requirements.”** *Luis Hemicke, United States Foreign Agricultural Service, January 2006*

EXPORT VALUE BY DESTINATION

Chile exports apples to a wide range of countries, with North America and Europe being critical markets

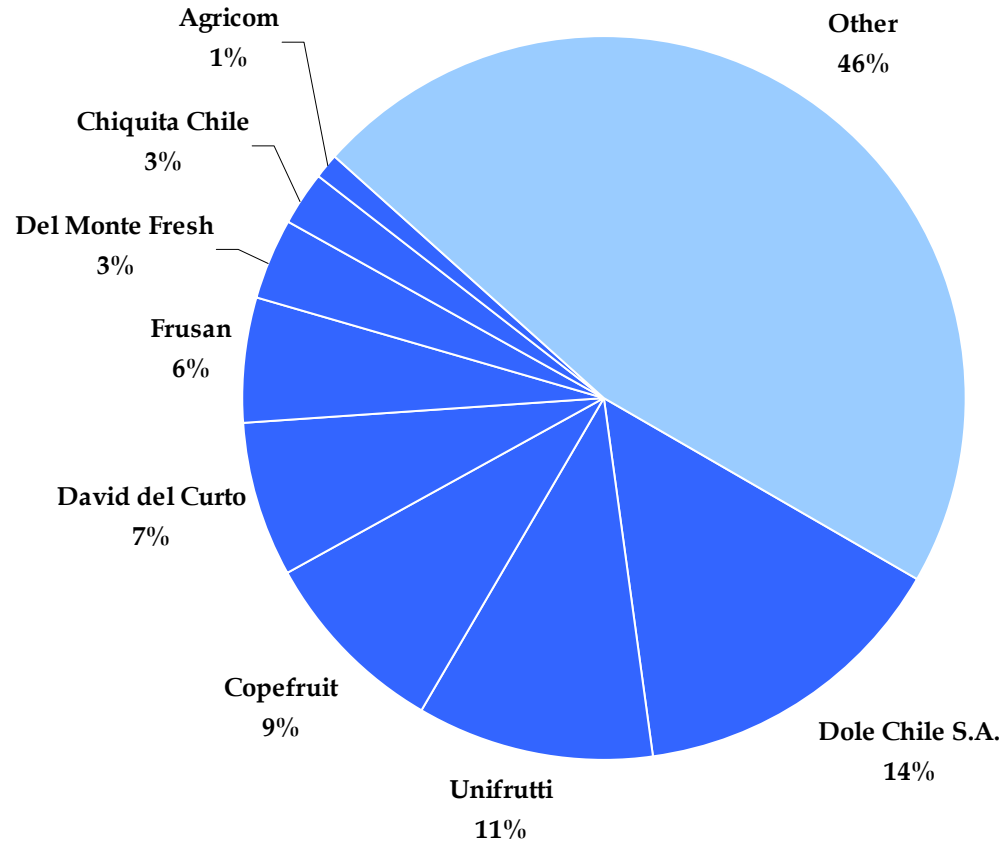
Chile apple export value FOB
(US\$m; 1990-2004)



MARKET STRUCTURE

A small group of Chilean fruit exporters dominate the Chilean industry

Chilean apple export market share by select company
 (% of FOB sales; 2005)



MARKET STRUCTURE

Chilean fruit is primarily exported by large scale exporters who offer a wide range of products – not just apples – spreading their fixed costs and reducing risk

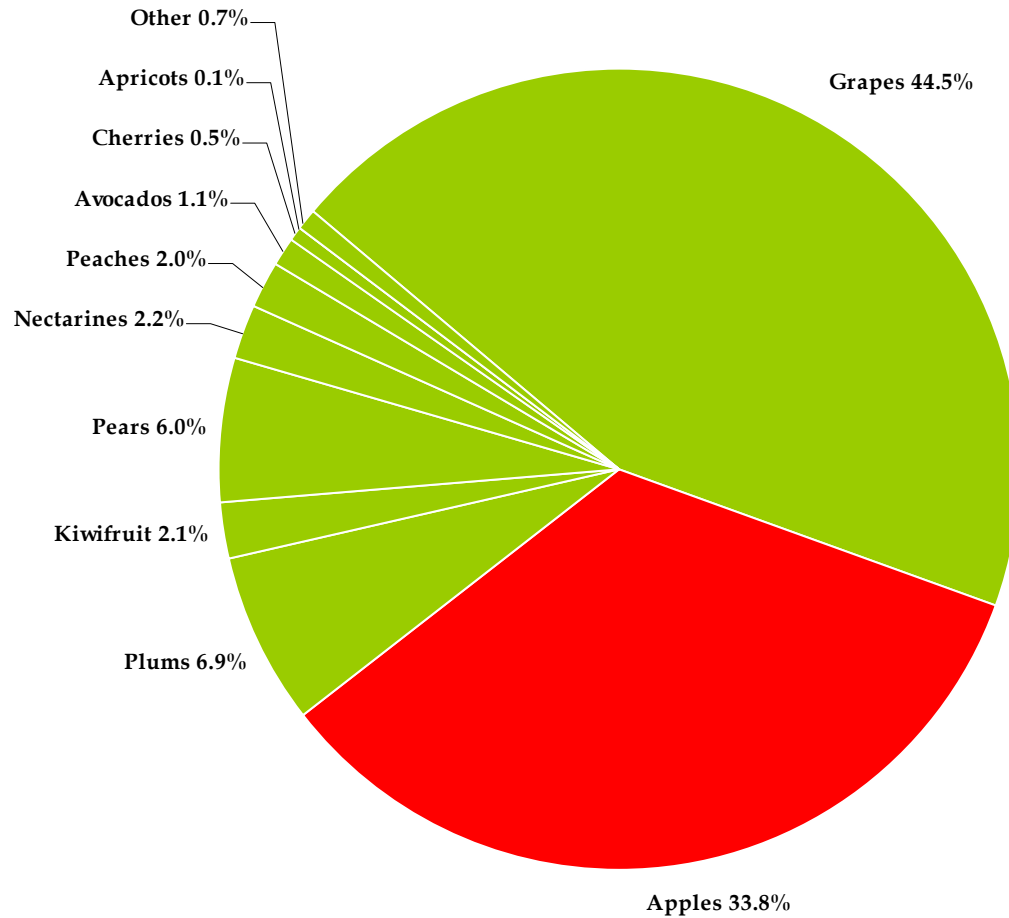
Major Chilean fruit & vegetable exporters
(boxes; US\$m; 2005)

Company	Ownership	Total Fruit & Vegetable Exports (boxes; 2005)	Apple Exports (US\$m; 2005)	% of total apples exported (2005)
Dole Chile S.A.	Dole (USA)	17.5m	\$43.8m	14%
Unifrutti	De Nadai Group (Italy)	11.5m	\$32.2m	11%
Del Monte Fresh	Del Monte (USA)	10.8m	\$10.2m	3%
David del Curto	Local	10.3m	\$20.7m	7%
Rio Blanco	Local	8.9m	-	-
Chiquita Chile	Chiquita (USA)	8.4m	\$8.0m	3%
Agricom	Local	7.6m	\$3.1m	1%
Copefruit	Local (Cooperative)	7.6m	\$26.4m	9%
Frusan	Local	6.4m	\$17.2m	6%
Subsole	Local	6.3m	-	-
Others	various	133.2m		47%
		228.5m	\$303.5m	

EXAMPLE - DOLE CHILE EXPORT SALES MIX

As an example, Dole exports a wide range of fruits and vegetables from Chile, of which apples accounts for only 34%

Dole Chile - Export sales mix by product
 (% of US\$m; 2004)



Total = \$142m

HARD TIMES

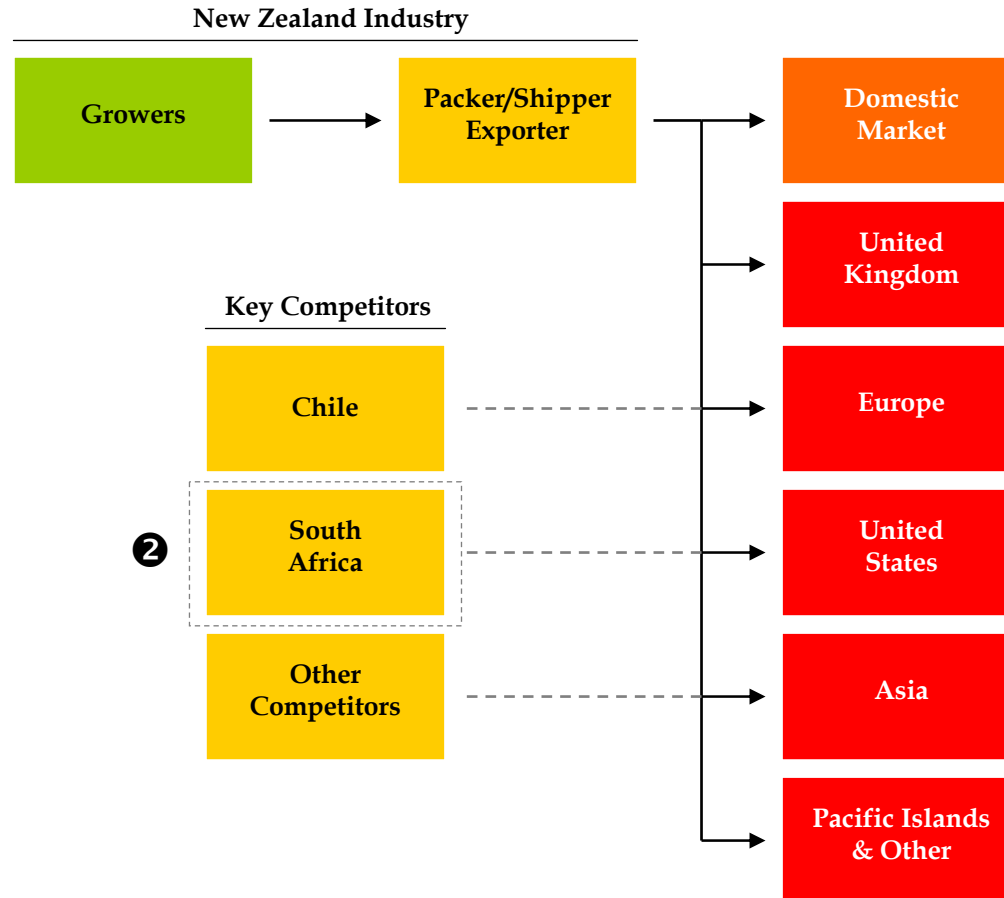
Even Chile suffered during the 2005 season

- **“Returns to Chile’s fresh fruit industry during the last season have been very poor. In many instances, returns reportedly have been lower than the cost of production. This poor profitability is forecast to continue in 2006, due to some ongoing factors. Chile’s peso remains strong, reducing returns to growers. Shipping costs have increased. Competition from other countries has increased and the seasonal advantage is being lost due to increasing southern hemisphere competition.”** *Luis Hennicke, United States Foreign Agricultural Service, January 2006*

COMPETITOR PROFILE 2 - SOUTH AFRICA

This report now develops a more detailed profile of South Africa, New Zealand's strongest competitor into the United Kingdom

Key players in the supply chain for New Zealand apples
(model)



SOUTH AFRICA - KEY CONCLUSIONS

South Africa is a stable, mature competitor moving into newer varieties

- **South Africa is increasing production through increasing efficiency**
 - **Hectares are stable to falling at around 21,000**
 - **Apple production per hectare is growing (in 2005 it reached the levels of New Zealand in 1995)**
 - **As a result, total apple production grew strongly in the past five years (+35%)**

- **South Africa is a major competitor to New Zealand in United Kingdom and European markets**
 - **South Africa exports between 40 and 45% of its crop most years; growing production has grown exports**
 - **South Africa's primary market is Europe; secondary markets include SE Asia, the Middle East and Africa**

- **South Africa realises it needs to get out of commodity apples**

SOUTH AFRICA – SWOT ANALYSIS

South Africa faces many of the same issues as New Zealand, albeit with lower wage costs and less history of innovation

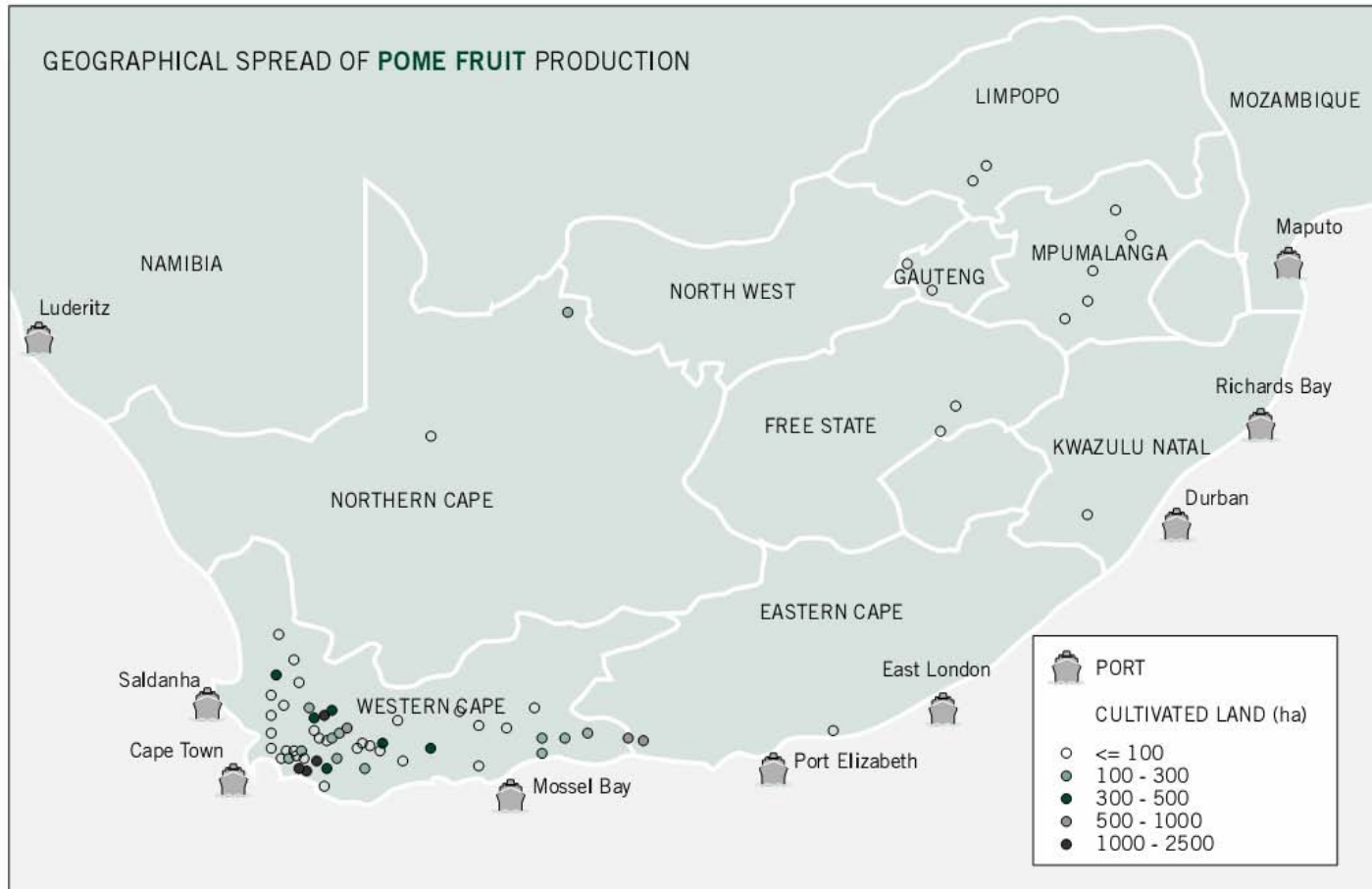
SWOT analysis for South African apple industry

Strengths	Weaknesses
<ul style="list-style-type: none"> - Long history of apple production - Strong in the British and European markets - Long historical relationship with the United Kingdom - Concentrated production in Western Cape (economies of scale) - Improving production efficiencies - Low labour costs 	<ul style="list-style-type: none"> - Primarily produce old commodity varieties (Granny Smith & Golden Delicious) - Flat to declining apple area - Destabilising effects of elimination of single desk Marketing Board in 1996 still being felt - Local and regional markets are very low income - Exchange rate variability/appreciation - Underlying risk associated changing African social and political structure
Opportunities	Threats
<ul style="list-style-type: none"> - Continued movement into new varieties (e.g. Pink Lady & Sundowner) - Development of unique IP controlled varieties (e.g. African Carmine) - Rising incomes growing domestic market 	<ul style="list-style-type: none"> - Continuing strong production growth in South America by highly efficient producers with new varieties e.g. Brazil - Global warming leading to increasingly erratic weather and higher temperatures impacting fruit quality - Large Eastern European apple producers (Poland, Hungary) joining the EU - SmartFresh 1-MPC increasing hangover of Northern Hemisphere fruit into Southern Hemisphere season - Chinese production increasing impacting the processing sector

CONCENTRATED INDUSTRY

The South African apple & pear industry is highly concentrated in the Western Cape

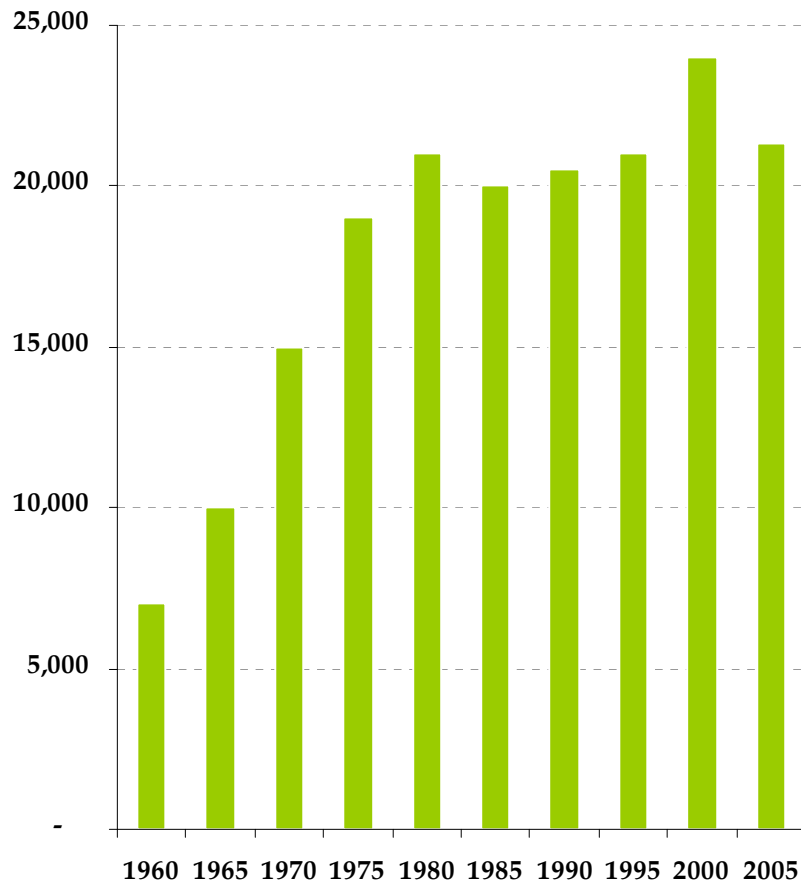
South African apple & pear production by region
(hectare; 2005)



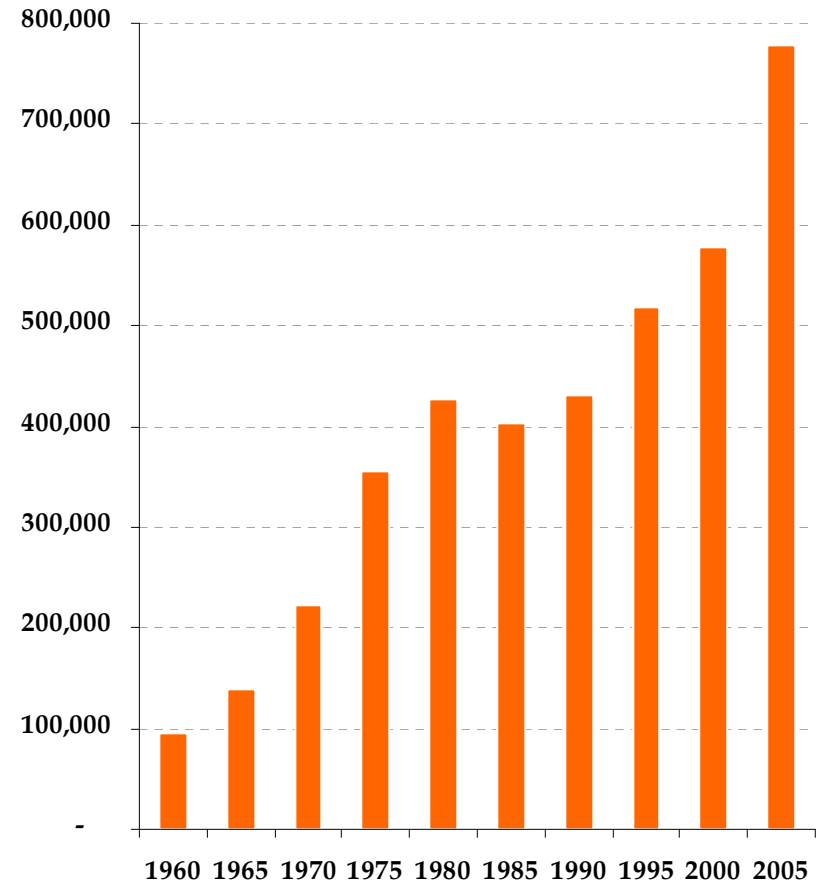
GROWING PRODUCTION ON FLAT AREA

South Africa is increasing its apple production on flat to declining area

Change in South African apple area
(hectare; 1960-2005)



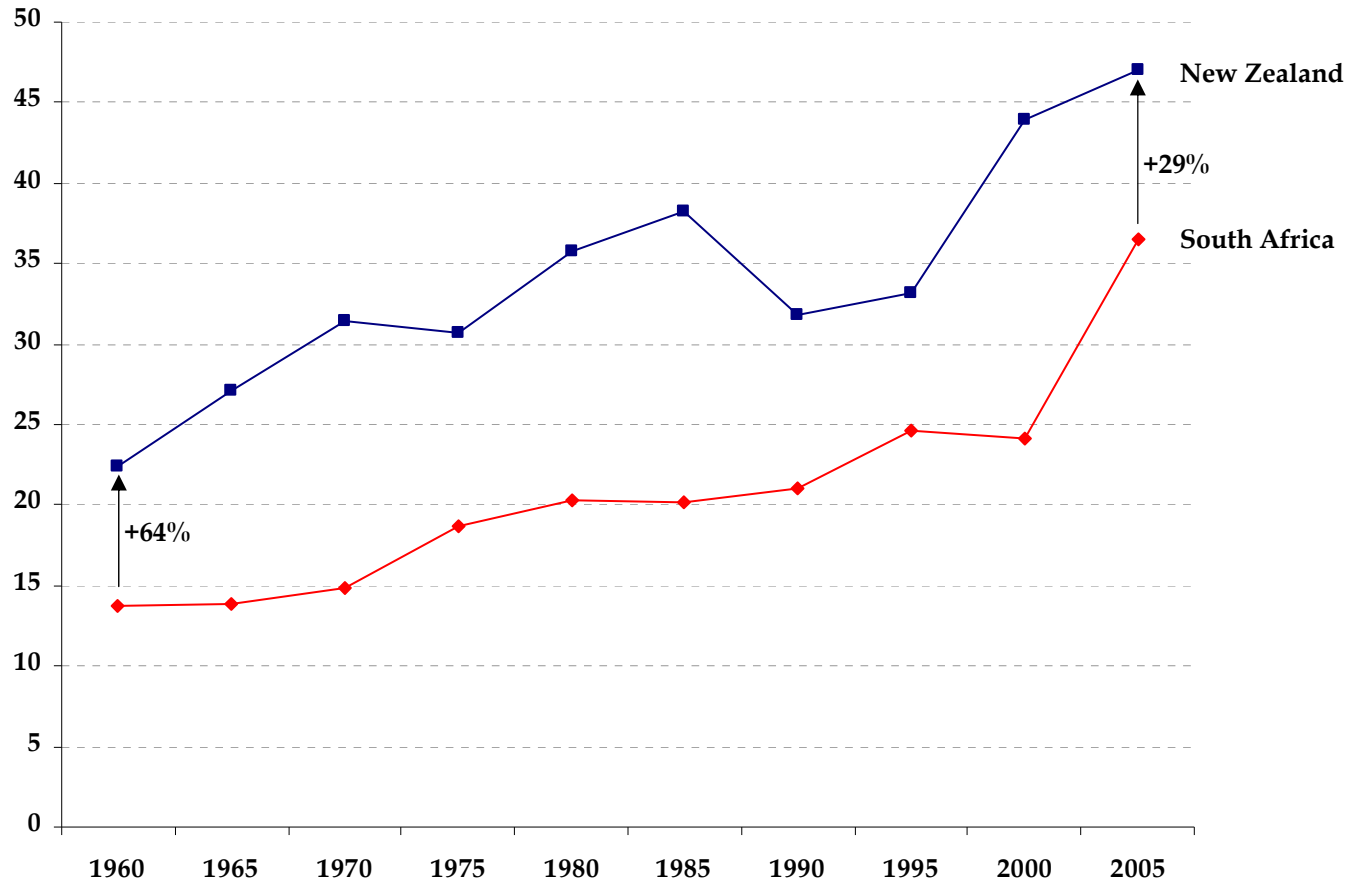
Change in South African apple production
(tonnes; 1960-2005)



IMPROVING LAND PRODUCTIVITY

South Africa is achieving this by increasing its yield per hectare

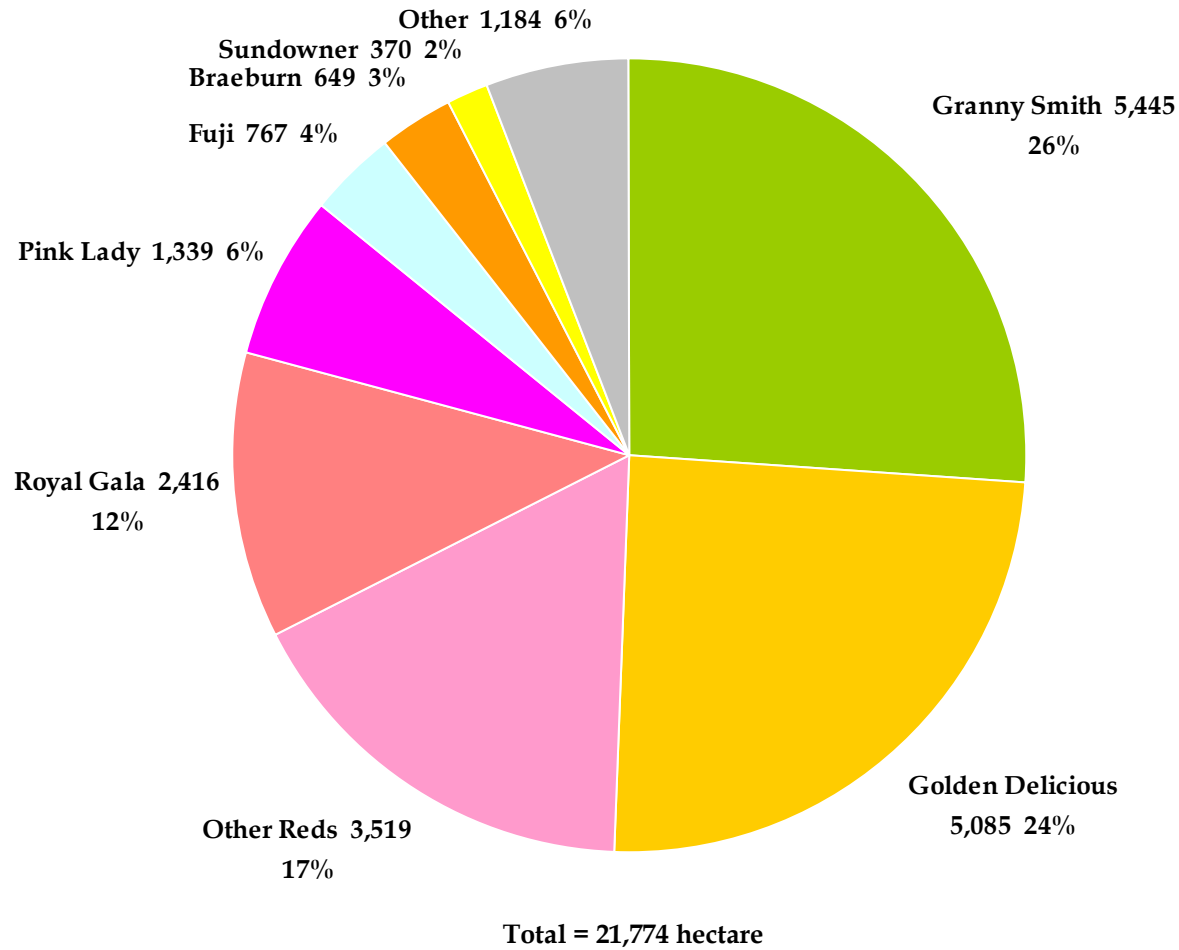
Change in South African apple production per hectare
(tonnes/hectare; 1960-2005)



MIX OF OLD AND NEW

South Africa has a mix of old and new varieties

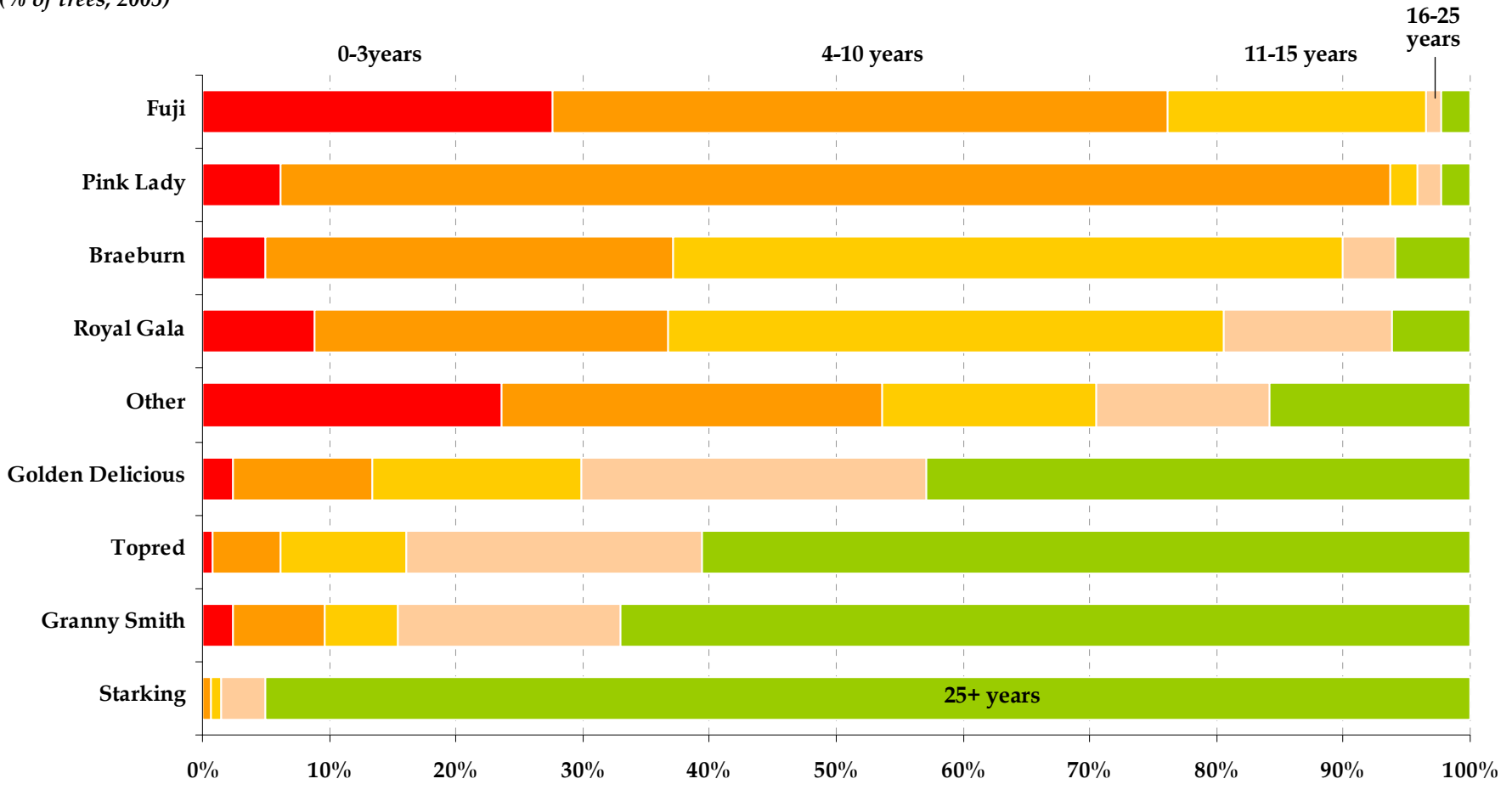
South African apple area by variety
(hectare; 2005)



OLD VARIETIES = OLD TREES

South Africa's older varieties are on older trees

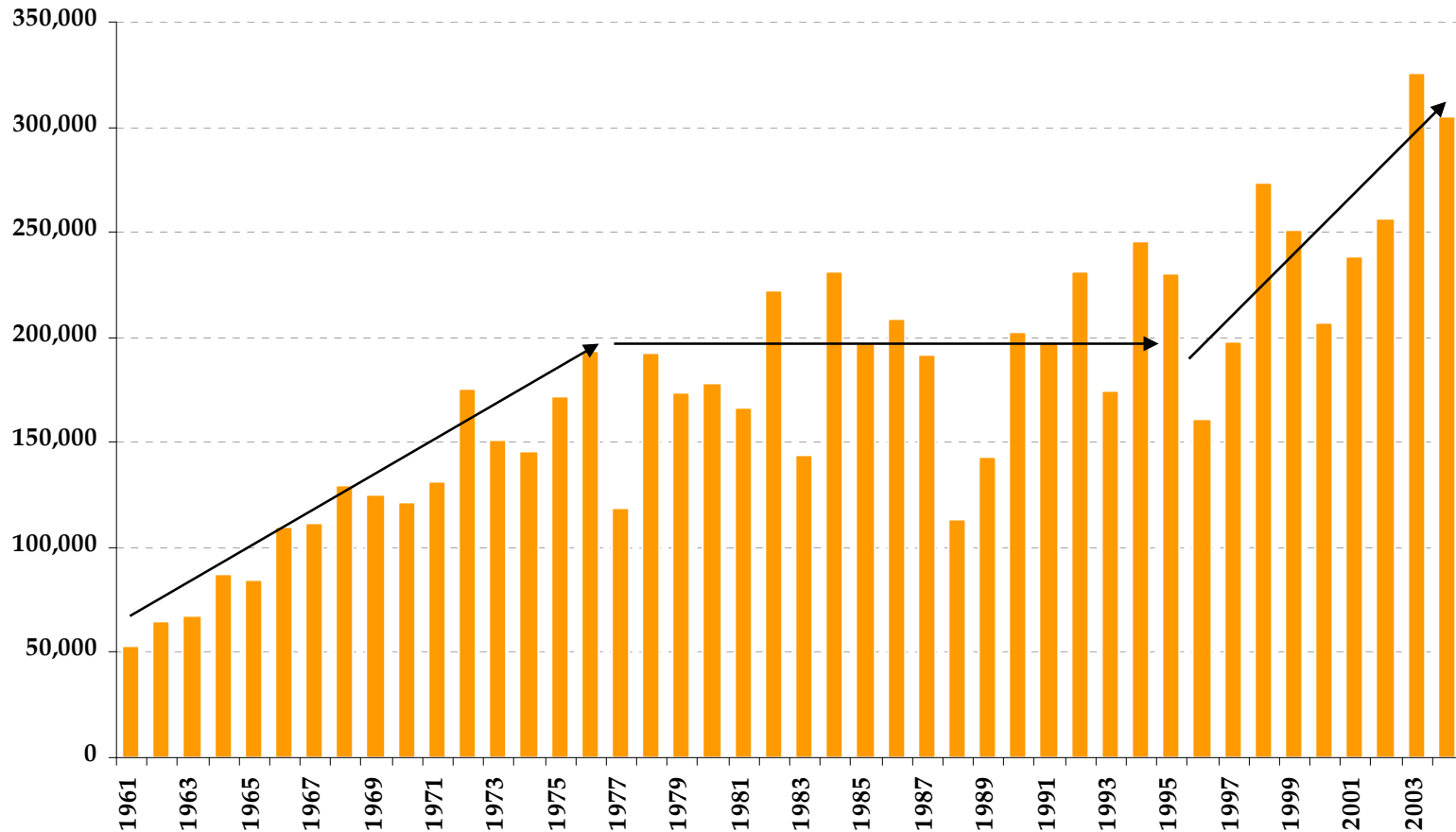
South African apple trees by age by variety
 (% of trees; 2005)



EXPORT VOLUMES GROWING

South African apple export volumes have been growing since the mid-1990's

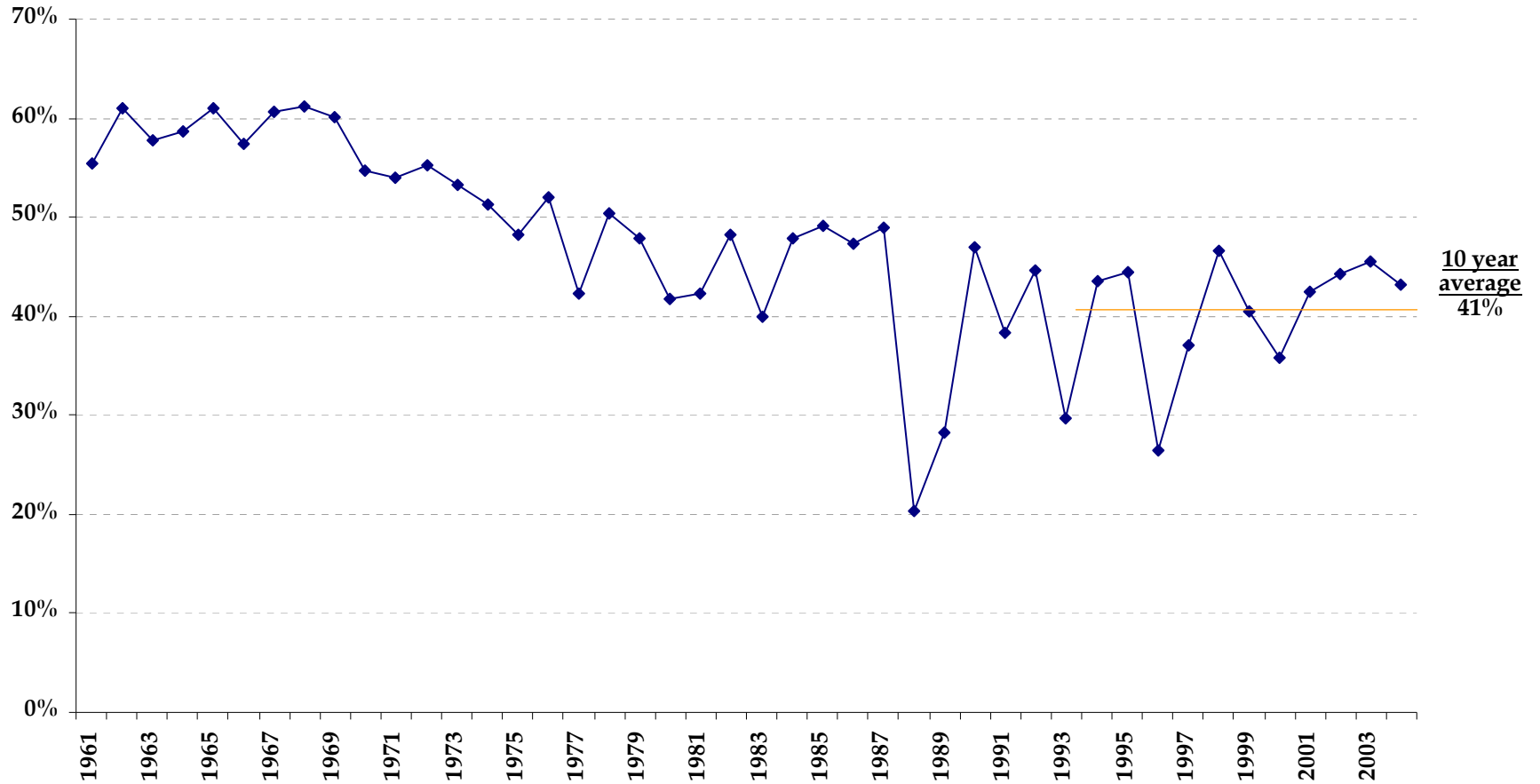
Apple export volume from South Africa
(tonnes; 1961-2004)



EXPORTS IMPORTANT

South Africa exports between 40 and 45% of its crop most years

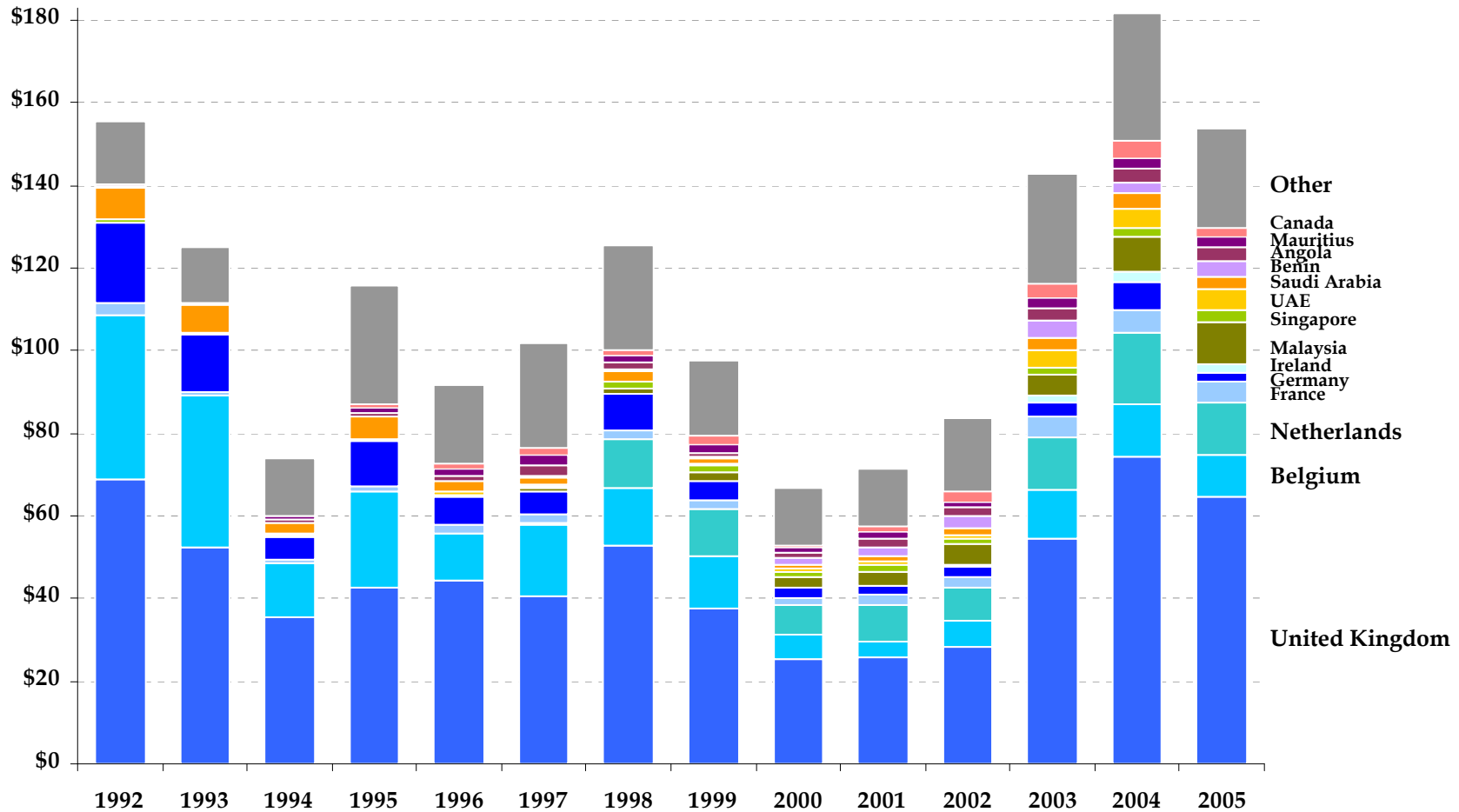
Fresh apple exports as a percent of total South African production
 (% of tonnes; 1961-2004)



EXPORT VALUE BY DESTINATION

South Africa's primary market is Europe, supported by SE Asia, the Middle East and Africa

South African apple export value FOB
(US\$m; 1992-2005)



DEREGULATED MARKET STRUCTURE

The South African industry is getting over the loss of its marketing board and moving on

- **“The Capespan Group is a leader in the international marketing of fresh fruit, shipping over 60 million cartons of fruit each year, as well as fruit-based products such as juices, wine and muesli cereals. Its brands Cape, Outspan, Bella Nova and Fyffes are known around the world. Products are sourced from over 20 countries, providing fruit all year round for its global customers. With an overall market share of 30%, Capespan is South Africa's leading fruit exporter. Since the deregulation of the South African fruit market in the 1990s, it has successfully transformed itself into a market-driven organisation and has maintained excellent relationships with suppliers and retail customers.”** *Capespan website*
- **“In the 10 years since the end of apartheid in 1994, South African agriculture has evolved from a highly regulated and protected industry to one free from all constraints, unsubsidised by government and capable of competing with the best in the world. The Marketing of Agricultural Products Act of 1996 dramatically changed agricultural marketing in the country by closing agricultural marketing boards, phasing out certain import and export controls, eliminating subsidies, and introducing import tariffs to protect South African farming from unfair international competition. While a fairly radical process to some old-style producers in South Africa, deregulation has ensured a leaner and stronger agricultural industry, with farmers and agribusiness able to position themselves as players in a globally competitive environment.”** *South Africa - Alive with possibilities, August 2006*
- **“During the 1990s Unifruco developed as a marketing organisation handling all deciduous fruit in South Africa. Previously, the function was undertaken by the Deciduous Fruit Board acting on behalf of co-operatives producing the fruit. While the system of co-operatives operating through a Deciduous Fruit Board has not persisted, Unifruco has been able to develop in the form of a private enterprise handling fruit exports... The major recent development has been the establishment of Capespan International. In 1994, Unifruco, the grower owned export marketing company, and Outspan (the South African citrus exporter) formed a joint venture company called Capespan International which manages all promotion, transportation and sales for Unifruco and Outspan throughout Europe. The annual sales for Capespan are around \$US1 billion with a retailer customer base of approximately 150,000 and around 200 million consumers. The products handled are all deciduous fruits, citrus subtropicals, vegetables, fruit juice and wines.”** *MAF Policy Paper, MAF website*

NEW CULTIVARS FOR THE FUTURE

South Africa realises it needs to get out of commodity apples

- “To be competitive on overseas markets, the South African apple industry needs a range of new, unique and locally adapted cultivars with good keeping quality. Plant breeders’ rights and other protective ownership measures make the importation of new cultivars and rootstocks costly. Greater demands for new products and shorter life cycles of new cultivars expected in the future support the breeding of new cultivars.” *ARC Infruitec - Nietvoorbij website*

Apples



African Carmine

Description: African Carmine is the trademark given to the Carmine variety.

