

Horticulture Facts and Figures 2000

Fruit, flowers and vegetables



“Horticultural exports have steadily increased in value over the past two decades contributing strongly to export earning, employment and the viability of rural communities...”

Ian Warrington
CEO, HortResearch

Horticultural exports have steadily increased in value over the past two decades contributing strongly to export earning, employment and the viability of rural communities. This publication helps confirm the significance of kiwifruit and apple exports and also records the continuing growth of many other sectors including wine, avocados, citrus, summerfruit, carrots and capsicums. Continuing innovation through the development of integrated pest management and organic production systems, and the adoption of new storage and transport methods will ensure ongoing growth in a highly competitive international marketplace.

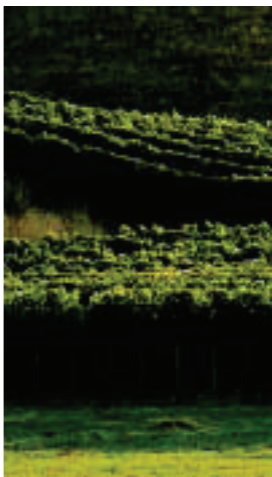
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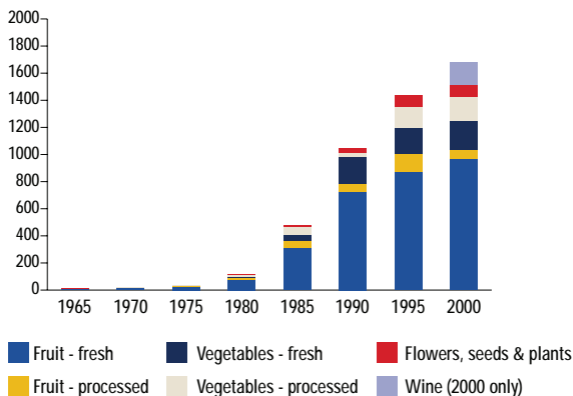
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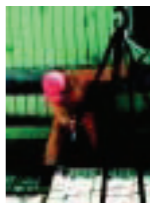
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Horticulture exports (\$ million, fob)



Source: Statistics NZ.



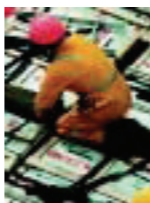
- Horticultural exports have grown from \$100 million to around \$1.7 billion in less than 20 years. The size of the overall horticultural industry exceeds \$3.1 billion.
- Horticultural exports were 6.5% of all New Zealand produce exports in 2000.
- Horticultural exports have grown steadily from 1970 (1.8% of agricultural exports) through to 2000 (12.3% of all New Zealand food and fibre exports).
- Apples and kiwifruit each represented 24% and 28%, respectively, of our horticultural exports, followed by fresh vegetables (13%), processed/frozen vegetables (11%) and wine (10%).
- New Zealand horticulture is driven by exports not domestic sales.
- Domestic sales of horticultural products were estimated at \$1.5 billion.

For more information visit www.hortresearch.co.nz

Horticulture exports (\$ million, fob)

Year ended June	1965	1975	1985	1995	2000
Fresh fruit					
Apples	5.0	19.3	108.2	482.1	404.5
Kiwifruit		2.9	171.9	320.8	462.0
Other fresh fruit	0.6	0.8	28.4	66.0	96.1
Total fresh fruit	5.6	23.0	308.5	868.9	962.6
Processed fruit					
Jams		0.4	1.7	20.3	17.7
Juices - fruit		0.1	9.6	34.6	24.7
Other processed fruit	0.1	1.3	38.6	34.2	29.9
Total processed fruit	0.1	1.8	49.9	89.1	72.3
Fresh vegetables					
Onions	0.2	1.2	17.7	92.6	78.6
Squash			14.6	57.7	60.3
Other fresh vegetables	0.7	1.9	11.6	43.9	74.4
Total fresh vegetables	0.9	3.1	43.9	194.2	213.3
Processed vegetables					
Peas (frozen)	0.5	1.5	22.0	34.0	40.6
Vegetables (frozen mixed)			4.6	25.6	29.1
Sweetcorn (frozen/canned)	0.2	0.8	9.5	25.1	39.3
Other vegetables	0.8	2.4	20.9	66.4	65.4
Total processed vegetables	1.5	4.7	57.0	151.1	174.4
Wine		0.1	3.0	42.0	169.8
Flowers		0.2	7.6	49.8	46.2
Seeds, plants and foliage	0.1	0.6	11.3	21.7	37.3
Other products					17.3
Total exports in current \$	8.2	33.5	481.2	1,416.8	1,693.2
Horticultural exports					
as % of NZ produce exports.		2.0	4.4	7.0	6.5

Source: Statistics NZ.

