World Kiwifruit Review

2014 Edition

A publication of Belrose, Inc.
Publishers of the World Apple Report

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FOREWORD

The illustration on the front cover of this, our seventeenth, edition of the World Kiwifruit Review depicts the rollercoaster of fear and hope that the kiwifruit industry has gone through since 2010 as it has attempted to cope with the widening damage inflicted by the bacterial disease, pseudomonas syringae pv actinidiae (PSA). There has been the sinking feeling as PSA appeared in rapid succession in many orchards in New Zealand, especially in the Golden cultivar, and more gradually in other major producing countries. There has been the depression felt by many producers as the value of their life's work has evaporated before their eyes. Falling supplies have forced other firms in the supply and marketing channels to scramble to compensate for the loss of scale in their operations. Retail customers and consumers have had to adjust to reduced supplies of their favorite kiwifruit products.

On the other hand, there have been glimmers of hope as the kiwifruit industry learned how to contain the damage from PSA or minimize its effects, as new cultivars showed promise of being more resistant to the disease, and as promising new technologies emerged to either overcome or bypass the problems of PSA. Reduced supplies have also led to a strong rebound in average prices, so those whose production systems have been least compromised have seen their returns recover. In general, the kiwifruit category has retained the loyalty of retailers and consumers throughout the ordeal. The industry has become increasingly more confident that the worst of the PSA epidemic is over and that it can resume its long-term growth path.

In the meantime, while the world kiwifruit industry has been suffering special trauma from PSA, changes have continued in the economic prospects of major markets, in the retail food system and in the preferences of consumers. This edition of the World Kiwifruit Review focuses on providing information that will be useful to the kiwifruit industry as it builds an even stronger future.

Desmond O'Rourke
President, Belrose, Inc.

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Acknowledgments

We are once again deeply indebted to Jean-Michel Fournier, Director, Bureau National Interprofessionel du Kiwi (BIK), Toulouse, France, for providing much valuable information and continuing assistance in making this Review available for producers, consumers and traders in of this unique fruit.

Resuming Growth after PSA

In 2014, the world kiwifruit industry entered its fourth year of dealing with the spread of PSA. It has been forced to change course in a number of ways to cope with the damage and the threat of PSA. However, at the same time, the market environment for fruit products has continued to change. Any strategy for future growth will have to deal both with significant internal changes within the kiwifruit industry and with substantial external changes in the marketing environment.

Within the kiwifruit industry, the biggest changes have occurred in New Zealand. Within New Zealand, the biggest change has been the dramatic reduction in the availability of Zespri™ Gold kiwifruit. Supplies have fallen from almost 30 million trays in 2011-12 to below 9 million trays in 2013-14. The New Zealand industry has speeded up the introduction of replacement gold cultivars, but it will be several years before total supplies regain the levels achieved in 2011-12. While the major Hayward cultivar can be infected, the loss of vines and fruit in Hayward can be more easily controlled than in Zespri™ Gold.

The New Zealand industry also responded very rapidly to the PSA threat by setting up a new body, Kiwifruit Vine Health, to monitor the spread of the disease, to develop quarantine measures and to coordinate management protocols in the orchard and in postharvest handling. As of the beginning of 2014, Kiwifruit Vine Health was reporting that 80 percent of the kiwifruit area in New Zealand was infected with PSA-V, the most virulent strain of PSA.

Additional efforts have been directed to finding ways to keep PSA-V out of kiwifruit orchards, to prevent the spread of the bacteria once it is in the orchard, and to minimize the damage to fruit from the bacteria. Another approach has been to determine what weather conditions, such as rain, hail, heat or humidity, make vines more susceptible to infection, and to tim defensive spraying to reduce the risk of infection.

In addition, New Zealand has marshaled the resources of the national government, research institutes, extension specialists and consultants to focus more intensely on various methods of combating PSA-V in kiwifruit. While victory has not been declared in any of these activities, progress has been reported in containing damage.

New Zealand has brought new urgency to established breeding programs to find resistant cultivars, and has brought in outside expertise to hasten the process. However, the time required to develop and commercialize new cultivars can be counted in decades rather than in years. Finding an outstanding cultivar like Zespri™ Gold also involves considerable serendipity, that is, the simultaneous confluence of many favorable events.

There has also been considerable consolidation at the storage and packing level in New Zealand to cope with the decreased overall supplies of kiwifruit. However, this still does not address one of the biggest vulnerabilities of the New Zealand kiwifruit industry, namely that production is still highly concentrated in a single, limited geographic area in the Bay of Plenty. This makes control of the spread of infection particularly difficult.

The Italian kiwifruit industry has been coping with PSA longer than New Zealand. However, the Italian industry is distributed across a number of geographically separate producing regions, with different climatic conditions. In general, the incidence of PSA has been more sporadic and less devastating than in New Zealand. However, PSA has been found in all major producing districts and has caused damage, especially to golden kiwifruit. This has triggered ongoing research programs to determine the method of transmission, and the best control methods, for PSA. It is unlikely that additional Zespri™ Gold will be planted in Italy unless its susceptibility to PSA can be controlled. Other gold cultivars have also shown susceptibility to PSA.

PSA has affected selected orchards in other major European producers, such as France, Spain and Portugal, but not, so far, in Greece. Infections began to appear in Chile in 2011. In general, the desert climate in Chilean producing areas is not as conducive to the spread of PSA as is New Zealand. However, by 2013, over 700 hectares, 6.4 percent of area planted to kiwifruit in Chile had tested positive for PSA. The Chilean Kiwifruit Committee, originally set up to monitor onshore quality and study offshore market needs has now taken the lead in the battle against PSA in Chile. This includes early detection, maintaining PSA-free zones, and developing protocols for growers, nurseries, packers, transportation companies and exporters to reduce infection and halt the spread of PSA. The Committee also funds research into PSA under Chilean conditions.