Harvested: mid March to beginning of April

Appearance: Carmine is a red, striped variety with a yellow background

Taste/Texture: The fruit is sweet, juicy and crisp

Storage: It stores well

Marketed: N. Hemisphere week 17-20

Carmine was bred by the ARC in South Africa and is a cross between Golden Delicious and Dedrick Starking. It was released in 1999.



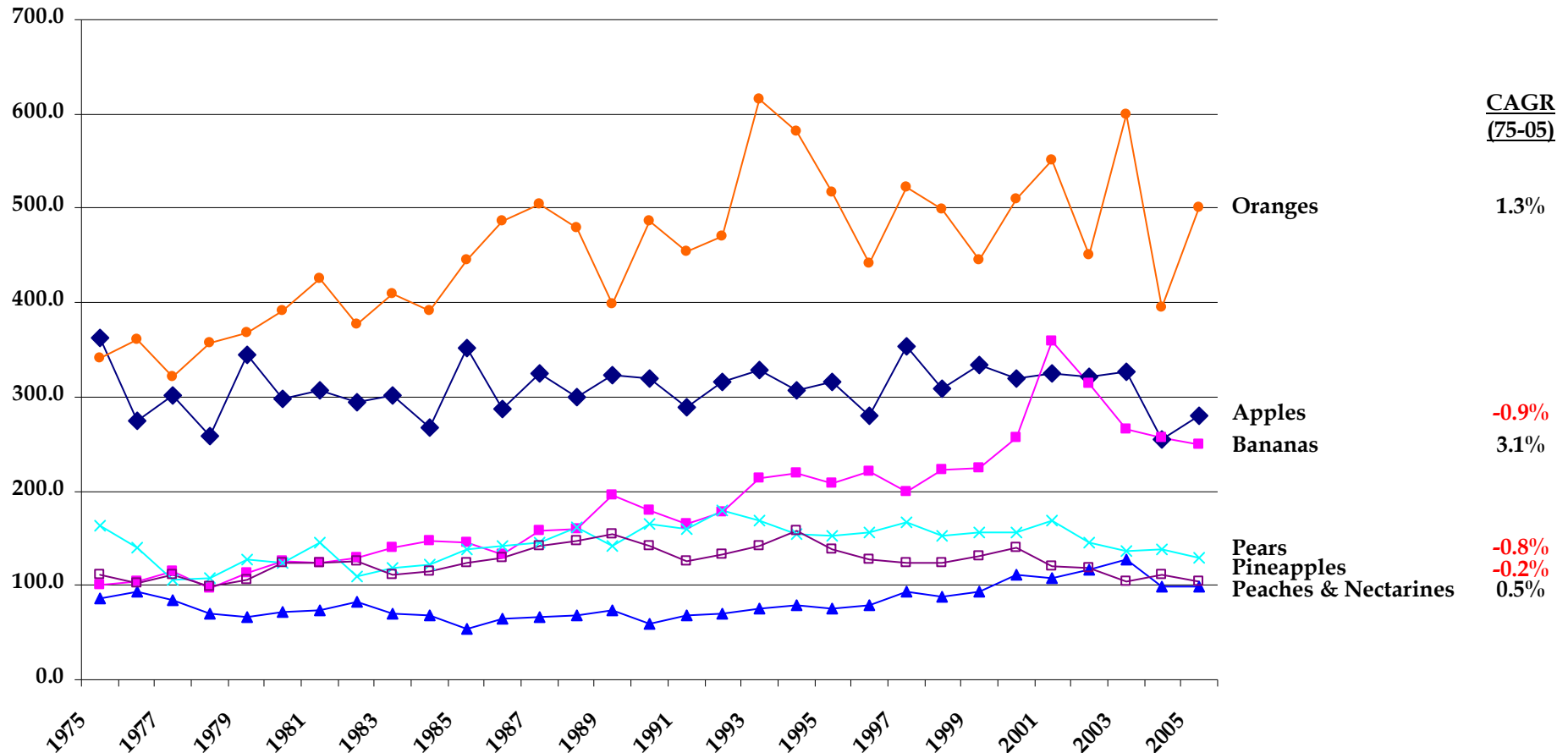
COMPETITION/MARKETS - AUSTRALIA

This section of this report looks briefly at Australia, which is both a minor competitor and a potential apple market

AUSTRALIA - PRODUCTION FALLING

Australian apple production has been flat to declining since 1975

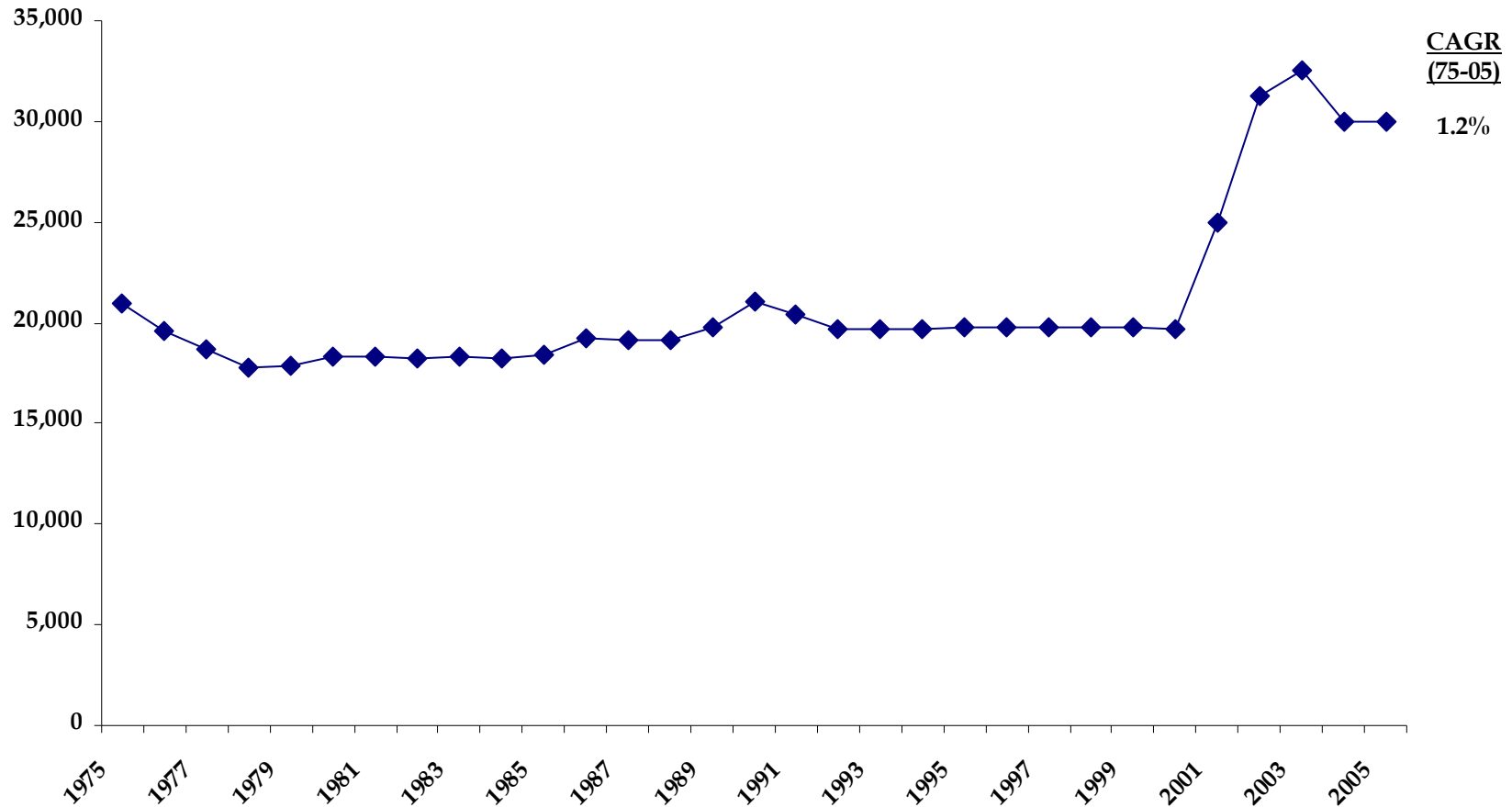
Select Australian fruit production
(t; 000; 1975-2005)



AUSTRALIA - APPLE AREA

However, according to the FAO, the apple area jumped substantially in 2001

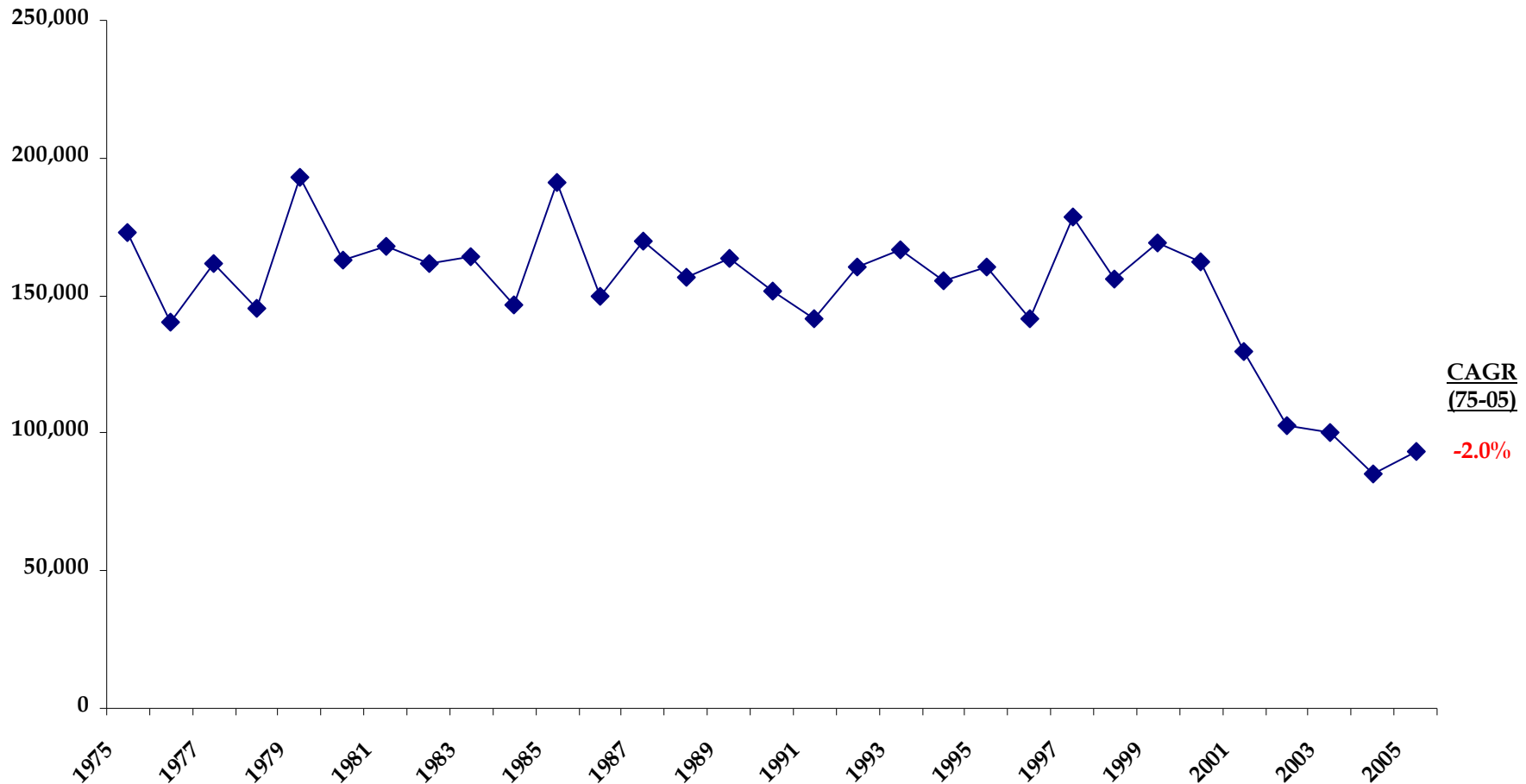
Australian apple Area
(Hectares; 1975-2005)



AUSTRALIA - YIELDS

Yields have declined over the same period

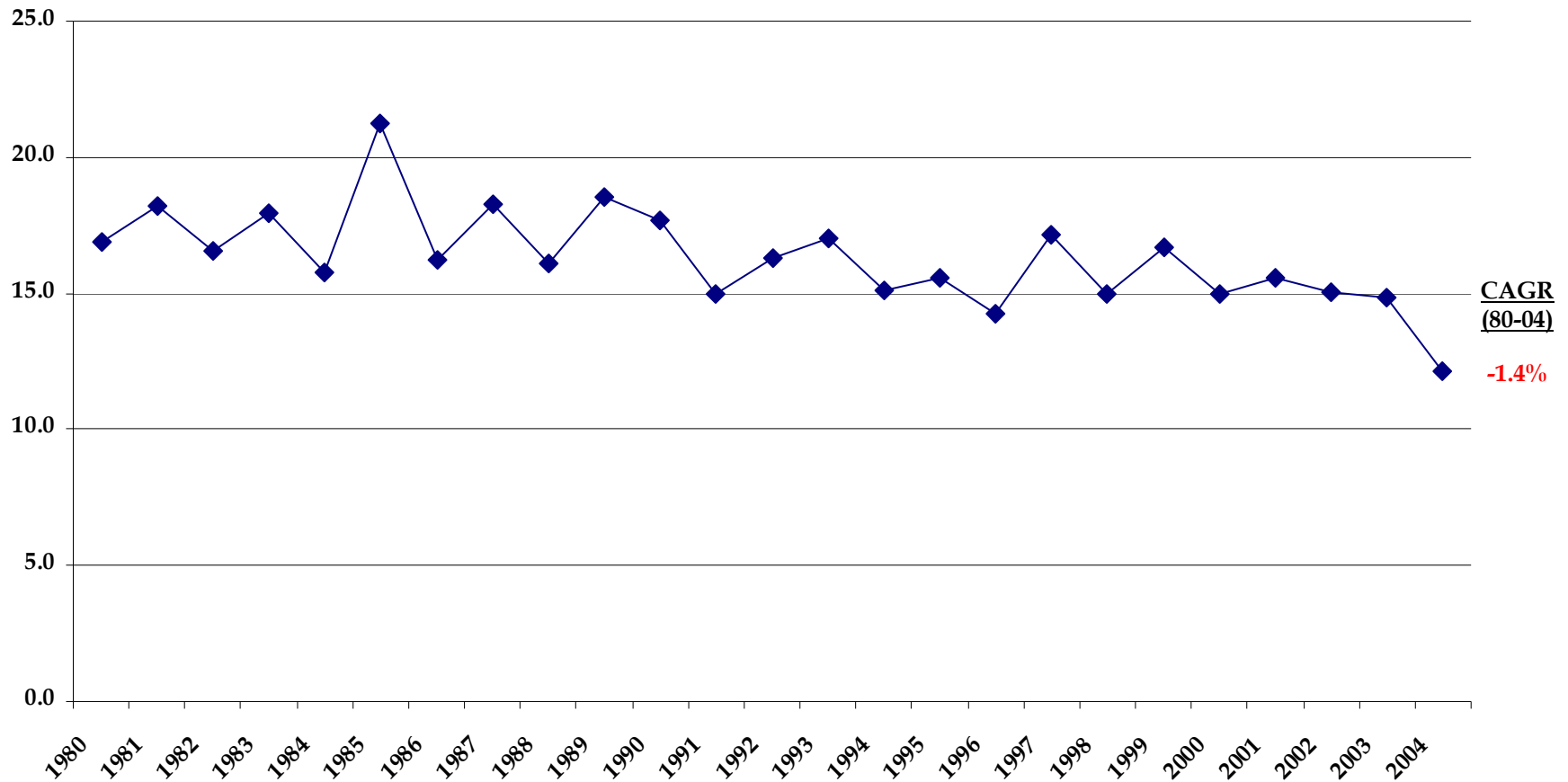
Australian apple yields
(Hg/Ha; 1975-2005)



AUSTRALIA - APPLE CONSUMPTION

Apple consumption is declining

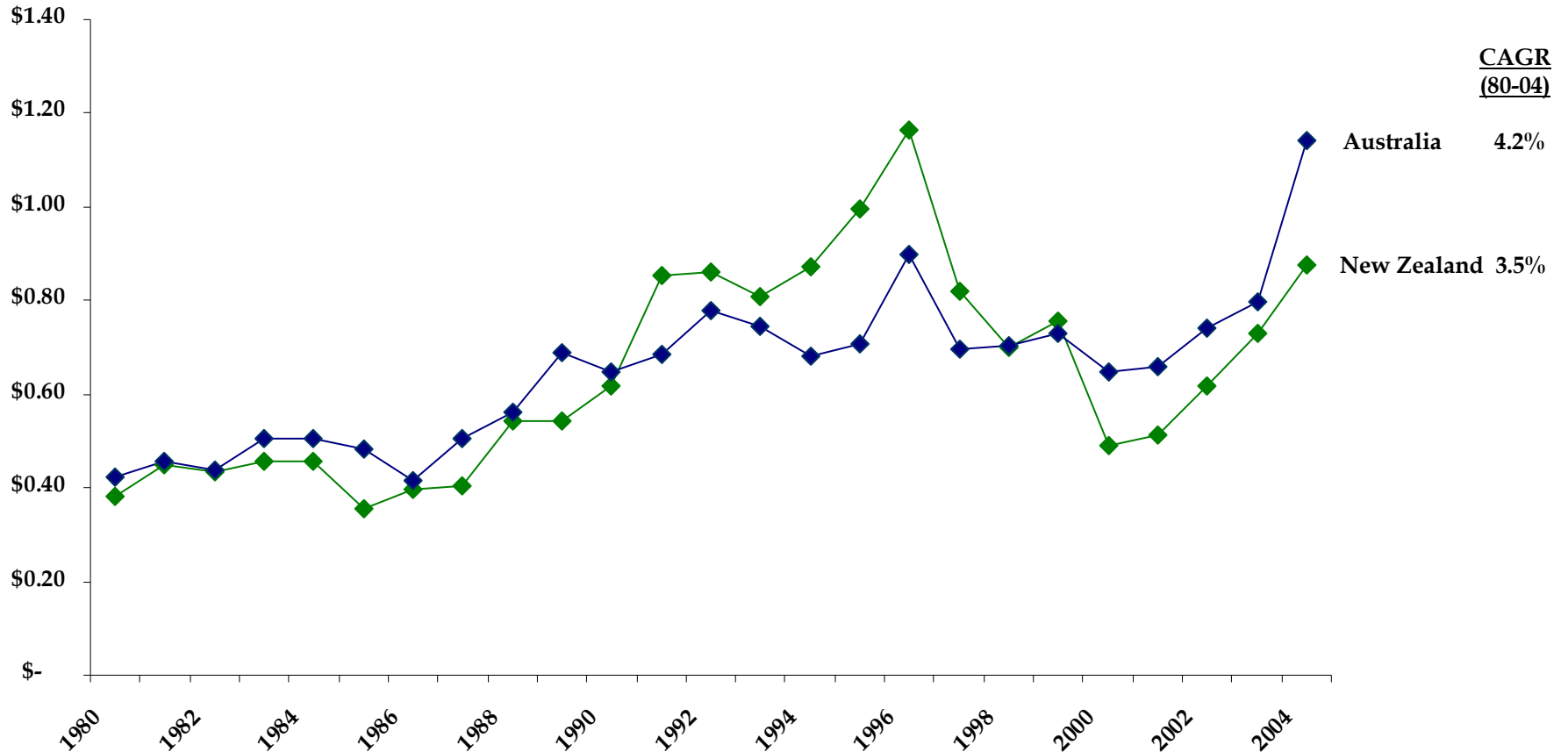
Apparent Australian apple consumption - all forms (fresh, juice, etc)
 (kilograms per capita; 1980-2004)



AUSTRALIA - EXPORT VALUE

The value of Australian apple exports has jumped sharply recently and Australia now get higher export returns than New Zealand

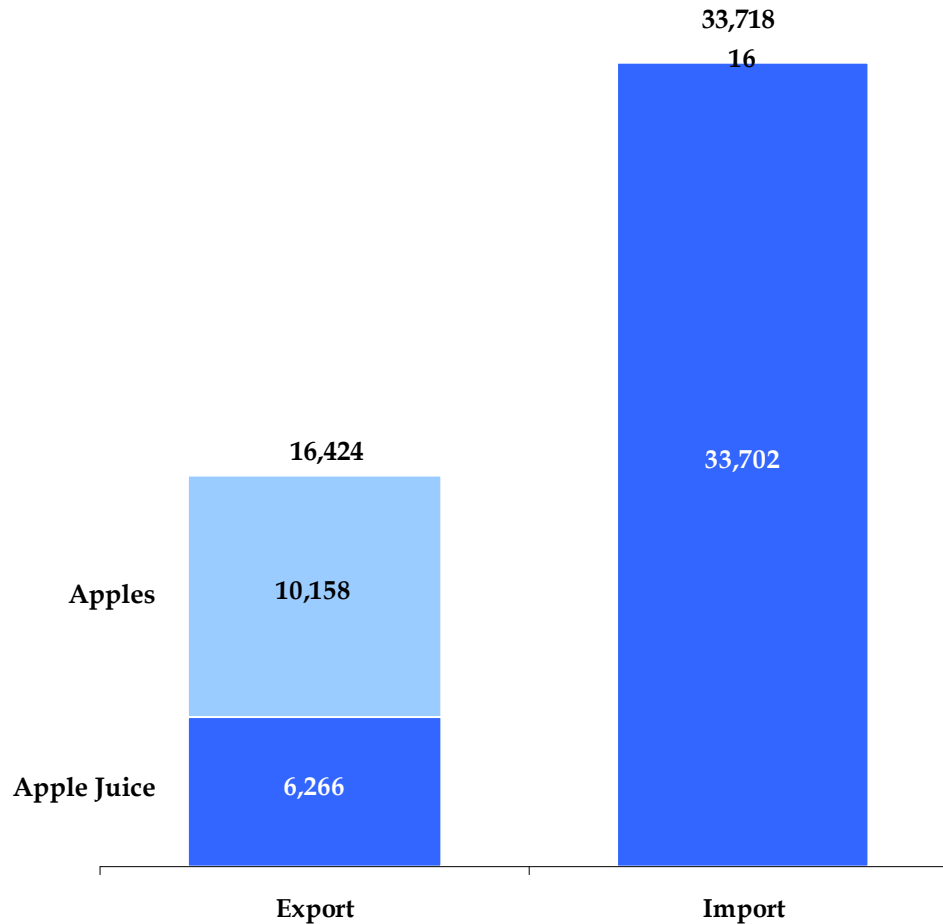
Value of Australian and New Zealand apple exports
(US\$/kg; FOB; non-inflation adjusted; 1980-2004)



AUSTRALIA - TRADE

Australia imports apple juice and exports a small amount of both apple juice and fresh apples

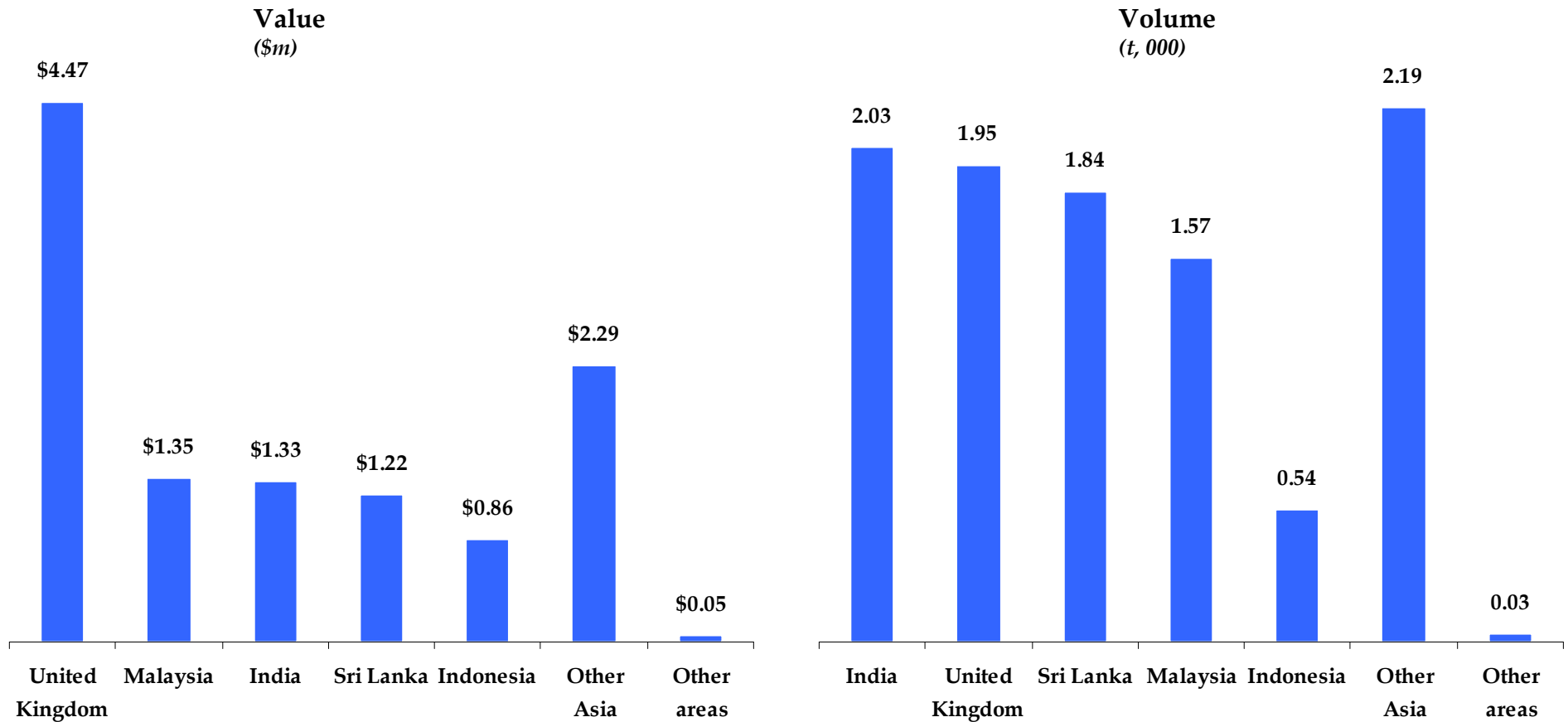
Apple trade by form
(t; 2004)



AUSTRALIA - EXPORTS

The UK and Asia are the key markets for Australian fresh apple exports

Australian fresh apple exports by destination
(2004)



AUSTRALIA - STATE STATISTICAL DATA

Apple production is spread throughout Australia

Apple Statistics by State (various; 2004)

	VIC	NSW	TAS	SA	QLD	WA	TOTAL AU
Total trees	3,524,305	2,102,968	1,398,892	1,366,812	1,045,344	1,067,001	10,505,322
Tonnes produced	84,079	47,760	37,256	20,172	27,913	37,256	254,925
Tonnes for processing ¹	10,803	10,794	6,812	1,589	4,611	6,812	39,471
Processing CAGR (97-04)	-9.8%	-4.0%	-6.6%	-7.6%	-0.9%	-6.6%	-6.0%
Main areas	Goulburn Valley Shepparton, Tatura, Cobram, Bacchus Marsh, Harcourt	Batlow, Orange, Bilpin, Forbes, Picton	Huon Valley	Adelaide Hills, Riverland	Stanthorpe	Donnybrook, Perth Hills, Manjimup Dwellingup	
Employed full time	3,000	1,000	n/a	1,500	450	n/a	5,950
Employed Peak Season ²	20,000	5,000	n/a	2,500	2,200	n/a	29,700

AUSTRALIA - STATE VARIETY DATA

Cripps Pink (Pink Lady) is the growth variety for Australia

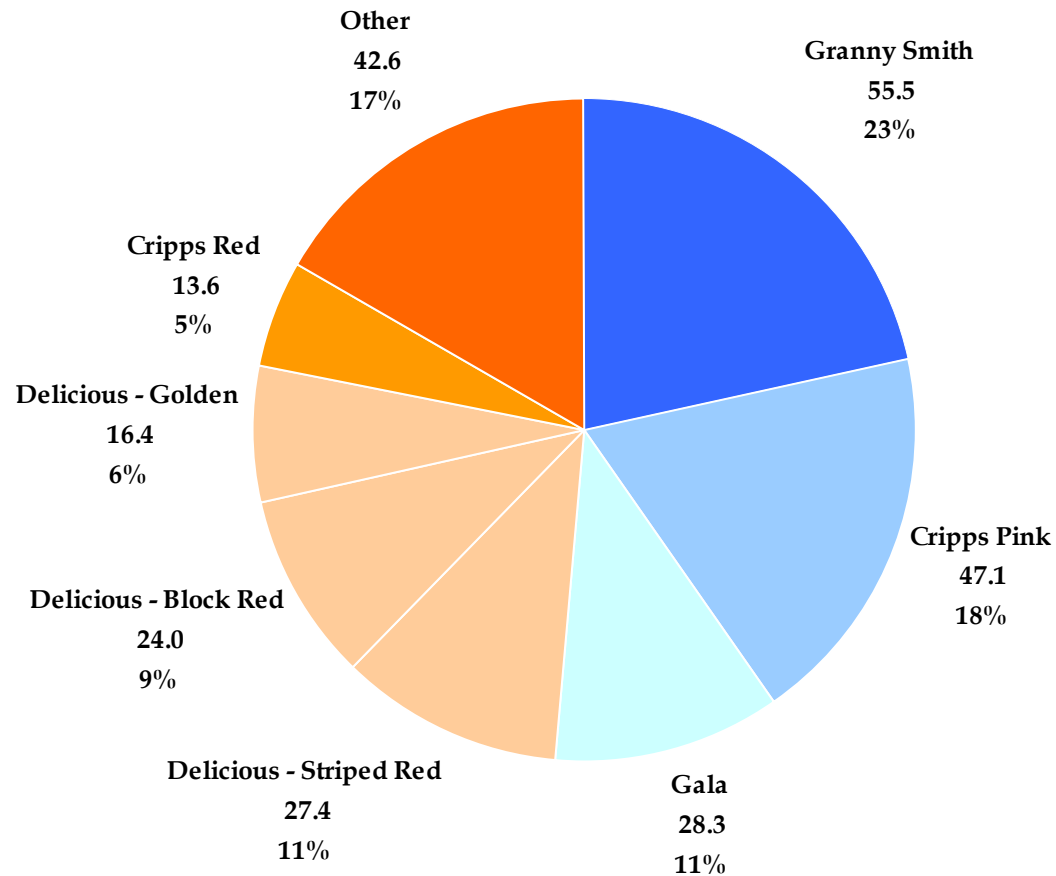
Apple varieties by State
(percent; 2004)

	VIC	NSW	TAS	SA	QLD	WA
Main varieties grown - trees	Cripps Pink 28% Granny Smith 16% Galas 15% Cripps Red 11%	Red Delicious 30% Galas 18% Cripps Pink 15% Fuji 15%	Red Delicious 26% Fuji 20% Gala 15%	Cripps Pink 32% Galas 19% Fuji 12%	Red Delicious 25% Galas 24% Granny Smith 17% Cripps Pink 15%	Cripps Pink 33% Granny Smith 16% Gala 16% Cripps Red 11%
Production volumes	Granny Smith 33% Cripps Pink 24% Golden Delicious 9%	Red Delicious 41% Gala 10% Cripps Pink 10%	Red Delicious 34% Fuji 14% Golden Delicious 12%	Cripps Pink 21% Red Delicious 13% Granny Smith 16% Galas 14%	Red Delicious 30% Granny Smith 27% Gala 18% Cripps Pink 11%	Cripps Pink 32% Granny Smith 25% Galas 13%
New tree plantings	Cripps Pink 25% Granny Smith 22% Galas 18% Cripps Red 10%	Cripps Pink 24% Red Delicious 21% Galas 17% Fuji 11%	Fuji 37% Gala 25% Red Delicious 18% Cripps Pink 16%	Cripps Pink 39% Granny Smith 16% Galas 14%	Gala 35% Cripps Pink 22% Granny Smith 16%	Cripps Pink 34% Granny Smith 33% Galas 22%

AUSTRALIA - PRODUCTION

While Granny Smith is still has the highest production, Cripps Pink is now a strong number two

Australian apple production by variety
(t; 000; %; 2004)



AUSTRALIA - INDUSTRY ISSUES

Apple and Pear Australia have identified key industry issues




Key issues facing the Australian apple industry (subjective)

Markets	<ul style="list-style-type: none"> Increase per capita consumption Improve export performance Producer share of dollar falling Competition from other fruit World production steadily rising Chinese apple juice 'dumped' in AU
Marketing	<ul style="list-style-type: none"> Education of growers- presentation of fruit Prepare for 'category suppliers' in supermarket
Industry	<ul style="list-style-type: none"> Trees with low preference fruit Restructure orchards to meet demand Require new varieties to get premium dollars Average age of grower increasing
Q&A	<ul style="list-style-type: none"> Product not meeting consumer standards Too many hands Poor rewards for high quality
Productivity & Costs	<ul style="list-style-type: none"> Cost/price squeeze Improve yield per tree and per hectare Disease risk from imports Supply chain has too many players Freight costs rising High input costs; water and labour

AUSTRALIA - RELATIVE PRICING VS NEW ZEALAND

A quick online price comparison indicates fresh apple prices in Australia are generally higher than those in New Zealand, indicating some opportunities if New Zealand achieved access

Price survey: fresh apples from online website
(NZ or A\$; 24/10/2006)

Variety			
Braeburn	NZ\$2.92	A\$4.31	n/a
Granny Smith	NZ\$1.98-\$3.50(Yess)	A\$4.31	A\$4.12
Royal Gala	NZ\$2.95-\$3.98 (Yess)	A\$3.70	A\$4.12
Pink Lady	n/a	A\$4.31	A\$3.48
Notes:	Prices from woolworths.co.nz website on 24/10/06; Woolworths NZ is owned by Woolworths Australia	Prices from homeshop.com.au website on 24/10/06; used Sydney 2000 postcode	Prices from colesonline.com.au on 24/10/06; used Sydney 2000 postcode

**THE CHANGING APPLE
INDUSTRY IN WASHINGTON
STATE: A CASE STUDY**

August 2006



REASONS FOR THIS DOCUMENT

- From our experience, case-studies allow people, companies and industries to look at a similar set of problems while removing the day-to-day issues and politics

- Washington State provides an excellent mirror for New Zealand growers to look at their own industry in transition

- By using United States data we can clearly document industry trends
 - Available historical data on the New Zealand pipfruit industry is poor and inconsistent while the United States has excellent industry data
 - We believe the forces and trends in both countries should be similar

- The United States market is one of New Zealand's largest apple export destinations and both countries compete in world markets (e.g. the United Kingdom)

COMPARING NEW ZEALAND & WASHINGTON

New Zealand and Washington State are comparable in a number of ways

Select measures comparing New Zealand and Washington State

(select)

	New Zealand	Washington State
Area	268,680km ²	184,824km ²
Climate	Temperate (34°S-47°S)	Temperate (45°N-49°N)
First visited by Europeans	1642	1579
First visited by Captain Cook	1778	1769
Population	4.0m	5.9m
% of population in largest city	25%	55%
GDP	US\$98b	US\$244b
GDP/Capita	US\$24,769	US\$33,332
Major horticultural products	Apples & pears Kiwifruit Wine grapes	Apples & pears Cherries Wine grapes Berries
Area planted in apples	11,700ha (2005)	70,000ha (2002)
# of growers	920	4,600

DOCUMENT STRUCTURE

This document is structured into two sections



DOCUMENT STRUCTURE

The first section of this document looks at the challenges facing the United States apple industry