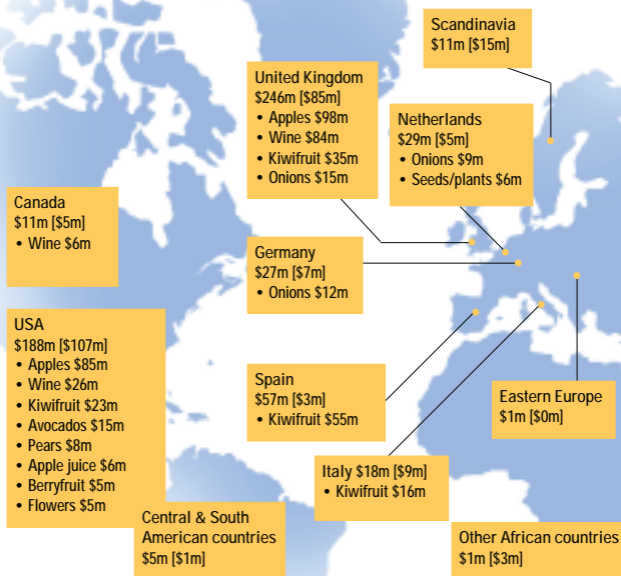


International trade

HORTICULTURE BUILDS THE NEW ZEALAND PROFILE OVERSEAS IN MANY MAJOR MARKETS

Export destinations for New Zealand horticultural products
- trends of the 1990s

- Fruit, vegetables & flowers were exported to 114 countries around the globe in 2000. This is an increase from 83 countries in 1990.
- Exports to 42 countries [27 in 1990] exceeded \$1 million in 2000 and of these 16 countries [5 in 1990] exceeded \$10 million.
- Japan, European Union, UK, USA and Australia are the primary export markets. All have grown during the 1990s.
- Taiwan, Germany, Hong Kong, Netherlands, Singapore, Malaysia, Spain, and Italy are all growing markets.

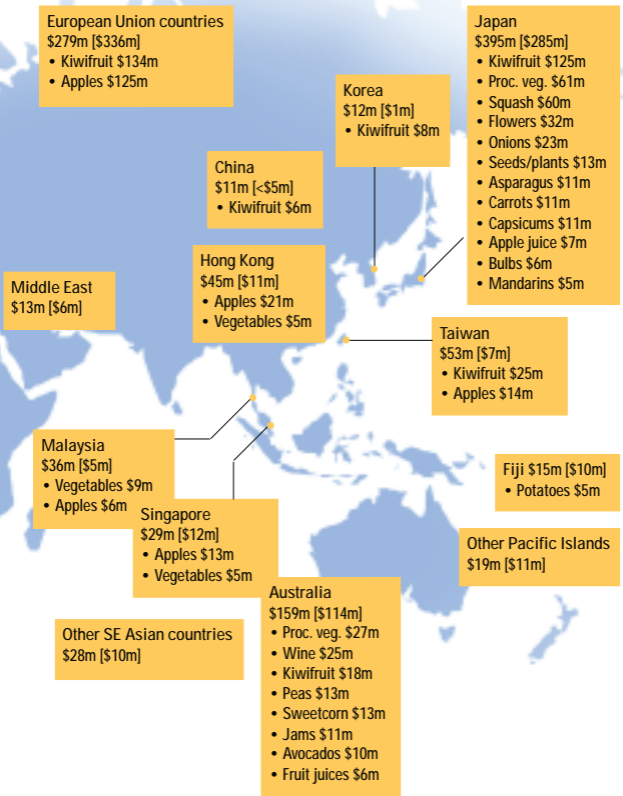


Source: Statistics NZ.

Countries shown are those defined as the export destinations. Note, that there are exports to the European Union as well as direct exports to countries within the EU such as the UK and Germany. Values following the country name are for 2000 and those in brackets for 1990.

Export value for each crop is in \$NZ million, fob for year ended 30 June 2000. Entries only included if value to a destination exceeds \$NZ 5 million.

- Horticulture is a \$1.7 billion export industry for New Zealand, representing about 6.5% of all produce exports.
- The key export markets for New Zealand fruit and vegetables are the European Union, Japan, USA and Australia.
- New Zealand exports to many diverse markets. The diversity of products exported is notable, especially to Japan and Australia. New Zealand apples have now gained entry into Japan, but they are still banned from entry into Australia.
- Japan is the dominant market for flowers and UK for wines.
- Horticultural exports to Japan, UK, Germany and Taiwan exceed 10% of all New Zealand exports to these countries.

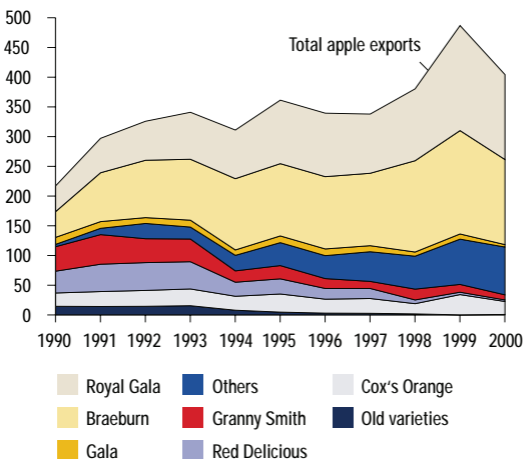


Pipfruit industry statistics

Season	1994	1995	1996	1997	1998	1999	2000
Crop volumes ('000 tonnes)							
Apples produced	393	582	599	364	420	486	540
Apples exported	201	305	295	287	290	309	330
General Statistics							
Yield (tonnes/ha)	29.1	41.6	39.9	23.5	27.1	31.4	34.8
Area planted (ha)	13,500	14,000	15,000	15,500	15,500	15,500	15,500
Growers (no.)	1,600	1,645	1,700	1,570	1,500	1,500	1,500
Packhouses (no.)					183	150	130

Sources: Statistics NZ; Fruit Council Report; ENZA.

Revenues from apple exports, by variety (\$ million, fob)

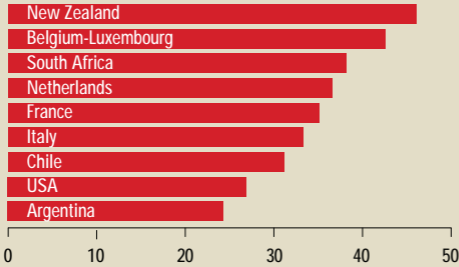


Source: Statistics NZ.