Different strains of PSA have been detected in China and in Japan. Indeed, the virulent strain in New Zealand is thought to have come from China. However, there are no good estimates of the extent of infection, or of damage to vines or fruit in these countries. Little is known about the level of infection in other major Asian producers such as South Korea and Iran. However, overall, the world kiwifruit industry has suffered numerous losses that included immediate loss of income from vines removed, reduced yields from vines that could be saved, increased costs of controlling PSA damage, sharp drops in the capital values of orchard land and kiwifruit plantations, and additional costs of replacing partially, or totally, unproductive kiwifruit orchards.

One of the benefits that has resulted from the PSA outbreak is that kiwifruit industry organizations in major producing countries have been more willing to share information and work together on research and testing programs to fight the disease. This should help speed the discovery of solutions.

While the kiwifruit industry has been dealing with the unprecedented shock of PSA, the rest of the food marketing system has been dealing with significant changes with which a renewed kiwifruit industry will have to cope. The international economic system has been shocked by the global financial crisis of 2008, the Great Recession which followed, and the halting pace of recovery in many major markets. Many consumers were hurt by falls in the value of their assets (such as housing and financial investments), and by loss of jobs and incomes. In 2014, average purchasing power in many markets was lower than it was in 2007, before the Great Recession. In general, higher-income consumers recovered more rapidly than lower-income consumers. As a result, the gap in purchasing power between higher-income and lower-income consumers has continued to widen. While sales of gourmet foods and premium products have recovered, many lower-income consumers have been forced to cut down on purchase of economy products.

The Great Recession has also had a differential effect by region. In general, the developed countries in North America and Europe were hardest hit and slowest to recover. In contrast, recovery was very rapid in China. Resource rich regions like Russia, the Middle East and South America benefited from surging demand in China for the raw materials needed to feed China's growing economy. Recently, as China's economy has begun to slow, those gains are starting to evaporate.

The changing fortunes of different regions and different segments of consumers have changed the fortunes of the food retailers that supply them. Early in the Great Recession, discount grocery retailers flourished, and many non-food discounters entered into the discount food segment. However, as the recession faded, upscale retailers saw their sales rebound, while many discount retailers suffered because their normal clientele were continuing to cut back on food spending.

In the meantime, mainstream food retailers have been squeezed between the discount chains at the lower end of the market and the upscale chains. Many weaker chains have either gone bankrupt, been absorbed by larger chains, or had to sell off parts of their networks in order to survive. As a result, retailer purchasing power has continued to become more concentrated in fewer hands.

Competition among the surviving major food retailers continues to become more intense. To protect their flanks against the discounters, they have become even more demanding in the price points that they want met for each product line. Many have sought to buy product more directly from the initial producers, on the assumption that cutting out traditional middlemen will reduce acquisition costs. To protect their reputation among elite customers, they have become more adamant about their suppliers meeting higher standards for environmental awareness, worker treatment, food safety, traceability, corporate social responsibility, etc. Suppliers must undertake expensive audits to demonstrate that they are meeting standards that are often poorly defined and differ among major retailers. Ironically, the same major retailers that were eager to reduce acquisition costs, were simultaneously placing additional demands on suppliers that had the effect of raising costs.

Governments have also become much more intrusive in the food system, usually in the name of protecting consumers. For example, the United States is in the course of implementing its new Food Safety Modernization Act, which will require suppliers around the world both to implement new food safety measures and to document the measures taken. The European Union continues to tighten restrictions on permissible residue levels of chemicals now widely used in fruit production and postharvest, but for which no ready substitutes are available.

The accumulation of retailer and government requirements provides an advantage to larger suppliers that can spread the additional overhead costs over a larger volume of fruit. In contrast, it places smaller firms at a distinct disadvantage. One likely effect is the continuing withdrawal of smaller producers from fruit production, and the concentration of more production in the hands of integrated grower-packer-shipper operations. Even among integrated operations, retailer initiatives to buy fruit more directly are causing headaches for many multinational, multiproduct suppliers that do not have a firm production base. The structure of the fruit supply system will be altered further as such firms seek to acquire more production capacity.

Finally, the explosion of consumer use of various social media, and their ability to access the internet continually from smart phones and other mobile devices, is radically altering how consumers learn about, and shop for, different products. At every level of the marketing chain, firms are exploring how they can use social media to persuade consumers to patronize their products or their outlets. These firms range from online giants like Amazon.com, to traditional retailers like Walmart or Waitrose, to on-farm direct marketers, and to small, local restaurants.

At the same time, social media have given consumers a unique ability to have their opinions influence what others hear about any product or firm. In many cases, consumer comments arise randomly and are likely to represent normal differences among consumers. However, various activist groups have learned how to use the internet to bring a single, directed message to millions of people. That message can push a particular philosophy or policy. It can equally well "trash" a particular product, firm or group. The recipients of such messages rarely have the knowledge to judge their credibility or to counteract the underlying prejudices of the senders. For businesses, social media have become a two-edged sword, that can help them to reach an ever larger audience, or can broadcast negative stories that can ruin the reputation of their brand or products.

In normal circumstances, it will be important for the kiwifruit industry to learn how to best utilize social media. However, as the world kiwifruit industry recovers from the PSA outbreak and per capita supplies again begin to rise, there will be normal downward pressure on kiwifruit prices. In that situation, it will become even more vital to protect the good name of kiwifruit products and to quickly counteract any negative publicity about kiwifruit.