**1. Challenges
facing the
industry**

CHALLENGES

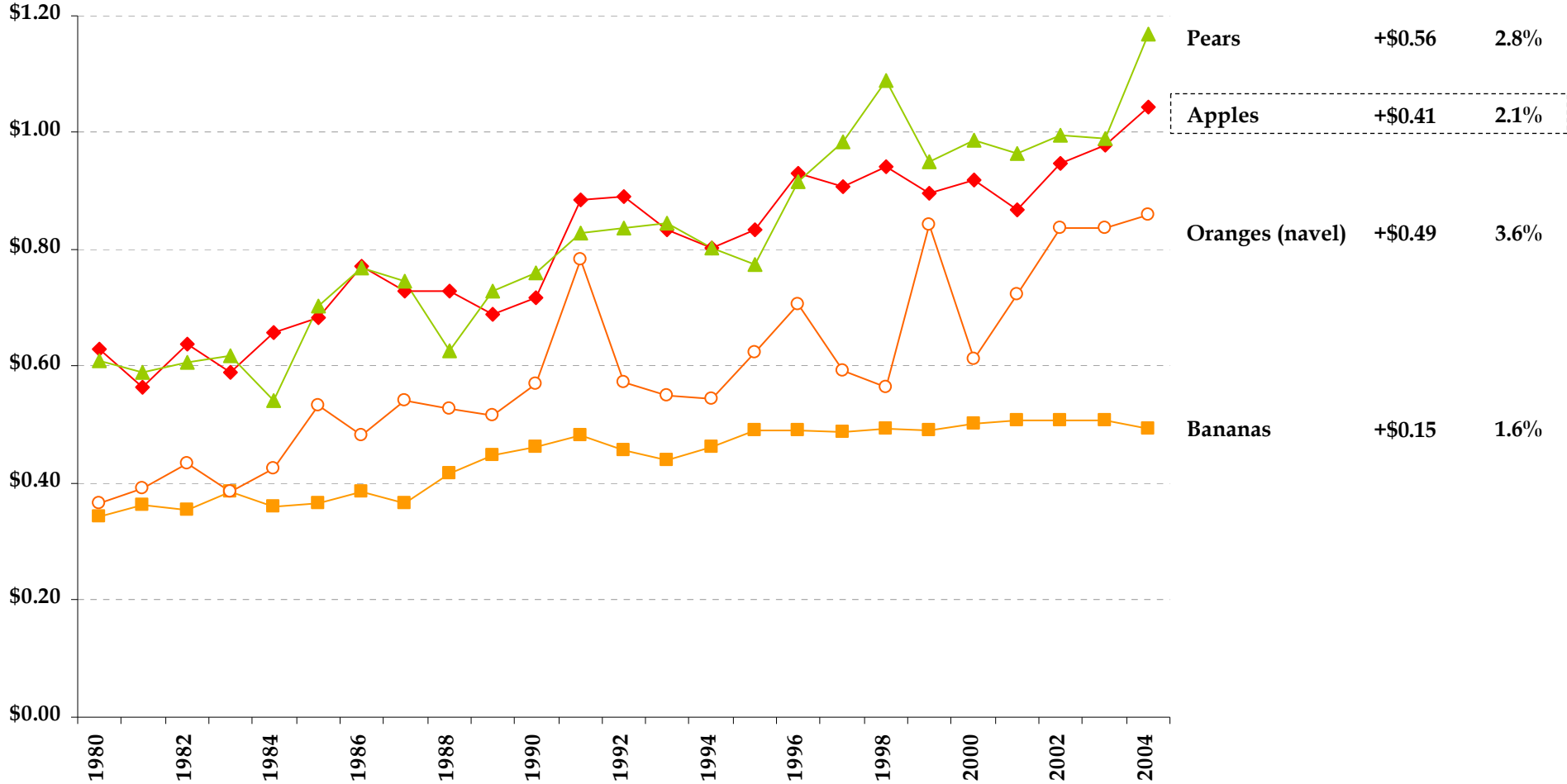
Washington State apple growers face difficult industry environments

- 1. Rising apple prices vs. other competing fruit
 - Fresh apple prices have increased \$0.41/pound in the last 24 years; bananas have increased \$0.15/pound
- 2. Falling fresh apple consumption; imports driving juice consumption growth
 - Fresh apple consumption is not growing in the United States over the medium-term
 - What apple consumption growth that is occurring, is coming from apple juice
 - Unfortunately apple juice consumption growth is being driven by a massive increase in imports
- 3. Apple area and total production is falling since the late 1990's
 - After a long period of slow growth, harvested apple area has fallen 15% since 1998
 - Following a period of strong growth - from the mid-60's to the mid-90's - apple production is also falling
- 4. No major growth sectors other than exports
 - Most crop utilisations are flat to declining; only fresh exports stand out for growth
- 5. Falling real returns to growers
 - Over the past half century, apple growers have received on average -1.2% less every year for their apples, in real terms
 - However these lower prices appear to be being passed on to the consumer as the grower's share of the retail price is stable across the cycle
- 6. Strong growth of imports over the past decade
 - Fresh apple imports into the United States have been growing, driven by Chile and New Zealand
 - Apple imports are strongest in a five month window between March and July
 - Apple juice imports into the United States have been growing, driven by China

RISING FRESH RETAIL PRICES

Fresh apple prices have increased \$0.41/pound in the last 24 years; bananas have increased \$0.15/pound

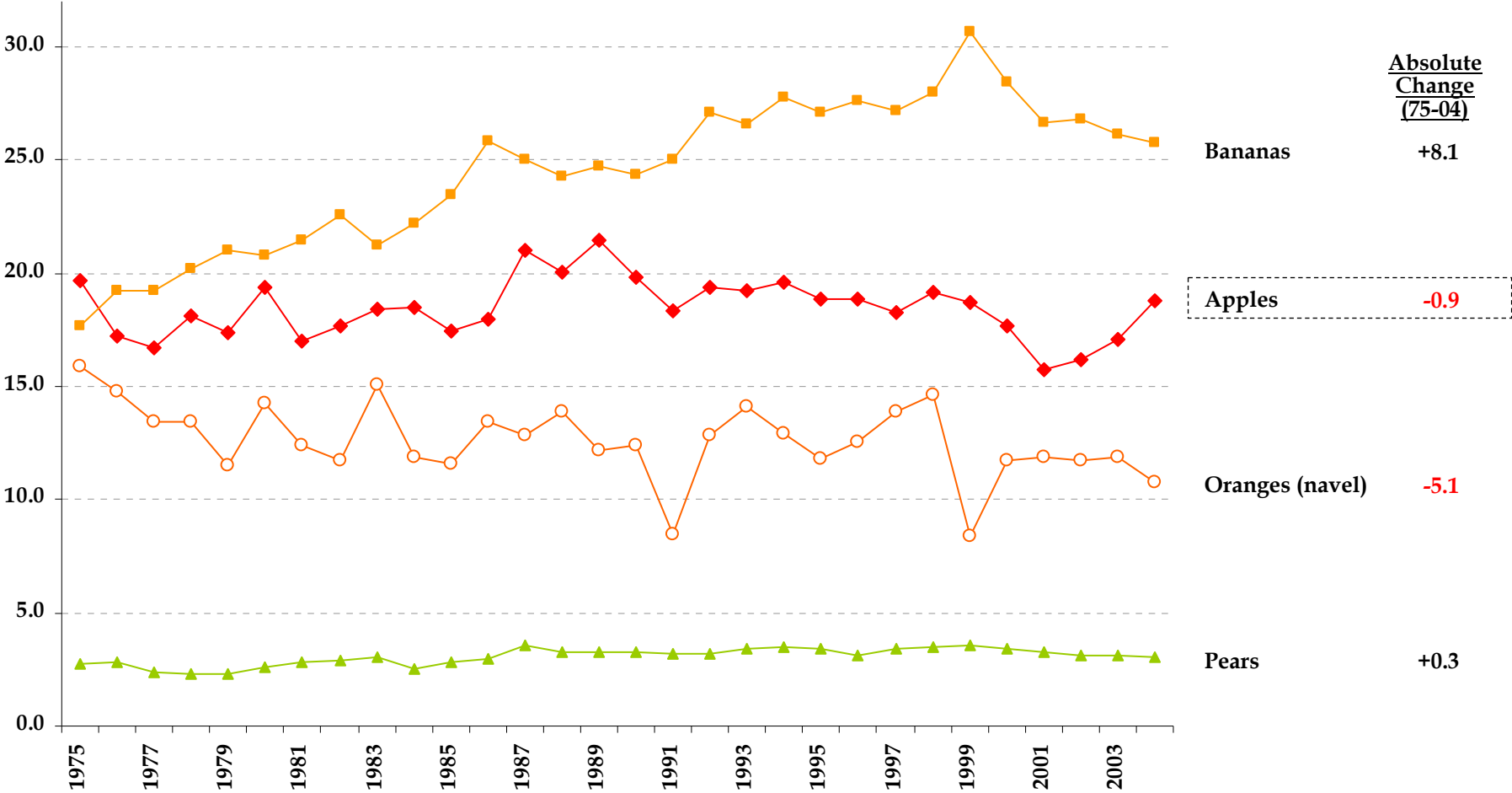
Average annual retail price for select fresh fruit in the United States
(US\$ per pound; actual; 1980-2004)



NO FRESH CONSUMPTION GROWTH

Fresh apple consumption is not growing in the United States over the medium-term

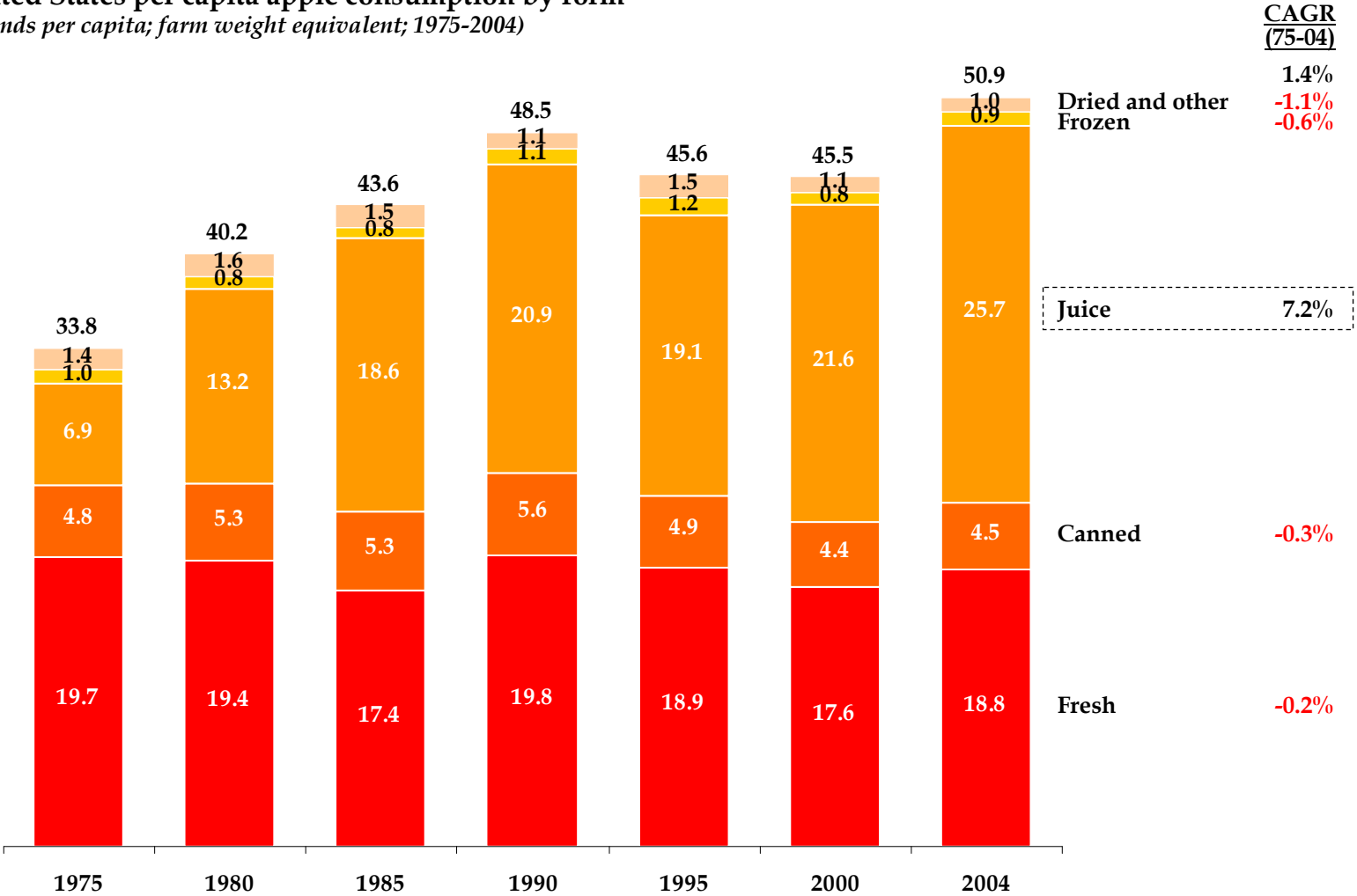
United States per capita select fresh fruit consumption
(pounds per capita; farm weight equivalent; 1975-2004)



PER CAPITA CONSUMPTION GROWTH COMING FROM JUICE

What apple consumption growth that is occurring, is coming from apple juice

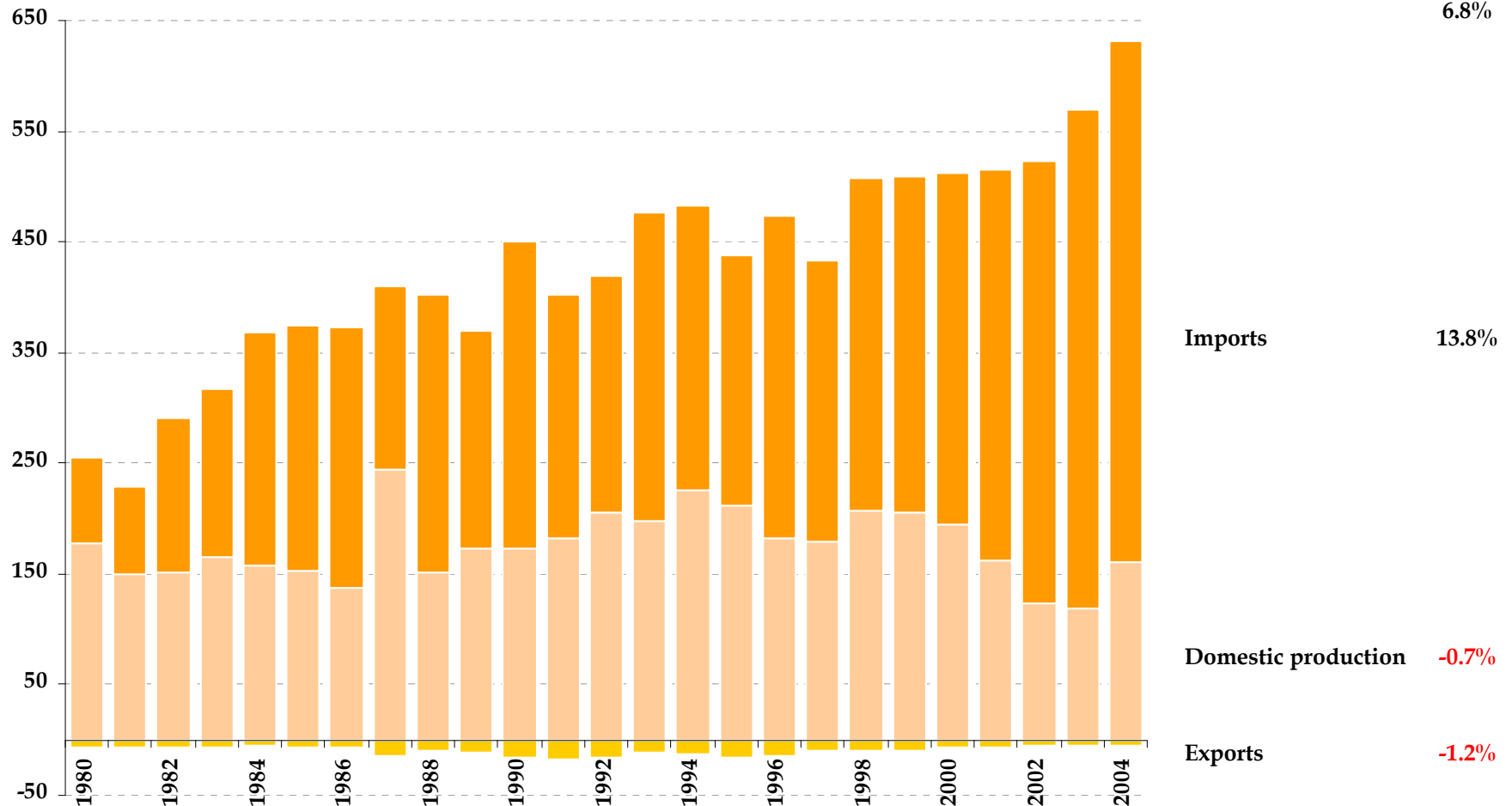
United States per capita apple consumption by form
(pounds per capita; farm weight equivalent; 1975-2004)



JUICE GROWTH DRIVEN BY IMPORTS

Unfortunately apple juice consumption growth is being driven by a massive increase in imports

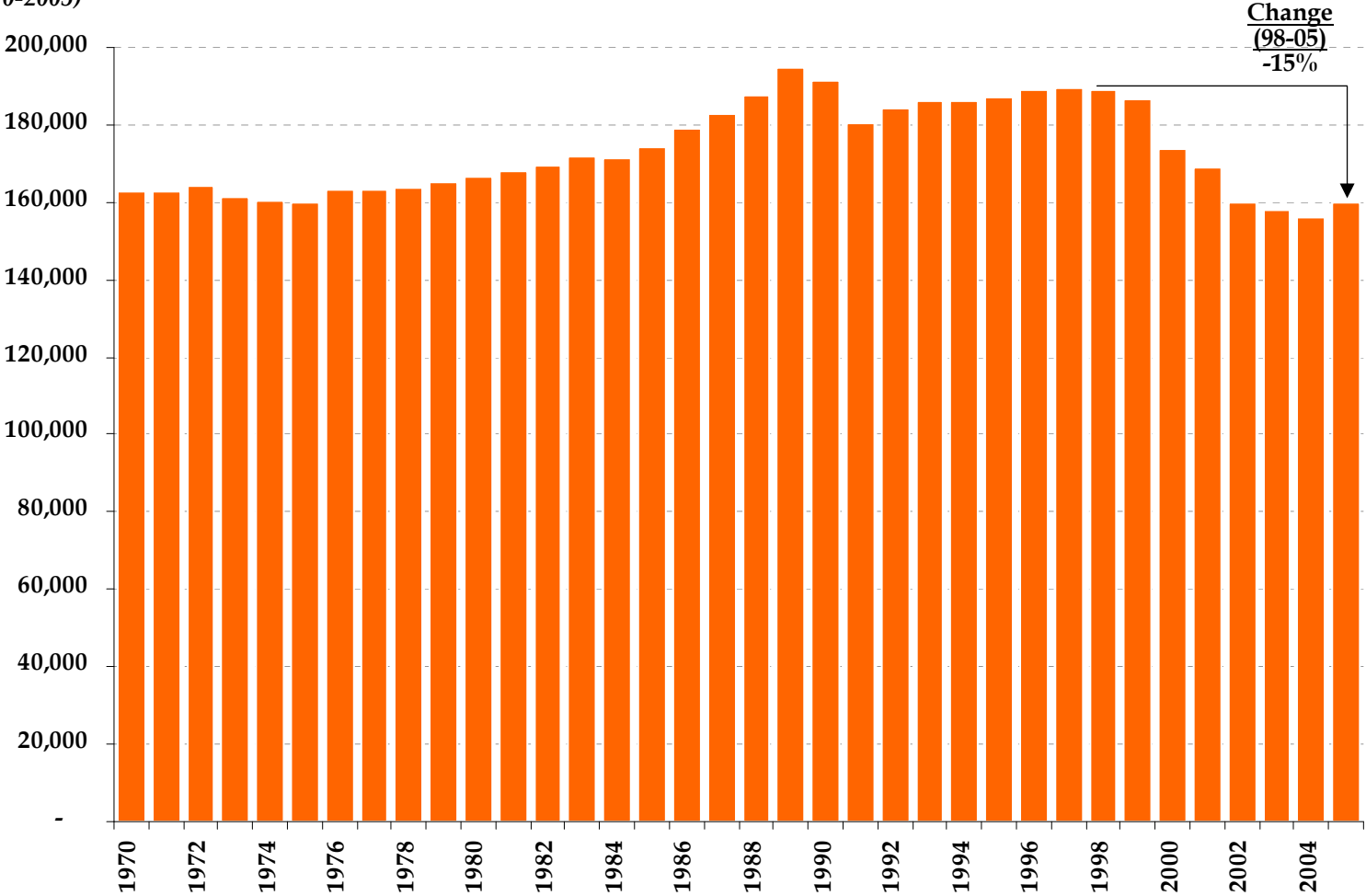
United States apple juice domestic production, imports and exports
(gallons; millions; single-strength equivalent; 1980-2004)



FALLING APPLE AREA

After a long period of slow growth, harvested apple area has fallen 15% since 1998

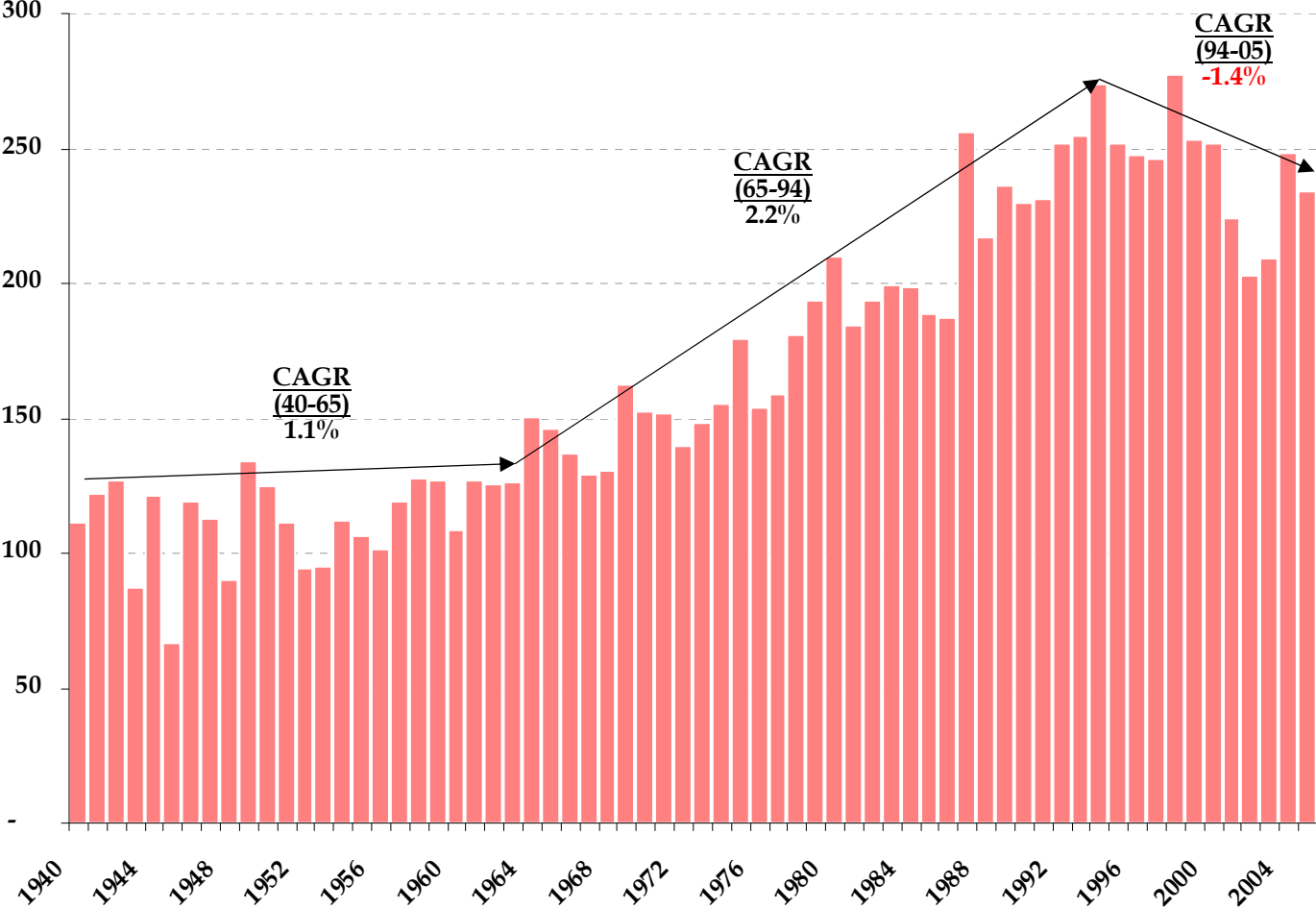
United States apple area harvested
(hectares, 1970-2005)



FALLING APPLE PRODUCTION

Following a period of strong growth - from the mid-60's to the mid-90's - apple production is also falling

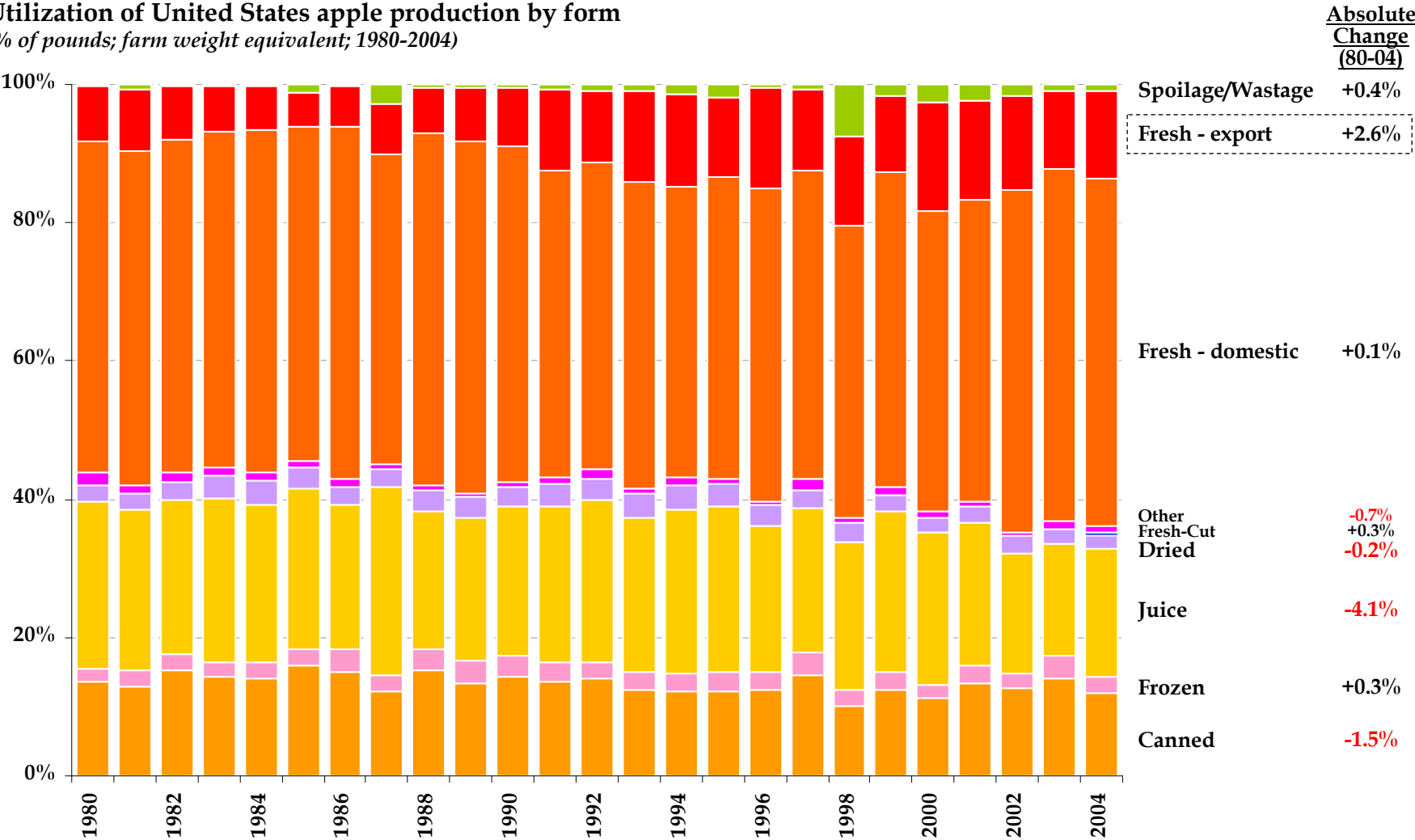
Historical growth of apple production in the United States
(42lb boxes; millions; 1940-2005)



PRODUCTION UTILIZATION

Most crop utilisations are flat to declining; only fresh exports stand out for growth

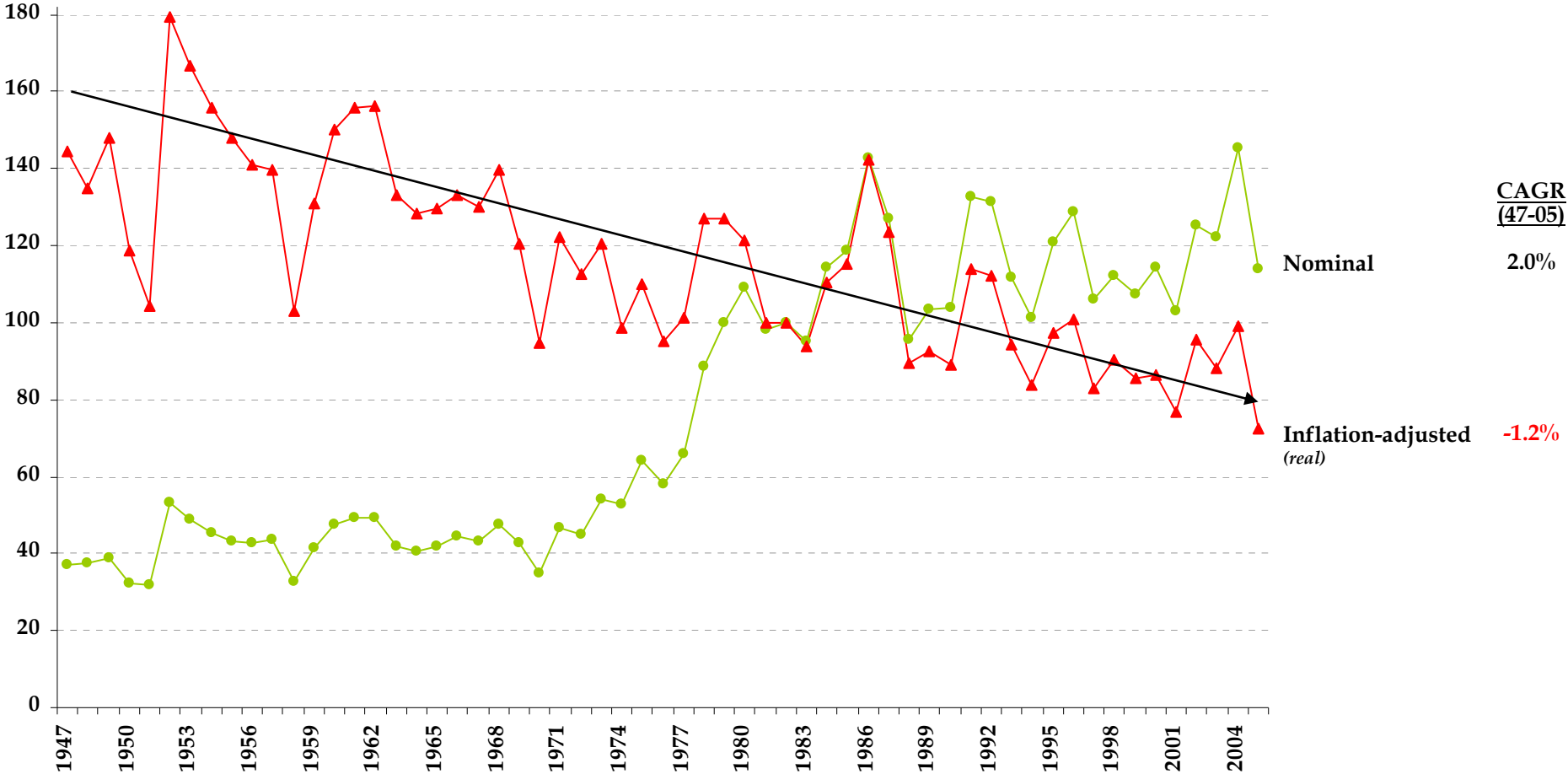
Utilization of United States apple production by form
 (% of pounds; farm weight equivalent; 1980-2004)



FALLING REAL FARM-GATE PRICES

Over the past half century, apple growers have on average received -1.2% less every year for their apples, in real terms

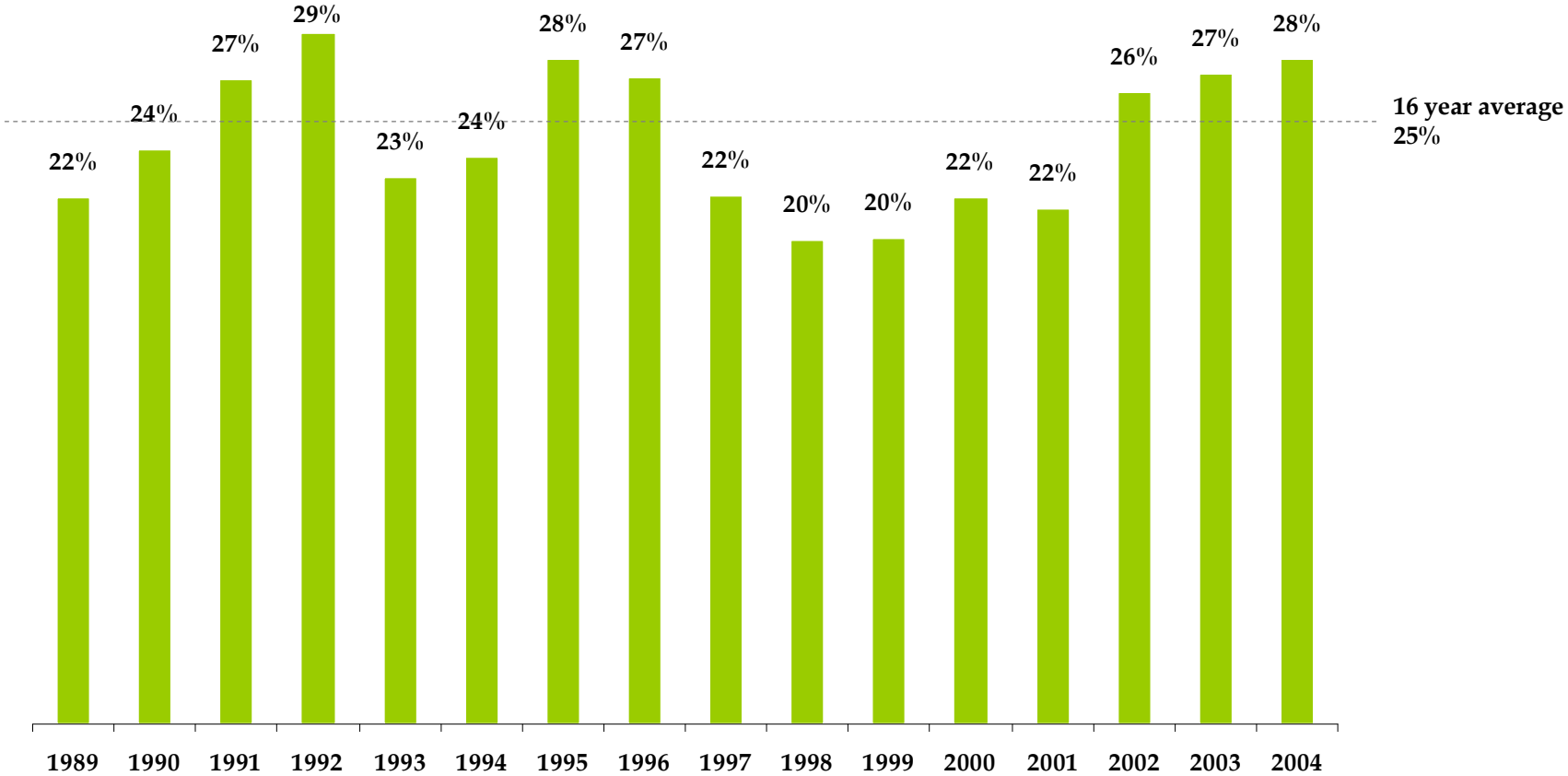
United States producer price index for apples
(price index; 1947-2005)



GROWERS SHARE OF THE PIE

However, these lower prices appear to be being passed on to the consumer, as the grower's share of the retail price is stable across the cycle

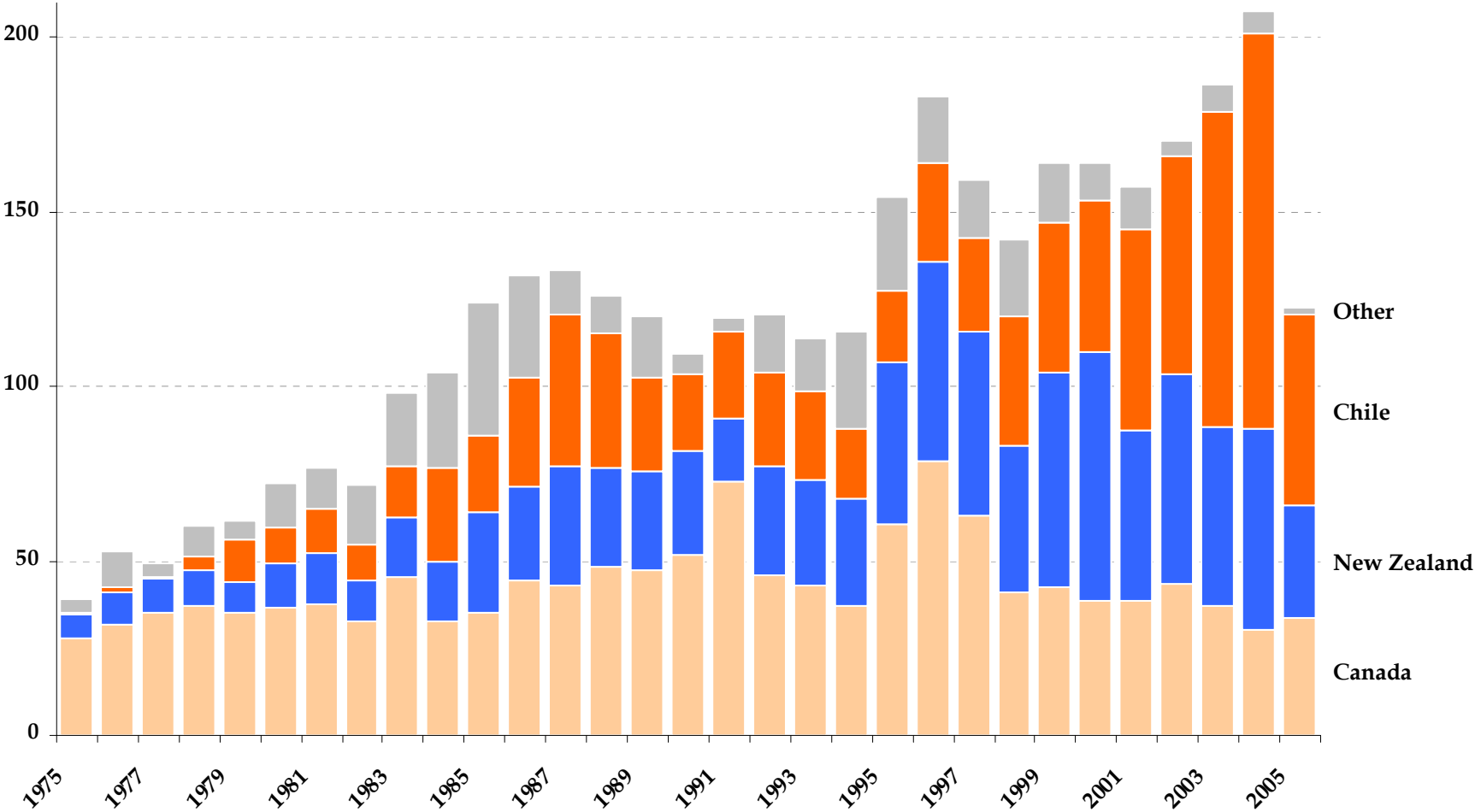
Apple farm gate value as a percent of retail price in the United States
(% of retail price; 1989-2004)



GROWING FRESH APPLE IMPORTS

Fresh apple imports into the United States have been growing, driven by Chile and New Zealand