For more information visit www.enza.co.nz

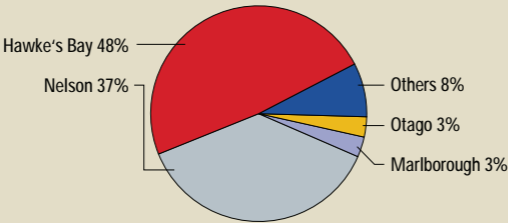


New Zealand apple yields exceed those of other exporting countries (tonnes/ha)



Source: World Apple Review-2000.

Export crop submitted by growing area (18 million cartons, 2000)



Source: ENZA.

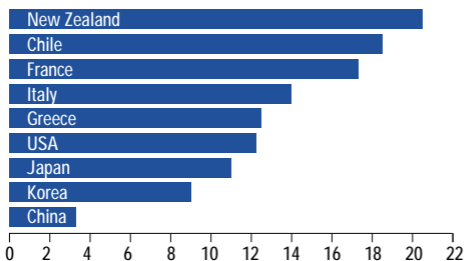
- Apples valued at \$404 million (fob) were exported to 58 countries. Key destinations were Europe, UK, USA, and the emerging markets of Hong Kong, Taiwan, Singapore and Malaysia.
- New apple varieties such as Braeburn, Royal Gala and Pacific Rose have been introduced to the international market during the past twenty years. They now represent over 75% of export crop.
- Innovative quality management systems have enabled NZ apples to obtain a premium in most markets.
- Older varieties such as Golden Delicious, Red Dougherty and Sturmer are being phased out of production. Granny Smith and Red Delicious sales are declining.
- World apple production reached 46.4 million tonnes in 1999 with approx. 5 million tonnes (11%) traded internationally.
- New Zealand produced 485,800 tonnes in 1999 of which 308,800 tonnes (64%) were exported.
- The domestic market consumes about 54,000 tonnes of fresh apples, valued around \$42 million. About 20% of the apple crop was exported as juice or other processed products.

Kiwifruit industry statistics

Season ends 31 March	1994	1995	1996	1997	1998	1999	2000
Crop volumes (million)							
Trays submitted	55.3	55.8	58.7	63.1	60.6	63.1	54.2
Trays sold	49.2	49.9	48.7	56.2	56.2	59.4	51.8
General Statistics							
Yield (trays/ha)	4,516	5,492	5,756	6,110	5,919	6,305	5,295
Area planted (ha)	12,256	10,161	10,210	10,329	10,243	10,015	10,234
Growers (no.)	2,748	2,335	2,205	1,596	1,766	1,657	1,614
Packhouses (no.)	252	190	148	137	126	118	113
Coolstores (no.)	146	125	119	106	111	106	103

Source: Annual Report 1998 Kiwifruit New Zealand; Zespri Ltd. Annual Report 2000.

New Zealand kiwifruit yields exceed those of other countries (tonnes/ha)

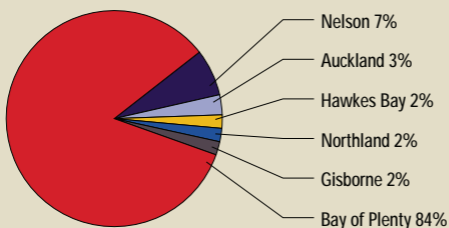


Source: World Kiwifruit Review 2000.

For more information visit www.zespri.com



Regional production of kiwifruit (Total area 10,234 ha)



Source: Zespri Group Ltd.

- New Zealand is a dominant player in the global kiwifruit market. ZESPRI International, the world's largest marketer of kiwifruit was corporatised from 1 April 2000.
- Kiwifruit valued at \$462 million (fob) was exported to 60 countries. Grower returns of \$413 million on net sales of \$651 million produced a record season.
- The key markets are Europe and Japan with Korea, Taiwan and China showing signs of fresh growth.
- New Zealand (36%), Italy (36%) and Chile (19%) are the largest exporters of kiwifruit.
- World production of kiwifruit has averaged 850,000 tonnes for the past five years, and New Zealand production has averaged 235,000 tonnes (27%).
- Rationalisation of the number of orchards, packhouses and coolstore operations during the 1990s has improved the industry's viability and there have been efficiency gains in growing methods.
- New Zealand extended its global leadership with trials of ZESPRI™ GOLD kiwifruit, the exclusive new golden fleshed variety bred by HortResearch.
- ZESPRI took the first steps into year round marketing during 1999/2000. Trial shipments of Italian and Iranian fruit were marketed overseas through the ZESPRI™ system, and selected growers were licensed for the production of the ZESPRI™ GOLD kiwifruit variety.

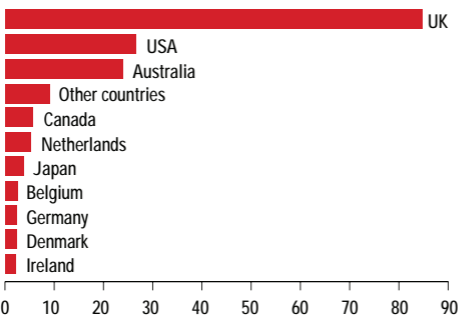
Grape and wine production

Variety	Vineyard area (ha)		Production (tonnes)	
	1990	2000	1990	2000
Muller Thurgau	1,306	419	25,767	6,353
Chardonnay	689	2,787	6,026	23,593
Sauvignon Blanc	427	2,423	4,659	15,472
Cabernet Sauvignon	396	654	3,148	3,792
Riesling	282	490	3,658	4,070
Muscat Varieties	225	183	6,881	3,487
Semillon	147	229	1,443	2,189
Pinot Noir	178	1,098	1,425	6,319
Merlot	96	657	1,062	4,090
Other	1,134	1,002	16,196	10,735
Total	4,880	9,942	70,265	80,100

