

# The Japanese Market for Organic Fruit and Vegetables

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In 1998, New Zealand organic produce exports reached \$29 million, a 45% increase over the figure for the previous year. This rapid increase was a reflection of expanding world-wide demand for organic produce, driven by increasing consumer interest in more healthy food and concerns about the sustainability of conventional agricultural production. Japan is now New Zealand's largest organic export market, consuming 46% of organic exports. This paper reports the results of a study conducted in 1997 of Japanese consumers' awareness and consumption of organic fruit and vegetables, and their attitudes towards organic produce, food imports in general, and New Zealand as a supplier of organic fruit and vegetables. The study concludes that there is continued potential in Japan for New Zealand organic fruit and vegetables. However, New Zealand organic exporters must emphasise the safety of their product, and ensure that certification labelling and explanations are clear and comprehensive. The healthiness, taste, and freshness of the produce are also important points to emphasise in packaging or promotional materials.

Keywords: Japanese market, organic fruit, vegetables

## Introduction

In the last decade much attention has been placed on sustainable and environmentally sound farming practice and on the international market opportunities for New Zealand produce grown in a sustainable way. Much of this attention has focused on organic farming, its viability in New Zealand, and the market potential for organic produce in Japan, the United States, and Europe. One reason for this interest in organic farming is that many consumers and producers are concerned about negative impacts of conventional farming on physical health and safety, and on the environment. A further reason is that many producers and processors see this environmental concern as a potential market opportunity (Tregear, Dent, and McGregor 1994).

Though typically up to 30% less productive than conventional farming, organic farming is less capital intensive, and its produce is often claimed to be safer, better tasting, and more nutritious than its conventional counterpart. Conversely, organically-grown produce has the disadvantage of being irregular in shape, small in size, more often afflicted by blemishes and insects, as well as being relatively more expensive to purchase than conventionally grown produce (Powell 1995; White 1995).

While the local market for organic food remains small, New Zealand companies were reporting annual organic export sales of \$NZ29 million by June 1998. This represented a 45% increase over exports in the previous year and an increase of more than 250% in two years. However, this 1998 figure represents only 0.1% of the value of all exports, and 0.2% of the value of agricultural exports. Organic kiwifruit represents the largest single category of organic exports at 55%. Fresh organic squash and onions represent 22%, and processed foods and honey make up 10% each. Japan is New Zealand's largest market, accounting for 46% of total organic export sales; Europe accounts for 28%, and the United States, 16%.

Despite the importance of the Japanese market, relatively little is known or understood about Japanese consumers' attitudes to organic produce or their purchasing behaviour. Thus the

research reported in this paper was designed to determine Japanese consumers' consumption and awareness of organic fruit and vegetables, and their attitudes towards organic produce, food imports in general and New Zealand as a supplier of organic produce. The objective was to identify those New Zealand-produced products which have greatest potential for exporting to Japan and the success factors for realising this potential.

## Methodology

A self-completion survey was administered to a convenience sample of 998 Japanese consumers using the drop-off-pick-up method in May and June 1997. The questionnaire, containing 31 questions translated into Japanese, was distributed in the Japanese cities of Sapporo and Fukuoka, and the prefectures of Tochigi and Hyogo. Two separate sample groups were chosen. The first comprised members of organic consumer groups (referred to subsequently as 'organic groups'), the second comprised members of both consumer co-operatives and the general public (referred to hereafter as the 'general public'). The combined response rate for both sample groups was 70%, representing 700 respondents.

The organic groups, constituting 35% of the 700 respondents, included one group from the Hyogo prefecture branch of Japan Organic Agriculture Association (JOAA), and a group of 50 housewives in Sapporo. These respondents had a median annual income of \$NZ120,500, were mostly females aged between 40 and 50 years, and 37% were university educated. The second sample constituted 65% of the 700 respondents, and also consisted of two groups: members of consumer co-operatives, and members of the general public. Respondents in this sample had a median annual income of \$NZ95,000, were mostly females aged between 40 and 50 years, and 24% were university educated. Over 80% of respondents in both samples were females and the main shopper in the household.

Both sample groups represented populations already inclined towards environmental issues and organic produce. They were chosen because they represented a significant proportion of the population of Japan already inclined towards organic food and, therefore, the potential market for organic exports from New Zealand. Though the sample was not representative of Japanese society as a whole, being biased towards the more affluent<sup>1</sup> and to those more likely to purchase organic food, it does represent 15% of the population of Japan, a potential market for New Zealand organic exports of more than 18 million people.