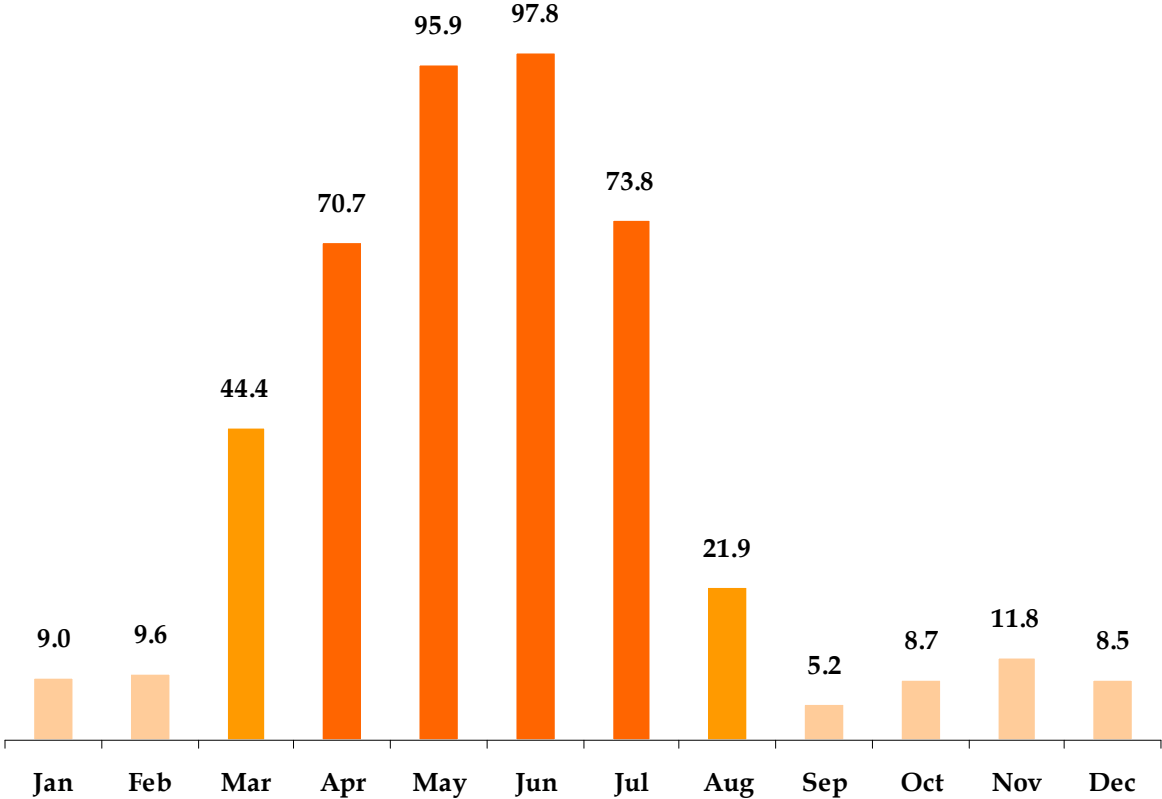
United States fresh apple import volume by select country
(tonnes; 1975-2005)



FIVE MONTH IMPORT WINDOW

Apple imports are strongest in a five month window between March and July

United States fresh apple import volume by month
(pounds; millions; 2004)

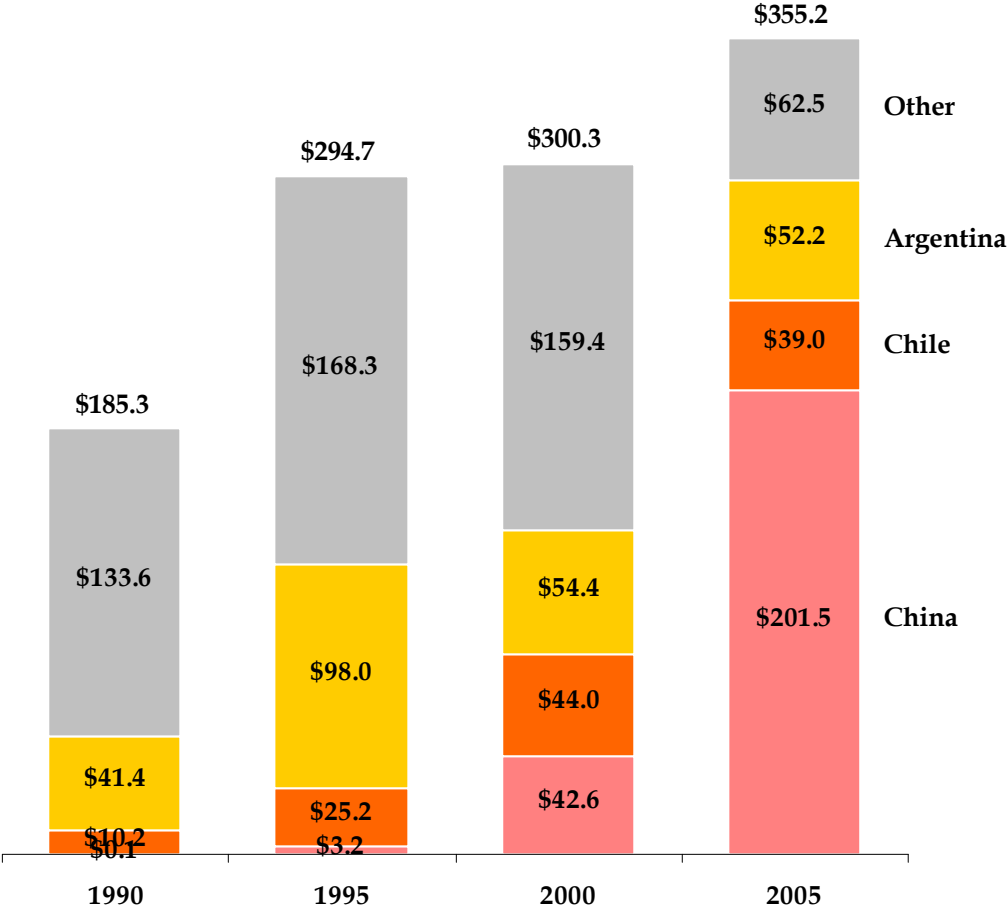


Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
% of total imports	2%	2%	10%	15%	21%	21%	16%	5%	1%	2%	3%	2%

GROWING APPLE JUICE IMPORTS

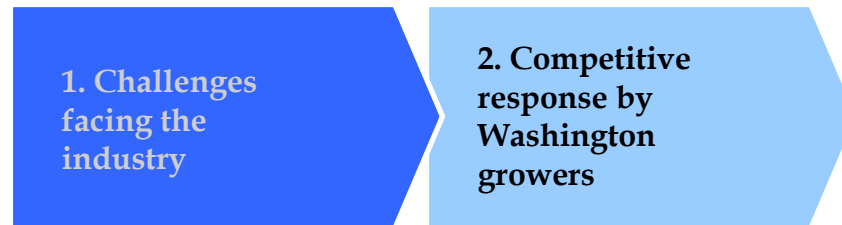
Apple juice imports into the United States have been growing, driven by China

United States apple juice import value by select country
(US\$; m; 1990-2005)



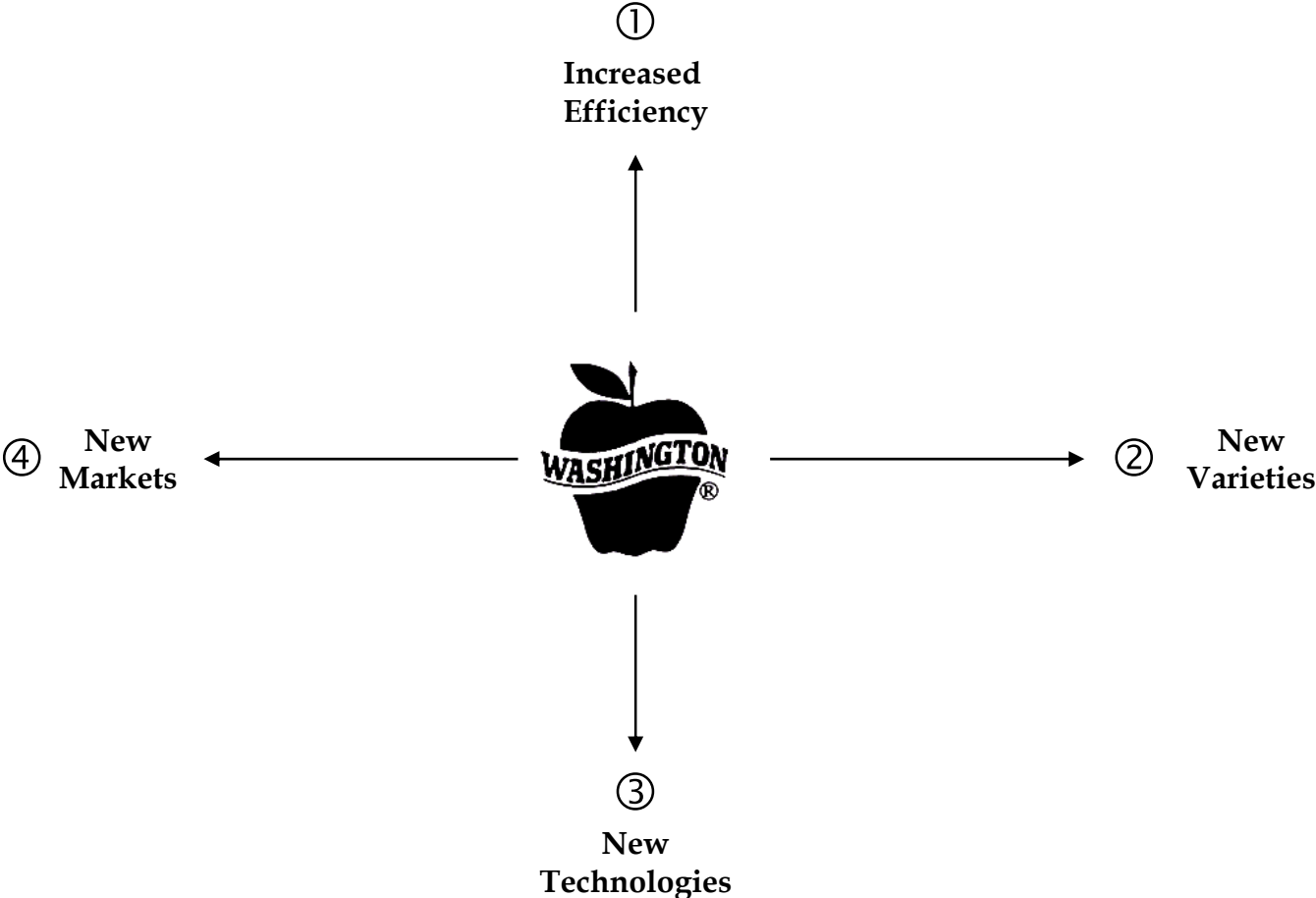
DOCUMENT STRUCTURE

This document now looks at the competitive response of Washington State growers to this challenging environment



WA STATE RESPONSE

Growers in Washington State have made four responses to the challenges facing the apple industry



WA STATE RESPONSE #1
Growers in Washington State have increased their efficiency



WA STATE DOMINATES US APPLE PRODUCTION

The United States has five major apple growing regions, of which Washington State is by far the largest

Area planted in apples by state
(1 dot = 500 acres; 2002)

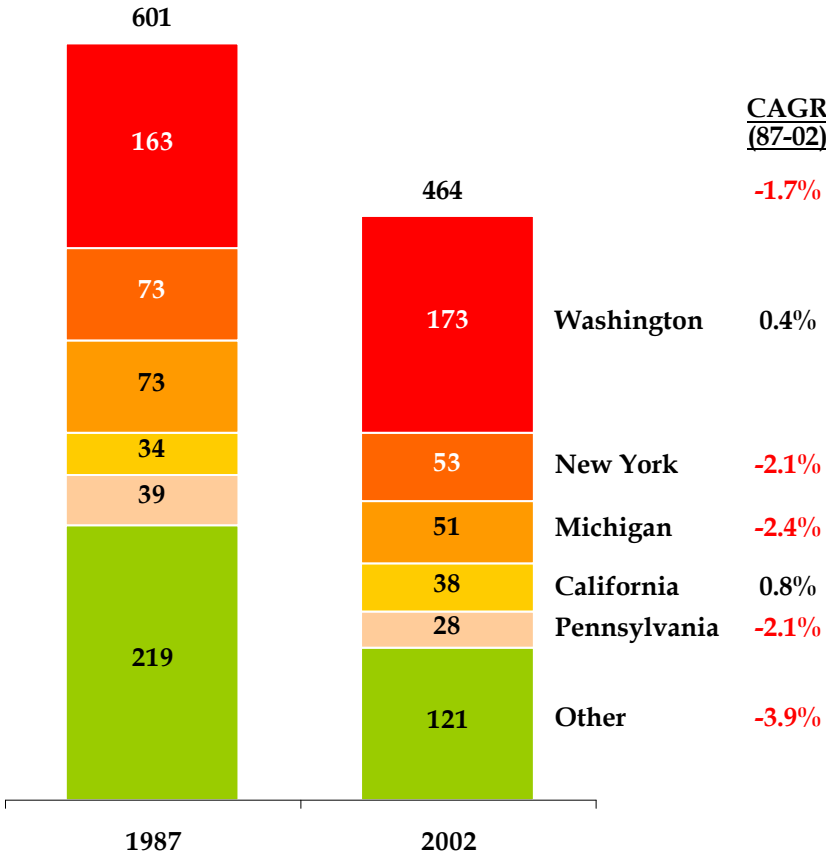


WASHINGTON STATE GROWING DOMINANCE IN US APPLE INDUSTRY

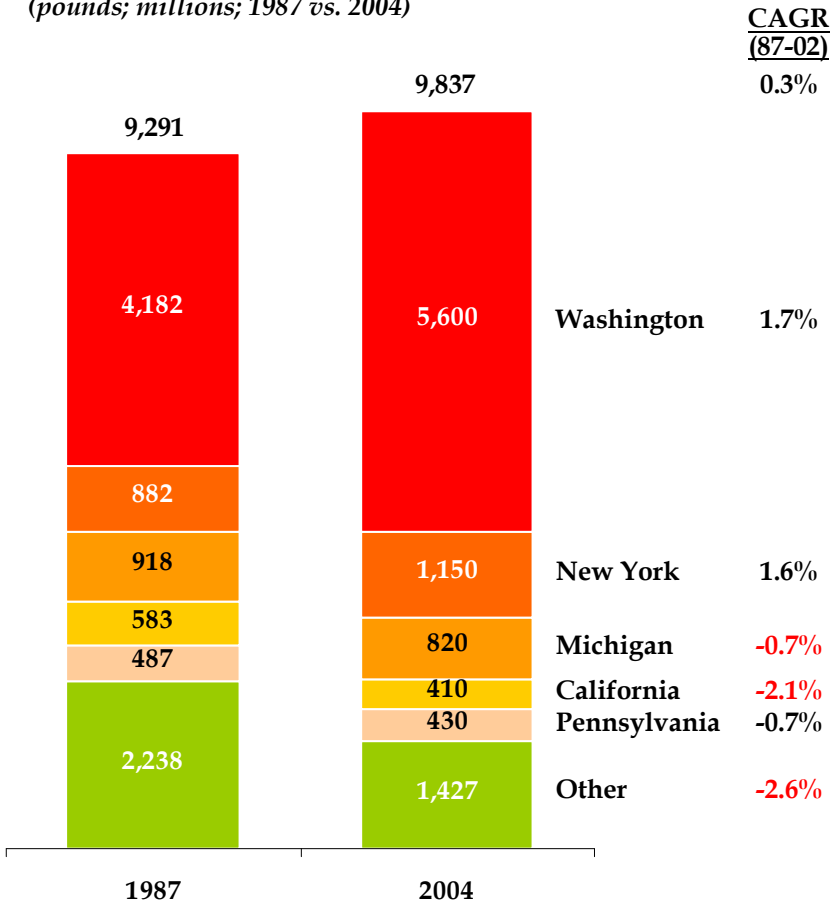
Washington State is growing its dominance of the industry; it is the only major region to increase area and production over the past 15 years

Changing structure of United States apple industry

Area by select state
(acre; 000; 1987 vs. 2002)



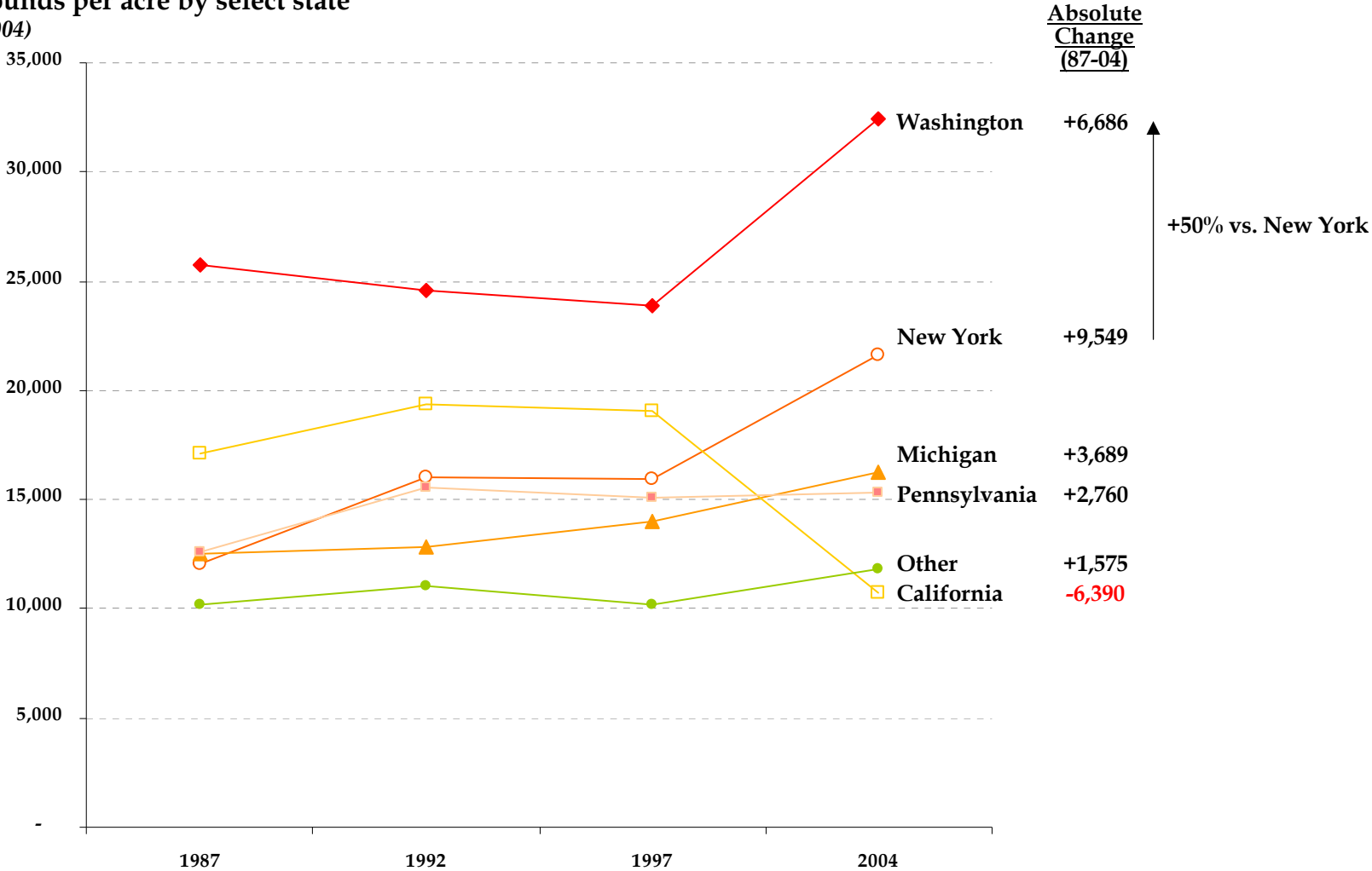
Production by select state
(pounds; millions; 1987 vs. 2004)



WA LEADS IN PRODUCTION PER ACRE

Washington State has achieved this by being massively more productive per acre than its rivals

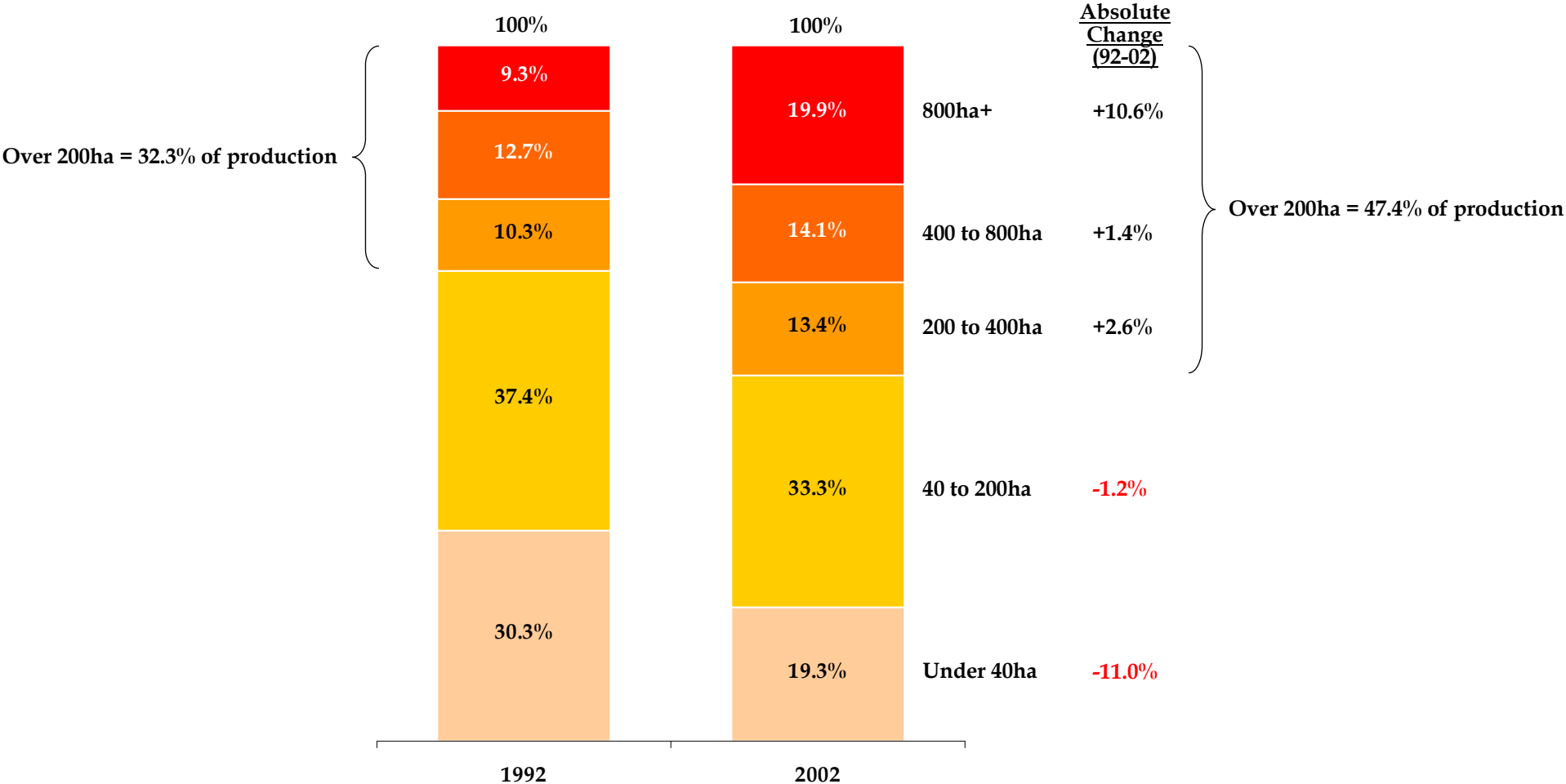
Apple yield in pounds per acre by select state
(pounds/acre; 1987-2004)



GROWING SHARE OF LARGE ORCHARDS

Large scale industrial farms are increasing production at the expense of smaller un-economic lifestyle producers

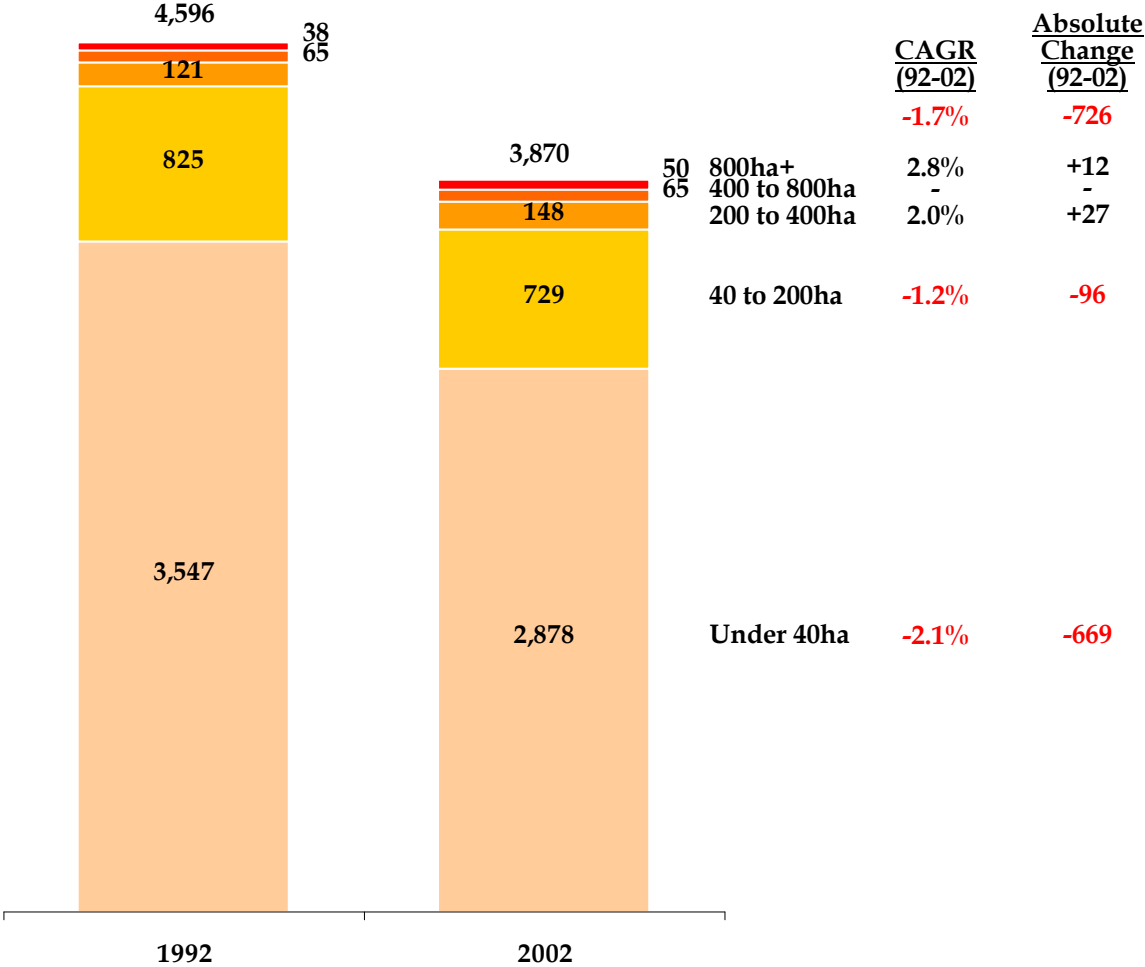
Changing share of Washington State apple production by farm size
(% of pounds; 1992 vs. 2002)



DECLINING ORCHARD NUMBERS

The total number of apple farms has declined sharply in the past decade, big farms are growing in number and small farms are declining

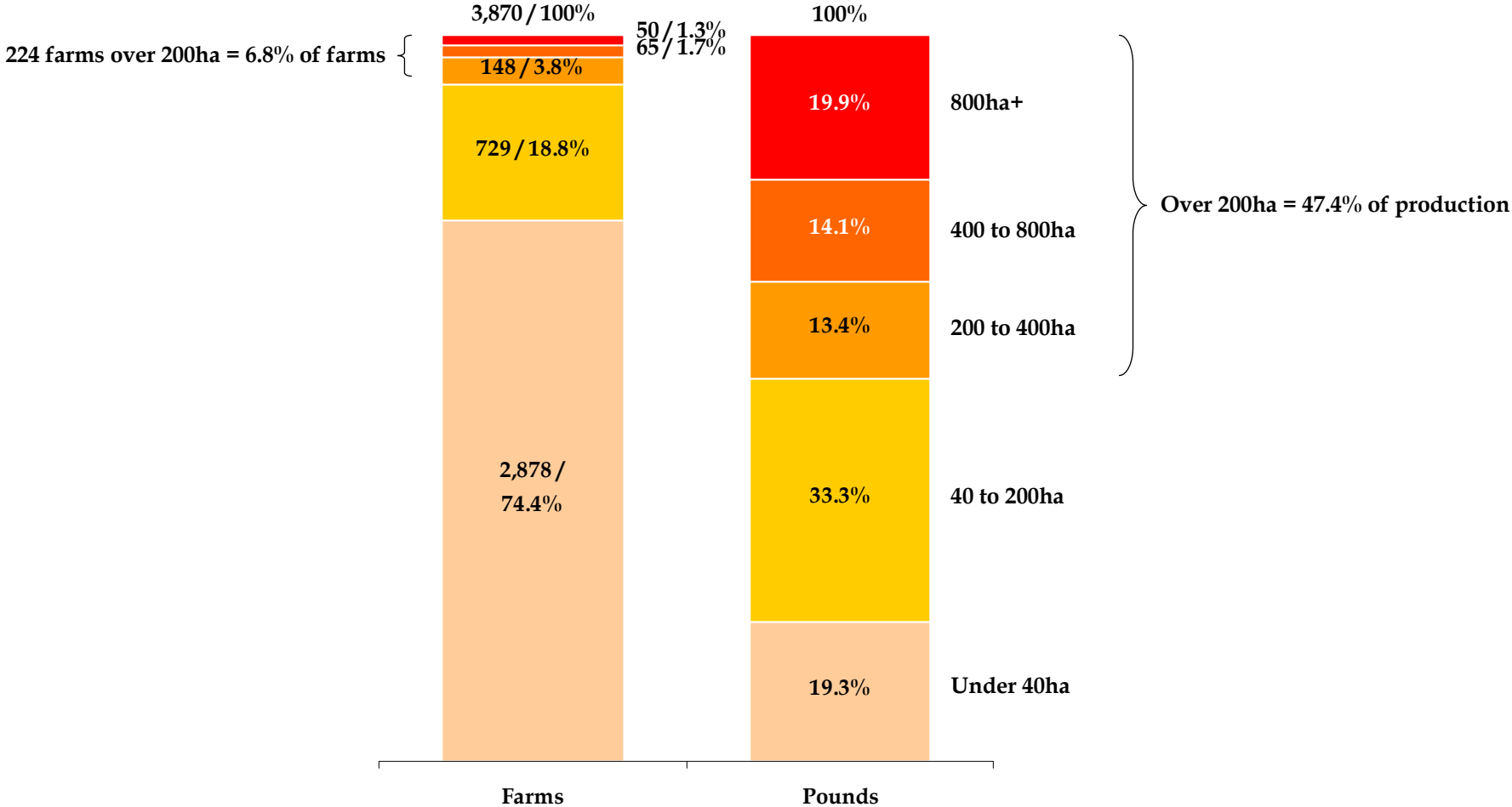
Change in number of apple farms in Washington State by farm size
 (# of farms; actual; 1992 vs. 2002)



IMPORTANCE OF A SMALL NUMBER OF PRODUCERS

Under 7% of farms now account for almost 50% of production; of this 1% of farms account for 20% of production

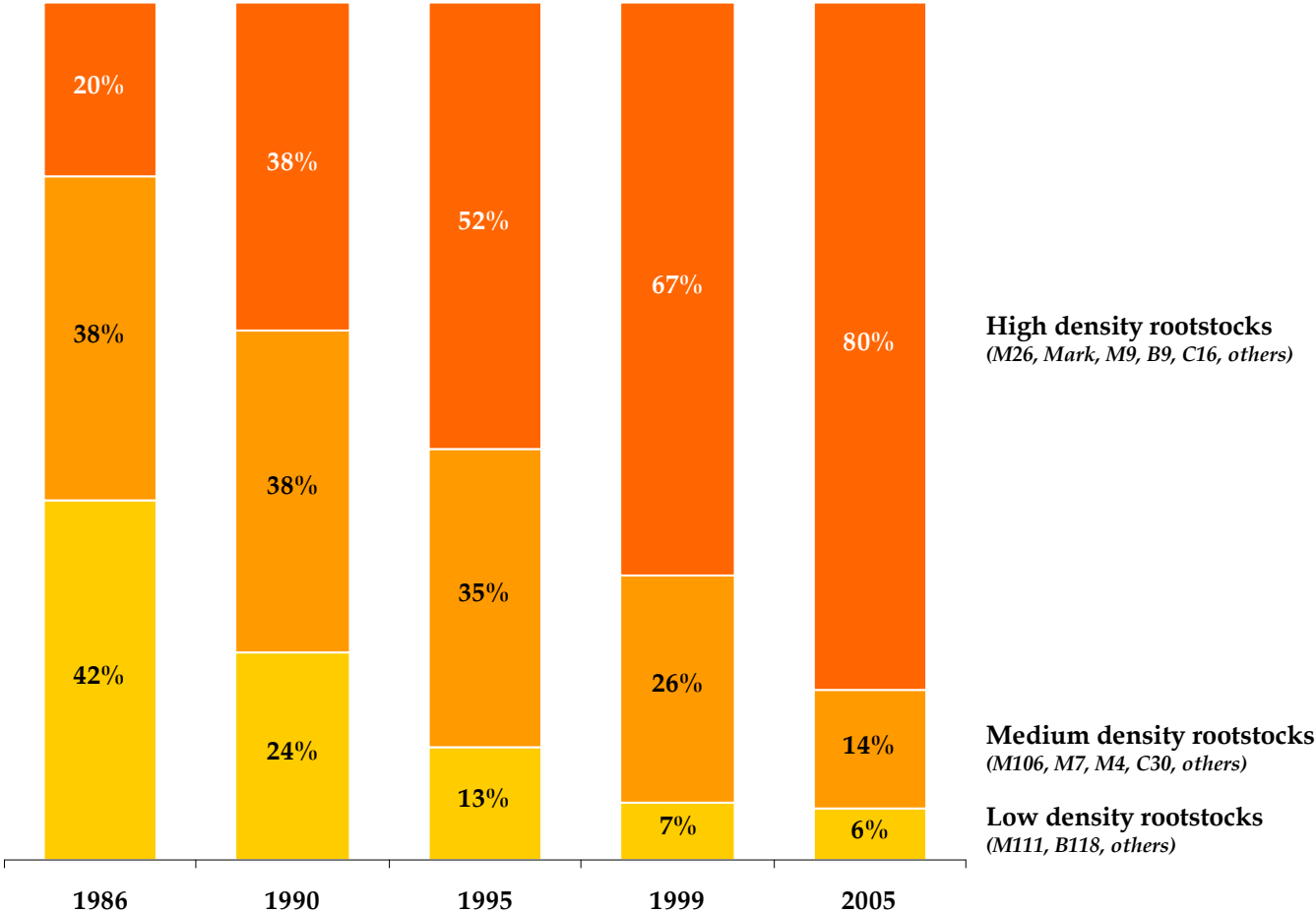
Share of Washington State farm numbers vs. apple production by farm size
(% of farms; % of pounds; 2002)



STRONG MOVE TO HIGH DENSITY ROOTSTOCKS

'Nursery trees sold' data shows a strong move to rootstocks that support high density plantings

Nursery trees sold in Washington State by rootstock planting density
(% of nursery trees sold; 1986-2005)



RENOVATION IS CAPITAL INTENSIVE

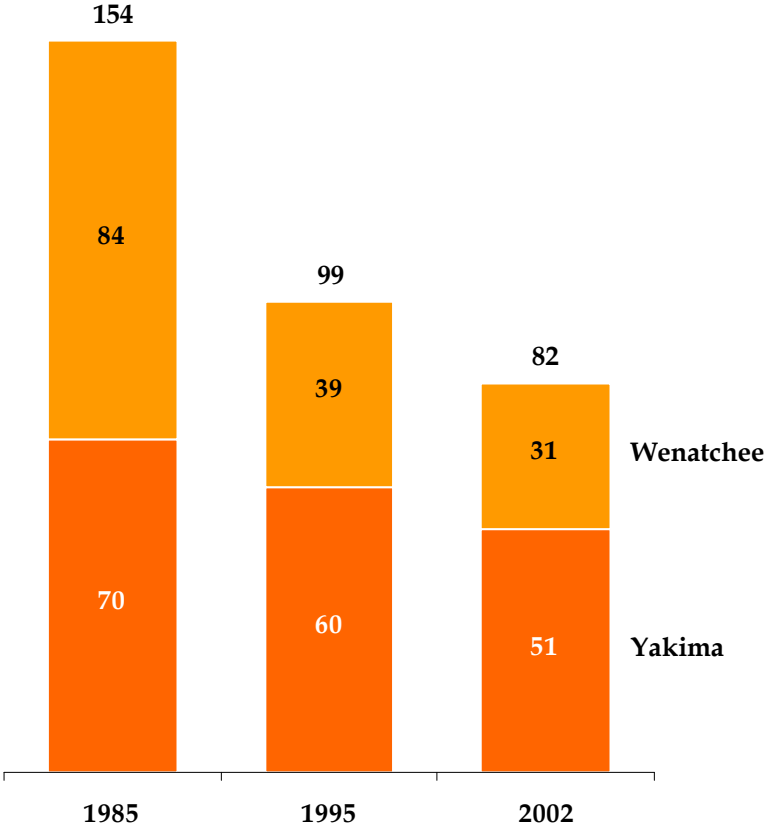
However, renovating an orchard to higher intensity planting is capital intensive favoring larger and corporate farmers

- “Apple orchards in Washington are rapidly transitioning from conventional, central-leader orchards at 300-400 trees per acre, to higher-density orchards commonly planted on M9 or B9 rootstocks. The transition is nowhere complete, however, younger more progressive orchardists who have planted any of the newer cultivars over the past 5 to 10 years are there. The cost of nursery trees is much higher in Washington than Italy, which makes orchard renovation a more costly venture, easily exceeding \$10,000 per acre.” *Jon Clements, University of Massachusetts, Feb 2006*

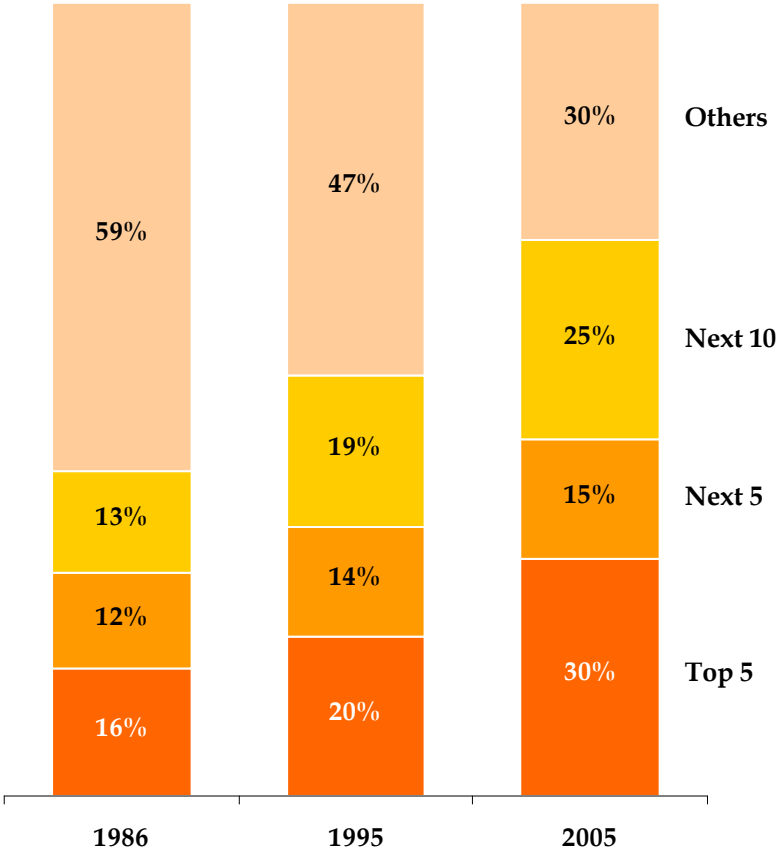
CONSOLIDATION IN PACKING & STORING

Consolidation is occurring in packing and storing

Number of apple warehouses in select WA regions
(apple warehouses; 1985-2002)



WA apple warehouse storage share
(% of storage area; 1986-2005)



TECHNOLOGY AND MARKETS DRIVING CHANGE

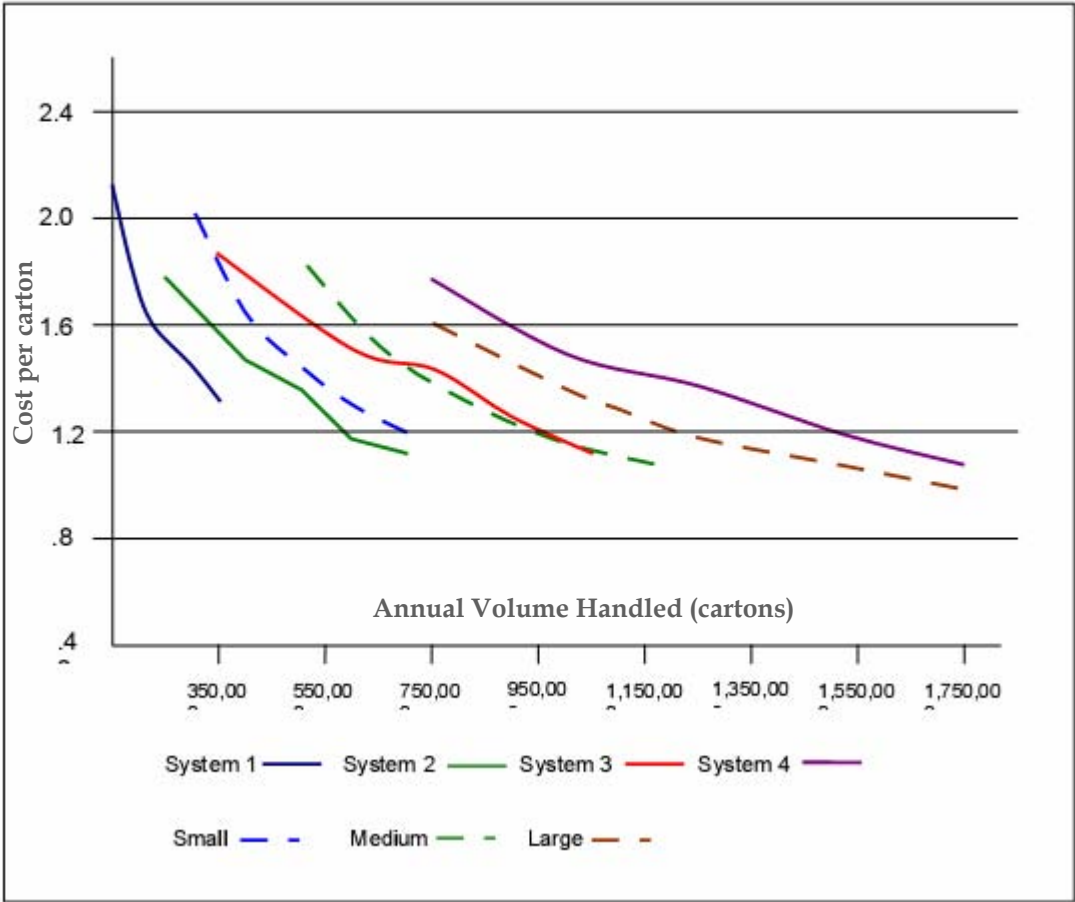
Changing packing technology and market forces are driving this consolidation

- “The decline in numbers has been a result of two pressures. First, packing and storage technology has changed significantly over the past 20 years. The advent of presize technology and the introduction of electronic sensing have created a significant cost advantage for those firms willing to make the capital investment and have the volume of fruit needed to use the equipment efficiently. The initial advantage associated with the presize system was that the grading and sizing operation was not affected by the rate of packing. In fact, as the presize system was installed by more and more warehouses, they soon learned that the initial rated capacity of the system was understated. Those warehouses were soon looking for more fruit to store and pack.
- Further, these systems were often installed with the idea of adding new technologies as they became available. The color sorter was the first to be introduced. Then came electronic weight sizing. By 2004 warehouses were adding equipment that measures soluble solids of each individual fruit. This latest technology measures the sweetness of the fruit. This technology has been in use in Japan for at least ten years, but could not, until recently, operate at speeds consistent with the flow of fruit in Washington warehouses. Other labor saving technology is used in Japan, but, again, does not have the capacity to operate at speeds suitable for Washington. The other new technology used by some firms was nondestructive pressure testing. Certain levels of firmness are required by the grade standards. Until the introduction in 2003 of nondestructive testing, samples of fruit were measured for firmness using destructive tests. Now, rather than relying on samples, each piece of fruit can be measured for firmness. Over the years the knowledge gained in operating presize systems has been applied to commit to pack lines so that the packing operation is less constraining. In fact, the commit to pack lines used today are preferred for some varieties of apples because they tend to cause fewer bruises.
- Another factor causing reduced numbers of warehouses was the economic environment over the past 5 years. The FOB prices made it difficult for warehouses to increase charges to cover rising costs. Those warehouses with orchards suffered a double hit, especially if they were growing many Red Delicious apples. At the same time it should be noted that some warehouses with orchards have been able to remain in business, so orchard ownership has not been a sufficient reason for failure.” *Thomas Schotzko, Washington State University, SES 04-05 Brief Look at WAAI*

INDICATION THAT SCALE EXISTS

What limited information that is available indicates economies of scale in technology and that “over time the advantage goes to the larger operation”

Figure 30: Estimated packing cost relationships. System: conventional versus presize (small, medium and large).