Regional Councils	Vineyard area (ha)		Production (tonnes)	
	1990	2000	1990	2000
Auckland	310	393	1,818	1,363
Waikato/Bay of Plenty	126	119	681	637
Gisborne	1,422	1,681	24,255	21,820
Hawke's Bay	1,328	2,443	20,302	23,886
Wellington	74	327	na	1,124
Tasman	45	203	na	1,125
Marlborough	1,423	4,054	21,385	26,212
Canterbury	111	442	na	788
Otago	19	280	na	1,009
Other	16	0	1,824	2,136
Total	4,880	9,942	70,265	80,100

Source: Wine Institute of NZ Annual Report 1998, 2000; BNZ Wine and Grape Industry Annual 2000.

Wine exports (\$million, fob)



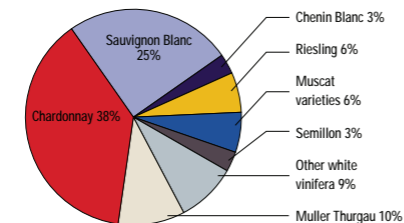
Source: Statistics NZ.

For more information visit www.nzwine.com

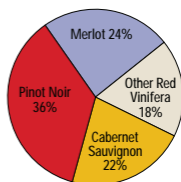
- Wine valued at \$168.8 million (fob) was exported to 60 countries. Exports have increased from \$18.4 million in 1990.
- Vineyards have doubled in the last 10 years and now total 9,942 ha. Vineyard plantings have increased significantly in Hawkes Bay and Marlborough, with smaller increases in Wairarapa, Canterbury, Nelson and Otago.
- Number of wineries has increased from 131 in 1990 to 358 in 2000.
- The modest increase in production during the 1990s (+14%) reflects the change from high yielding varieties to high quality and lower yielding varieties. Muller Thurgau and Muscat varieties have declined and Chardonnay, Sauvignon Blanc, Pinot Noir and Merlot have increased.
- New Zealand wine production represents about 0.2% global production.
- Over 50% of the vineyard area is managed according to IWP (Integrated Wine Production) practices originally introduced in 1998/99.
- Domestic sales of 40 million litres (approx. 68% production) were valued at around \$300 million.

GRAPE PRODUCTION BY VARIETY (2000 VINTAGE)

White varieties (62,720 tonnes)



Red varieties (17,380 tonnes)



Source: Wine Institute of NZ Annual Report 2000.



Other fresh and processed fruits					Sales value (\$m)	
Crops as at 30 June 2000	Growers (no.)	Planted area (ha)	Crop per grower (ha)	Production (tonnes)	Domestic 1999	Export 2000
Fresh Fruit						
Avocado	650	1,500	2.3	7,200	6.7	25.2
Citrus	500	1,900	3.8	30,000	24.0	9.3
Grapefruit		108				0.0
Lemons		310				2.8
Mandarins		598				5.5
Oranges		569				1.0
Tangelos		216				
Persimmon	93	230	2.5	3,000	0.4	7.4
Melons	na	na		na		4.2
Feijoa	200	200	1.0	950	1.2	0.2
Tamarillo	175	300	1.7	740	1.3	0.6
Passionfruit	100	38	0.4	240		0.4
Pears						15.6
Nashi	150	100	0.7	1,300	0.6	0.6
Berryfruit	480	1408	2.9		26.2	17.6
Blackcurrants	33	587	17.8	2,200		na
Boysenberries and Raspberries	72	187	2.6	2,500		0.8
Blueberries	52	239	4.6	1,130		6.8
Strawberries	144	222	1.5	6,300		10.0
Summerfruit	524	3000	5.7		55.0	14.8
Apricots				7,410		8.1
Cherries				1,220		5.6
Nectarines - white/yellow				5,030		0.7
Peaches - white/yellow				10,030		0.3
Plums				2,030		0.1
Other fruits					0.0	0.2
Total	3,243	11,911			115.4	96.1
Processed Fruit						
Jams, jellies						17.7
Apple juice	<i>Fruit used for processing is produced on the orchard areas described above</i>					21.1
Fruit juices						3.6
Frozen fruits						8.1
Fruit pastes and purees						20.5
Other processed fruit						1.3
Total					na	72.3

Sources: Statistics NZ; NZ Fruit Research and Strategy Report 1998-99, May 2000.

- Berryfruit exports equal \$17.6 million, strawberries being the dominant berryfruit.
- Avocado exports (\$25.2 million) are expanding.
- The persimmon, citrus and summerfruit exports range from \$7.4 to \$14.8 million.
- Domestic markets for citrus and berryfruit are similar in size, (\$24 –\$26 million) while the summerfruit market is about double (\$56 million).

FLOWERS, PLANTS, SEEDS AND OTHER PRODUCTS

Exports of flowers, plants, seeds and other products (\$ million, fob)

	1985	1990	1995	2000
Cut flowers				
Carnations				0.5
Lilium			1.5	1.9
Nerines				0.6
Orchids	2.8	8.2	14.6	22.4
Paenies				0.5
Proteaceae	0.3	0.5	1.5	1.4
Roses	0.9	1.3	1.1	0.3
Sandersonia		0.2	5.6	3.1
Zantedeschia		1.9	6.6	7.7
Other	3.7	6.5	18.8	7.8
Plants				
Live plants	6.3	2.5	3.5	5.6
Foliage	2.9	0.7	0.2	0.6
Seeds, bulbs				
Flower seeds	0.5	<0.1	0.3	2.1
Vegetable seeds	1.2	2.1	7.3	15.9
Tree seeds				1.6
Bulbs, tubers, corms	0.4	2.0	6.3	11.6
Sphagnum moss		11.0	17.3	11.0*
Hops		1.4	6.8	6.2
Olive oil				0.1
Total	19.0	26.2	91.4	100.8

* Estimate only

Source: Statistics NZ.