This will be particularly relevant in efforts to exploit the health benefits of kiwifruit. Many fresh fruits and vegetables, and many processed foods and beverages, have been touting the health benefits of their products. Kiwifruit must compete against the health claims of obscure items like Acai berries and quinoa, and mainstream items like wine and chocolate. It will become even more important to promote nutritional aspects of kiwifruit, such as its content of natural fiber and Vitamin C, and to protect the reputation of the kiwifruit for safety; that it is free of natural toxins, chemical residues, allergens, or other substances that might make a consumer sick.

A new challenge for kiwifruit will be how to position its marketing to deal with the bifurcation of consumers. Among the more affluent consumers, the battle will be for market share. Among the less affluent, the challenge will be to persuade them that kiwifruit offer them an exceptional value proposition, that the blend of good taste and good health to be found in kiwifruit makes them a good buy for consumers with limited income.

These and many other issues will be explored more fully in subsequent chapters of the World Kiwifruit Review - 2014. For convenience, the Review is divided into seven main sections:

1. Production of Kiwifruit.
2. Trade in Fresh Kiwifruit.
3. Consumption of Fresh Kiwifruit.
4. Prices of Fresh Kiwifruit.
5. Analyzing Demand for Fresh Kiwifruit.
6. Marketing Initiatives.
7. Strategic Issues.

Each section looks backward at past trends and forward to emerging trends that have the potential to alter the global kiwifruit industry. It looks at international, national, regional and local forces for change. Every effort has been made to ensure the accuracy of the data provided, to present in an easily-readable format, and to note known inconsistencies. We hope that the resulting document will provide significant to kiwifruit executives as they wrestle with the challenge of restoring the world kiwifruit industry to growth.

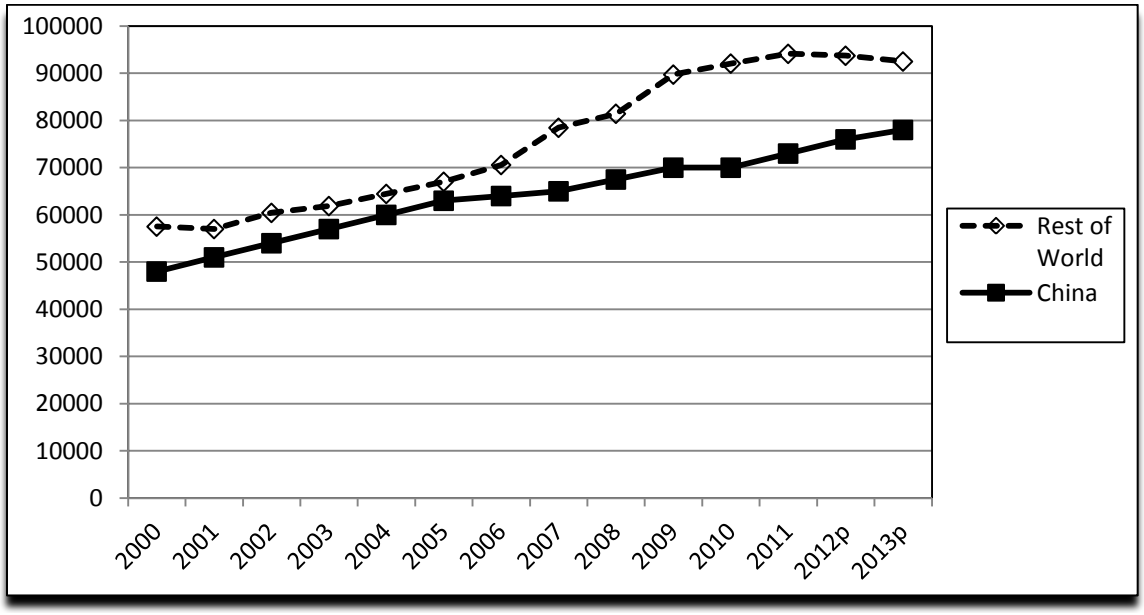
1. Production of Kiwifruit

Pause in Industry Expansion

Official data from UN,FAO through 2011 indicated that the rate of growth in the area of kiwifruit harvested had begun to slow in the world excluding China. The UN,FAO does not report data for the Chinese kiwifruit industry. Data from industry sources suggest that since 2011, the area harvested of kiwifruit has fallen as the industry has coped with the impact of PSA. Existing area has been removed and renewal plantings have been delayed because of the economic distress and uncertainty created by PSA.

In the past, harvested area of kiwifruit has been highly correlated with planted area. The main differences were due to planted area that had not yet come into production, or by bearing area that was not harvested because of weather damage. PSA has added a further complication to this relationship. Depending on the severity of PSA infection, the grower response may be to remove parts of vines, or remove entire plants, or remove entire blocks, resulting in widely different effects on the productivity of harvested areas.