The 'organic groups' sample represents health conscious, environmentally-aware consumers, already predisposed to organic food and willing to pay the price premiums currently being realised. The 'general public' sample represents a wider segment of the Japanese population. Comparison of these two sample groups allows some conclusions to be drawn about the consequences for organic producers and exporters of an expanded Japanese market for organic produce.

In addition to the self-completion survey, 22 personal and group interviews were conducted with Japanese consumers, business people, academics, and government officials, and the merchandising of organic produce in Japanese supermarkets was observed.

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<sup>1</sup> The average income for the total working population in Japan is approximately \$NZ87,000.

## Results

The main sections in the questionnaire were based around the areas of the perceived definition of organic produce, past and present purchases and consumption of organic produce, perceptions and opinions of organic produce, attitudes towards imported food, and demographics.

All significant differences between the 'general public' and the 'organic groups' are indicated by the following:

- \*\*\* difference between groups significant at  $p < 0.001$
- \*\* difference between groups significant at  $p < 0.01$
- \* difference between groups significant at  $p < 0.05$

## Consumer Awareness

Awareness of the organic system in Japan was low and there was confusion amongst respondents about what the term 'organic' meant, and how this differed from 'chemical-free' and 'natural'.

When asked what they thought the term organic meant, respondents had the option of choosing any combination of natural, chemical-free, low-chemical, additive-free, traditional, mystical, and not sure. Most respondents indicated that the term organic encompasses the concepts of both natural and chemical-free. A minority believed that the term also includes the concepts of low chemical, additive-free, and traditional techniques, while almost none believed that there was any mysticism in terms of lunar cycles and the using of unseen 'powers of the universe', inherent in the term organic (see Table 1).

**Table 1. Understanding of the term 'organic'**

Definition categories	Proportion of sample choosing each option	
	General Public n = 452 %	Organic Groups n = 248 %
Natural	68	72
Chemical-free	39	63***
Low chemical	27	14***
Additive free	14	17
Traditional	8	13*
Mystical	1	2
Not sure	2	0

Note: Respondents could choose more than one category, thus percentages do not sum to 100%.

## Consumer Behaviour

Most respondents had bought fresh organic vegetables and fruit, and significant proportions had bought organic fruit or vegetable juice. Relatively few respondents had ever bought frozen organic fruit or vegetables, or canned produce (see Table 2).

**Table 2. Type of organic produce ever bought**

Produce Categories	Proportion of sample having purchased each option	
	General Public	Organic Groups
	n=436 %	n=246 %
Fresh Vegetables	85	94
Fresh Fruit	56	79***
Vegetable Juice	28	30
Fruit Juice	26	49***
Frozen Vegetables	11	16*
Canned Fruit	6	5
Canned Vegetables	4	9**
Frozen Fruit	4	3
Never Buy	7	2***
Other	3	1***

Note: Respondents could choose more than one category, thus percentages do not sum to 100%.

The average total weekly food expenditure of the general public was approximately \$200, an estimated 10% of which (\$21) was spent on organic produce. Respondents in the organic groups had an average total weekly food expenditure of \$257; an estimated 16% of which (\$42) was spent on organic produce. Those in the organic groups spend more than twice as much as the general public on fresh organic produce (particularly on fresh organic vegetables). The general public spends approximately twice as much on frozen organic produce as members of the organic groups, although in absolute terms this amount is minimal (see Table 3).

**Table 3. Mean weekly expenditure on organic produce**

Produce Categories	General Public n=452 \$	Organic Groups n=248 \$
Fresh	14.0	36.6***
Juice	4.0	3.9
Frozen	1.7	0.9
Canned	1.1	0.5
Mean total weekly organic expenditure	21	42***
Mean total weekly food expenditure	200	257***
Percentage of total weekly expenditure spent on organic produce	10%	16%***

To estimate the elasticity of demand for organic produce, respondents were asked their probability of purchase of a 500g packet of chemical-free frozen mixed vegetables (carrots, peas and corn) at three different prices: 400 yen, 450 yen and 500 yen. For the general public the estimated price elasticity was between -1.5 and -2.0; for the organic groups the figure was between -2.4 and -2.9. These estimates indicate a relatively elastic demand for frozen organic mixed vegetables. The fact that the estimated price elasticity is higher for the organic groups than the general public is explained by these respondents' aversion to buying frozen products.