- Exports of cut flowers have increased from \$7.7 million in 1985 to \$46.2 million in 2000. There are significant exports of orchids (\$17.9m), zantedeschias (\$5.2m) and sandersonias (\$2.8m) to Japan.
- The exports of bulbs and vegetable seeds have also increased.
- The domestic market of cut flowers is estimated at \$50 million.
- Sphagnum moss exports to Japan have been significant during the past decade.



Fresh and processed vegetables

Crops data as at 30 June 1999	Growers (no.)	Planted area (ha)	Crop volume(tonnes)	Exports-2000 (\$million, fob)
Fresh Vegetables				
Asparagus	200	2,000	2,500	12.2
Carrots	160	1,500	55,000	22.2
Onions	185	6,388	225,000	78.6
Potatoes	385	12,191	210,000	13.3
Squash	245	7,077	110,000	60.3
Tomatoes	675	720	35,000	1.2
Other fresh vegetables				
Beans	225	1,200	na	0.8
Brassicac	300	4,000	35,000	0.9
Capsicums	190	130	5,120	15.1
Cucurbits	415	na	1,500	na
Garlic	30	139	1,500	2.8
Kumara	90	1,000	15,500	na
Lettuce	270	905	na	0.3
Peas	730	10,000	na	na
Sweetcorn	305	6,000	na	2.6
Other vegetables*	1,600	25,000	na	3.0
Total				213.3
Processeed Vegetables				
Asparagus			2,900	8.5
Beans			7,000	16.2
Carrots			22,000	0.5
Kumara			550	na
Peas			60,000	40.6
Potatoes			265,000	19.5
Sweetcorn			100,000	39.3
Tomatoes			45,000	na
Mixed vegetables			na	29.1
Dried vegetables			na	9.5
Other vegetables			5,000	11.2
Total				174.4
Overall total*	3,500	50,000		387.7

* Includes taro, vegetable shoots, celery, spring onions, parsnips, beetroot, silver beet, spinach, yams, leeks, swedes, and some others

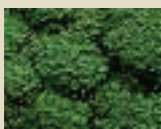
** Growers usually grow several crops. Land may grow more than one crop each year

Sources: Statistics NZ; www.vegfed.co.nz September 2000.

Over 50 different types of vegetables are grown in New Zealand for fresh consumption and processing. The estimated farm gate value of these crops was \$428 million for 2000.

For more information visit www.vegfed.co.nz





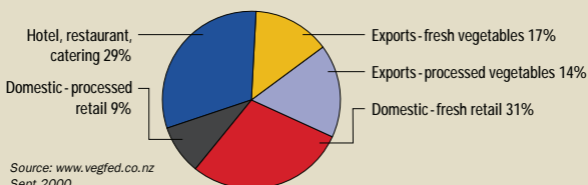
Fresh vegetables

- Exports of fresh vegetables valued at \$213 million were sent to 50 countries. \$199 million was exported in 1990.
- Onions, carrots and squash were the main export fresh vegetables. Other significant exports were capsicums, potatoes and asparagus.
- Potatoes, tomatoes, mushrooms, lettuce, carrots, broccoli, onions and kumara are important on the domestic market.

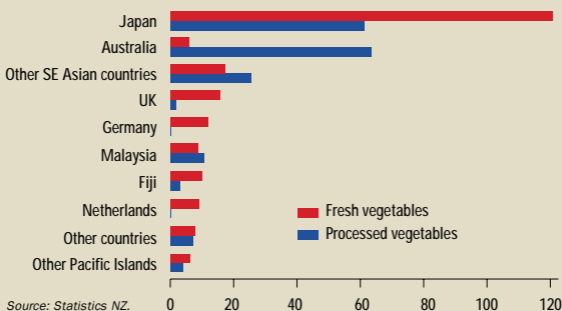
Processed vegetables

- Exports of processed vegetables have reached \$174 million in 2000 and go to 55 countries. In 1990 the value of these exports was \$31 million.
- Processing includes freezing, canning, juicing and artificial drying.
- Processed peas, sweetcorn and mixed vegetables are the significant exports. Processed asparagus, beans, potatoes and dried vegetables also contribute.

Industry value (\$1.4 billion)



Vegetable exports (\$million, fob)



Distribution of fruit and vegetables by Regional Councils (ha)