Note: Historic data from 1981 based on new equipment cost at that time; no newer data available as “packers are extremely reluctant to share cost information”

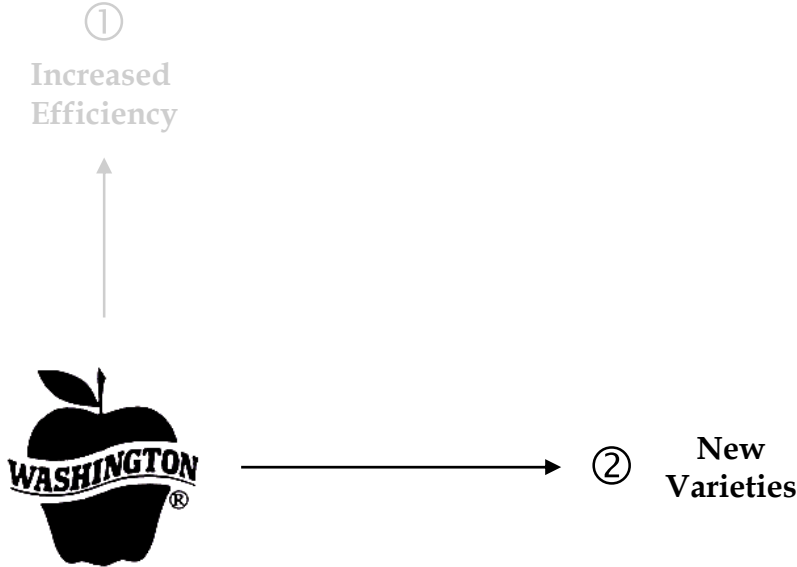
CONSOLIDATION & COOPERATION

Consolidation and cooperation are major themes in packhouse/marketing operations, as the example of Chelan Fresh shows

- “Chelan Fresh Marketing was established in August 2004 as a result of mergers and acquisitions and holds the sales and marketing responsibilities for Gebbers Farms and Chelan Fruit Cooperative. This fledgling year, Chelan Fresh Marketing estimates they will market 8,500,000 cartons of apples...
 - Gebbers Farms is 100 percent family owned and managed... They farm 5,400 acres of apples and cherries, including a 4,000 acre block that is one of the largest contiguous apple orchards anywhere...
 - In 2003, the Gebbers combined marketing forces with other neighboring shippers to organize the AltaFresh marketing agency, which sold fruit for their own company, as well as for MAGI, Gwinn White and Prince, Apple House and Obert Cold Storage...
 - In 2004, Chelan Fruit Company joined the marketing venture, and AltaFresh was renamed to Chelan Fresh Marketing...
 - Chelan Fruit is a 359-member, grower-owned cooperative based in north central Washington. Its roots are in three former regional cooperatives: Trout, Blue Chelan, and MAGI. Currently the Cooperative receives bins of apples, pears and cherries from 15,000 acres...
 - Trout was incorporated in July of 1921 as Lake Chelan Fruit Growers by eight growers. Blue Chelan, Inc. was established in 1942 by 26 local growers... In September of 1995, Trout, Inc. and Blue Chelan, Inc. merged to form the largest apple packing cooperative in the world...
 - Magi’s roots go back to 1937 when a dozen growers got together and formed Brewster Cooperative Growers. In 1969 a merger of Brewster Cooperative Growers together with Omak Fruit Growers formed “Brewster Mutual Growers Association”. In 1974 Omak Fruit Growers merged in to the Brewster Mutual Growers Association which resulted in the official name change to MAGI INC. Magi continues to bring into the fold, Caribou Growers in 1987 and Star Crisp Growers, Inc. of Okanogan in 1989, and in 1998 Crisp N’ Spicy Growers joining the unit, resulting in the largest crop of 240,000 bins.” *Chelan Fresh website*

WA STATE RESPONSE #2

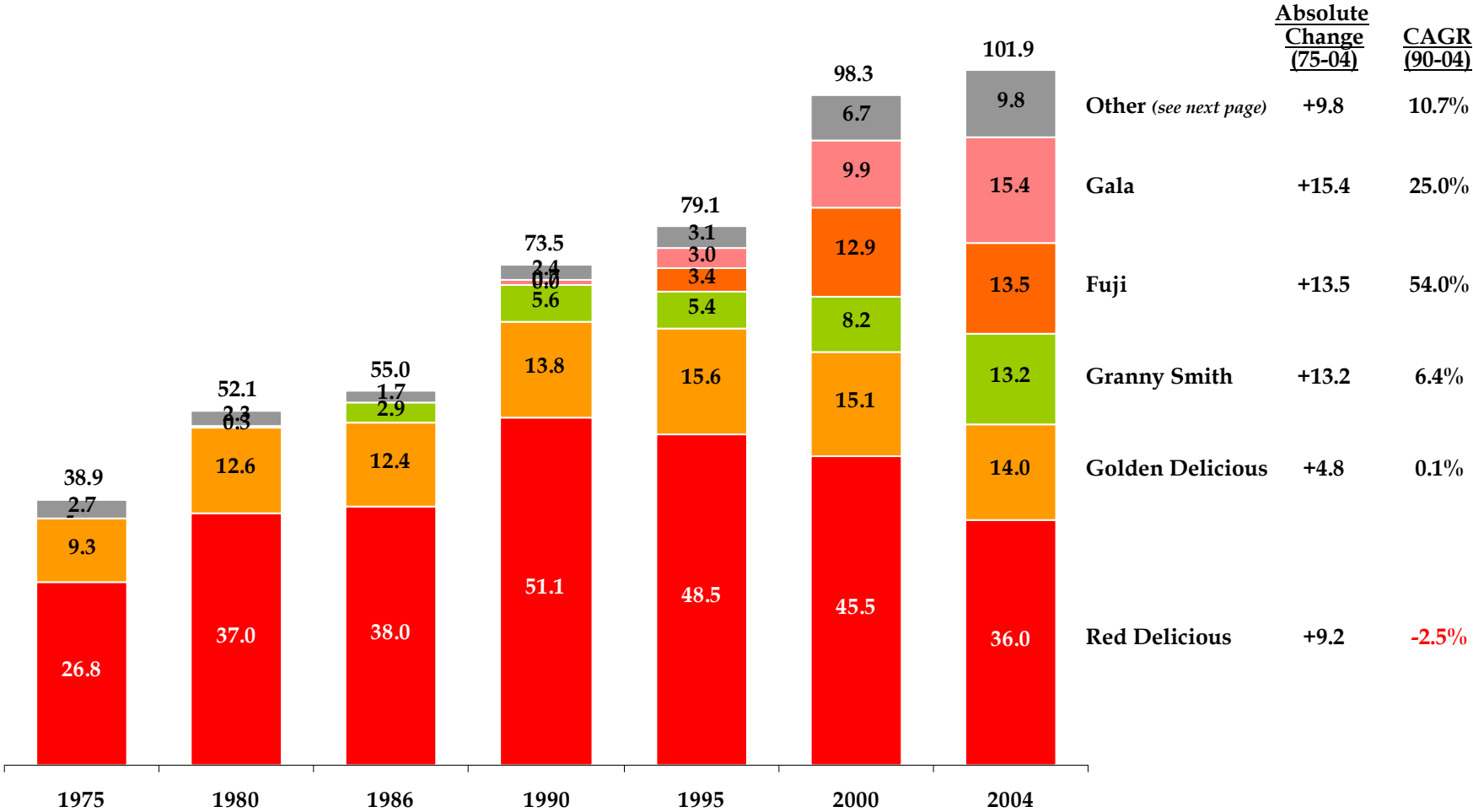
Growers in Washington State have moved rapidly into new varieties



GROWING IMPORTANCE OF NEW VARIETIES

Increasing apple production is coming from three major varieties: Gala, Fuji and Granny Smith

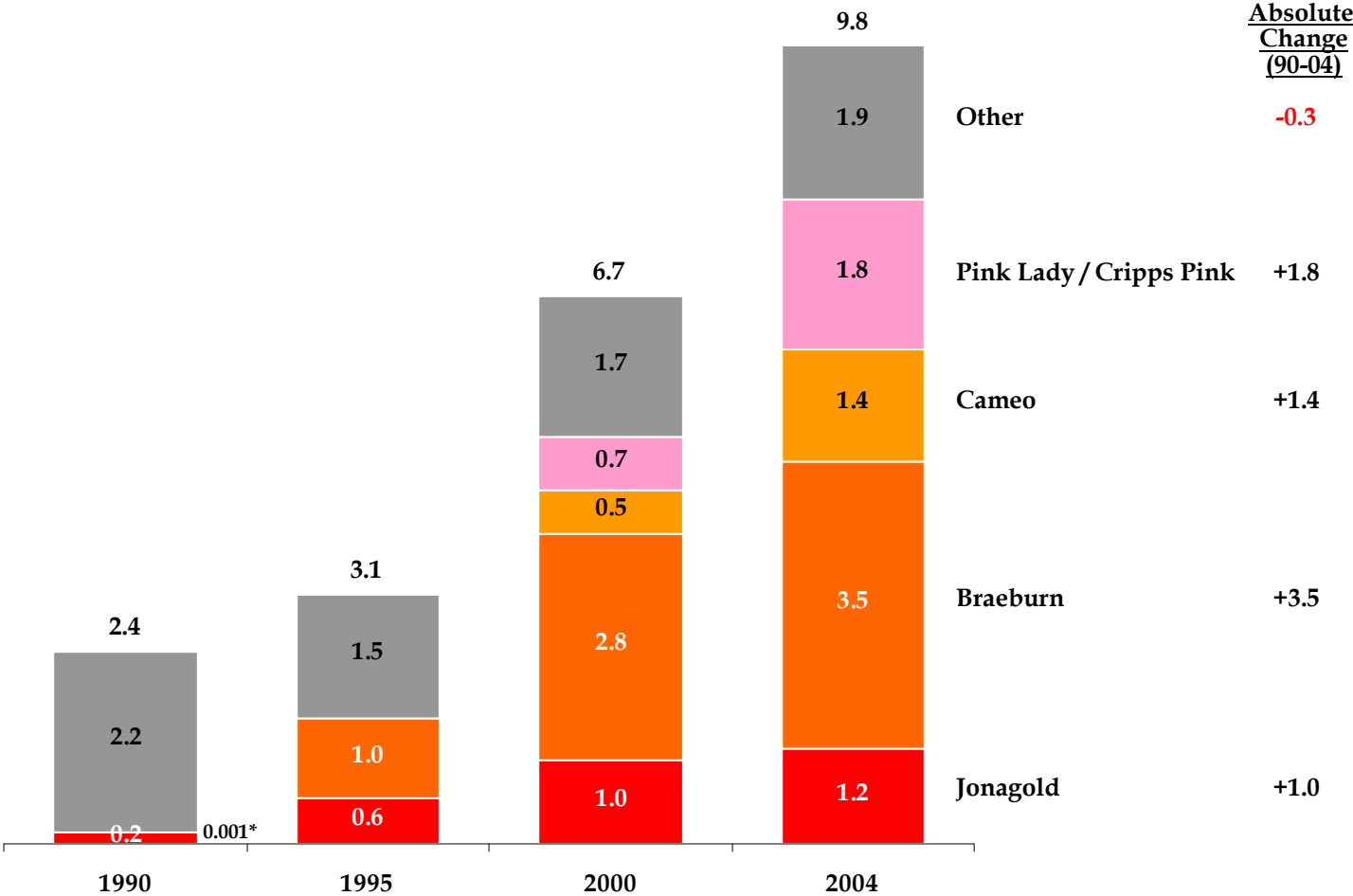
Change in Washington State apple production by major variety
(42lb. boxes; 000; 1975-2004)



SECOND TIER NEW VARIETIES GROWING RAPIDLY

In addition, there is a strong group of second tier new varieties coming on strongly

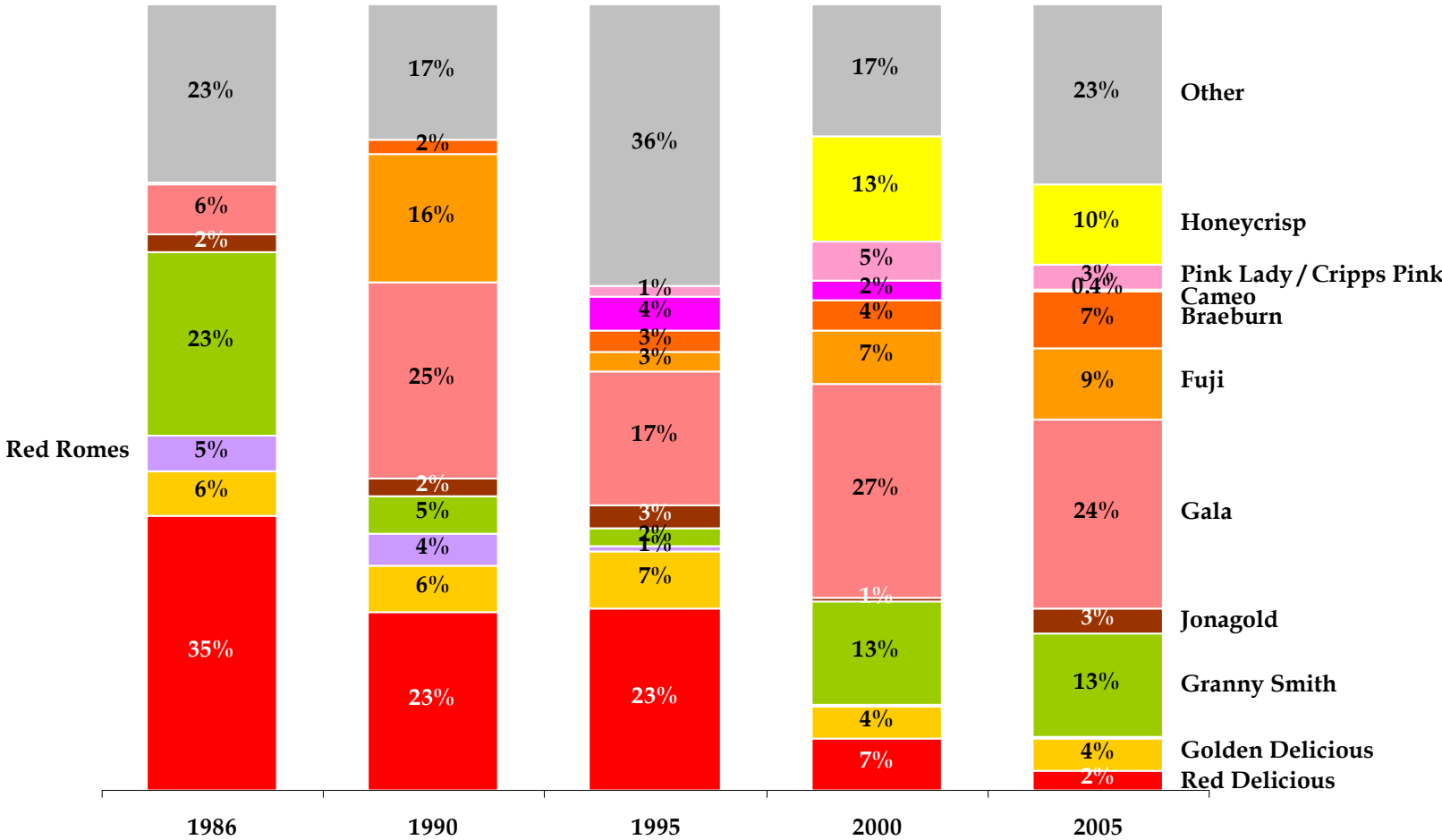
Change in Washington State apple production by secondary varieties
(42lb. boxes; 000; 1990-2004)



NEW PLANTINGS BECOMING MORE VARIED

Nursery trees sold data shows the future is all about new varieties

Nursery trees sold in Washington State by major varieties
 (% of nursery trees sold; 1986-2005)



NEW VARIETIES FROM AROUND THE WORLD

The major new varieties being planted in Washington State come from around the world

Details of major new varieties being planted in Washington State

(various)

	Plant Patent	Year developed/ production	Origin	Parents	Control
Cameo®	9,068	1987	Chance seedling discovered by Darrel Caudle in Wenatchee, Washington State	Chance seedling (Red Delicious x Golden Delicious?)	Cameo Apple Marketing Association
Honeycrisp™ (Minn1711R)	7,197	1960 1991	University of Minnesota apple breeding program	Macoun x Honeygold	Nurseries licensed by University of Minnesota
Pink Lady® (Cripps Pink)	7,880	1973	Western Australia Department of Agriculture breeding program	Lady William's x Golden Delicious	Pink Lady is a trademark of Brandt's Fruit Trees, Inc., and is managed by Pink Lady USA.
Ginger Gold™ (Mnt. Cove 509)	7,063	1969 1980	Chance seedling following hurricane at Clyde & Ginger Harvey's orchard in Virginia	Unknown (Winesap x Newtown? Golden Delicious and Pippin?)	Patent held by Adams County Nursery, PA
Sansa	6,519	? 1988	Crossed by DSIR Havelock North, New Zealand for Tohuku Research Station in Morioka, Japan	Gala x Akane	<i>none</i>
Jonagold	-	1968	Cornell University Geneva Station apple breeding program	Golden Delicious x Jonathan	<i>none</i>
Fuji	-	1938 1958	Tohuku Research Station in Morioka, Japan	Ralls Janet x Delicious	<i>none</i>
Braeburn	-	1952 1970	Discovered on the property of O. Moran, Waiwhero, Upper Moutere, New Zealand	Possibly an open pollinated seedling of Lady Hamilton x Granny Smith	<i>none</i>
Gala/Royal Gala	-	1934 1973	J.H.Kidd at Greytown Wairarapa, New Zealand; private breeding program	Kidd's Orange Red x Golden Delicious	<i>none</i>

URGENT NEED FOR NEW VARIETIES

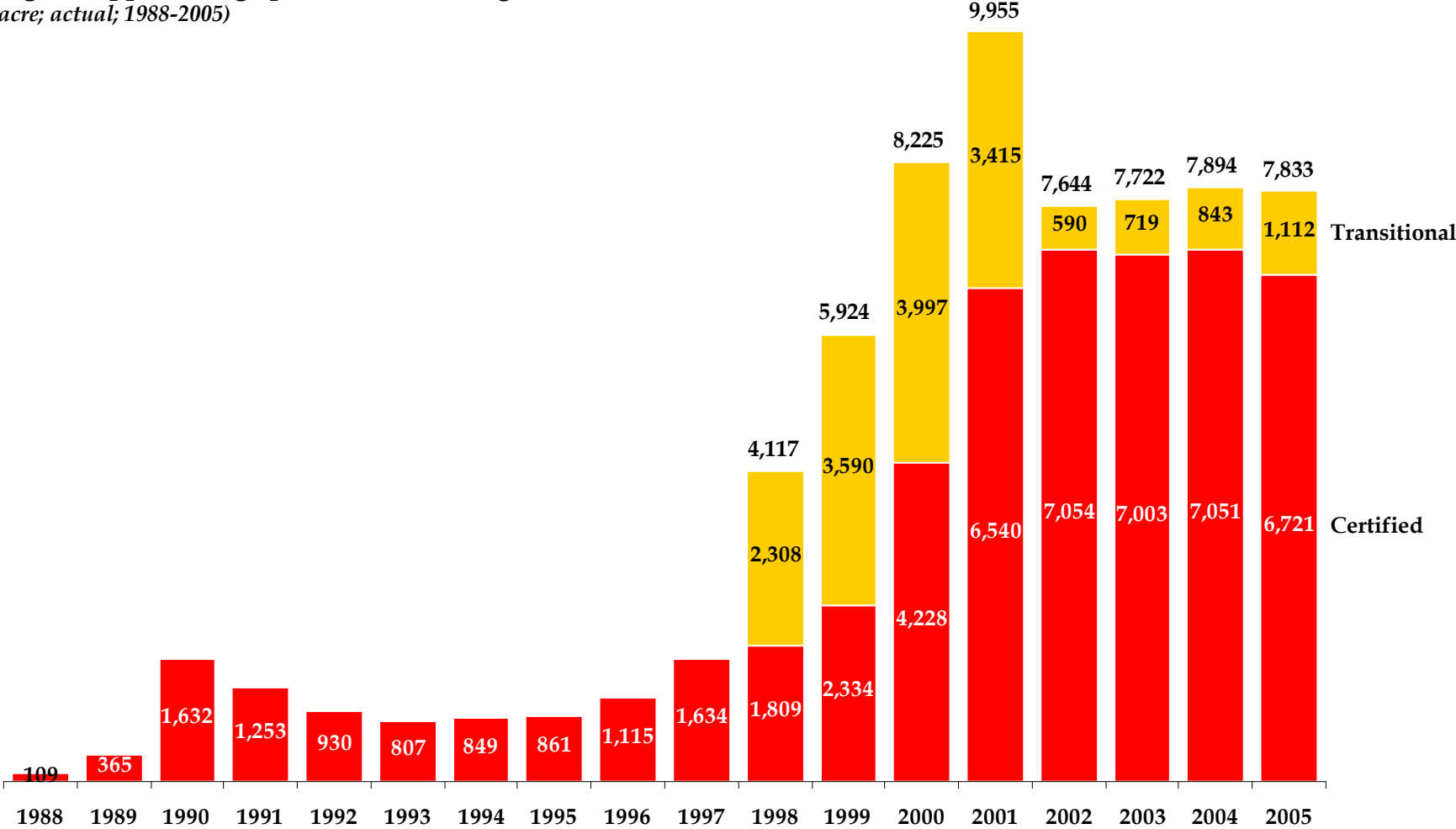
There is a recognized and urgent need for more successful new varieties

- **“The Washington State apple industry urgently needs new varieties, but traditional breeding is a long, slow process. There's got to be a sense of urgency. Time is money lost. The sooner we introduce a new variety, the sooner there's the potential to have a better paying variety. I'm in a hurry, and I think we need to be in a hurry for the sake of our industry... It takes many years to develop and commercialize a new variety. For example, the time it took from making the initial crosses to releasing the variety was 31 years for Honeycrisp, 28 years for Gala, 25 years for Jonagold, 24 years for Aurora Golden Gala, 23 years for Fuji, and 17 years for Elstar... In theory, a variety could be introduced within 12 years, but if growers want to know more about it before they plant, and reduce their risk, it could take another five to ten years to learn about the characteristics of the variety.”** *Dr. Bruce Barritt, Director, apple-breeding program, Washington State University, Feb 2006*

GROWTH OF ORGANICS

Organic apple area has grown strongly over the past decade; however this growth appears to have leveled off recently

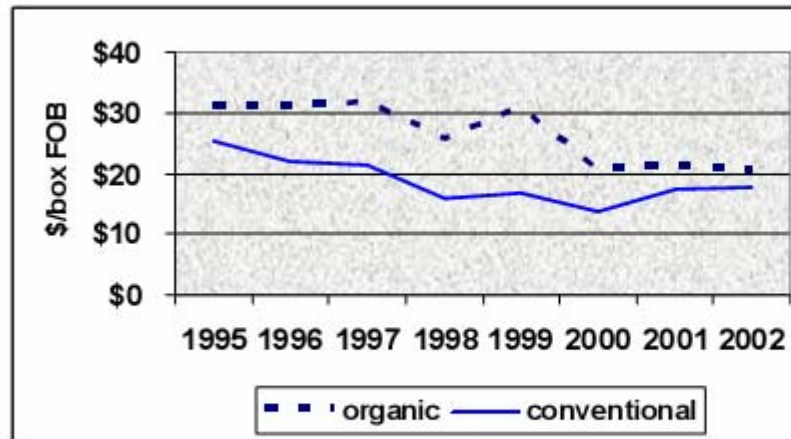
Organic apple acreage planted in Washington State - certified & transitional
(acre; actual; 1988-2005)



FALLING PREMIUMS

The market premium for organic apples appears to be falling

Figure 27: Price trends for organic and conventional Gala apples in Washington State.*



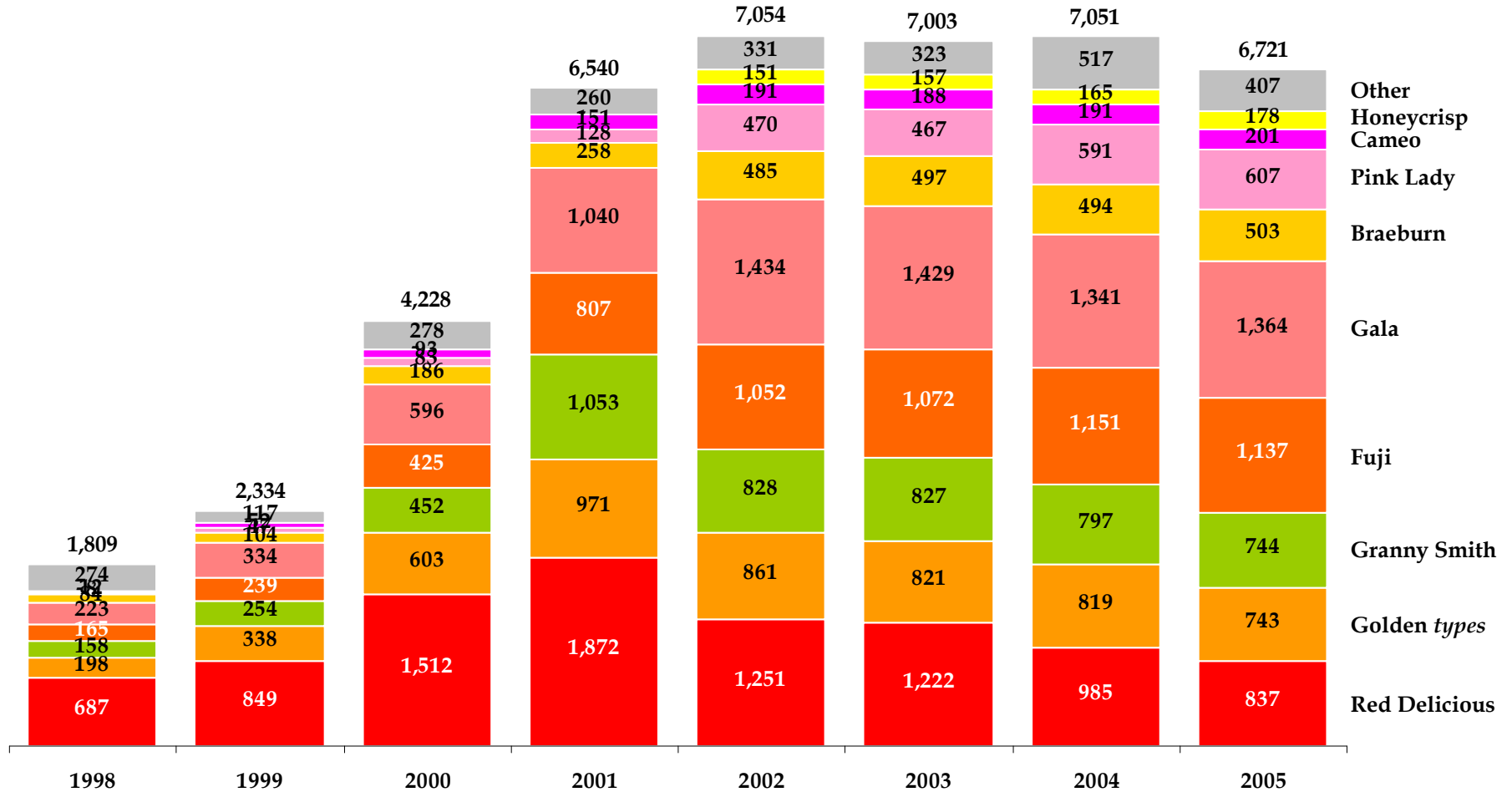
* Updated the original figure from: Granatstein, D. and E. Kirby. 2002. "Current Trends in Organic Tree Fruit Production." CSANR Report No. 4, WSU.

http://wrganic.tfrec.wsu.edu/OrganicIFP/OrganicFruitProduction/current_trends.pdf

CERTIFIED ORGANIC AREA BY VARIETY

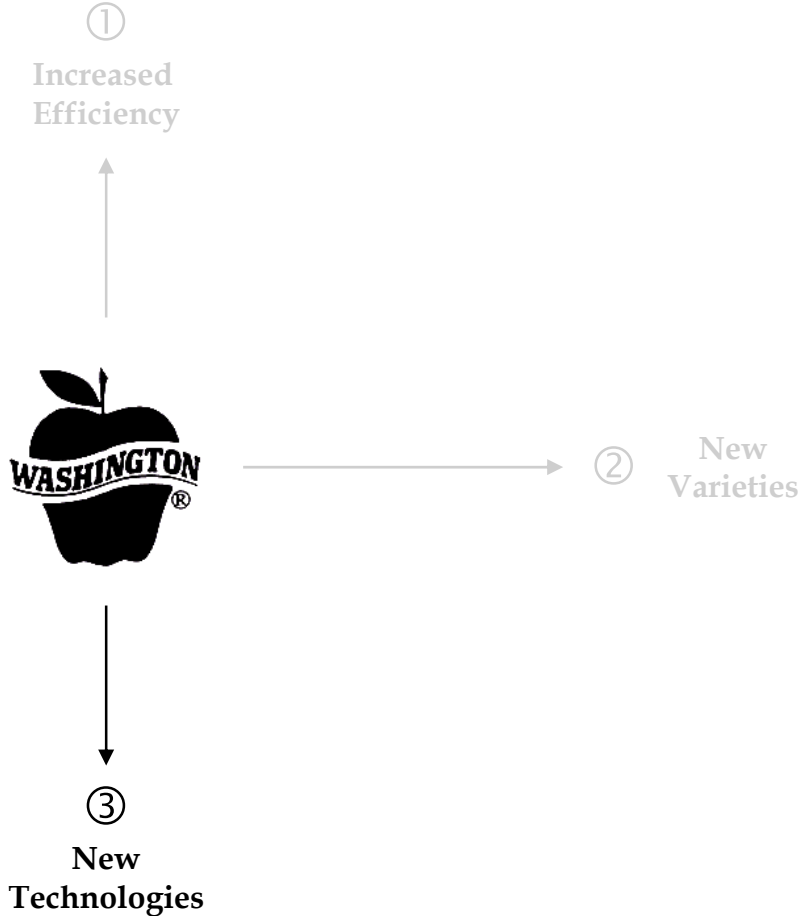
Emerging new varieties have a strong and growing presence in organics

Organic apple acreage planted in Washington State by variety – certified only
(acre; actual; 1998-2005)



WA STATE RESPONSE #3

Growers in Washington State have embraced new technologies



CONTROLLED ATMOSPHERE

Washington State growers have embraced controlled atmosphere as a way of extending the apple season

- **“Washington now has the largest capacity of CA storage of any growing region in the world. The large, airtight CA rooms vary in size from 10,000 boxes to 100,000 boxes, depending on the volume of apples produced by the apple shipper and his marketing strategies... Washington has the highest concentration of CA storage of any growing region in the world. Eastern Washington, where most of Washington’s apples are grown, has enough warehouse storage for 181 million boxes of fruit, according to a report done in 1997 by managers for the Washington State Department of Agriculture Plant Services Division. The storage capacity study shows that 67 percent of that space – enough for 121,008,000 boxes of apples – is CA storage.”** *WA Apples website*
- **“Once harvested, apples are stored for up to 12 months in controlled atmosphere rooms... Storage technologically has improved dramatically over the last decade enabling the industry to provide better quality apples throughout the year. Many of the newer varieties like Gala, Fuji and Granny Smith are now available from the United States on a year round basis, much like Red and Golden Delicious, eliminating the need to rely on imported apples.”** *Rainier Fruit Co. website*
- **“Washington Records Huge Apple Crop – Washington’s 2005 apple crop was recently estimated at 5.8 billion pounds... The good news is that much of the Gala crop, which was huge, has been sold. The bad news is there is still a lot of price pressure on other varieties from the large crop. Because Washington produces about 60% of the total U.S. apple crop, the large crop is also bad news for southern hemisphere producers such as New Zealand and Chile, he says. With so many apples in storage, the shippers from Down Under will have a tough time breaking in to the U.S. market. Stocks of apples and pears are also high in Europe, so that outlet might not be available. The southern hemisphere folks might be facing quite a challenge.”** *Desmond O’Rourke, Industry Expert, Belrose, Feb 2006*
- **“Stemilt's airtight CA rooms vary in size from 16,000 carton capacity (800 bins) to 60,000 carton capacity (3000 bins). Stemilt uses smaller CA rooms to maintain "Rapid CA". Smaller CA rooms allow fruit to be loaded more rapidly and get fruit under CA soon after harvest. Smaller CA rooms also offer more flexibility and improved market timing.”** *Stemlit website*

SMARTFRESH

The development of SmartFresh™ treatment has also had a dramatic impact on the storage life of apples

- **“1-Methylcyclopropene (1-MCP), sold under the commercial name of SmartFresh™ , needs little introduction to storage operators. 1-MCP has quickly become a major component of our industry. Its effects on delaying apple ripening, and especially on maintaining the texture quality of fruit, continue to amaze, and 1-MCP is impacting sales both domestically and internationally. We receive telephone calls from retailers wanting to know how 1-MCP works because they cannot believe the quality of Empire apples that they are selling. The UK market has also responded very positively to the beneficial effects of 1-MCP on fruit quality. The advantage that 1-MCP confers on apple fruit is that it helps maintain the fruit’s firmness throughout the entire marketing chain, in contrast to air and CA storage alone where fruit can deteriorate and quickly soften after leaving the packing house... However, there are also some areas of concern. One of these in particular, has been internal browning disorders.”** *Chris Watkins, Department of Horticulture, Cornell University, Autumn 2004*
- **“The dream of every grower, storage operator, and retailer is to have commodities that we put into some type of suspended animation where the fruit do not change from the time of harvest, and then are ripened to reach the consumer in desirable condition... A revolution may be occurring in our ability to control ripening of apple fruit! Many trade magazines have recently carried articles about a compound known as 1-methylcyclopropene (MCP). It is not difficult to get excited about a compound when one is able to show growers McIntosh apples that have been treated at harvest and after two months at room temperature are still 15 lb!”** *Chris Watkins, Department of Horticulture, Cornell University, Autumn 2000*



FRESH CUT TO THE CONSUMER

Improved modified atmosphere packaging technology is also allowing apples to be sold to the final consumer in a more convenient form

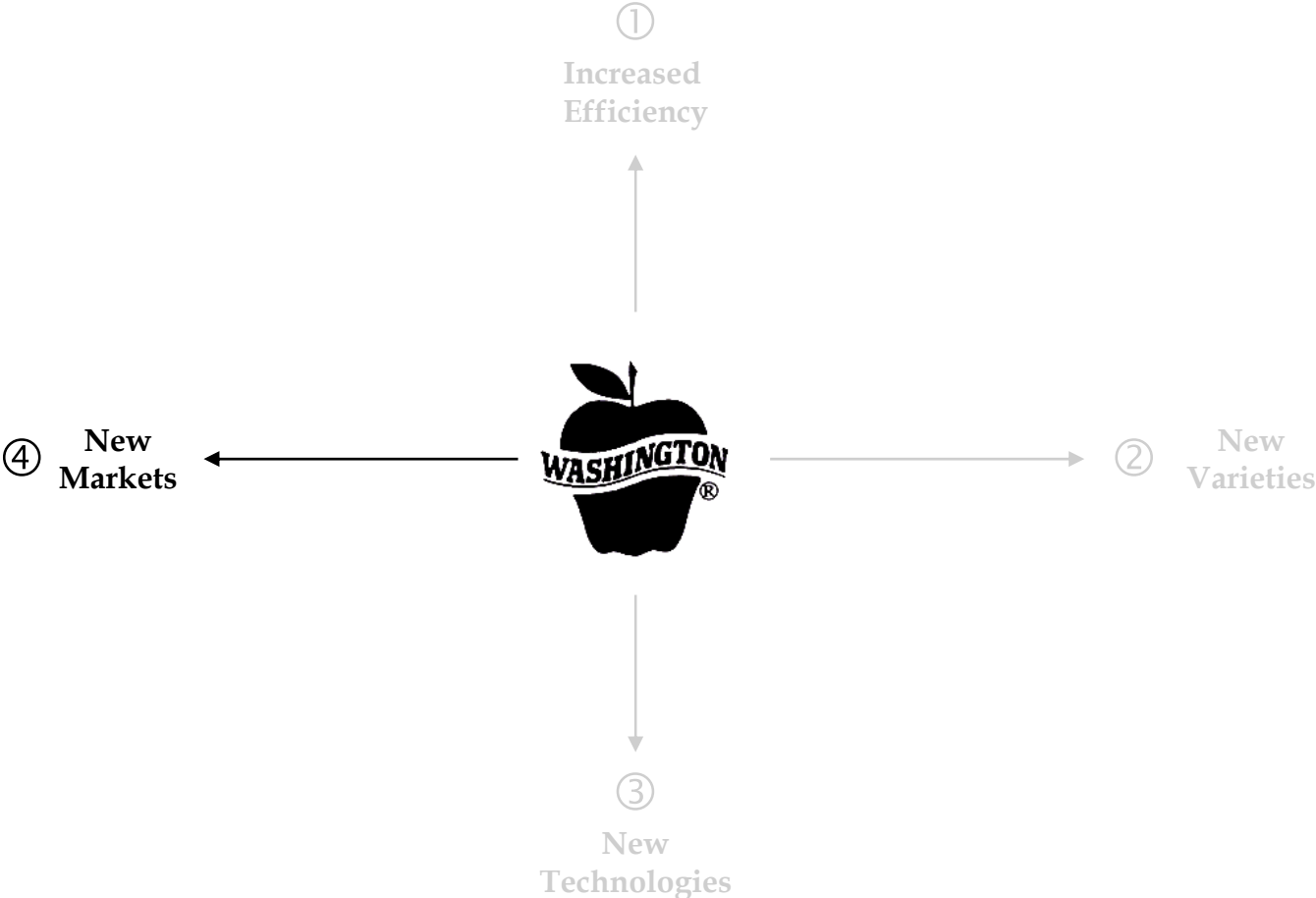
- “Tree Top Inc. is so confident about the future of fresh-cut apple slices that it’s opening a new plant in Washington that will turn out fresh-sliced apples for more than 500 McDonald’s restaurants in the Northwest and Alaska as well as for foodservice, retail, and wholesale customers. The new plant, which is located just north of Yakima, WA, is adorned with a sign that says fresh-cut apples are “giving sliced bread a run for its money.” No matter how you slice it, the burgeoning popularity of fresh-cut apples has been welcome news for the co-op’s 1,460 grower-owners.”