Of the fresh organic vegetables that respondents had purchased in the last three months, the most popular varieties for both sample groups were onions, carrots and sweet potatoes. Apples, mandarins and strawberries were the most commonly purchased organic fruits, while the most commonly purchased frozen organic vegetables were asparagus, mixed vegetables and pumpkin. The most frequently purchased canned organic produce were corn, mandarins and asparagus, while apple, vegetable, tomato, and orange juice were the most commonly purchased organic juices (see Table 4).

**Table 4. Type of organic produce purchased in the last three months**

Category	Variety	Proportion of sample having purchased each option	
		General Public n=436 %	Organic Groups n=246 %
Fresh organic vegetables	Onions	53	87
	Carrots	46	82
	Potatoes	41	76
	Salad	21	58
	Vegetables		
Fresh organic fruit	Apples	34	49
	Mandarins	30	49
	Strawberries	30	42
	Kiwifruit	23	26
Frozen organic produce	Asparagus	16	2
	Mixed	14	14
	vegetables	12	6
	Pumpkin	10	6
	Green beans		
Canned organic produce	Corn	11	8
	Mandarins	8	5
	Asparagus	6	2
	Green peas	6	2
Organic fruit or vegetable juice	Vegetable	55	15
	Apple	26	36
	Tomato	24	14
	Orange	15	20

Note: Only the four most commonly purchased items for each produce category are shown in this table.

The most important place of purchase of organic produce for the general public is the co-operative retail outlets, followed by the supermarkets, and then direct from an organic grower. This differs from the organic groups, who most frequently purchase organic produce direct from the grower, then from the co-operative retail outlets, and then from the supermarkets.

### Consumer Attitudes and Perceptions

Most respondents consider organic production methods to be more environmentally friendly than conventional production methods and the legal level of pesticide residue allowed on conventional produce to be too high. Most believe that the trace quantities of pesticide residues allowed on conventional produce do harm people, with many also believing that

excessive use of chemicals in food production can cause allergies in children. Predictably, these attitudes are stronger among those in the organic groups. (See Table 5).

**Table 5. Attitudes to organic fruit and vegetables**

Statements concerning organic produce	Proportion agreeing with statement	
	General Public n=436 %	Organic Groups n=246 %
I don't buy organic fruit and vegetables if they have rough patches or spots on the skin	17	3***
I don't buy fresh organic fruit or vegetables if they are a little misshapen	5	0***
The range of organic fruit and vegetables available is very limited	57	40***
There are not enough places from which I can buy organic fruit and vegetables	70	74
The legal level of pesticide residues allowed on conventional fruit and vegetables is too high	59	70*
Although trace quantities of some pesticides are found on conventional foods, these don't harm people	11	5***
I don't normally buy organic fruit and or vegetables because the prices are too high	66	42***
Conventional growing methods have little effect on the natural environment	10	8
Organic growing methods are more environmentally friendly than conventional growing methods	82	91
Excessive use of fertilizers and pesticides in food production can cause allergies in children	77	91**
Conventionally grown fruit and vegetables are just as nutritious as organically grown fruit and vegetables	14	5***
I would always choose to buy locally grown organic fruit and vegetables over imported organic produce	83	93
I am not confident about the safety of imported organic fruit and vegetables	39	48*

Note: Percentages are of respondents who *agree* or *strongly agree*.

These attitudes are reflected in the perception of the large majority of respondents in both groups that organic produce is safer to eat than conventional food. Organic produce is also perceived as more nutritious and better tasting than its conventional counterpart. However, organic produce is perceived as more expensive, less widely available, less attractive, and having a more limited range than conventional produce (see Table 6).

**Table 6. Perceptions of organic fruit and vegetables**

Statements concerning organic produce	Proportion agreeing with statement	
	General Public n=440 %	Organic Groups N=241 %
Organic food is safer to eat than conventional food	90	97
Organic food is more environmentally friendly than conventional food	87	95
Organic food tastes better than conventional food	74	92***
Organic food is more nutritious than conventional food	72	87***
Organic food is more expensive than conventional food	66	52
Organic food is not as widely available as conventional food	44	46
Organic food does not look as good as conventional food	35	34
Organic food is more often misshapen than conventional food	33	36

Note: Percentages are of respondents who *agree* or *strongly agree*.

The most important purchase consideration among all respondents was the guaranteed safety of organic produce. In other words, the fact that it is less likely to contain unacceptable levels of pesticide residues is the main motivation for purchasing organic produce. Price is the second most important purchase consideration. Many respondents reported that they did not buy organic produce because the prices were too high, though high prices are less of a deterrent to those in the organic groups (see Table 7).