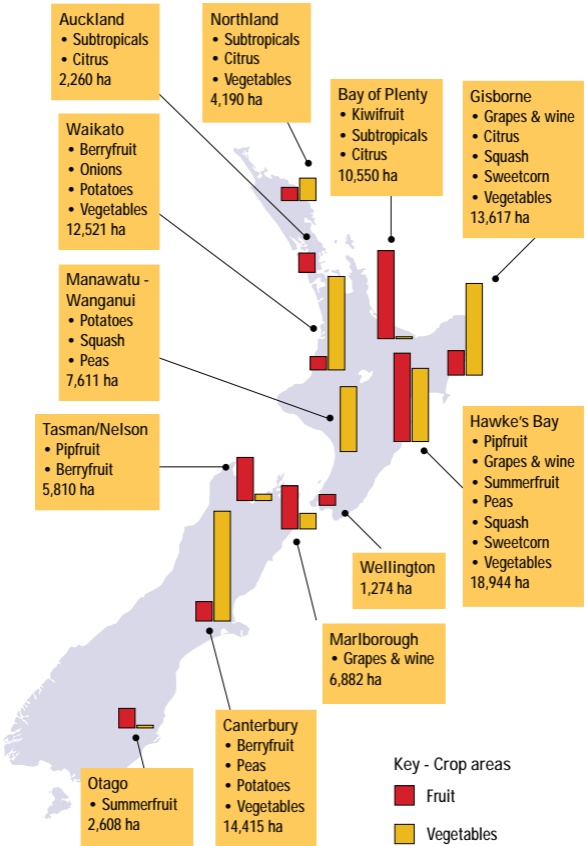
Regional Council	Pipfruit	Kiwifruit	Grapes	Summerfruit	Subtropical	Berryfruit	Citrus	Total fruit	Onions	Peas	Potatoes	Squash	Sweetcorn	Other	Total vegetables
Northland	130	205		44	536		640	1,555						2,637	2,637
Auckland	720	307	393	203	336	120	180	2,259							
Waikato	820	119	119	104	144	330	45	1,562	5,000		2,590	442		2,927	10,959
Bay of Plenty	240	8,596		37	998		450	10,321	188		41				229
Gisborne	310	205	1,681	28	128		515	2,867				2,750	2,900	5,100	10,750
Hawke's Bay	6,590	205	2,443	949	91	35	50	10,363		1,280	349	2,400	1,800	2,752	8,581
Manawatu-Wanganui									102	1,400	2,559	1,150		2,400	7,611
Wellington	670		327	120	64	82	11	1,274							
Tasman	3,830	691	203	55	11	265	6	5,061		159	75			515	749
Marlborough	750	25	4,054	215	7		3	5,054		535				1,293	1,828
Canterbury	510		442	220		517		1,689	700	6,500	1,500			4,026	12,726
Otago	930		280	1,025		59		2,294		126	188				314
Other							398				4,889	335	1,300	3,350	10,272
Total	15,500	10,234	9,942	3,000	2,315	1,408	1,900	44,299	6,388	10,000	12,191	7,077	6,000	25,000	66,656

Sources: ENZA, Zespri Ltd., BNZ Wine & Grape Industry Annual Report – 2000, 'The New Zealand Fruit Industry - An Investment for the Future', November 1998, www.vegfed.co.nz, MAF Horticultural & Arable Monitoring Reports 2000.

Note: The areas shown in this table may differ from those presented in statistics from the various industry sectors. Differences among the various sources are due to factors such as the year of data collection, domestic versus export supply, and productive versus planted area.

HORTICULTURE IS VITAL TO THE ECONOMY OF MANY REGIONS

New Zealand horticulture - regional location of crops



Crop is named when the regional area exceeds 10% of the national crop area. Some 10,272 ha of crops could not be assigned to a specific region.

Economic contributor to the regions

INVESTMENT IN THE HORTICULTURAL INDUSTRIES

Estimated investment in horticulture

	Crop area (ha)	On-farm (\$million)	Off-farm (\$million)
Cabbages, cauliflowers	4,000	38	38
Grapes and wine	9,942	398	1,193
Kiwifruit	10,234	1,355	271
Onions	6,388	61	61
Other fruit	8,623	302	302
Other vegetables	16,593	158	158
Peas, beans, carrots and sweetcorn	18,700	178	355
Pipfruit	15,500	543	543
Potatoes	12,191	116	232
Squash	7,077	67	67
Tomatoes	1,707	16	32
Total	110,955	3,230	3,251

Sources: Data elsewhere in this brochure; MAF Arable and Horticulture Monitoring Reports, 2000

- Horticultural enterprises represent a significant capital investment on farms and orchards of over \$3.2 billion, in land, buildings and equipment.
- The off-farm capital investment to package, process and transport the products to the nearest port and/or domestic market is similar to the on-farm investment.
- The ratio of on-farm to off-farm investment varies across the individual sectors. Kiwifruit off-farm investment is about 20% on-farm, whereas wine approaches 300% of on-farm investment.
- Horticultural enterprises operate at many scales. Off-orchard pack houses allow small holdings to be economic for growers. This resource encourages new grower entrants.



The economic impact of fruit and vegetable growing extends well beyond



Nurseries and seed



On-orchard and farm labour



Orchard and farm management and harvesting

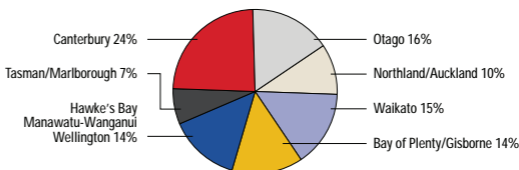
- Research & development and tertiary education
- Horticultural engineering
- Beneficial participants: tourism, community activities,

MORE HORTICULTURAL ACTIVITIES WITH REGIONAL IMPACTS

Bees – a vital contributor to horticulture

- Bees pollinate crops and play a big part in the success of horticultural enterprises.
- Honey exports exceeded \$10 million in 2000. Bees and bee products earned another \$1.9 million. About 23% of the honey crop is exported.
- Some 300,000 hives are distributed throughout New Zealand.

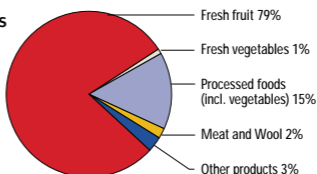
New Zealand honey crop (9609 tonnes)



Emergence of organic production

- Organic exports are growing and exceeded \$60 million for 2000. Exports have grown tenfold during the past 5 years.
- Fruit and vegetables play a key role with kiwifruit, processed vegetables and pipfruit prominent.