World: Area Harvested of Kiwifruit, 2000-2013
(hectares)



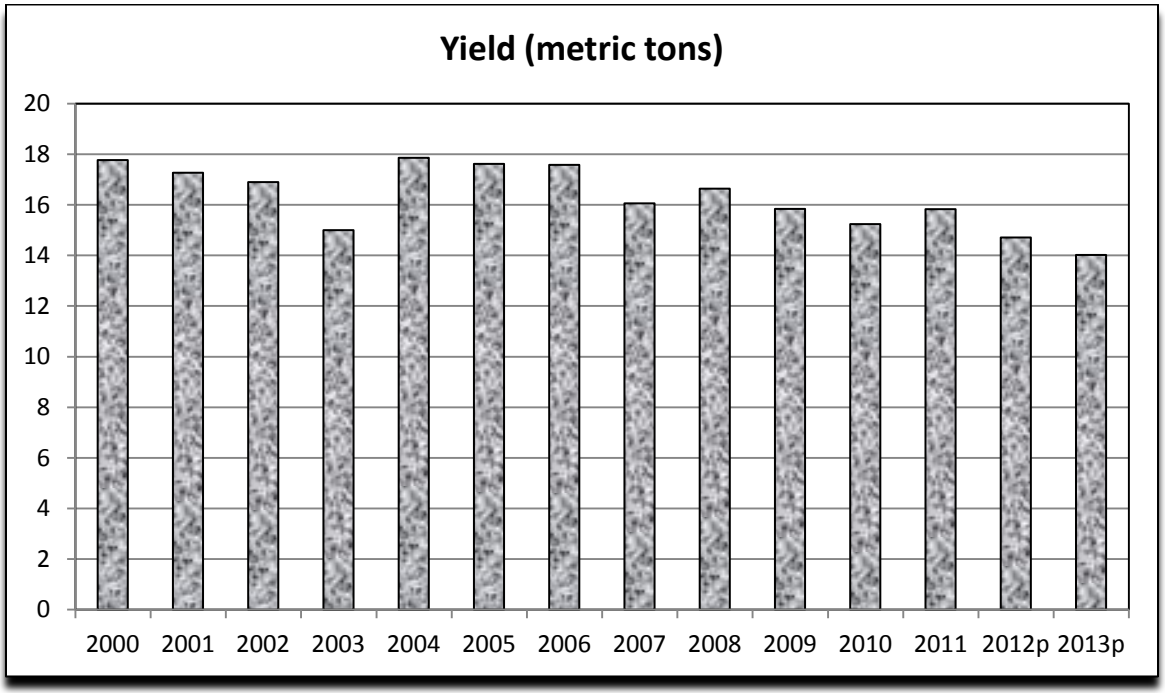
Tendency for Declining Average Yields

Even prior to the advent of PSA, average global yields of kiwifruit, as reported by UN,FAO, had been on a downward trend since 2004. This was not a cause for alarm. Because of increased plantings when the industry was in an expansionist mode, the percentage of vines not at full bearing would have been increasing and would have tended to pull down average yields. As new plantings slowed, that process could be expected to reverse.

However, since 2010, PSA has been a factor in further reducing average yields per hectare harvested. The effect has been compounded by the fact that the higher-yielding golden kiwifruit, especially 16A in New Zealand, have been the most damaged by PSA. The share of area planted to golden kiwifruit will continue to fall for several more years. Because of the forced replacement of many of the affected orchards, the proportion of young plantings will again rise and lead to a further short-term decline in average world yields.

World, excluding China: Average Yields of Kiwifruit, 2000-2013

(metric tons per hectare)



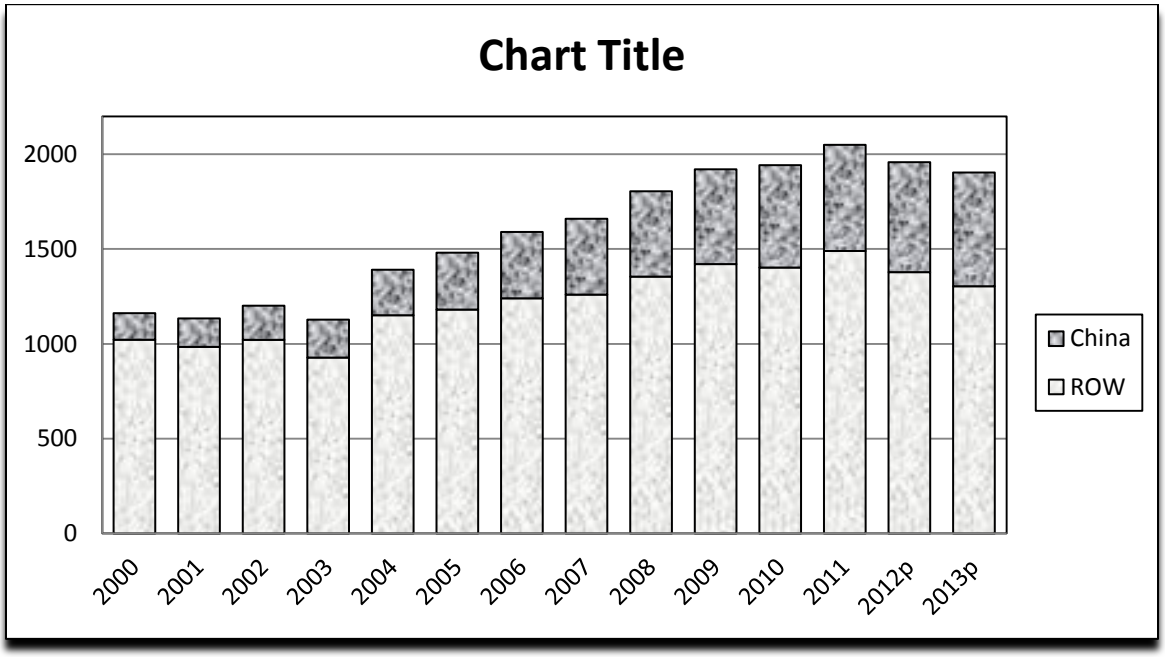
Production Climb Halted

In the decade from 2001 to 2011, production of kiwifruit in China and in the rest of the world was on a steady upward march as increased area more than compensated for declines in average yields. Production In China rose almost fourfold from 150,000 metric tons to 560,000 metric tons, while that in the rest of the world rose by over 50 percent, from 984,300 metric tons to 1,490,000 metric tons. Total world production exceeded 2 million metric tons for the first time in 2011. Production in China continued to increase in 2012 and 2013. Preliminary indications suggest that production in the rest of the world fell by over 7 percent in 2012 and by a further 5 percent in 2013.