American Fruit Grower, April 2006



WA STATE RESPONSE #4

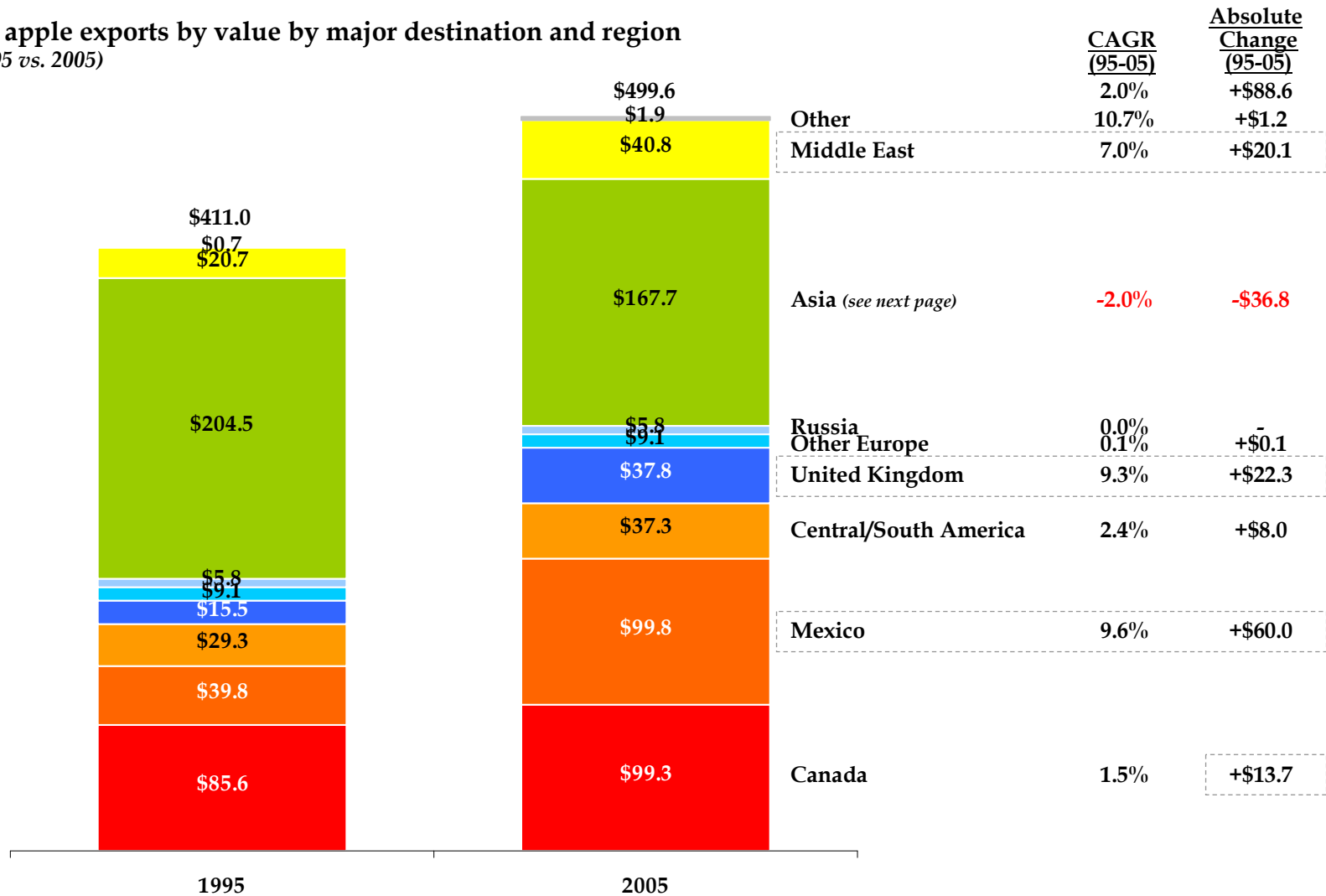
Growers in Washington State have also pushed into new markets



NEW MARKETS

Total fresh apple exports are growing, with growth coming primarily from Mexico, the United Kingdom, Canada and the Middle East

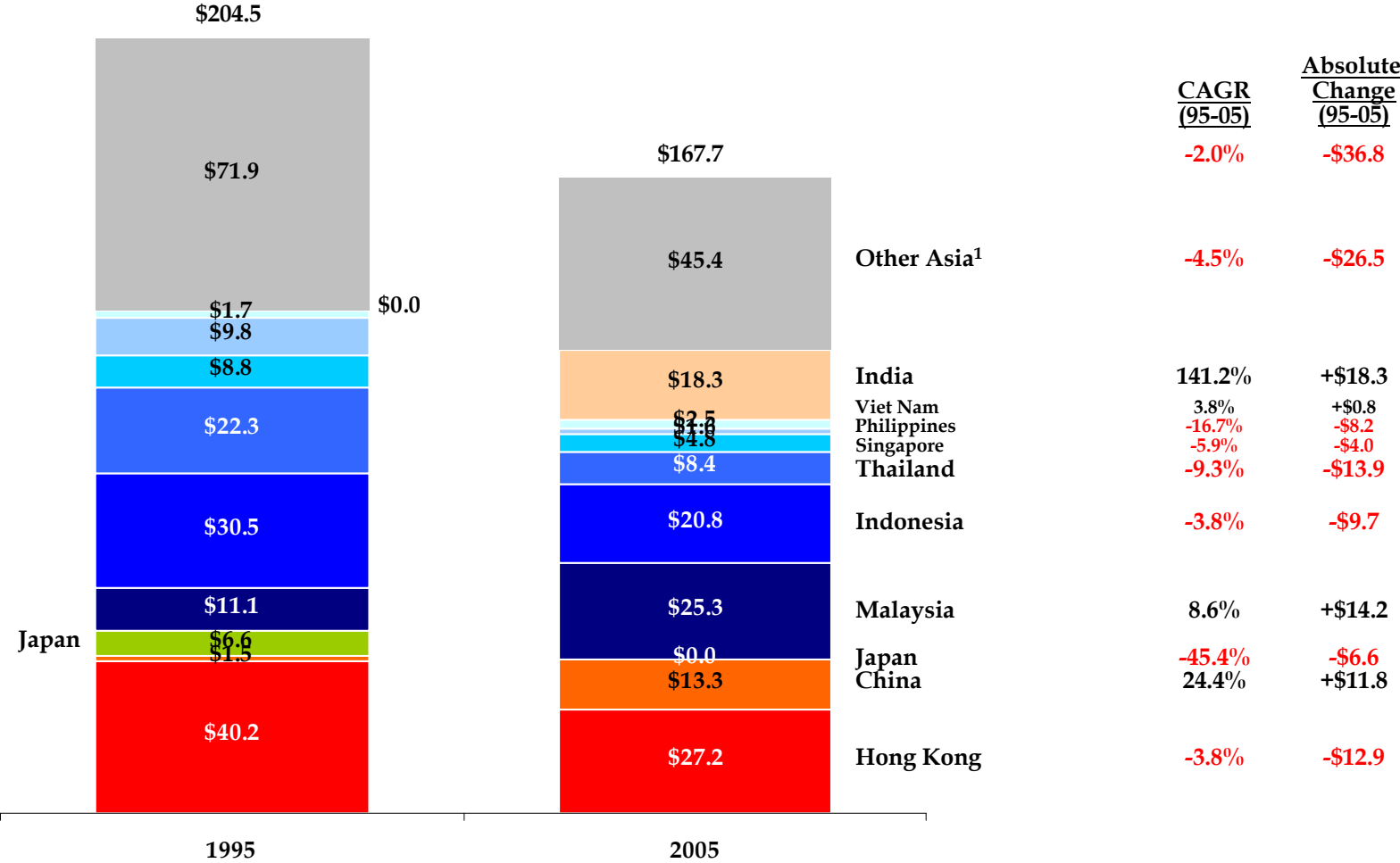
United States apple exports by value by major destination and region
(US\$m; FOB; 1995 vs. 2005)



NEW MARKETS

Growth in other markets is making up for strong declines across most of Asia

United States apple exports to Asia by value by major destination
(US\$m; FOB; 1995 vs. 2005)

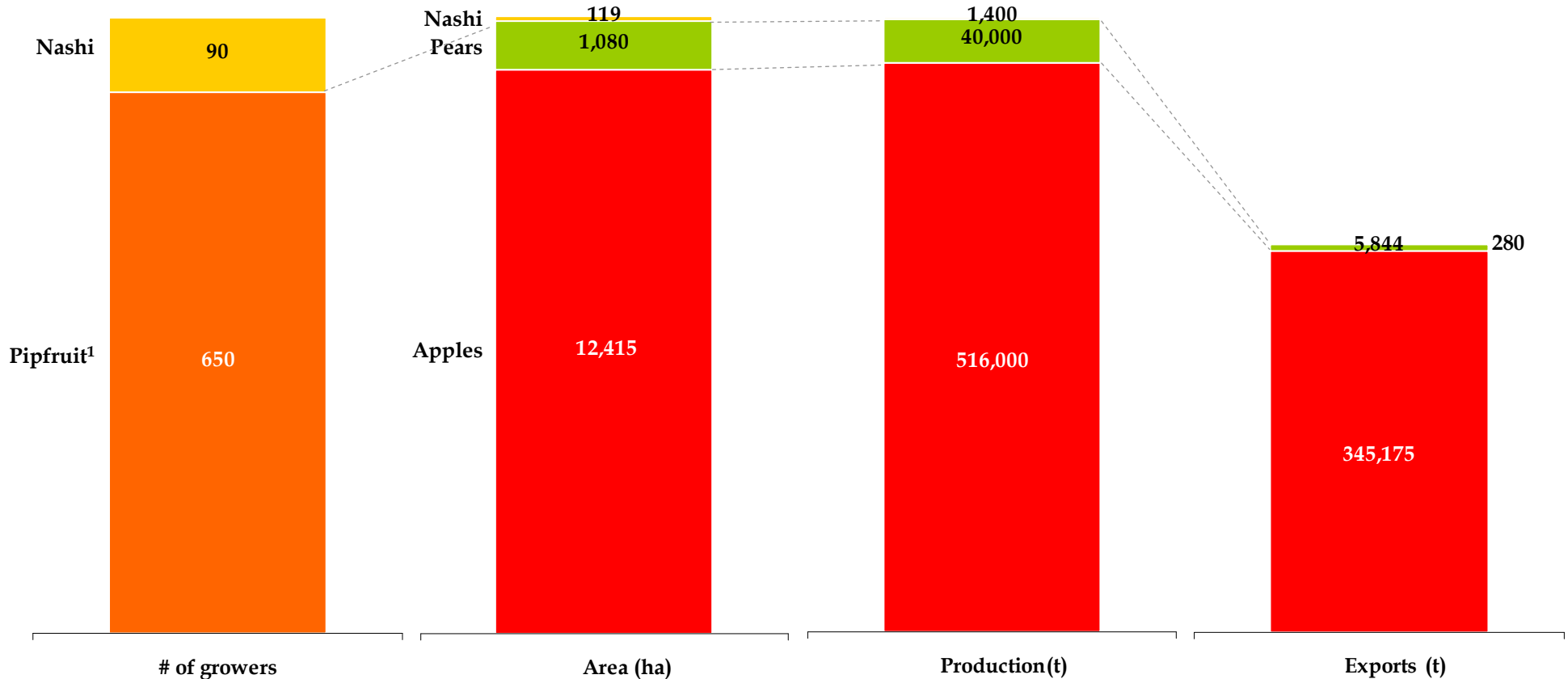


BRIEF OVERVIEW OF THE NEW ZEALAND PEAR INDUSTRY

RELATIVE SCALE

Pears are a relatively minor component of the New Zealand pipfruit industry, especially on the export side

Relative size of pipfruit segments: apples, pears and nashi in New Zealand
(various; actual; 2002/2005)



PEARS - SUPPLY-SIDE

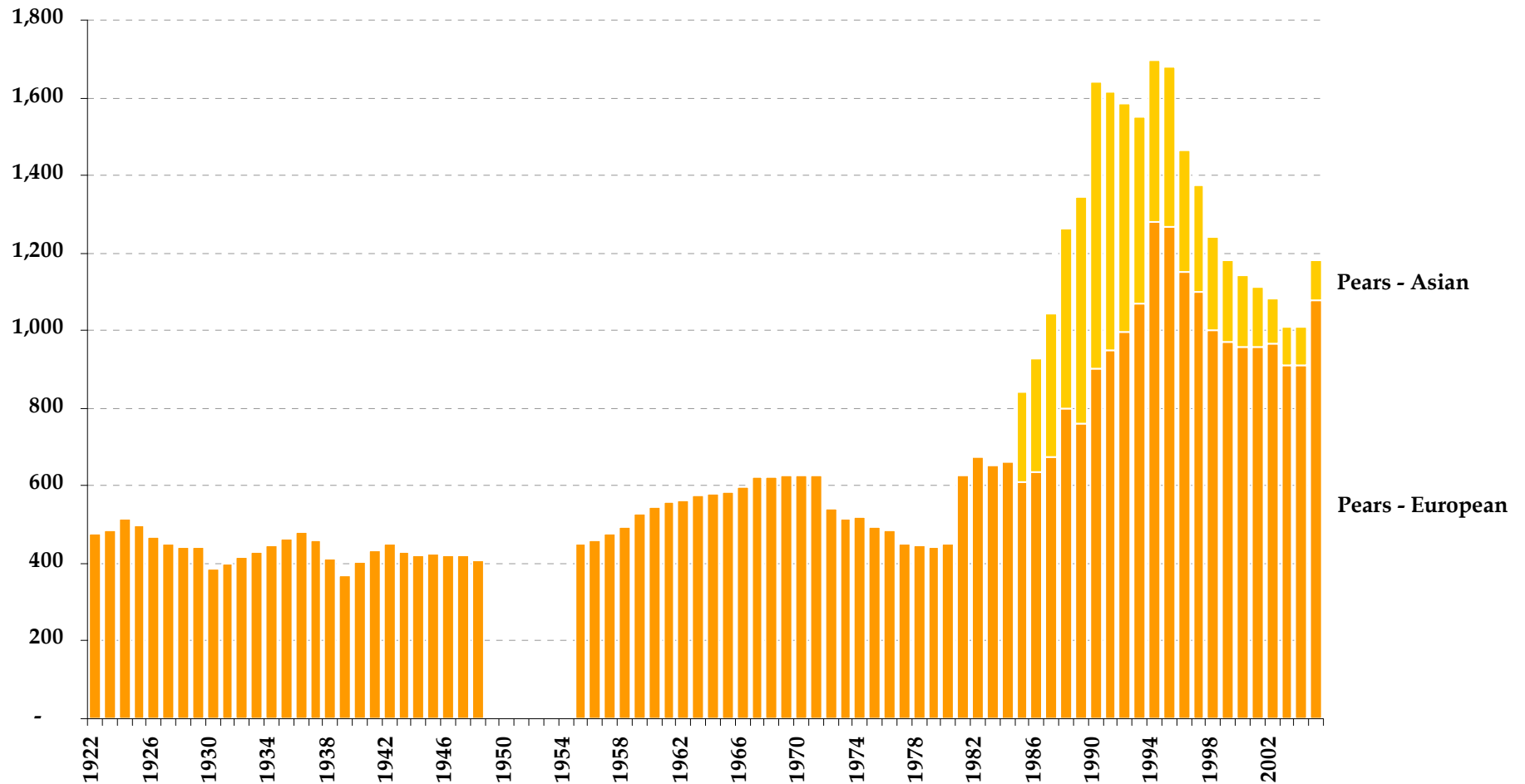
- **The New Zealand pear industry is small and domestic focused with a limited track record of success**
 - **New Zealand pear area was relatively flat until the early-to-mid 1980's when it took off; following a peak in 1994, area has fallen, particularly in Asian pears**
 - **New Zealand pear production also peaked in 1994 and has fallen by 10,000t since**
 - **Most of the New Zealand pear crop is sold on the domestic market or goes for processing; only 15% is exported in a fresh form**
 - **Pear production growth has been absorbed by the domestic and processing markets, not exports; pear export growth has been a meager +3,190t in 44 years**

- **While the industry appears competitive with other Southern Hemisphere suppliers, it has been unable to achieve traction and growth in world markets**
 - **New Zealand accounts for less than a half a percent of the world export market with exports of US\$6m**
 - **New Zealand's pear export volume growth has been poor compared to Argentina, Chile and South Africa who are all experiencing strong growth**
 - **New Zealand generally achieves a premium for its pears versus other Southern Hemisphere suppliers**
 - **New Zealand achieves superior yields per hectare versus other Southern Hemisphere suppliers**

NEW ZEALAND PEAR AREA

New Zealand pear area was relatively flat until the early-to-mid 1980's when it took off; following a peak in 1994, area has fallen, particularly in Asian pears

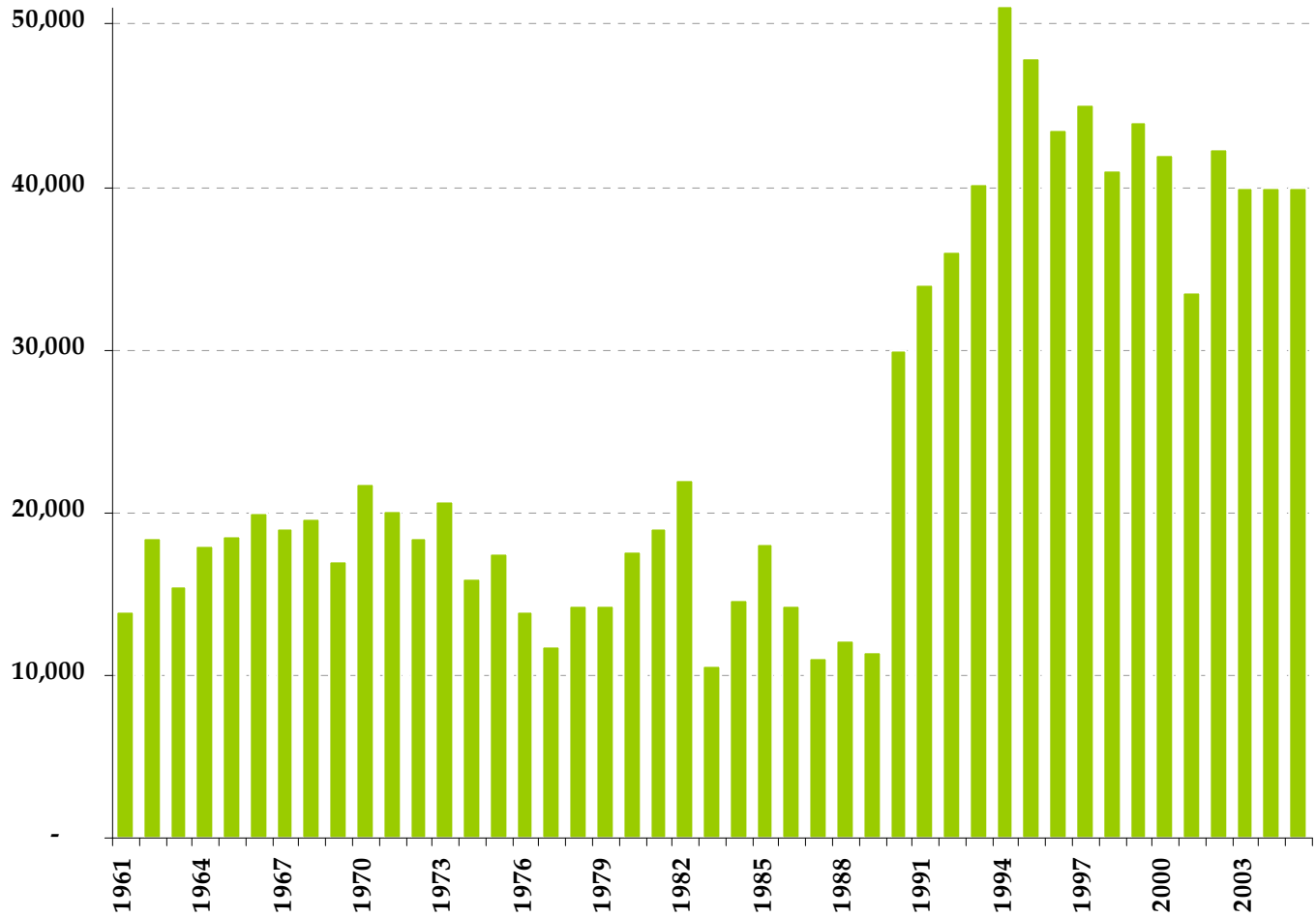
Area planted in pears in New Zealand by type
(hectare; 1922-2005)



NEW ZEALAND PEAR PRODUCTION

New Zealand pear production peaked in 1994 and has fallen by 10,000 tonnes since

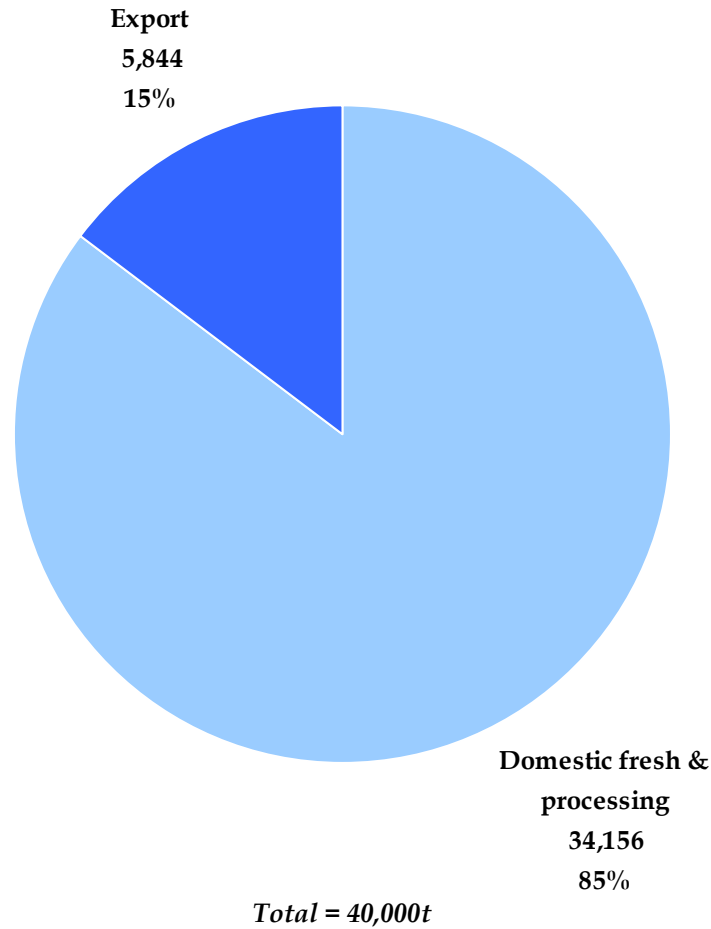
New Zealand pear production and crop disposition
(tonnes; 1961-2005)



CROP DISPOSITION

Most of the New Zealand pear crop is sold on the domestic market or is processed; only 15% is exported in a fresh form

New Zealand pear production and crop disposition
(tonnes; 2005)



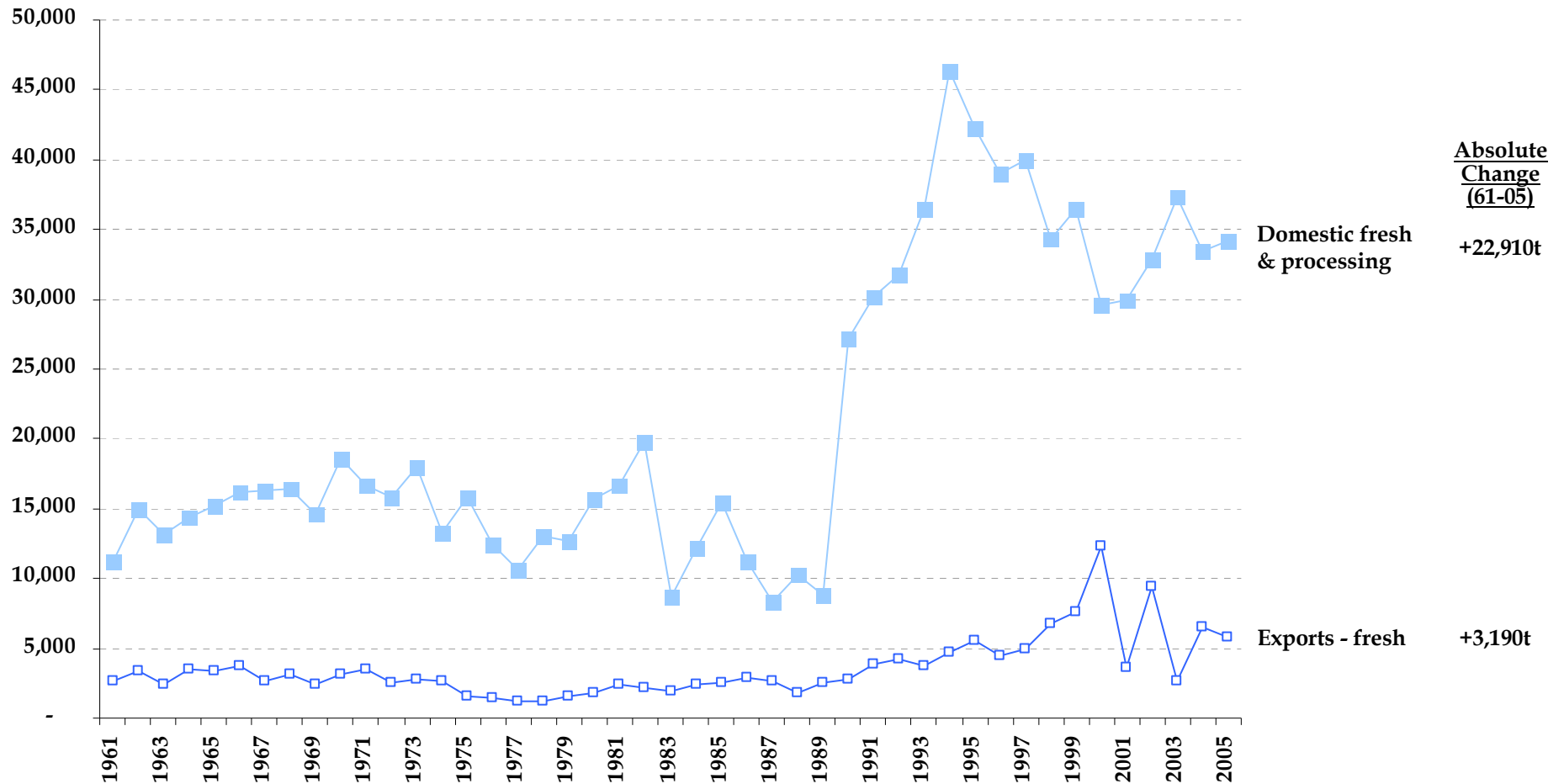
No estimate of % of crop to processing currently available

Total = 40,000t

NEW ZEALAND PEAR PRODUCTION

Pear production growth has been absorbed by the domestic and processing markets, not exports; pear export growth has been a meager +3,190 tonnes in 44 years

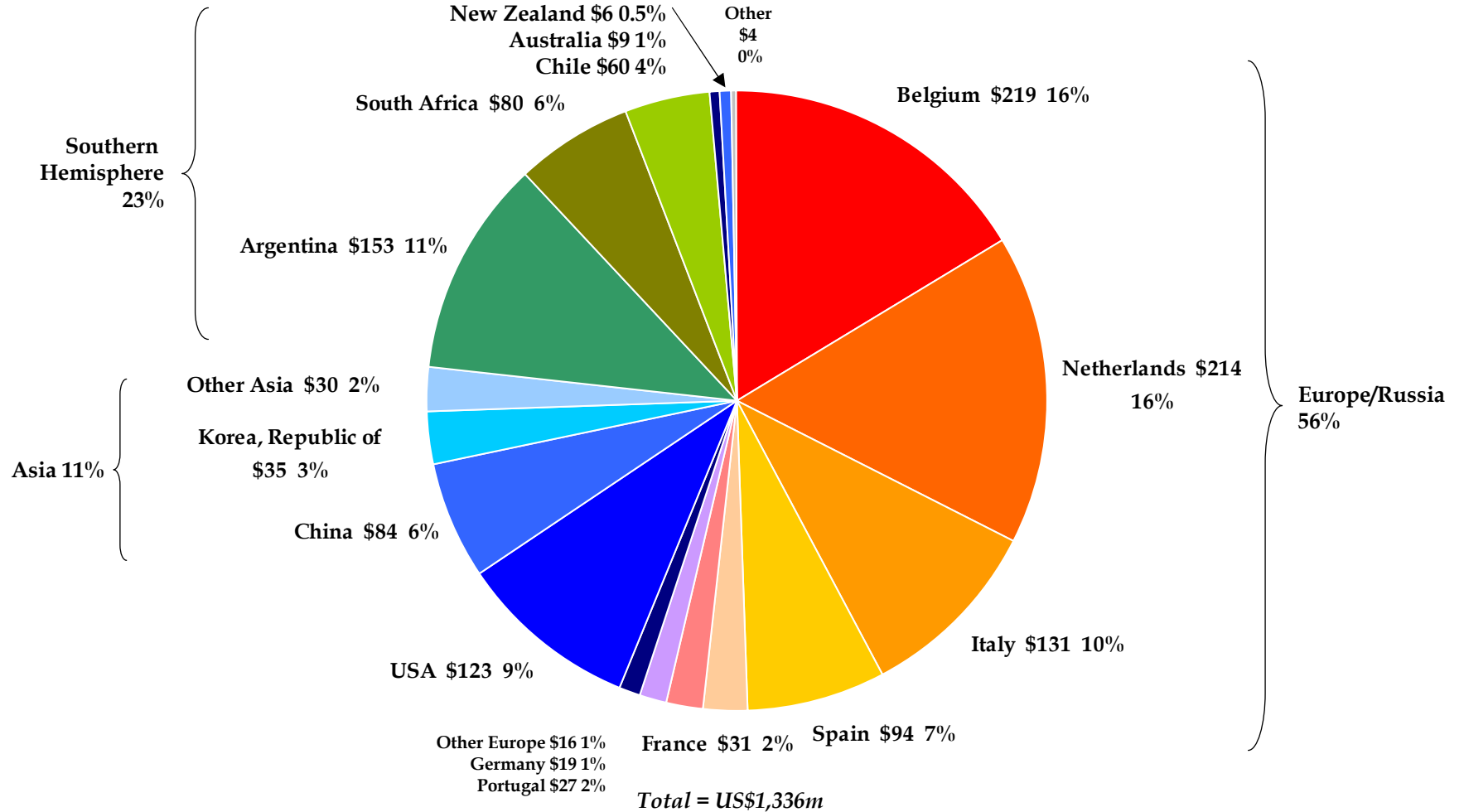
New Zealand pear production and crop disposition
(tonnes; 1961-2005)



THE WORLD PEAR MARKET - SUPPLY

New Zealand accounts for less than a half a percent of the world export market with exports of US\$6m

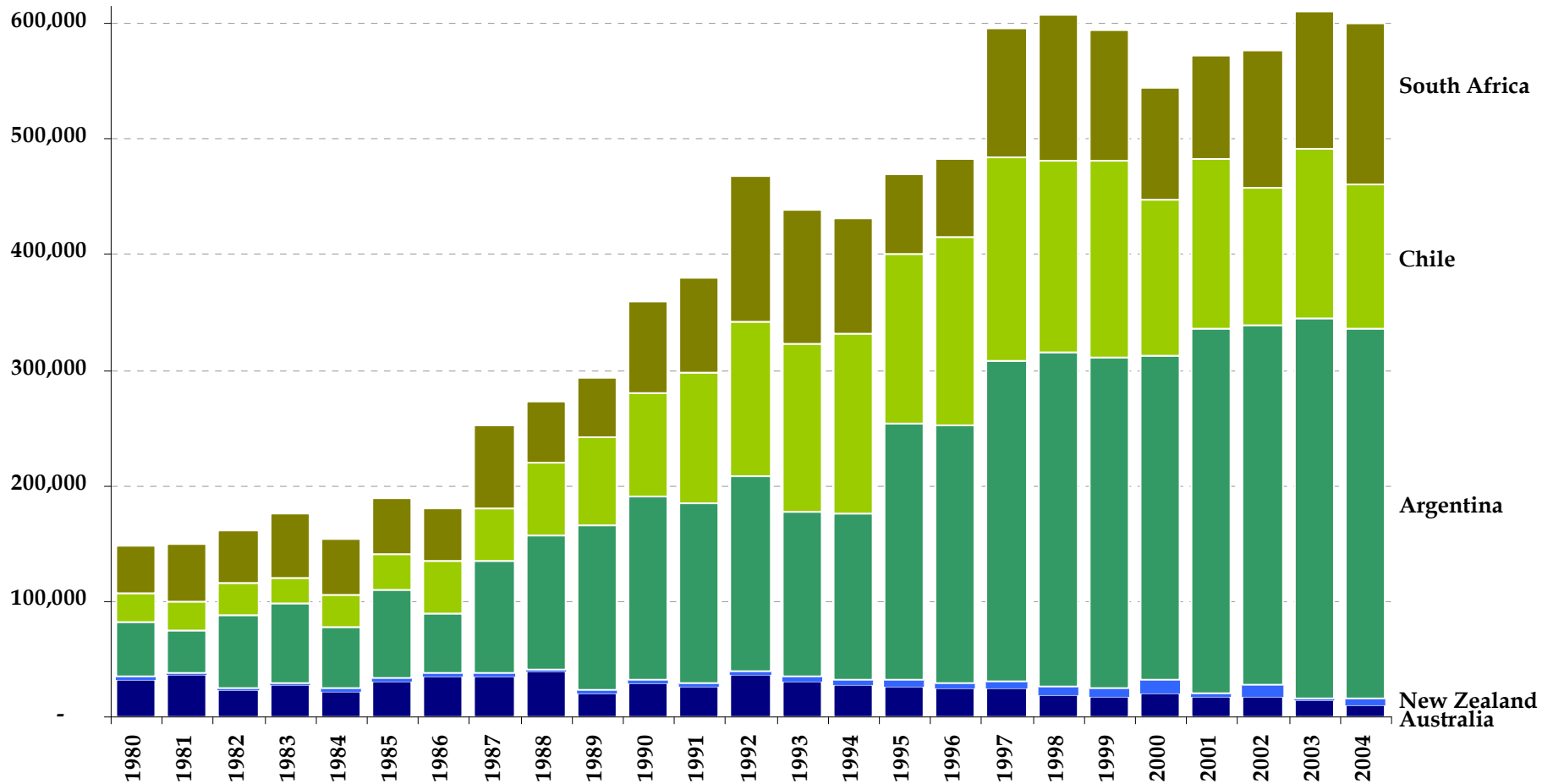
Export value share of pears by major exporting country/region
(US\$m; 2004)



SOUTHERN HEMISPHERE EXPORT VOLUME

New Zealand's pear export volume growth has been poor compared to Argentina, Chile and South Africa who are all experiencing strong growth

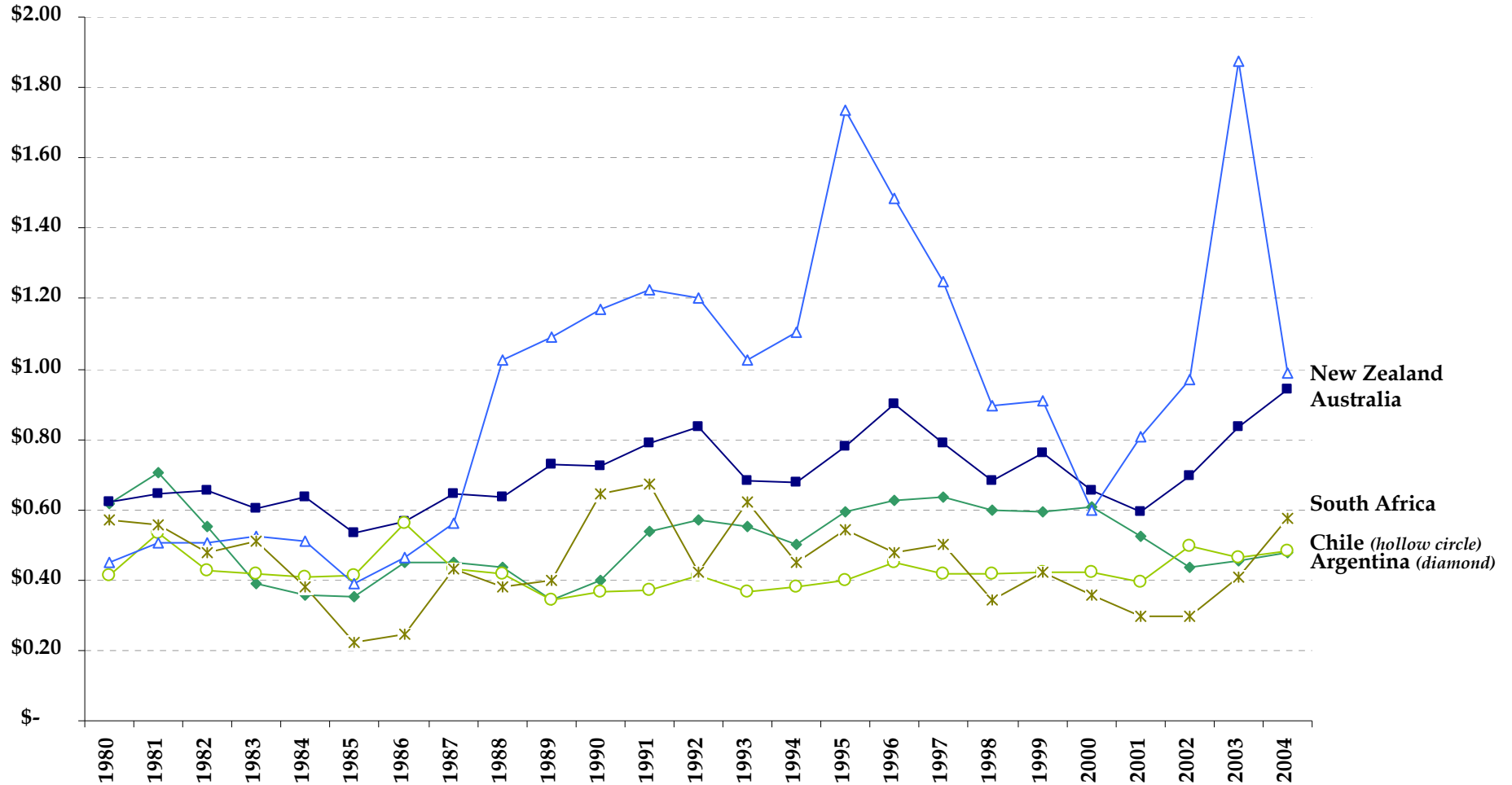
Pear export volume by key Southern Hemisphere suppliers
(tonnes; 1980-2004)



SOUTHERN HEMISPHERE EXPORT VOLUME

New Zealand generally achieves a premium for its pears versus other Southern Hemisphere suppliers

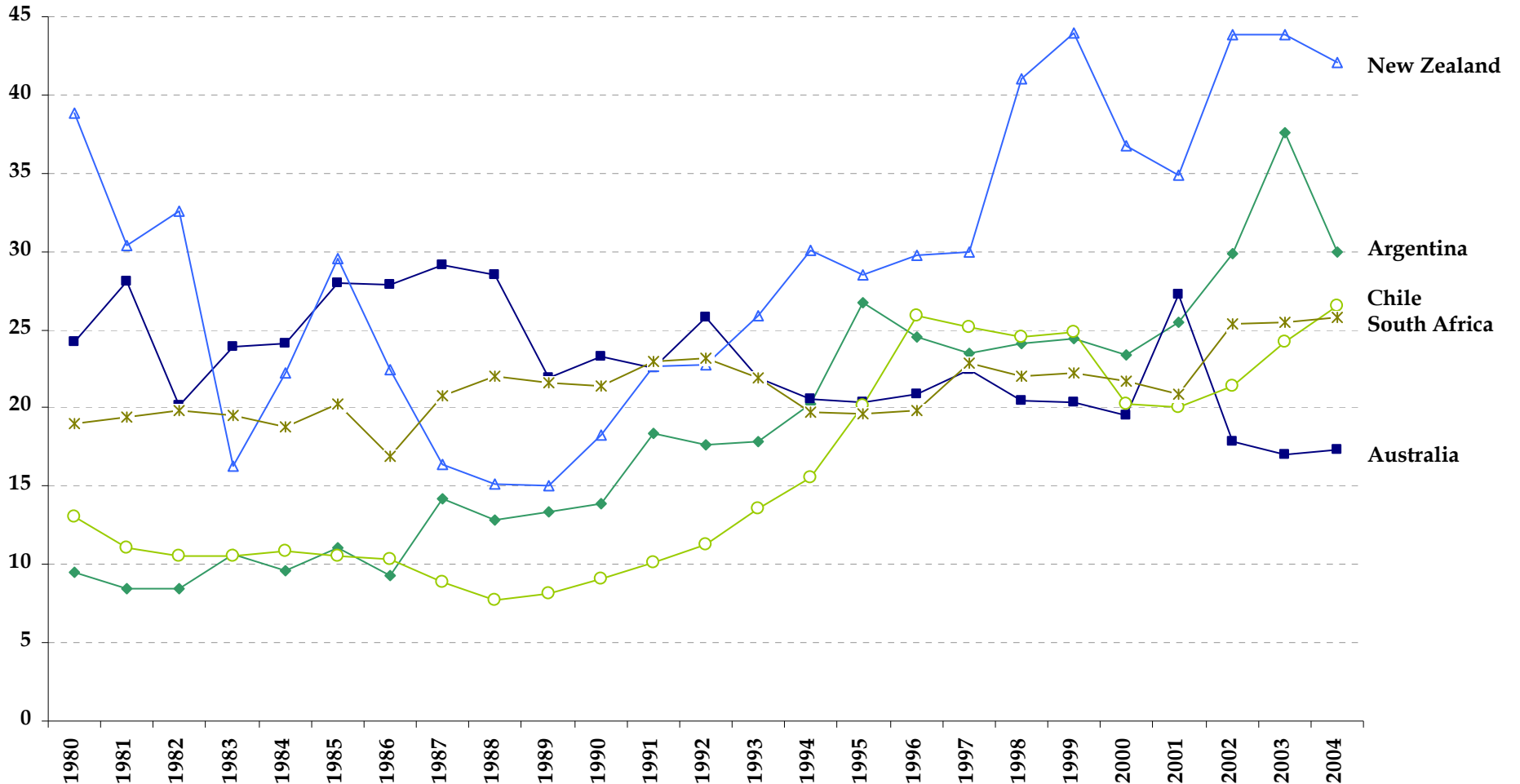
Pear export value per kilogram by key Southern Hemisphere suppliers
(US\$/kg; 1980-2004)