**Table 7. Purchase considerations for organic fruit and vegetables**

Purchase Considerations:	Proportion rating as important	
	General Public n=440 %	Organic Groups n=241 %
Guaranteed safety	96	97
Price	80	61***
Origin (local versus imported)	78	88***
Regularity of supply	59	59
Range Available	49	42
No skin blemishes	47	28***
Size Uniformity	8	1***
Shape Uniformity	8	1***

Note: Percentages are of respondents who answered *important* or *very important*.

The other important purchase considerations are the origin of organic produce, the regularity of supply, and the range of produce available. The size and shape of organic produce are relatively unimportant, but the presence of skin blemishes is a deterrent to purchase, particularly for the general public (see Table 7).



Almost all respondents in both samples indicated that they would prefer to purchase locally-produced organic produce rather than imported produce. Locally-produced produce is perceived to be fresher, safer and more trustworthy than imported produce, and the preservation of Japanese agriculture through the consumption of locally-produced food is an issue for many respondents.

Despite respondents being strongly averse to food imports in general, if they were to purchase imported organic produce, New Zealand would be their second most preferred country of origin after Australia, followed in descending order by Canada, the USA, Germany, England, and China. Two reasons given for choosing each respective first choice country were the perception that the country had clean water, air, and soil, and that there was a high level of perceived trust in the chosen country and its potential organic exports. In Japan, the image of New Zealand is that it is a beautiful, green and natural place, a farming country with many sheep. These images are ones that should be emphasised when promoting organic produce to the Japanese.

## **Discussion**

The results of this study confirm that there is a significant niche market for organically-grown produce in Japan. The market is mainly among better educated, more affluent urban consumers, particularly those concerned about environmental issues and food 'safety', who are willing and able to pay the higher prices charged for organic produce. While these prices remain high, the market for organic produce in Japan is unlikely to expand significantly. Other barriers to the expansion of the organic market are a lack of trust in organic produce labelling (the result of widely-publicised incidents where produce has been falsely-labelled as 'organic' or 'chemical free' and priced accordingly), the limited range of produce available and the frequent unavailability of organic produce (JETRO 1994 & 1997; OPEG 1997; TRADENZ 1997).

In the longer term, competition from cheaper producers in South America and China may see the current price premiums for organic produce in Japan eroded and the size of the market increased as a result. This will increase the potential for New Zealand exporters, but place more emphasis on production costs and the appearance of organic produce. Ironically, consumers willing to buy organic produce at lower prices are less tolerant of skin blemishes and lack of size and shape uniformity.

These conclusions suggest that, at least in the short to medium term, New Zealand producers and exporters should continue pursuing the existing niche market for organic produce in Japan with premium-priced products. In the long term, it is likely that the market for organic produce in Japan will expand and price premiums will be minimal or non-existent. The New Zealand industry should prepare for this by increasing the yields of organic crops, and number of producers growing organically.

This study also indicates that New Zealand producers and exporters should focus on value-added organic produce. Because of the various difficulties associated with exporting many fresh organic fruit or vegetables (there are some notable exceptions), attention should be focused on organic juices and (processed) frozen foods. Examples of such foods frequently purchased by survey respondents include organic vegetable, apple, tomato, and orange juices. Organic kiwifruit, carrot, and grape juices are also potential export items for New Zealand,



although not presently consumed in any great quantity (this could be due to unavailability rather than dislike). The study also indicates that (processed) frozen produce for exporters to focus on include asparagus, mixed vegetables, pumpkin, green beans, and green peas.

Japanese consumers prefer to buy fresh produce. However, fresh food imports into Japan are randomly sprayed for insects by Japanese officials at quarantine. No distinction is made between organic or conventional produce when spraying, and if sprayed, organic produce entering the country loses its organic status. New Zealand companies have the choice of placing organic labelling only on the produce that has not been sprayed upon arrival in Japan, or they can label their produce 'organic at time of growing'. The former is a more costly option, but under the latter option the organic status of the produce at the time of purchase is unknown. Another issue is the very strict import standards for fresh produce. Japanese regulations stipulate that produce must be of a specific shape and size before being allowed entry. This is particularly challenging for exporters of fresh organic produce.