In the highly concentrated New Zealand kiwifruit industry, there is a deliberate national strategy to plant replacement cultivars that will put the country back on a growth path by 2016. The economic alternatives to kiwifruit are limited. In other major producing countries, where decision-making is more dispersed, no such strategy has been enunciated. There, industry response will be heavily influenced by how profitability in the kiwifruit industry compares with that of alternative fruits and vegetables.

World: Production of Kiwifruit, 2000-2013

(1,000 metric tons)



Kiwifruit's Changing Place Among Fruits

The kiwifruit has had a small, but growing, niche in a global fruit market that has itself been expanding at a rapid rate. World production of the major deciduous, vine, citrus, tropical and berry fruits (but excluding watermelons and other melons) grew from 342 million metric tons in 1989-1991 to 467 million in 1999-2001, an increase of 36.5 percent. It increased by more than 30 percent to 610 million in 2009-2011. Even when China was included, kiwifruit production in 2009-2011 averaged about 2 million metric tons, about three-tenths of one percent of the world total. The table below shows how world per capita supplies of major individual fruits and fruit categories have surged over time. During both of the last two decades, supplies of fruit, and of all melons, have outpaced population growth by more than 15 percent. Per capita supplies of kiwifruit grew even faster than that of all fruit, but remained a tiny segment of the total fruit complex.

World: Per Capita Supplies of Major Fruit Groups and of Melons, 1989-1991, 1999-2001 and 2009-2011

Fruit Category	1989-1991	1999-2001	2009-2011	99-01 v 89-91	'09-11 v 99-01
	(kg)	(kg)	(kg)	(% change)	(% change)
Apples	7.58	9.51	10.46	+ 25.5	+ 10.0
Other deciduous	5.95	7.68	9.73	+ 29.1	+ 26.7
Total deciduous	13.53	17.19	20.19	+ 27.1	+ 17.5
Total Grapes	11.00	10.20	9.89	- 7.3	- 3.0
Total Kiwifruit	0.14	0.16	0.21	+ 14.3	+ 31.3
Oranges	9.61	10.13	9.95	+ 5.4	- 1.8
Other citrus	5.42	7.02	8.19	+ 29.5	+ 16.7
Total citrus	15.03	17.15	18.14	+ 14.1	+ 5.8
Bananas	8.81	10.92	15.06	+ 24.0	+ 37.9
Other tropical	14.17	16.04	19.59	+ 13.2	+ 22.1
Total tropical	22.98	26.96	34.65	+ 17.3	+ 28.5
Other fresh fruit	2.62	3.78	4.21	+ 44.3	+ 11.4
Total berries	0.78	0.93	1.09	+ 19.2	+ 17.2
TOTAL FRUIT	66.09	76.37	88.39	+ 15.6	+ 15.7
Total melons	9.14	16.04	18.54	+ 75.5	+ 15.6

During the recent past, and in the next several years, the supply of kiwifruit is likely to grow much more slowly than in the previous decade. However, in the meantime, the total volume of other fruits is likely to continue to grow. In addition, the mix of fruits entering the world market is likely to continue to change. Only two fruits, grapes and oranges, have experienced reduced supplies per capita in the last two decades. Supplies of the other two major fruits, apples and bananas, have continued to grow much faster than world population. In addition, there has been above average growth in per capita supplies of other fruits in the deciduous, citrus and tropical categories, while per capita supplies of all other fruits have grown by over 60 percent in the last two decades.

A number of factors are driving growth and change in world fruit supplies. More and more of the production of fruits is in the hands of large, well-financed operators. Much of that production is sold in expanding domestic markets or exported to high-income countries. It involves high-density plantings of the best available rootstocks, trees or vines. These generate early production and continuing high yields per hectare. International and national development agencies follow similar models. They can generate much greater incomes and jobs in rural areas by planting fruit crops than by planting field crops such as cereals or oilseeds. Since the land area devoted to field crops in most countries is many times that devoted to fruit production, there is a large reservoir available for transfer to fruit production. The two biggest limitations in developing countries are capital and water. In general, there is no shortage of the needed labor.

On the demand side, the market for fruit continues to grow. In the developed world, much of that demand is driven by increased health consciousness. Aging consumers have become more concerned about improving health and fitness, slowing the aging process, or warding off diseases like heart attacks, diabetes, cancer or Alzheimer's. Many lower income consumers in the developed world are still inhibited from buying more fruit because of the perception that it is too expensive. Upper income consumers have both the income, and the desire, to try new, different or exciting fruits. In the heavily-populated, temperate Northern Hemisphere countries, these fruits tend to be tropical in origin. In tropical regions, the demand for temperate fruits tends to rise as incomes rise. Consumers have been enabled to enjoy a wide array of fruits twelve months a year because of supplies being available from multiple sources and because of advances in transportation, storage and retailing of perishable products.

In the developed economies, there is unprecedented interest in food; where it comes from, how it is produced and marketed, how it can be cooked or served, and what are its distinguishing attributes. Entire service industries have sprung up around such food concerns. Celebrities use various media, including cooking demonstrations on television, internet blogs, and columns in newspapers and magazines to broadcast their expertise. Among the major celebrity categories are chefs and health experts. The focus of chefs tends to be on the enjoyment to be gained from various foods, that of health experts tends to be on the relationship between consumption of different foods and health outcomes. The messages from these different celebrities are often conflicting. Consumers are more likely to be influenced by the salesmanship of the celebrity than by the soundness or rationality of their advice.