SOUTHERN HEMISPHERE EXPORT VOLUME

New Zealand achieves superior yields per hectare versus other Southern Hemisphere suppliers

Pear yield per hectare by key Southern Hemisphere suppliers
(t/ha; 1980-2004)



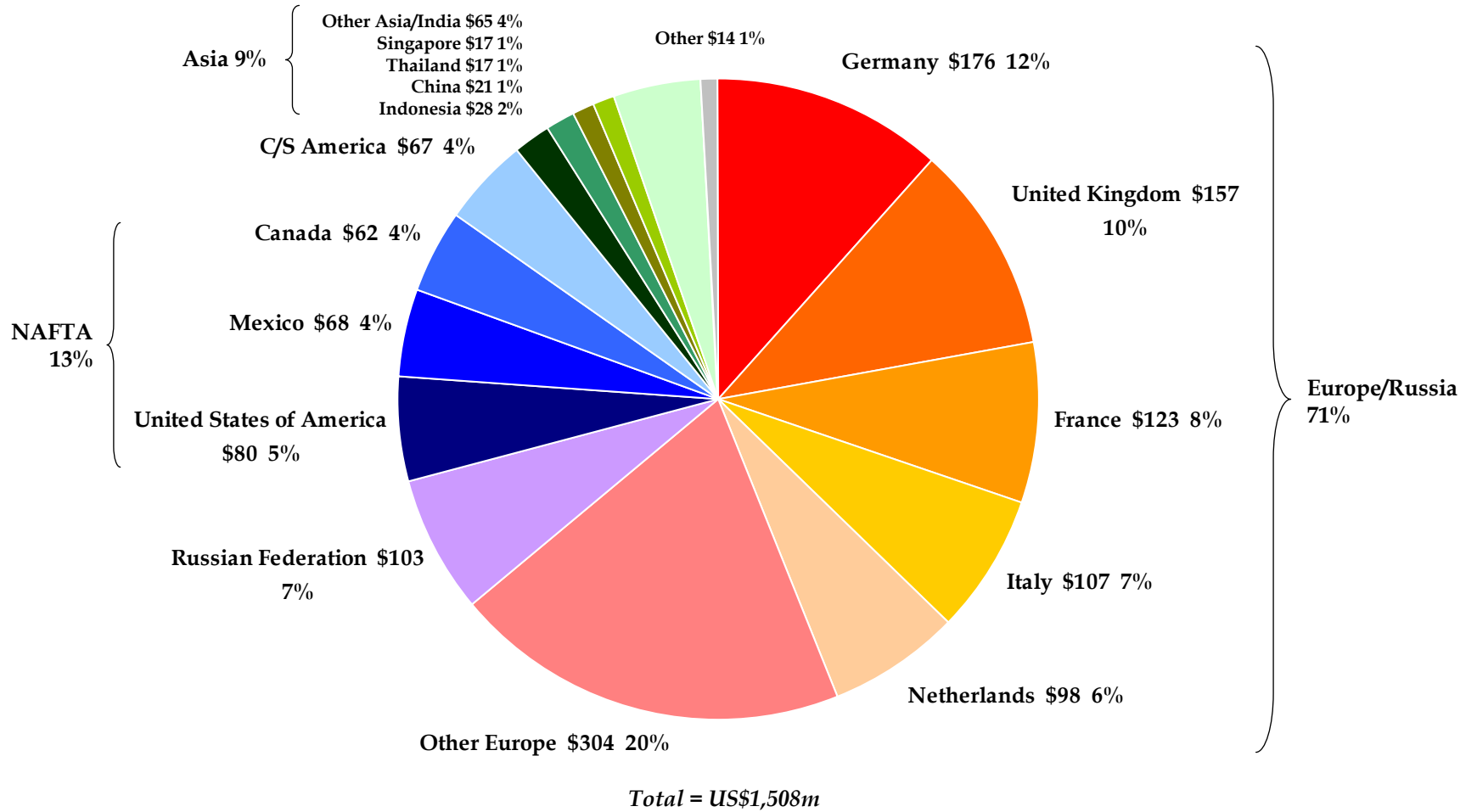
DEMAND

- The \$1.5b world market for pears is concentrated in Europe
- New Zealand's pear exports go primarily to the United States, the United Kingdom and Europe
- The United States and United Kingdom are the main drivers of growth
- Pear consumption is growing in both markets, though much more strongly in the United Kingdom
- In the United States, New Zealand accounts for about 10% of the value of pear imports
- In the United Kingdom, New Zealand accounts for about 1% of the value of pear imports

THE WORLD PEAR MARKET - DEMAND

The \$1.5b world market for pears is concentrated in Europe

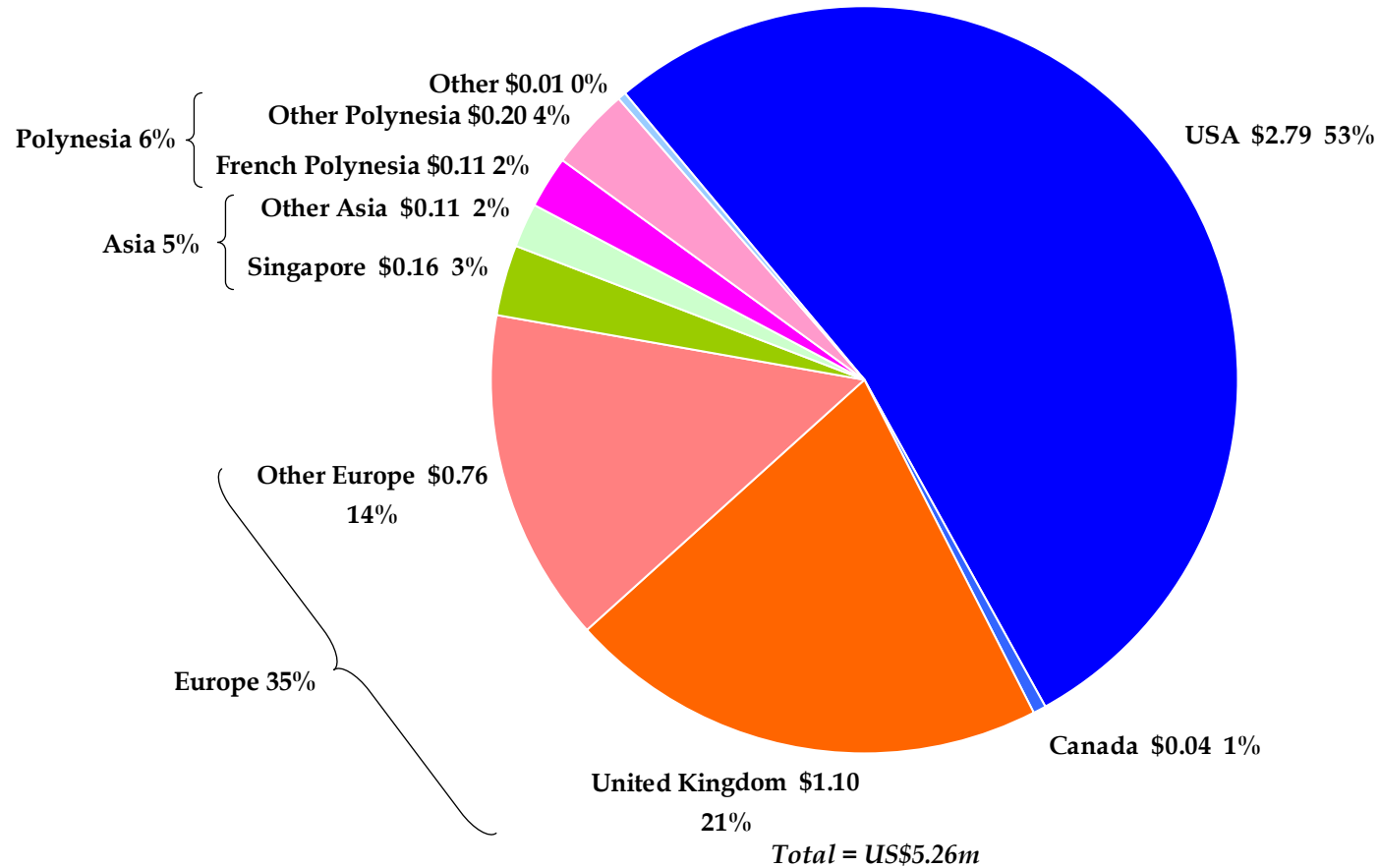
Import value share of pears by major importing country/region
(US\$m; 2004)



NEW ZEALAND PEAR EXPORT VALUE BY DESTINATION

New Zealand's pear exports go primarily to the United States, the United Kingdom and Europe

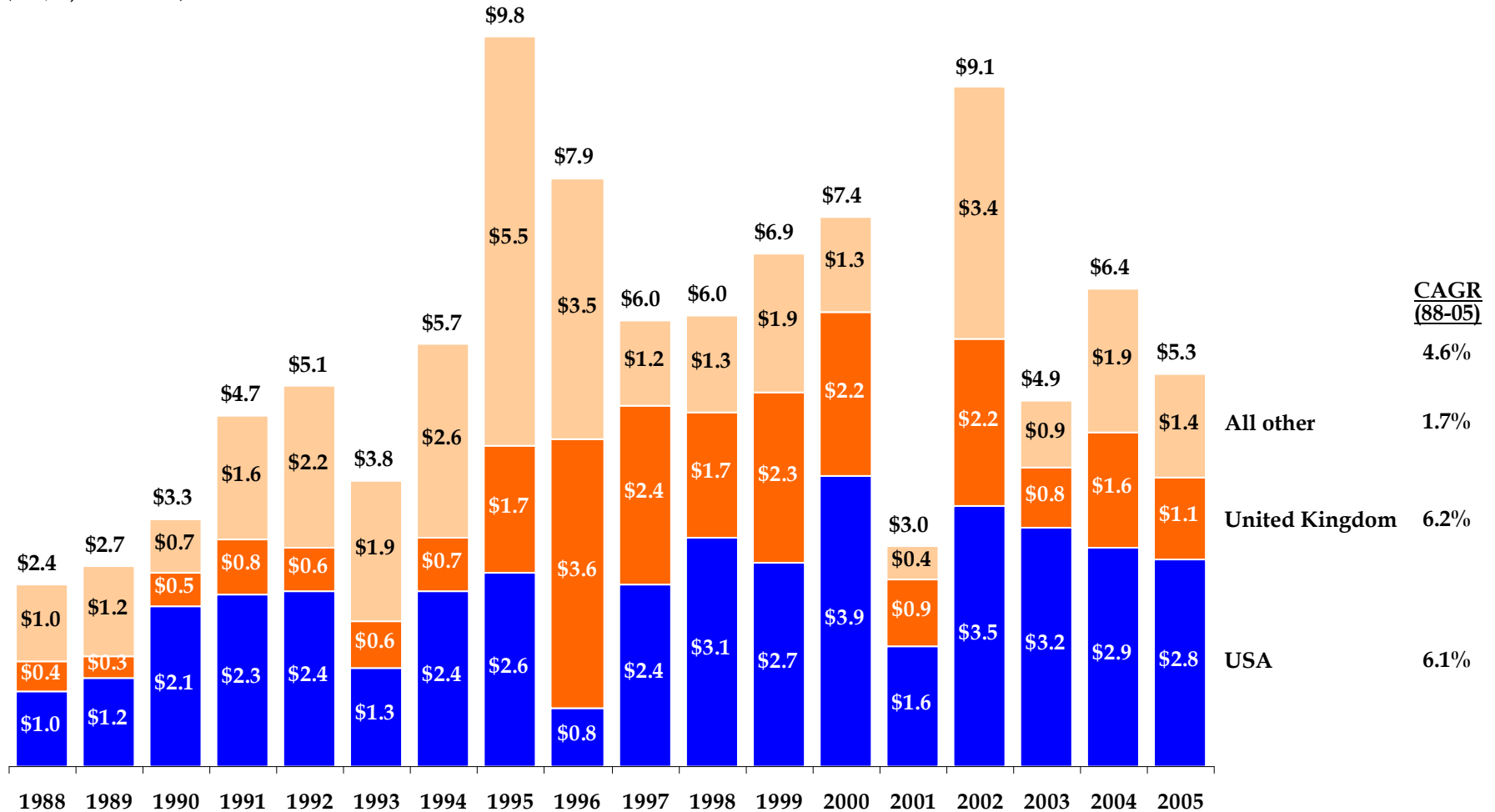
Export value of New Zealand pears by destination country/region
(US\$m; 2005)



NEW ZEALAND PEAR EXPORT VALUE BY DESTINATION

The United States and United Kingdom are the main drivers of growth

Export value of New Zealand pears by major destination country/region
(US\$m; 1988-2005)

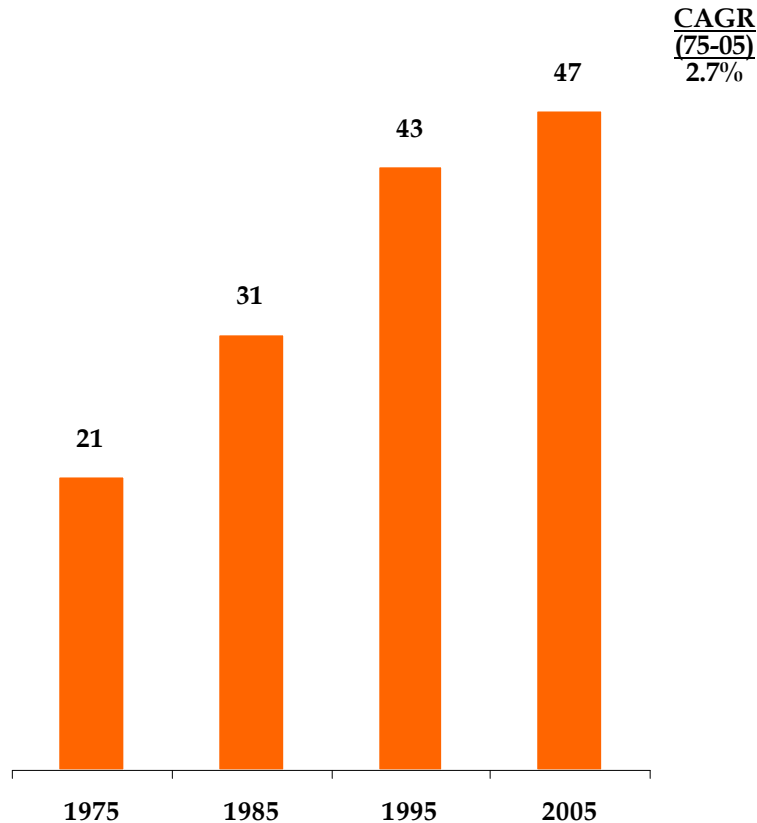


CONSUMPTION GROWTH

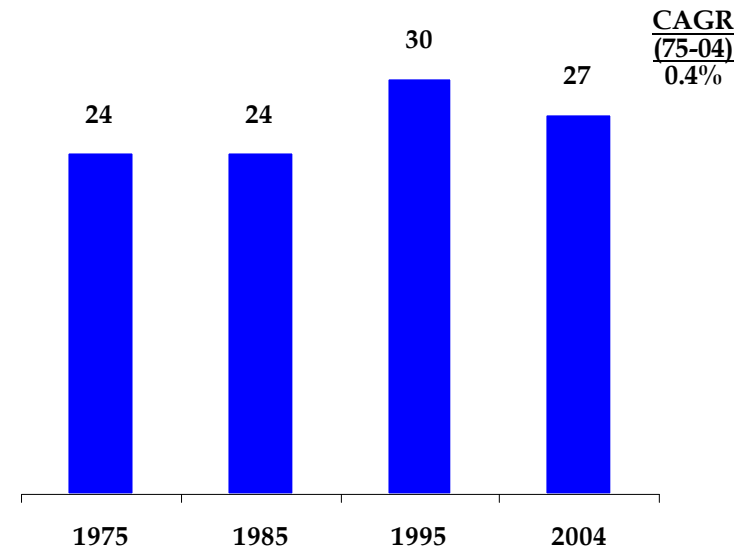
Pear consumption is growing in both markets, though much more strongly in the United Kingdom

Weekly fresh pear consumption per capita
(grams per person per week; 1975-2004/05)

United Kingdom



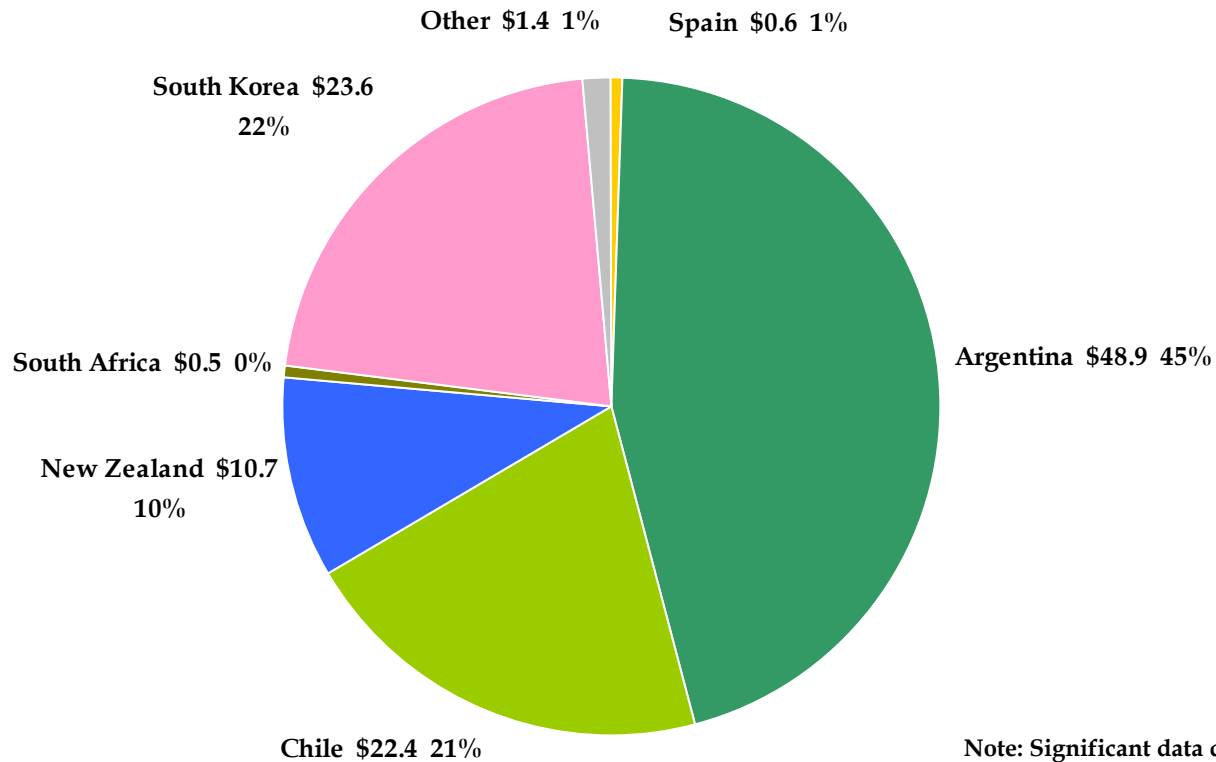
United States



UNITED STATES - IMPORT MARKET SHARE

In the United States, New Zealand accounts for about 10% of the value of pear imports

United States import value of pears by major exporting country/region
(US\$m; 2005)



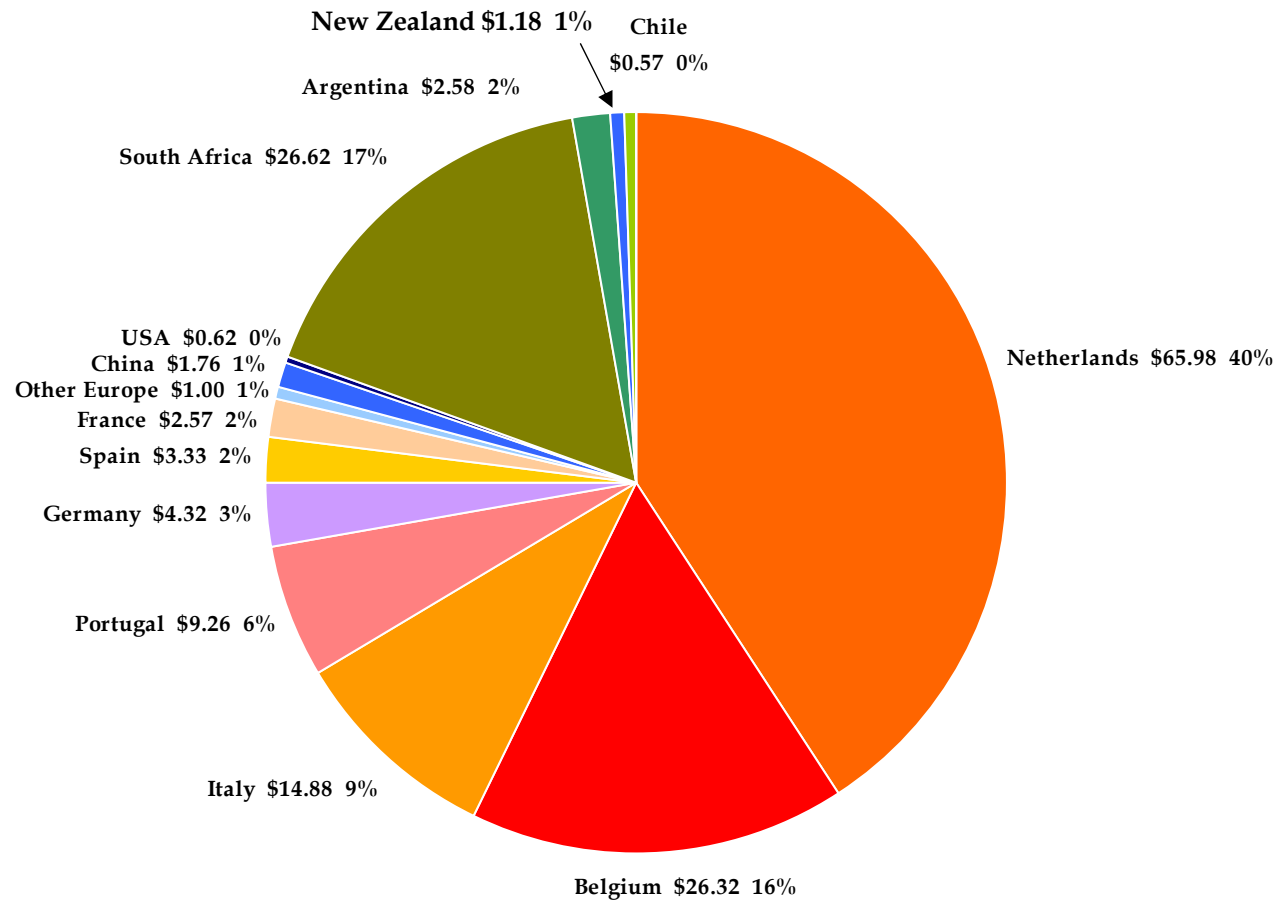
Note: Significant data disagreement
New Zealand pear exports to the United States in 2005
- NZ Customs: US\$2,789,966 / 3,390,629kg
- US Customs: US\$10,664,579 / 3,106,439kg

Total = US\$108m

UNITED KINGDOM - IMPORT MARKET SHARE

In the United Kingdom, New Zealand accounts for about 1% of the value of pear imports

United Kingdom import value of pears by major exporting country/region
(US\$m; 2005)



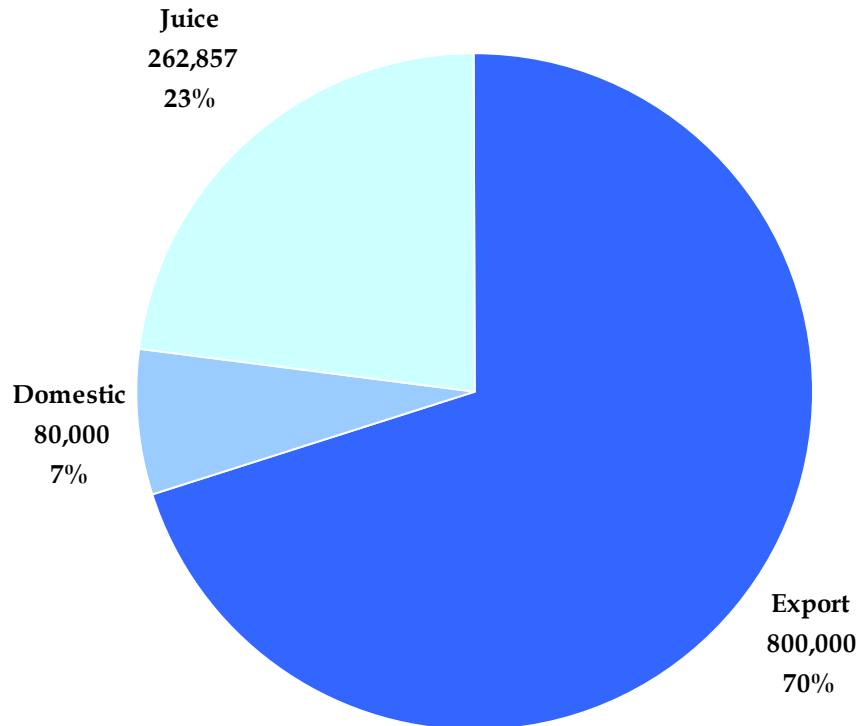
OVERVIEW OF ORGANIC APPLES

MARKETS

NEW ZEALAND ORGANIC APPLES - DESTINATION

Seventy percent of organic apples produced are exported, accounting for approximately 800,000 cartons worth approximately \$40 million¹ in 2006

NZ organic apple production by type
(TCE; %; 2006E)



Total = 1,142,857 TCE

Discussion Points

- Braeburn and Royal Gala make up 80% of that production, what about other varieties?

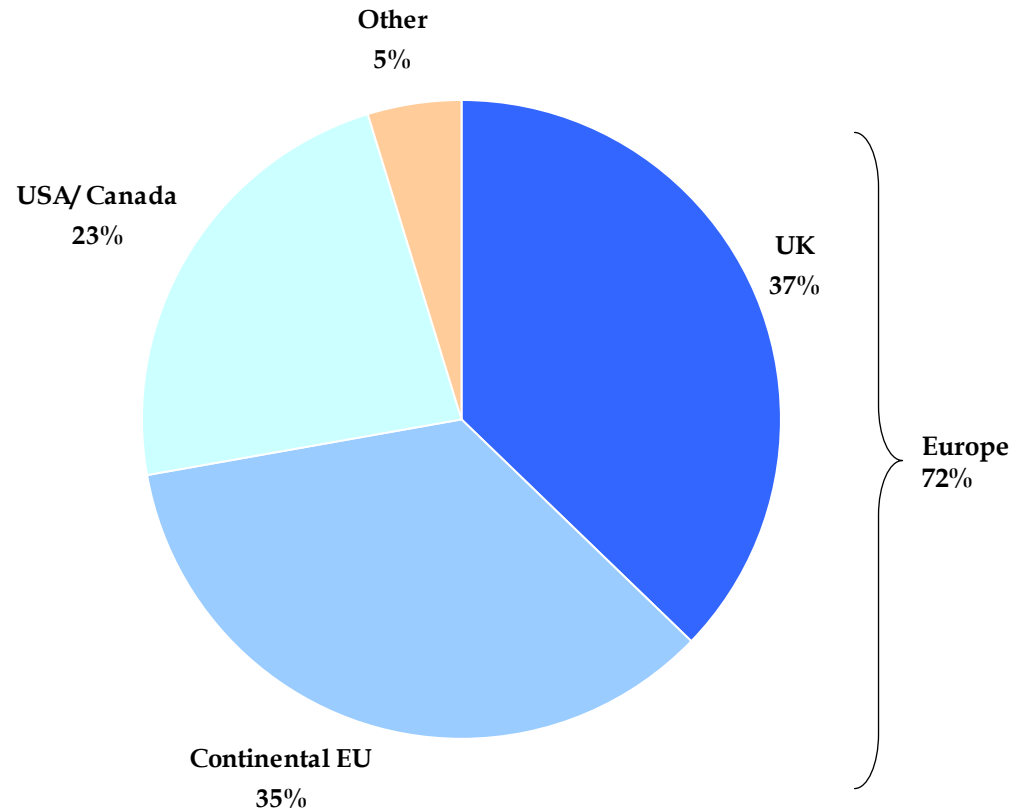
Notes

- See note on page 27
- Industry estimates vary slightly between the proportionality between these sectors
- 90% of juice is exported

NEW ZEALAND ORGANIC APPLES - EXPORT MARKETS

Europe and the United States are New Zealand's key markets for organic apples

NZ Organic apple volume share by destination
(%; 2006)



EXPORT MARKETS - EUROPE

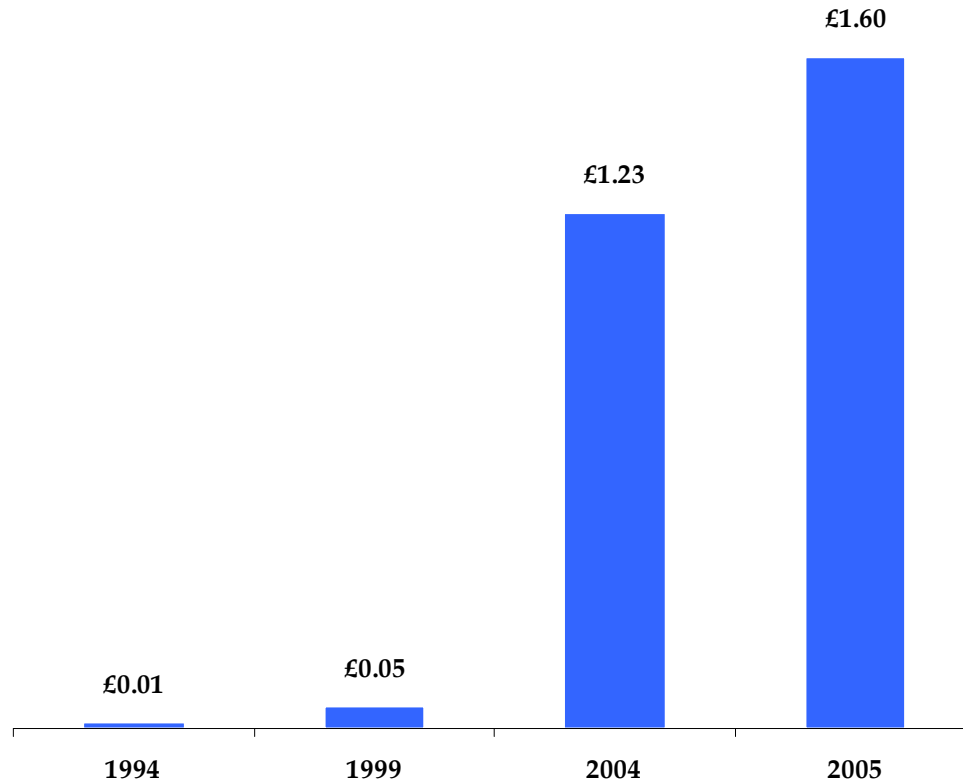
Europe is a large and growing organic fruit and vegetable market

- "Global sales of organic produce are rising by about 20% a year, North America and Europe account for 97% of global food and drink sales." *ECOS, 2005*
- "Steady growth in organics in Europe, driven by Germany and the Netherlands. Move to supermarkets, where organics is a must-have on shelves." *Stiefel, Industry Consultant, 2006*
- "Consumer demand for organic fresh produce continues to strengthen with revenues increasing by 26% between 2001 and 2004. Healthy growth rates are projected to continue as sales channels for organic products broaden. The German market is currently showing the highest growth with organic fruit & vegetable sales volume increasing by 14% in 2004. Sales of organic fruit & vegetables are concentrated in a handful of countries. Germany and the UK have the largest markets, representing over half of all European revenues. The British organic fruit market, valued at EUR 330 million, is the largest in Europe. Organic fruit & vegetables as a percentage of total sales are highest in Scandinavian and Alpine countries." *Organic Monitor, The European market for organic fruit & vegetables, June 2005*
- "Production of organic fruit & vegetables has increased significantly across Europe, however imports continue to play an important role. Off-season organic fresh produce and tropical & exotic fruit are mainly imported into Western Europe. Imports represented 22% of total sales volume in 2004 with organic fruit comprising the majority." *Organic Monitor, The European market for organic fruit & vegetables, June 2005*

EXPORT MARKETS - UK

The UK has shown substantial growth in organic sales in the last decade

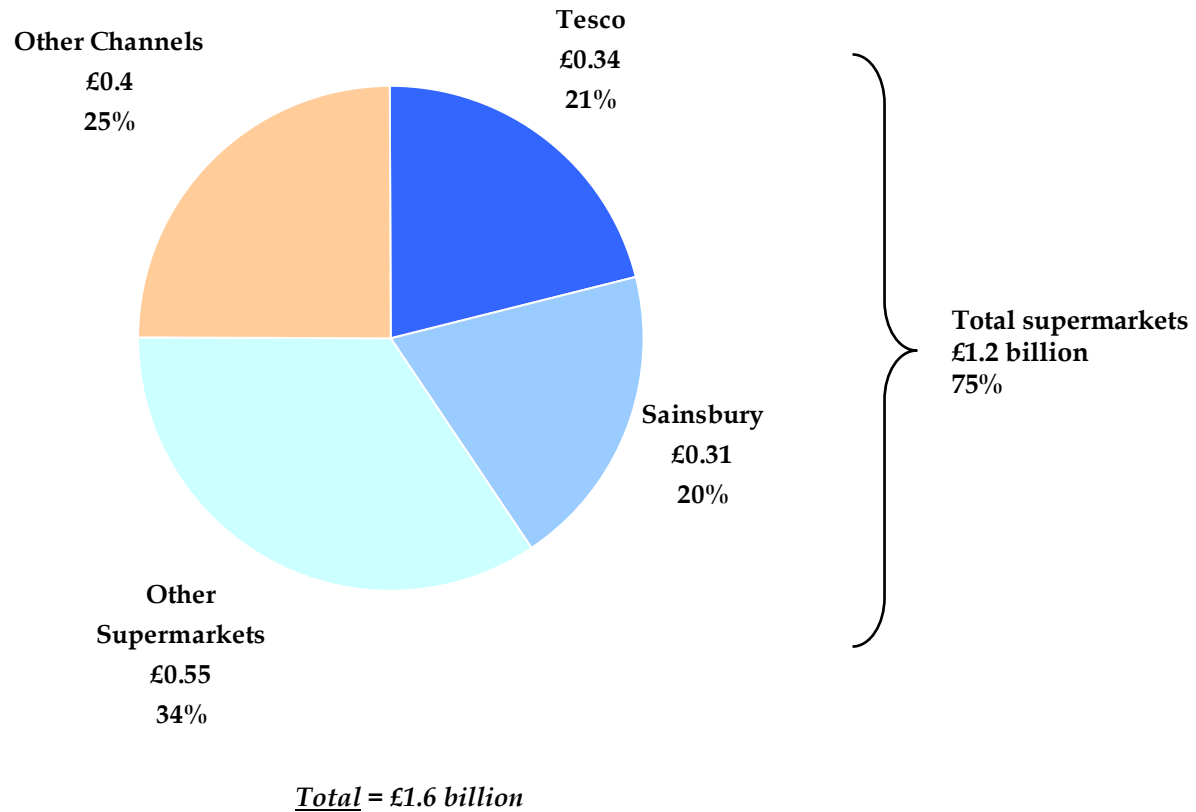
Organic sales
(£B; 1994-2005)



EXPORT MARKETS - UK - THE RETAILERS

Three quarters of organic sales is occurring in supermarkets

Organic sales by channel
(%; £B; 2005)



EXPORT MARKETS - UK - THE RETAILERS

Retailers compete fiercely for the organic dollar

- "Waitrose has reported an increase of last year of 20% in its organic lines..."
- "...Sainsbury's is introducing a box scheme with fresh organic fruit and vegetables..."
- "...Tesco says that 25% of its customers will buy at least one item of organic food on each visit..."
- "...Independent fruit and vegetable firm Abel and Cole will see sales top pounds 20m this year. Two years ago, it was turning over just pounds \$6m..."
- "...A [organic] shop is to be opened by the world's biggest and most profitable organic grocer, the American supermarket chain called Whole Foods." *The Observer, London, August 2006*
- "Customer across the board are buying organic and we plan to treble our range of products." *Asda spokesperson, Marketing Week, April 2006*

EXPORT MARKETS - UK

...but buying local and "food miles" is the new hot topic in the UK

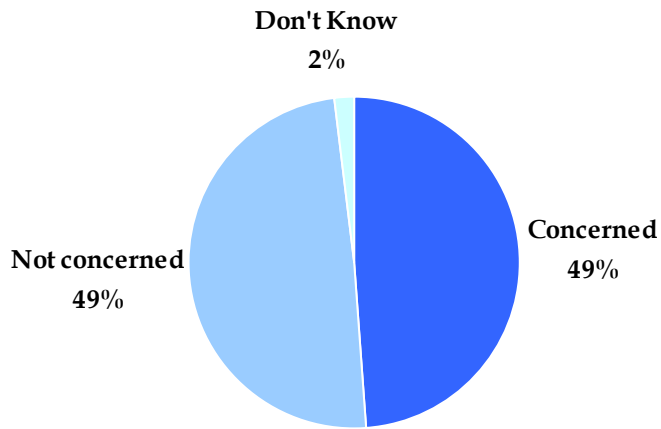
- **"The move to imports is an ethical problem for the organic movement...People in the trade say 'local is going to be the new organic' because the issue of where food comes from is important to green-minded consumers... The industry believes the key weapon in the turf war will be the local-sourcing issue...Sainsbury will subsidise English apple-growers." *The Observer, London, October 2006***
- **"What is hard to excuse is shipping in foods that are available in the UK." *Peter Holden, Director, Soil Association, UK, August 2006***
- **"Often organic food is equated to being local. Some customers think if its not local it ceases to be really organic." *Waitrose Marketing Director, Marketing Week, April 2006***
- **"From New Zealand, a journey of 10,000 miles. A passenger flying the same distance would create 3.1 tonnes of carbon dioxide, almost as much as an average UK household creates in a year from electricity." *The Observer, London, October 2006***
- **"It was a worry for New Zealand that the concept of food miles had gained traction with Europe's Green politicians. I've been concerned for some time that the next round of protectionism New Zealand will face will be in the form of environmental barriers, such as the notion of food miles." *Prime Minister Helen Clark, NZ Herald, October 2006***

EXPORT MARKETS - UK

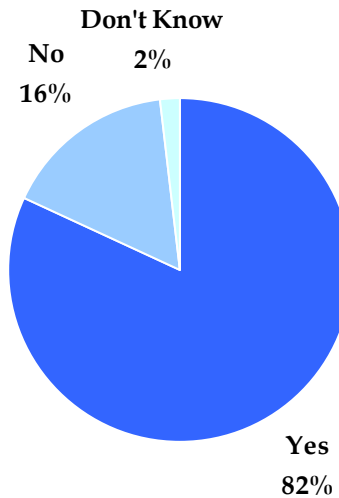
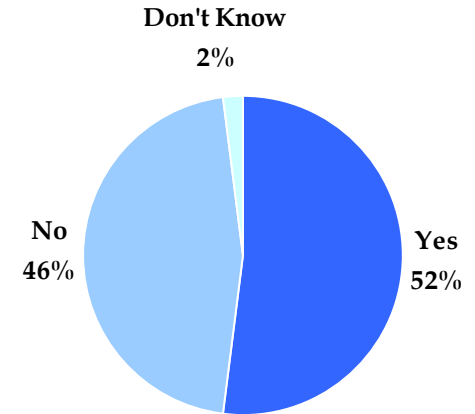
Research by Farmers Weekly shows some UK consumer support for buying local

Survey response to Farmers weekly: Local Food Miles survey
 (% , April 2006)

Concern that 30% of food is imported in UK?



Would you buy less imported food if you knew the distance it had travelled?



If food that has been produced locally was clearly labelled in the supermarket, would you be more likely to buy it?