New Zealand organic exports by product



Source: www.organicnewzealand.org.nz.

Carrots - rapid export growth

- Exports have expanded from \$1 million in 1991 to \$22 million in 2000.
- Carrots are exported as fresh, frozen, dehydrated product and juice concentrate.
- Japan is the primary market.
- Strong domestic base with a fresh market of \$30 million.

the orchard and farm gate



➔ Packhouses and processing



➔ Transport and distribution



➔ Export and market management

and consultancy services • Goods and services suppliers including financial services
real estate, sports and recreation, regional authorities, etc

SUSTAINABILITY AND RENEWABLE RESOURCES

- Horticultural production systems are designed to minimise chemical residues. Integrated Fruit Production (IFP) and Integrated Pest Management (IPM) practices are widely used in fruit and vegetable production. Careful monitoring and 'trace-back' systems provide overall quality assurance.
- New Zealand has strict border protocols designed to reduce entry of unwanted pests and diseases.
- New Zealand exports to countries which have their own border controls with which we must comply. These are designed either to protect their crops and/or the health of their citizens.
- Market access issues arise where risks of disease and pest entry are raised as non-tariff barriers: eg Australia - perceived fireblight risk prohibits apple imports; Japan codling moth risk restricts apple imports; USA leafroller and mealybug risks restrict apple imports.

Integrated Winegrape Production

- Winegrowers reduce chemical usage through the NZ Integrated Winegrape Production scheme. Over 140 vineyards (more than 50% of the total vineyard area) have elected to participate in this scheme in 2000.



Kiwifruit growers have adopted the ZESPRI™ Kiwigrreen Programme which is designed to minimise chemical residues on kiwifruit.

Trial work by DSIR, MAF and HortResearch on kiwifruit. Studied phenology and ecology of key pests, use of softer chemicals and pest monitoring.

Trial work on 20 orchards. Produced 250,000 trays using IPM methods.

1985

1986

1987

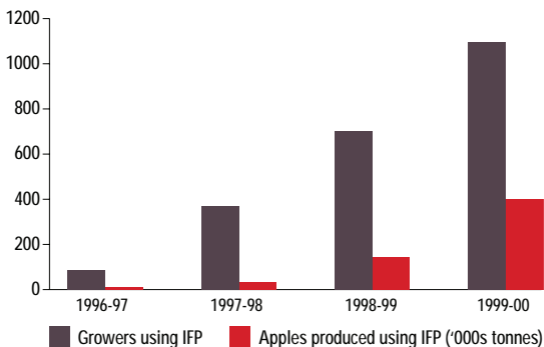
1988

1989

1990

1991

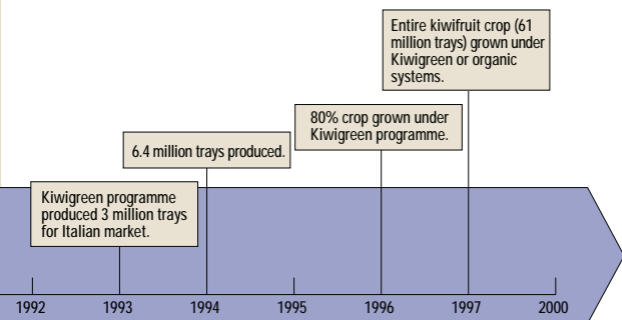
Uptake of Integrated Fruit Production (IFP) by apple growers



Typically IFP technology enables:

- 30% reduction in use of dithiocarbamate (EDBC) fungicides
- 13% reduction in fungicide applications
- 50% reduction in insecticide use
- 75% reduction in organo-phosphate insecticide use
- 100% reduction in miticide use.

Source: HortResearch.



Nutritional value

FRUIT AND VEGETABLES ADD VALUE TO DAILY HEALTH

A report card of health benefits

- Showing how fresh fruit & vegetables can alleviate major health conditions.

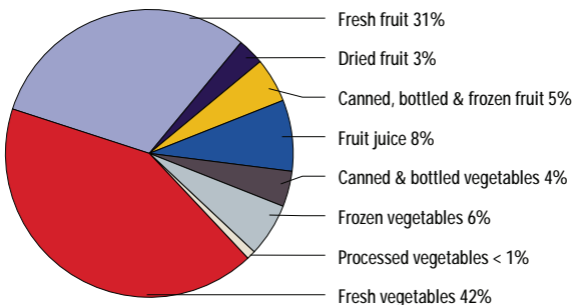
Condition	Strength of evidence	Assessment of evidence
Cancer	Substantial, growing	Most convincing
Heart Disease	Substantial, growing	Very convincing
Stroke	Limited, growing	Impressive
Hypertension	Limited, includes clinical trial	Suggestive
Birth defects	Substantial, proven	Most convincing
Cataracts	Growing, need clinical trial	Convincing
Diverticulosis	Strong	Convincing
Longevity	Human data lacking	Watching brief
Chronic Obstructive Pulmonary Disease	New	Suggestive
Diabetes	Mixed better for lipid, than for glycemic, control	Convincing
Obesity	Sparse	Convincing as an adjunct treatment

Active compound in fruit/vegetable and associated condition

Active compound	Condition(s)
Antioxidants, such as Vitamin C, beta carotene, carotenoids, flavonoids	Cancer Heart disease, includes stroke Cataracts
Folate	Birth defects Cancer Heart Disease
Fibre – soluble	Heart Disease Diabetes
Fibre – insoluble	Diverticulosis
Potassium	Stroke Hypertension
Low fat/ low energy food	Obesity

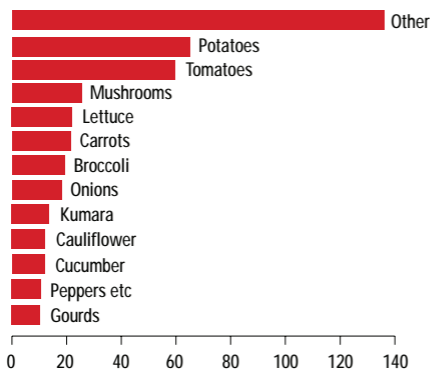
Source: United Fresh New Zealand Inc. 2000; 5 + a day 2000.