Commodity promotional agencies have added to this torrent of information by advancing their own claims for the advantages of their product. Many self-styled experts have sought to be heard over this torrent by claiming exceptional benefits from consumption of selected products, so called "super foods" or "super fruits". The major criteria for being classified as a super fruit appears to be that small amounts deliver large health benefits. Different experts rank different fruits in terms of their "super" qualities. Often included in such lists are familiar products like blueberries, less widely used products such as pomegranate, and little known products like Acai berries. Some lists even include kiwifruit. However, it remains difficult to separate the bogus from the scientifically valid claims regarding links between any specific fruit and any specific health outcome. Despite the confusion, eating habits and purchasing decisions by consumers continue to be heavily influenced by the claims about fruit and health.

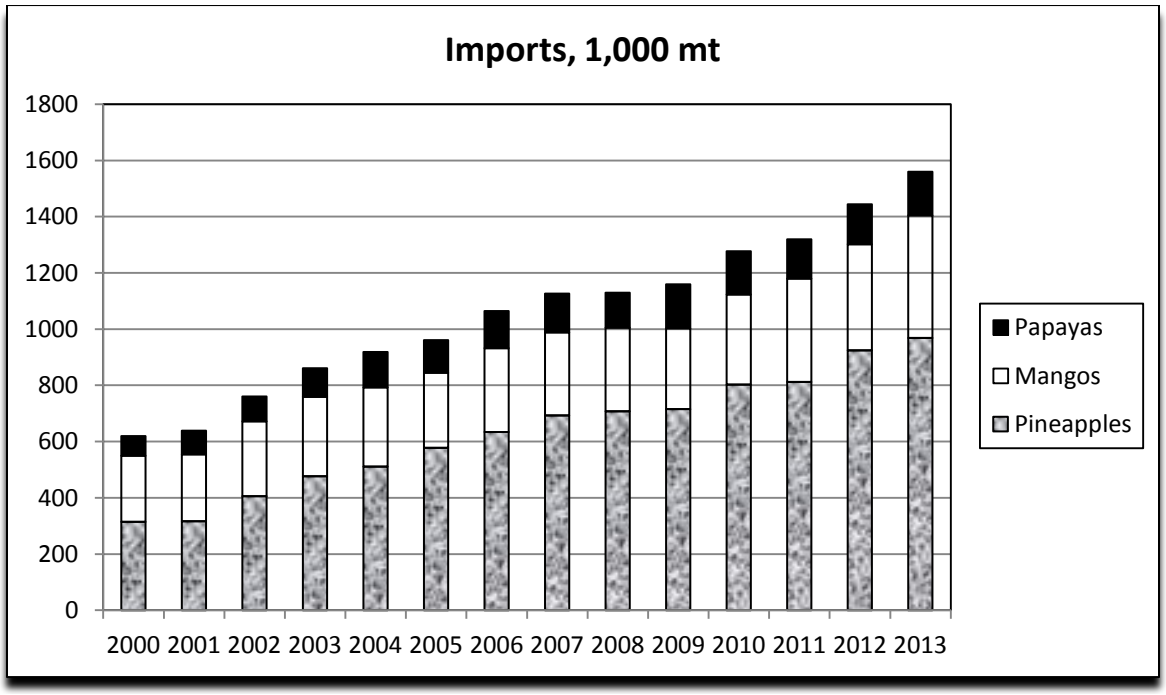
Another factor that has affected consumers' choice among fruits has been their increased mobility. In increasingly urban societies, consumers spend more time in travelling to work, school, shopping or recreation and less time preparing and eating home cooked meals. Eating often occurs while do other activities such as reading or using the telephone or internet. Convenience has become increasingly important. It favors bite-size fruits, such as seedless table grapes or blueberries, that can be eaten whole and leave minimal residues. It works against fruits like apples, oranges or peaches, and even kiwifruit, that make a mess while being eaten, and leave large residues for disposal. These latter fruits have sought to improve their convenience through use of small packs of sliced fruit or fruit cups.

Finally, a steady stream of new, foreign fruits or unusual variants of existing fruits are being introduced to the marketplace. Frequently, tourists or business executives first encounter them on their foreign travels. Upscale retailers like to feature them as an enticement to their more affluent clientele. Often they receive a push from celebrity chefs or health gurus who are keen to demonstrate their esoteric knowledge. These fruits present a special challenge to the kiwifruit. It, too, first entered developed country markets as such a novelty. It has gradually moved into the mainstream, and become available in most major supermarket / grocery outlets. Its market share is vulnerable to being eroded both by the total volume of fruits now available and, in particular, by newer novelty fruits.

The next two charts show the growing acceptance of three major fruits, fresh pineapples, fresh mangos and fresh papayas, in two major markets, the United States and the EU-28, where they were once such specialty items. The charts show the volume of imports of these three fruits for the calendar years from 2000 to 2013.