EXPORT MARKETS - UK

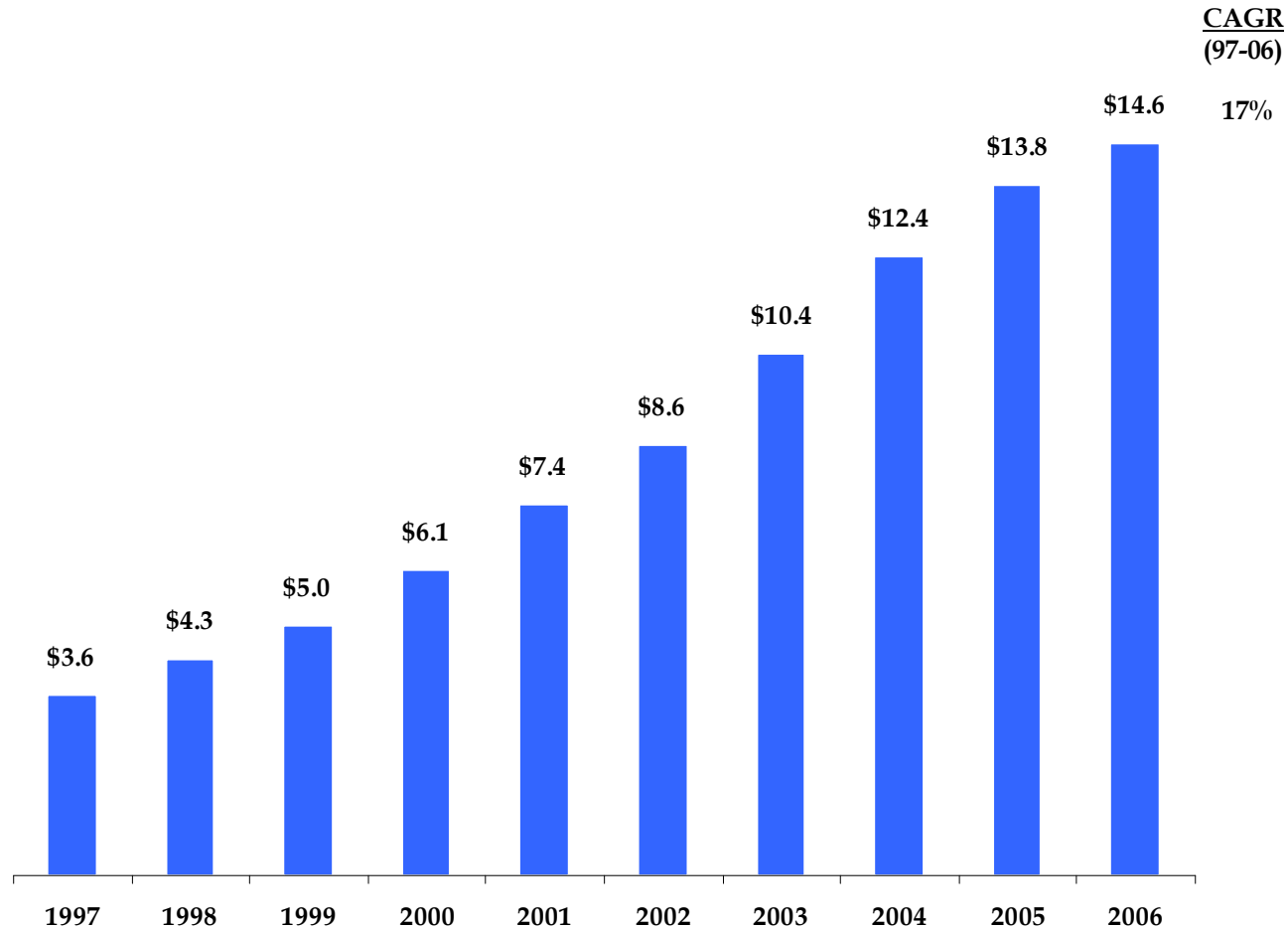
However, local supply is not able to keep up with local demand

- **"A surge in consumer interest is leaving the domestic market unable to cope with demand. Supermarkets which account for 75% of the organic sales, will have no choice but to airfreight goods in." *The Observer, London, August 2006***
- **"Supermarkets can only buy 40% of their organic apples in Britain." *The Observer, London, October 2006***
- **"In 2005 supermarkets were sourcing two thirds of salad vegetables and more than a third of another vegetables abroad, overall supermarkets imported 34% of all the organic food they sold in 2005." *The Observer, London, October 2006***
- **"The UK market for organic apples has grown by 10 year on year. Most growth coming from the supermarkets (e.g. Asda and Tesco). There are also opportunities outside supermarkets with: box schemes, farmers markets, wholefoods and organic specialist shops, organic juice bars, school programmes." *Stiefel, Industry Consultant, 2006***
- **"Organic apples & pears were the first to be introduced in the early 1990s and account for the largest revenues in the British organic fruit market however exotic & tropical organic fruit comprise the largest volumes. Organic bananas and organic kiwi fruit are the most popular with British consumers with organic kiwis accounting for almost a quarter of all kiwi sales in some British multiples." *Organic Monitor, The British market for fresh Organic fruit, Jan 2002***

EXPORT MARKETS - UNITED STATES

Total United States organic food sales have been growing at 17% year on year, and is currently 2.4% of total food sales

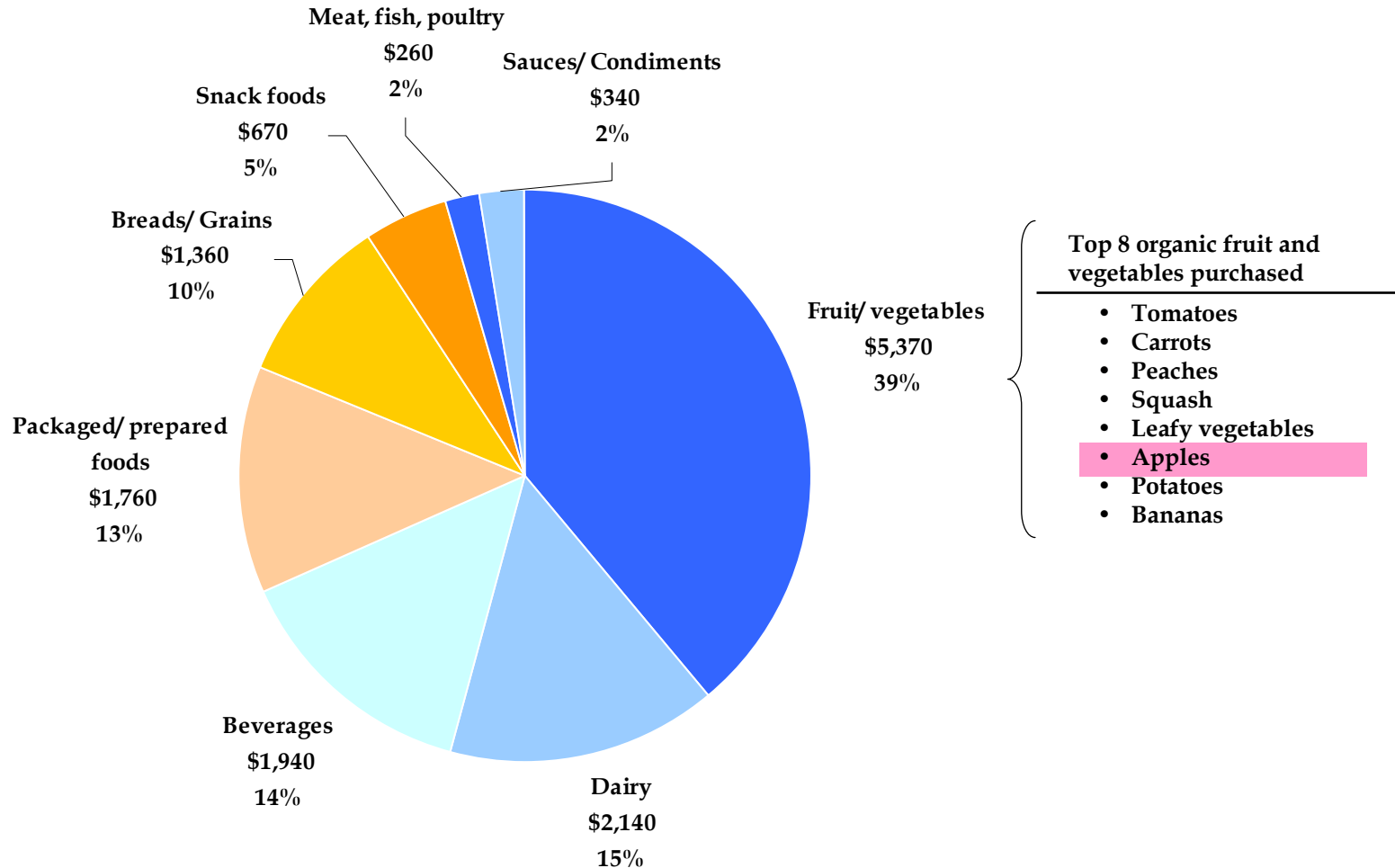
Total United States organic foods sales
(US\$B; 1997-2006)



EXPORT MARKETS - UNITED STATES

Fruit and vegetables dominate United States organic food sales

Organic Foods sales by Category
 (%; US\$m; 2005)



EXPORT MARKETS - UNITED STATES

The US market for organics is showing strong growth in; retail, imports and local production

- **“Organic apple sales increased in 2005 by 25% in the US, driven by supermarkets for example Wal-Mart.”** *Stiefel, Industry Consultant, 2006*
- **“Whole Foods market calls itself ‘the world’s largest retailer of natural and organic foods. It has 181 supermarkets and its revenue last year was US\$5 billion.”** *The Observer, London, October 2006*
- **“The organic products industry continues to deliver impressive growth, despite having grown at a close to 20% annual rate in the United States over the last decade. During 2005, data from the Organic Trade Association and Nutrition Business Journal indicate that the organic industry grew 17% to \$14.6 billion in the US, including 16% growth of organic foods to \$13.8 billion of the total. We believe that the organic food category will continue to grow in the 15-20% range this year, and that natural foods should continue to post 6-8% annual growth.”** *Canaccord Adams, Equity Research, 2006*
- **“USDA estimates that the United States imported between \$1 billion and \$1.5 billion in organic foods in 2002. International suppliers who can provide tropical produce, off-season fresh produce (e.g., during the winter months), or in-season produce in times of domestic shortages are likely to find the greatest reception in the U.S. market.”** *USDA, Price Premiums hold as US Organic Produce Market expands, May 2005*
- **“Certified organic crop acreage increased 11% between 2001 and 2003 with large increases from fruits and vegetables.”** *ERS, USDA*

EXPORT MARKETS - UNITED STATES

Consumers are buying more organic food and beverages

- **“Sixty-six percent of U.S. consumers report they use organic products at least occasionally. That number is up from 55 percent in 2000. A surge in periphery organic shoppers – those who buy organic products only occasionally – has been largely driven by increased access to organic products in mainstream markets, heightened concern about health, gradual emergence of organic alternatives in mainstream brands, and an increase in information sources. Lifestyle, rather than demographics, is driving organic purchases. *The Hartman Group, Organic Food & Beverage Trends 2004: Lifestyles, Language and Category Adoption, August 2004.***
- **“Twenty seven percent of Americans are eating more organic products than they did one year ago. 54 percent have tried organic foods and beverages, with nearly one in 10 using organic products regularly or several times a week.” *Synovate, 2004 Whole Foods Market® Organic Foods Trend Tracker survey***
- **“Sixty one percent of consumers who purchase natural and organic foods buy them in supermarkets.” *Supermarket News, March 1, 2004***

EXPORT MARKETS - UNITED STATES

Organic consumers can be segmented into three key groups with different needs

US Organic Customer segmentation
(Model, 2006)

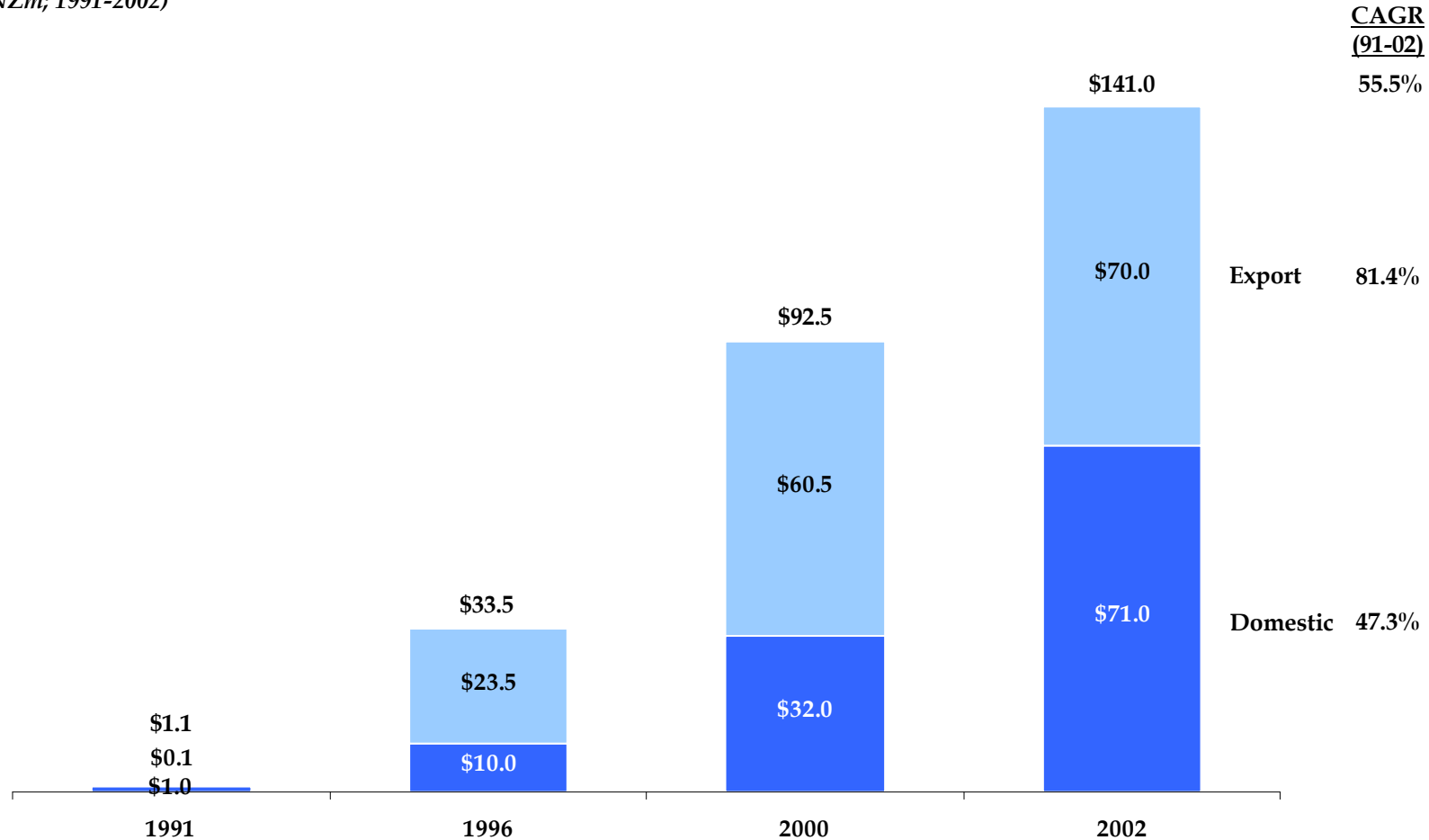
	Core	Mid-Level	Periphery
% of organic consumers	10%	53%	37%
Important Features	Authenticity	Authenticity	Experience
	Knowledge	Knowledge	Convenience
		Experience	Brand
		Brand	Expert opinion
		Expert opinion	Price
		Price	

ORGANICS IN NEW ZEALAND

MARKETS FOR NEW ZEALAND ORGANICS

Sales of all New Zealand organic products reached \$141 million in 2002, with exports growing in importance

Total organic sales by market
(\$NZm; 1991-2002)



Note: More recent data not available

ORGANIC ACCREDITATION

New Zealand has three main organic accreditation organisations as well as national government standards

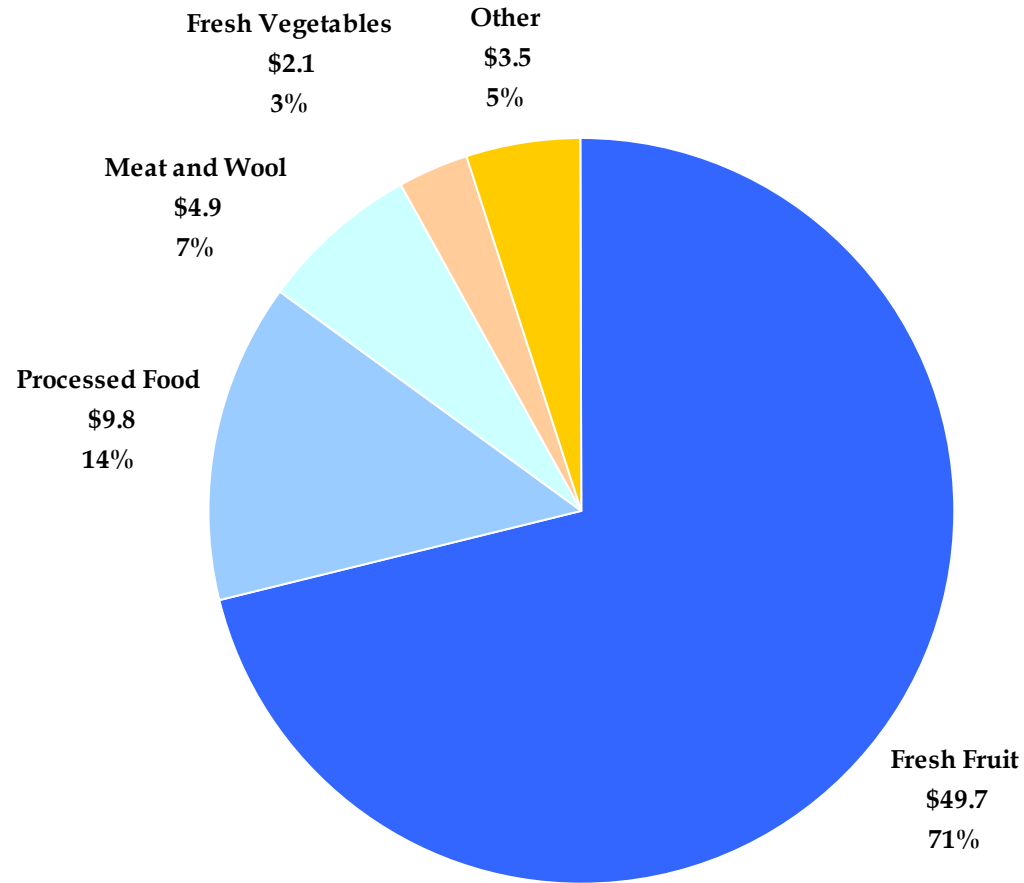
Organic certification agencies (2006)

	Standard	Comments
Accreditation organisations	Bio-Gro NZ Organic Standards	Agent for all organic apple exports Collates all organic apple export data Holds IFOAM accreditation
	AgriQuality Organic Standard (Certnz)	Recognised by: IFOAM EU regulations Australian National standard
	Demeter (Biodynamic Farming and Gardening Association of NZ)	Worldwide certification system in over 50 countries
Government standards	NZ Organic Standards	Minimum requirements for growers to meet, formalising the certification schemes already in place. NZ granted 'third country' status with the US and EU.
	NZFSA - Official Organic Assurance Programme (OOAP)	Developed for products exported to the EU, extended to Japan and USA

ORGANIC EXPORTS BY TYPE

Fresh fruit - predominantly kiwifruit and apples - dominate exports

Organic export sales value by type
(%; million; 2001)

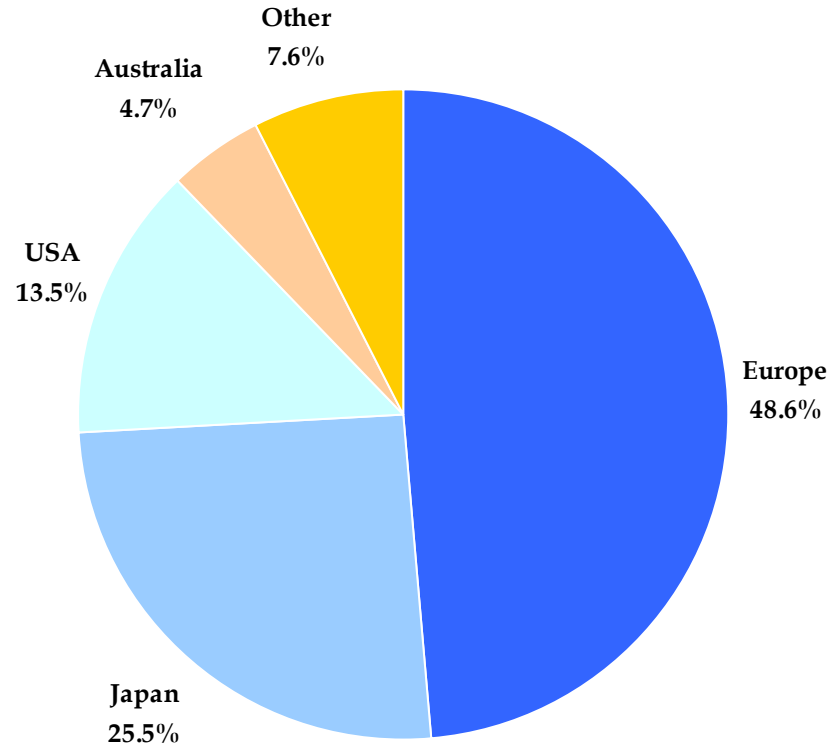


Note: More recent data not available

ORGANIC EXPORTS BY DESTINATION

Europe is New Zealand's key export market for organic products

Organic export sales value by destination
(%; 2000)



Note: More recent data not available

ORGANIC APPLES

ORGANIC APPLES - SUMMARY

It is important that New Zealand keeps ahead of its competition

- Organics represents an opportunity for the industry that will need to be underpinned with science and technical input into:
 - improved organic production systems
 - access to new varieties that achieve yield and quality parameters under organic conditions
 - on-going focus on lowering production costs through scale

- In the medium term the industry will need to remain very focused on its competitors (Chile) so it can modify its strategies and remain competitive

ORGANIC APPLES - CONSTRAINTS

The New Zealand organic apple industry faces a number of constraints on growth

Key constraints on the New Zealand organic apple industry
(2006)

Constraints	
Technical	<ul style="list-style-type: none"> - Lack of ability to manipulate their trees to secure reliable yields of good size fruit - The management of pests e.g. bronze beetle - Nutrition management - slow growth - Establishing new areas of orchard under an organic regime - "Losses to the fungal disease Black Spot can result in significant yield reductions and the products used to control the disease have a debilitating affect on apple trees."
Infrastructure/ Industry constraints	<ul style="list-style-type: none"> - Ability to extract an organic premium from the market - undermining the profitability of the industry - Institutional support and skills and knowledge, including research and development - Gaps in knowledge about organic production systems
Marketing	<ul style="list-style-type: none"> - Limited local market - Marketers of fruit would have to generate a bigger market for the organic fruit in order to sustain current premiums

ORGANIC APPLES – SWOT

The recent decline of organic apple production in New Zealand seems to indicate that challenges remain

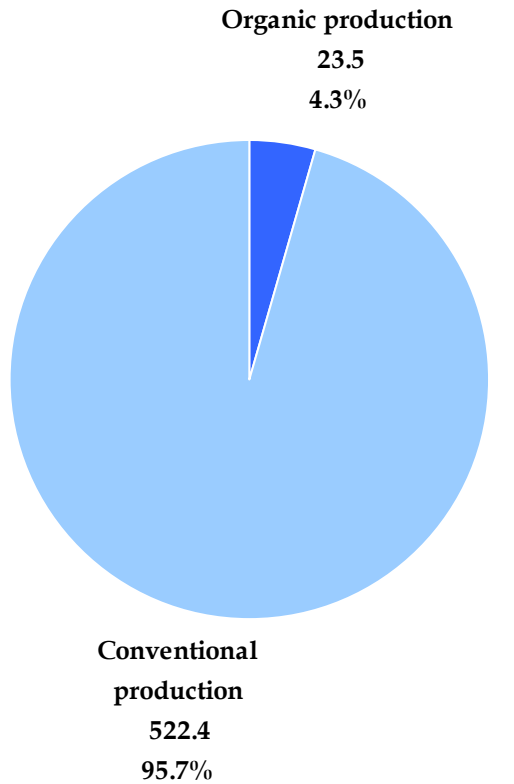
New Zealand organic apple industry SWOT analysis
(subjective)

Strengths	Weaknesses
<ul style="list-style-type: none"> - Fits with “clean green” image and positioning - Existing apple supply chain able to handle organics - Core group of committed organic supporters - Well educated skilled farmer/producer base - High premiums 	<ul style="list-style-type: none"> - Climate (e.g. high rainfall and damp) not conducive to organics and creates challenges for organic production with regards to fungal and bacterial diseases - Limited track record of success to date
Opportunity	Threats
<ul style="list-style-type: none"> - New varieties/cultivars more suited to organic growing systems - New Science and Technology to achieve yields and packout percentages under organic systems - Continued world wide growth of organics 	<ul style="list-style-type: none"> - Other countries able to produce organics at a lower cost due to their more conducive natural environments and ability to produce at scale and with low labour costs (e.g. Chile?) - “Cowboy” exporters caught selling non-compliant fruit damaging New Zealand's reputation - Organics loses its cache due to health scare/scandal in key markets - Organic premium continues to decline over time

ORGANIC APPLES AS PERCENT OF TOTAL

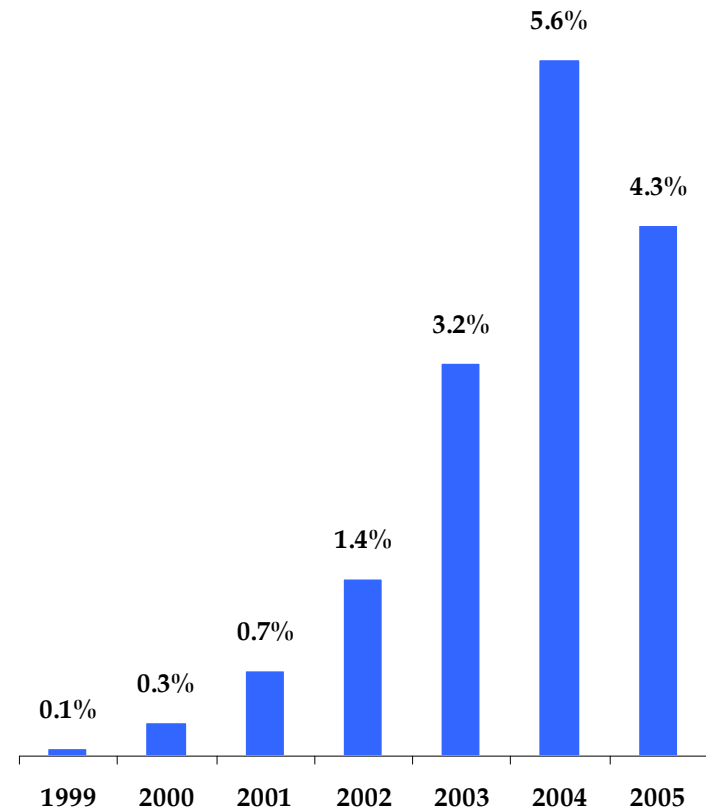
Organic apple production is approximately 5% of total apple production

Apple production by form
(Tonnes; 000; %; 2005)



Total production = 546 thousand tonnes

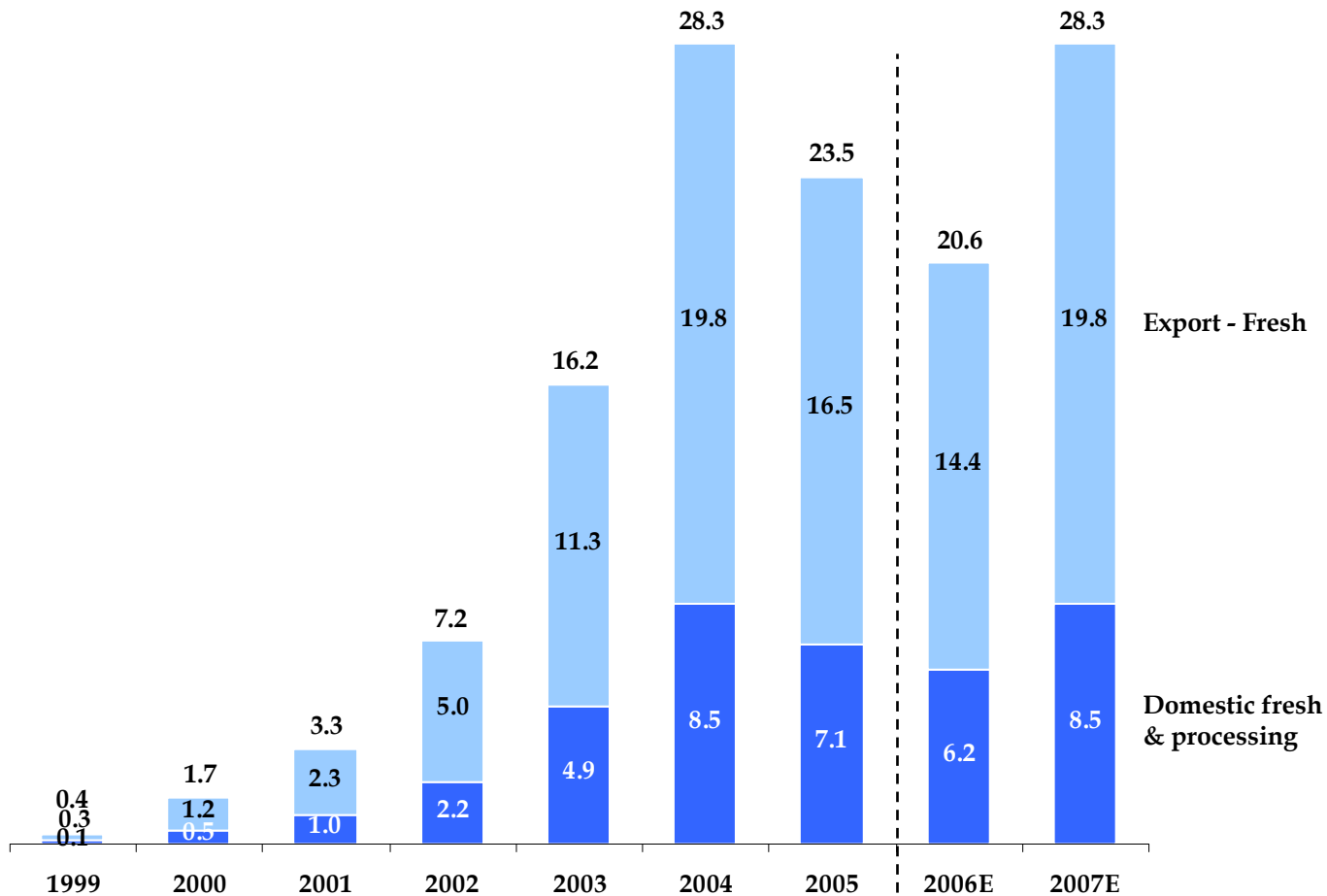
Organic production as percent of total production (%; 1999-2005)



ORGANIC APPLES - PRODUCTION

Organic apple production grew until 2004, reaching 28.3 thousand tonnes or an equivalent of 1.4m TCE's; however production has fallen since then

Organic apple production by type
(Tonnes; 000; 1999-2007E)



Discussion Points

- Drop in production due poor fruit set and low packouts (russet and blackspot) due to very wet, cool and cloudy spring in 2005
- 5 major exporters make up 90% - DM Palmer [J N Bostock], (40% vol) and Freshco Organics, Global Organics, Mr Apple & ENZA
- Majority of production in Hawkes Bay

Notes

- Assumption that 70% of production is exported fresh
- 1999 to 2003 are industry estimates as no organic apple data was collected; 2004-2005 data is actual export data; 2006 season data not yet collated; this is an industry estimate; 2007 estimate based on a better growing season

ORGANIC APPLES – PRODUCTION FORECAST

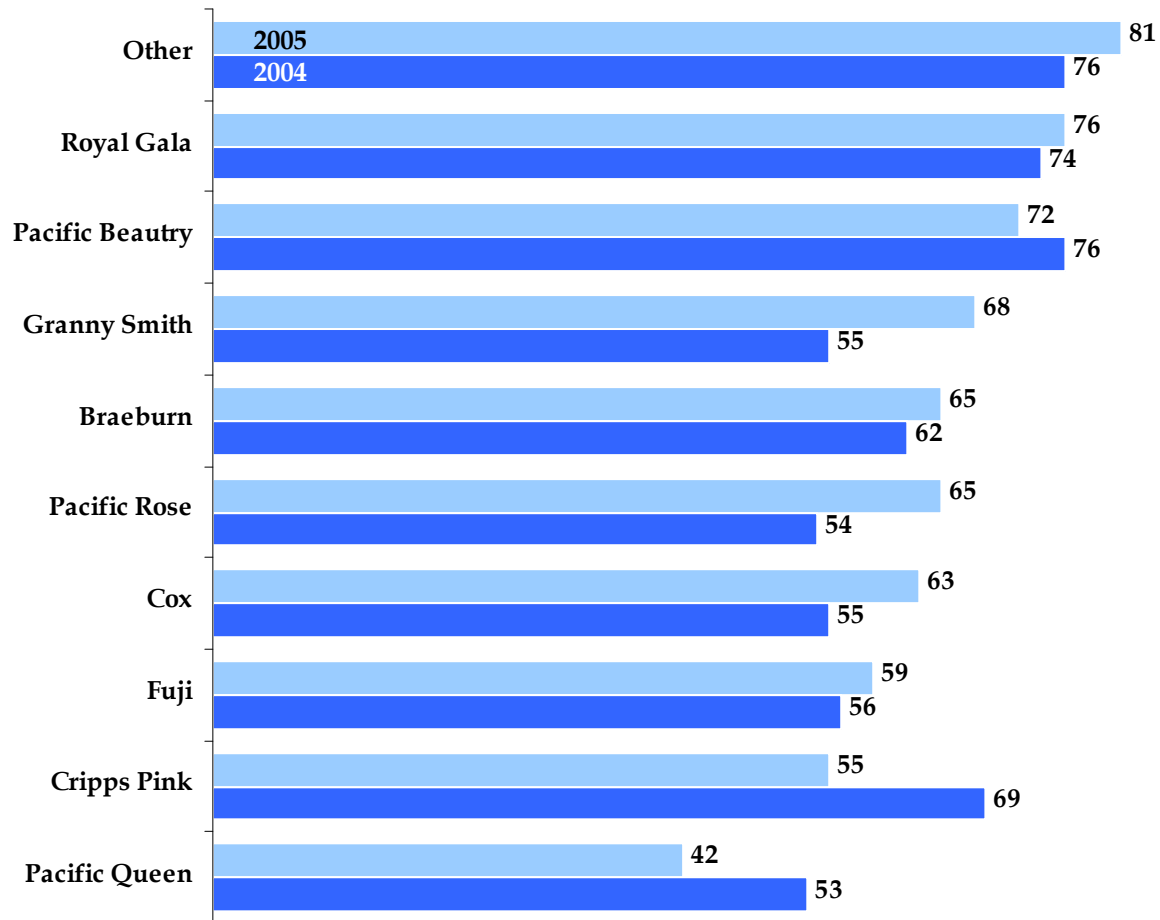
It is predicted that organic apple production will not significantly increase

- “At least sixteen orchards are at various stages of converting to organics and should all be online by the 2010 season. The growers are feeling very positive about the future.” *Bio-Gro, 2006*
- “The current high prices may not be sustainable because global supplies of organic pipfruit are increasing from Argentina, Italy, and the U.S., which is able to supply organic apples for 12 months of the year.” *Industry participant, 2006*
- “Growers are feeling very positive towards the future. However, they acknowledge the threat of Chile (currently 300,000 tce but 1 million in 3 years) and the need to maintain NZ’s premium position in the market. The expectation is that 2007 will also be a good year but in 2008 we would expect global supply to increase dramatically (mainly due to conversions in the Northern hemisphere).” *Stiefel, Industry Consultant, 2006*
- “It is expected that these [production] levels will remain somewhat static, as some organic pipfruit growers will revert back to conventional production methods. This is because the organic pipfruit industry faces some challenges in terms of the organic spraying regime. According to some industry insiders, the previous season has seen an increased use of organic sprays to fight the higher incidence of fungi, which was caused by higher than average rainfall. The increased use of sprays has, however, resulted in some tree damage. Especially younger trees appeared to be more susceptible to spray damage/stress than older established trees. In general, the spraying regime adopted by organic pipfruit orchards resembles the calendar-type spraying regimes in conventional pipfruit orchards. Such a regime stresses younger trees in new orchards considerably more than older trees. The net effect is that younger trees may never reach their full potential. Unless changes in the spraying regime and general pest control methods are made, organic pipfruit volumes will, at best, level off at about 950,000 trays but possibly be well below that number.” *FAS, USDA, Gain Report 2002*
- “New varieties are the key to the success of the organic apple industry. Work is now being conducted to develop varieties that are most suited to organic production. New strains of Braeburn apples and a range of pear varieties show promise. Work will also continue on Gala, Royal Gala and Pacific Rose. The key is to develop varieties that are naturally resistant to pest and disease, yet still maintain high colour, are cosmetically clean and eat well.” *New Zealand Organics Ltd, Freshco*

ORGANIC APPLES - PACKOUTS

Export packout rates for organic apples vary widely by variety, with some varieties being more suited than others for export production

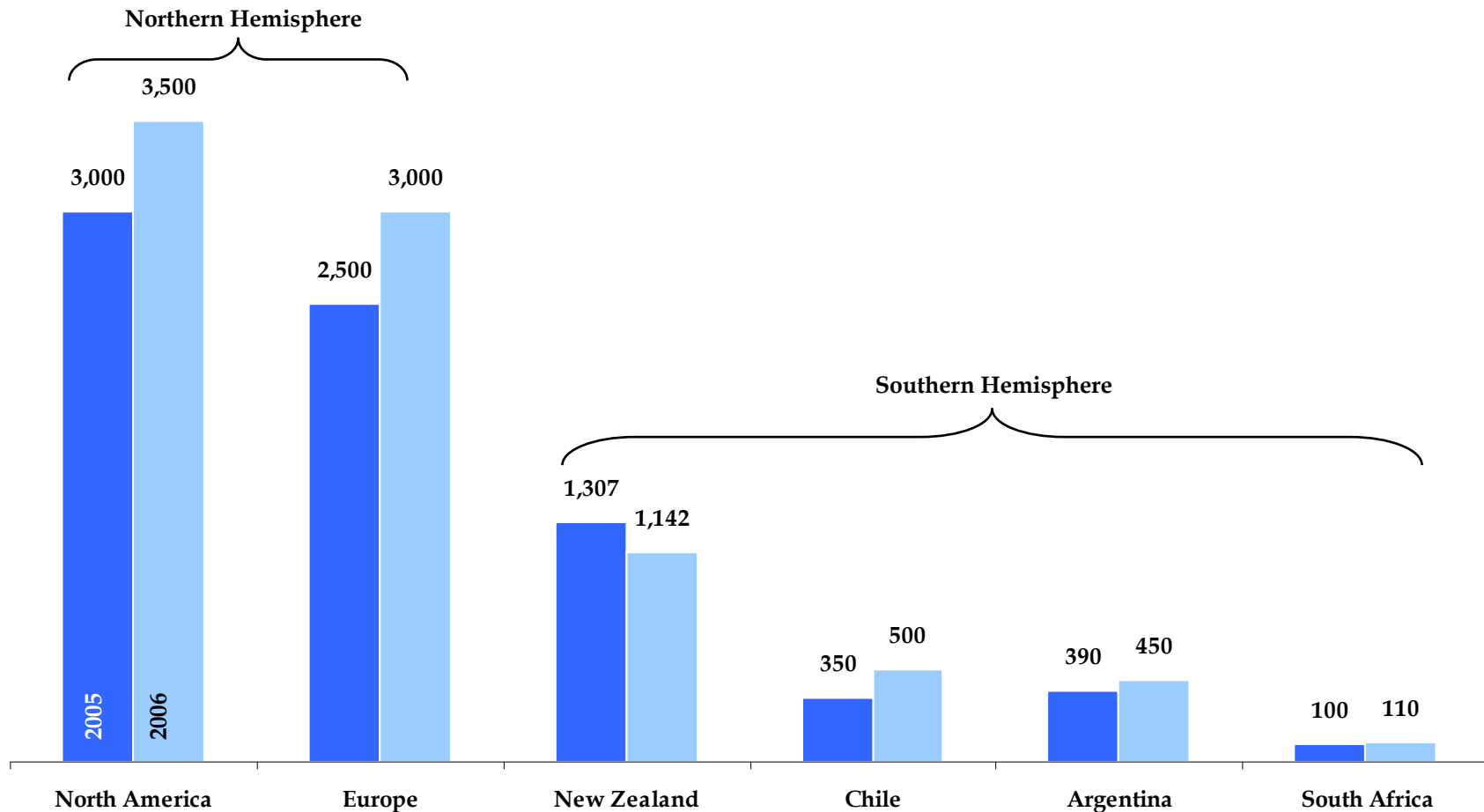
Organic apples export packouts by variety
 (% of production suitable for export; 2004 vs. 2005)



ORGANIC APPLES - COMPETITION

While New Zealand is currently the largest Southern Hemisphere producer, Chile and Argentina continue to increase production

Organic apple production by country/region
(TCE; 000; 2005 vs. 2006 est)



ORGANIC APPLES - COMPETITION

Organic production is not a level playing field as the EU subsidises organic production

- “European governments support organic agriculture through green payments for converting to and continuing organic farming. EU payments partly compensate new or transitioning organic farmers for any increase in costs or decline in yields while moving from conventional to organic production.” *ERS, USDA, 2005*