However, while there are significant drawbacks to exporting fresh organic fruit or vegetables to Japan, there are some potential opportunities. Depending on growing and transportation limitations, potential growth areas are onions, carrots, potatoes, apples, mandarins, strawberries, and kiwifruit. Resources could also be invested in New Zealand for developing techniques to grow produce that is of a consistently high quality, and that always meets the shape and size requirements of Japanese import standards. Research into how to successfully grow traditionally difficult organic produce such as apples and citrus could also be beneficial.

From this study the market potential for canned fruit or vegetables appears to be very limited, and attention should be focused elsewhere.

The finding that respondents make most of their organic purchases at large retail outlets – cooperative stores or supermarkets – reflects the changing pattern of Japanese society. The trend there, as in the West, is away from small family-operated shops to large supermarkets and cooperative outlets. These are the logical outlets for New Zealand organic exporters to target, though cooperative stores may be less receptive than supermarkets in some cases because the former tend to be more loyal to local producers (Shimizu, 1995).

The consumers surveyed in this study had a favourable image of New Zealand, and New Zealand was the most preferred source of organic food after Australia. TRADENZ (1997) has suggested that New Zealand's 'clean and green' image may be a 'perception perhaps strongest in the minds of the New Zealand suppliers themselves'. Nevertheless, the image of New Zealand as a country with clean water, air and soil is a desirable one, worth promoting.

When designing packaging and promotional material for organic produce in Japan, exporters should be aware of the importance of visual appeal. Promotion possibilities include the use of an annotated, colour map of New Zealand and colour photographs of the producers, the growing process and New Zealand nature scenes. Promotions should also include clear and detailed explanations of the organic standards and certification used in New Zealand, and of the production process. Further, promotion should stress, where possible, the concepts of safety, high quality, trustworthiness, taste, nutrition and the environmental benefits of organic production.

## Research Limitations

The survey samples used were limited to include mainly those concerned with environmental issues, demonstrated by their membership of a consumer group. The samples were not, therefore, representative of the Japanese society as a whole, being biased towards those more likely to purchase organic food. (Nevertheless, this sample group represents a potential market for New Zealand organic exports of over 18 million people, 15% of the population of Japan.) However, because the samples were selected using the non-probability techniques of judgmental, snowball, and convenience sampling, they may not be totally representative of their respective population groups. Furthermore, because they are non-probability samples, it is impossible to project parameters estimated from them to the populations they represent with any known degree of precision.

This survey was conducted in May and June 1997, which is late spring in Japan. For this reason, some of the results may not be generalisable to all seasons. This is particularly so for the types of locally-produced fresh fruit and vegetables purchased; the most readily available for the three months before the survey (late winter through to late spring) may have included onions, carrots, potatoes, pumpkin, asparagus, apples, mandarins, strawberries, and oranges. If the research had been conducted in autumn or winter, a different range of fruit and vegetables would have been available.

This survey was conducted in a variety of locations, both rural and urban. The majority of respondents lived in, or close to, cities of between one and three million people: Sapporo, Fukuoka,

Kobe, and Utsunomiya. However, in Japan, cities such as Utsunomiya – with a population of approximately one million – are often regarded as rural cities, and even a city of this size would differ from the truly urban city of nearby Tokyo, which has a population of 26 million. There are also likely to be differences between those living in geographically different regions of Japan, as every region has its own sub-culture. Both these issues were ignored for the purposes of this study. It is suggested that future research could focus on those living in the highly urbanised regions of Tokyo and Osaka, since these could be the places most easily targeted by New Zealand exporters, due to their large populations and proximity to sea and air ports.

## Conclusions

There is a large niche market for organically-grown produce in Japan. The greatest potential in this market is for fresh produce, but because of the difficulties associated with exporting fresh produce to Japan, New Zealand producers and exporters should concentrate on the smaller, but still potentially lucrative market for organic juices and processed frozen organic produce. While price premiums remain high, the market for organic produce is unlikely to expand significantly. However, in the longer term, exports from cheaper producing countries in South America and Asia are likely to erode current price premiums, leading to an expansion of the Japanese organic market as prices fall. In anticipation of this, the New Zealand organic industry should focus attention on lowering costs, increasing yields, and producing a reliable supply of guaranteed chemical-free produce. Furthermore, New Zealand exporters should emphasise the 'safety' (i.e., chemical-free status) of their products and ensure that certification labelling and explanations are clear and comprehensive. Packaging and

promotion materials should emphasise the healthiness, taste and (where appropriate) freshness of the New Zealand product.

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