United States: Imports of Fresh Pineapples, Mangos and Papayas, 2000-2013

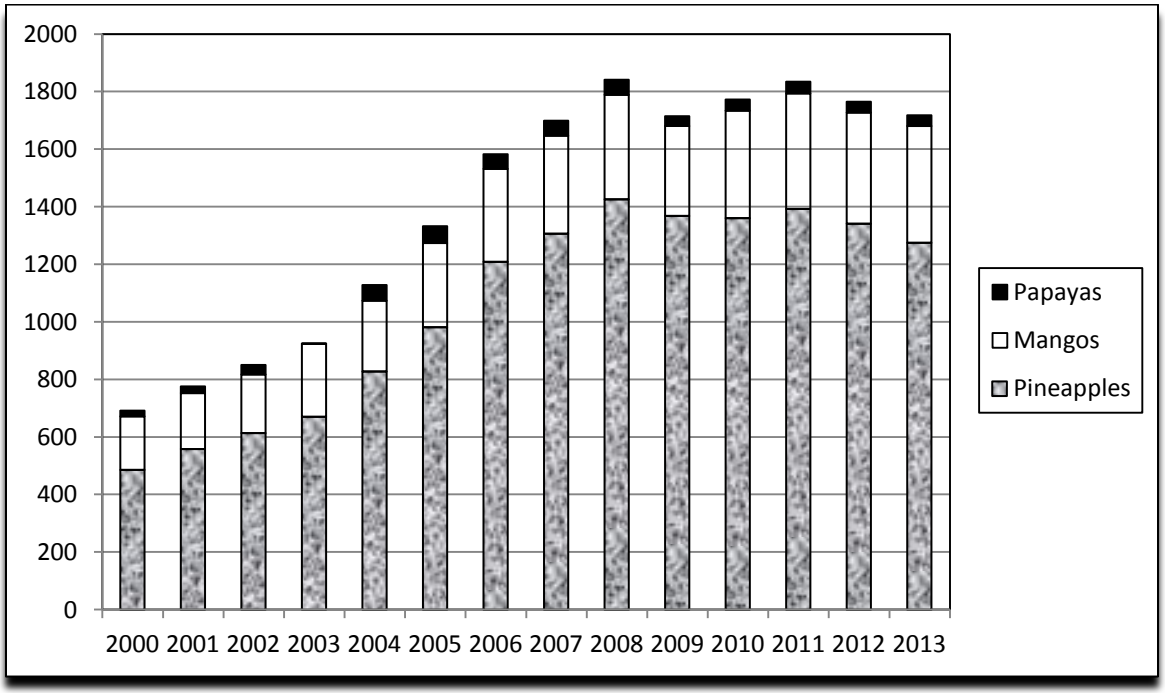
(1,000 metric tons)



In the United States, the combined imports of the three fruits moved up steadily over time. In 2013, they were about 150 percent greater than in 2000. The rate of growth slowed in the recession years of 2008 and 2009, but has picked up speed since. Of the three, fresh papaya imports were slowed most by the recession and its aftermath. In the EU-28, the European Union that recently increased to 28 member countries with the addition of Croatia, the rate of growth of imports was even faster than in the United States between 2000 and 2008. However, combined imports fell by about 7 percent in 2009, recovered modestly in 2010 and 2011, but fell back sharply in 2012 and 2013. The euro area was first hit with a solvency crisis in Greece in 2010, and that crisis spread to other euro member countries in the next two years. By 2013, EU-28 imports were still more than 10 percent below the 2008 peak. Imports of fresh mangos had recovered to the 2008 level by 2013, but imports of fresh pineapples were still 13 percent lower, and those of fresh papayas were 31 percent lower. Although these are now mainstream fruits, imports remain vulnerable to economic conditions.

EU-28: Imports of Fresh Pineapples, Mangos and Papayas, 2000-2013

(1,000 metric tons)



Footnote: EU-27 data for 2000 and 2001. Croatia not included.

These import trends are a reminder of the economic forces that are likely to affect demand for fresh kiwifruit as supplies return to their former growth path. It is relatively easy to relinquish shelf space in the produce aisle and in the consumer's pantry. It may be more difficult to regain that space, especially as many newer, more exotic, and often higher-margin, items will be competing for the same space. It may be particularly difficult to regain clientele in the premium niche that golden fruit has occupied for more than a decade.

Leading Kiwifruit Producing Countries

The table on the next page shows estimates of the top ten kiwifruit producing countries ranked by average tonnage in the three most recent seasons, 2011-12, 2012-13 and 2013-14, and compared with the tonnage and ranking for the three seasons between 2001-04. While most of the historical data are derived from the UN,FAO database, more recent data come from unofficial sources that do not always agree. In addition, there is confusion in some countries between reported total production, and the smaller commercial production. UN,FAO normally reports total production, so that protocol is followed here.

In the decade between 2001-04 and 2011-14, total world production increased by almost 72 percent and approached 2 million metric tons. One of the biggest contributors to this growth was China, which moved from third place to first place, ahead of Italy and New Zealand in 2011-14. Italy and New Zealand also had large absolute increases of close to 100,000 metric tons in the period. Chile retained fourth place in 2011-14 with an absolute increase of about 80,000 metric tons. Greece moved ahead of France into fifth place with an absolute increase of over 100,000 metric tons. Together, the top five in 2011-14 had an absolute increase of almost 750,000 metric tons, about 77 percent above their 2001-04 level. They accounted for almost 87 percent of total world production.

In contrast, the second five leading producers had a combined increase of less than 30,000 metric tons, or about 18 percent. Two of these, France and Japan, experienced declines in production between 2001-04 and 2011-14. South Korea was displaced by Spain among the second five as its average production fell in the decade.