New Zealanders spend over \$1 billion on fruit and vegetables each year



Source: Statistics NZ. Household survey for year ended 31 March 1998. (Grapes for wine are not included in this data).

New Zealanders spend over \$420 million each year on a wide range of vegetables (\$million)



Source: Statistics NZ. Household survey for year ended 31 March 1998.



For more information visit www.5aday.co.nz

Analysis of typical fruits and vegetables

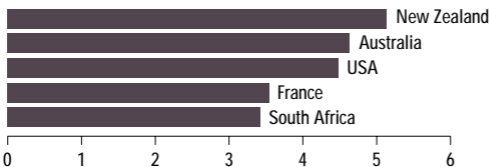
(Constituents contained within 100 gm portions)	Dietary fibre (g)	Energy (kJ)	Total fat (g)	Vitamin A equiv. (µg)	Vitamin C (mg)	Potassium (mg)
Apples	2.0	212	0.1	2	5	107
Apricots	2.1	139	0.1	35	12	335
Avocados	1.5	875	23.0	49	9	470
Cabbage (raw)	3.8	72	0.1	5	45	320
Carrot (raw)	3.3	110	0.2	1730	6	260
Kiwifruit (raw)	1.6	192	0.6	10	93	236
Onions (raw)	1.7	114	0.1	2	5	125
Oranges (raw)	2.0	151	0.1	21	52	145
Pears	2.4	225	0.1	3	5	83
Peas (boiled)	7.2	211	0.4	76	20	155
Potatoes (fries)	3.7	1010	14.0	1	10	520
Strawberries	2.2	77	0.1	1	45	130
Sweetcorn (boiled)	3.7	457	1.3	50	6	249
Tomatoes	1.2	52	0.1	58	18	200

Source: 'The Pacific Islands Food Composition Tables', Crop & Food Research, Palmerston North, 1993.

For more information visit www.crop.cri.nz

MARKET STRENGTHS IN HORTICULTURE

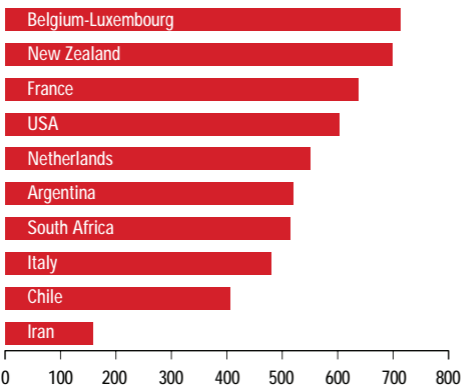
UK average wine price (£ per bottle)



Source: Wine Institute of NZ, Annual Report, June 1998

- Brands play a key role in marketing horticultural products.
- Premium prices are received by New Zealand white wines in the UK, which is our largest market.
- New Zealand first exported kiwifruit during the 1950s. 'New Zealand still sets the pace' for global marketing of kiwifruit (World Kiwifruit Review). New ZESPRI™ Gold yellow kiwifruit and ZESPRI™ Green organic fruit obtain a significant price premium in export markets.
- New Zealand is first in competitiveness among the major world apple suppliers on the basis of production efficiency, industry infrastructure and inputs, and financial and market factors (World Apple Review).
- New Zealand apple prices rank high among the top ten exporting countries.

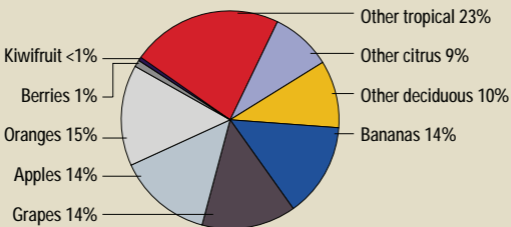
Comparative apple export prices (\$US/tonne)



Source: World Apple Review-2000

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2. Annual Report / Zespri New Zealand Ltd. 1998, 2000.
3. BNZ Wine & Grape Industry Statistical Annual 1999, 2000
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9. New Zealand Vegetable & Potato Growers' Federation website www.vegfed.co.nz September 2000.
10. World Apple Review – 2000 Edition. Belrose Inc. Pullman, Washington. USA.
11. World Kiwifruit Review – 2000 Edition. Belrose Inc. Pullman, Washington. USA.
12. United Fresh New Zealand Inc. and 5+a Day, 2000. "A scientific overview for the health professional – fresh fruit and vegetables first." Summary by Mary Ann S. Van Duyn (PhD, MPH, RD)

The World fruit basket (410 million tonnes)



Source: World Kiwifruit Review-2000

The World fruit basket is very large. New Zealand is a small player targeting niche markets. Many fruit varieties that New Zealand export are insignificant within the global fruit scene (e.g. kiwifruit). The availability of other fruit types in the market impacts on the success of our fruit exports.

HortResearch gratefully acknowledges contributions made by the following organisations:



Horticultural
Exporters
Council Inc



New Zealand Horticulture
Export Authority



*New Zealand Fruitgrowers
Charitable Trust*

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