Top Ten Kiwifruit Producing Countries, by Rank and Tonnage, 2001-04 and 2011-14

Rank 2001-04	Country, 2001-04	Volume 2001-04	Rank 2011-14	Country, 2011-14	Volume 2011-14
(#)		(metric tons)	(#)		(metric tons
1	Italy	343,828	1	China	580,000
2	New Zealand	249,378	2	Italy	444,807
3	China	176,667	3	New Zealand	336,325
4	Chile	129,333	4	Chile	210,768
5	France	76,810	5	Greece	153,467
6	Greece	44,316	6	France	65,493
7	Japan	39,633	7	Japan	33,700
8	United States	22,952	8	Iran	31,859
9	Iran	22,328	9	United States	28,351
10	South Korea	13,167	10	Spain	22,963
-	Top Five	976,016	-	Top Five	1,725,367
-	Percent	84.5%	-	Percent	86.9%
-	Top Ten	1,118,412	-	Top Ten	1,907,913
-	Percent	96.9%	-	Percent	96.1%
-	TOTAL	1,154,536	-	TOTAL	1,984,809

A small number of countries continue to dominate world kiwifruit production. The concentration of world production increased modestly among the top five. It was still relatively high among the top ten at over 96 percent, but slipped from 12.4 to 9.2 percent for the second five. Production among countries not in the top ten increased from 36,000 metric tons to 77,000 metric tons, less than 4 percent of the total. Of these other countries, the biggest gains were reported for Turkey and Portugal. UN,FAO reported kiwifruit production in eight other countries, Bulgaria, Canada, Cyprus, Israel, Kyrgyzstan, Slovenia, Switzerland and Tunisia. This rose from about 4,000 metric tons in 2001-04 to 5,500 metric tons in 2011-14. However, about 75 percent of that production was in one country, Israel.

Southern Hemisphere production grew by about 47 percent in the decade, about the same rate of growth as in Europe, its main target market. However, the Southern Hemisphere share of world production slipped from 33 to 28 percent largely due to increased production in China.

How Cultivar Mix is Changing

The data presented in the previous sections did not distinguish between the area, yield or production of different cultivars that contribute to world kiwifruit production. Production of kiwifruit in most countries continues to be dominated by the Hayward cultivar which was developed in New Zealand a century ago from Chinese actinidia deliciosa plant materials, and gradually improved over many years. It was the first kiwifruit sent to Northern Hemisphere markets by pioneering exporters from New Zealand. With its hairy, olive green skin and green flesh it became the prototypical kiwifruit in the minds of most retailers and consumers throughout the world. As other countries expanded their kiwifruit production, Hayward became their cultivar of choice.

A number of factors led the kiwifruit industry to seek new cultivars. Because of world overproduction, the price of Hayward kiwifruit crashed in the early 1990s. Breeders investigated cultivars that would provide a price premium, by maturing earlier or later than Hayward, to avoid mid-season market gluts. They also sought cultivars with attributes different from, or superior to, Hayward. Beginning in the 1980s, the Chinese economy became more open. Scientific exchanges increased between scientists from China and from major kiwifruit producing countries. The rest of the world learned about China's tremendous resources of kiwifruit genetic material, much of it still growing in the wild, and much of it not well documented. In the last twenty years, Chinese scientists have made huge strides in documenting the kiwifruit resource.

In the meantime, breeders in New Zealand were devoting particular attention to new cultivars that could be developed from actinidia chinensis. They found a winner in a selection initially named Hort 16A. It produced larger fruit than Hayward, its skin was smooth and golden, and its flesh was yellow. The New Zealand kiwifruit industry had recently rebranded its organization and its products under the Zespri™ label. The mainstay Hayward was rebranded as Zespri™ Green and Hort 16A as Zespri™ Gold. In order to provide supplies for twelve months a year, the Zespri™ organization made plans to have Hayward and Hort 16A produced in other countries, including Italy, France, Spain, Japan and South Korea, under strict specifications so they could also be sold under the Zespri™ label. The program was a tremendous success within the tightly-controlled New Zealand kiwifruit industry, but faced numerous struggles in reaching its global goals.

Sales of New Zealand Zespri™ Green expanded steadily after 2000 with little reduction in real price. In addition, sales of New Zealand Zespri™ Gold rose dramatically without cannibalizing sales of Hayward, and gradually earned a substantial price premium. Since Hort 16A yields were substantially higher than those of Hayward, Zespri™ Gold became a major contributor to the profitability of the New Zealand kiwifruit industry. This, in turn, drove up the value of land suitable for growing Hort 16A and brought additional investors into the industry.

The success of Hort 16A encouraged breeders everywhere to find other cultivars that might gain similar price premiums. Many sponsors followed the Zespri model of having supplies from different hemispheres. Because of its varied growing districts, Chile was chosen for trial plantings of many new cultivars, including early green cultivars like Summerkiwi and Greenlight, and gold cultivars like Soreli and Jintao. Production of Jintao reached 9,000 metric tons in 2013, of which 6,000 was produced in Italy and 3,000 in Chile. However, no other cultivar has had the level success of Hort 16A. The gradual demise of that cultivar because of its susceptibility to PSA has led to an even more intense search for new and improved cultivars that would be acceptable in world markets.

Many breeders are looking to China for the kiwifruit materials needed to develop new, winning cultivars. The table below shows best available estimates of the area planted to the major Chinese cultivars in 2002 and 2013. The authors recognized the challenge in getting accurate information for China. Total area is estimated to have risen by 15.6 percent between 2002 and 2013. The area planted to actinidia deliciosa cultivars grew by over 21 percent from 2002, while that planted to actinidia chinensis cultivars was virtually unchanged. Among the top five deliciosa cultivars were Hayward and Bruno, both developed in New Zealand. Both had substantial increases in area between 2002 and 2013. Qinmei was by far the most important cultivar overall, accounting for about one-third of planted area in both years. The area planted to Miliang No.1 increased by over 53 percent, while that planted to Jinkui increased by over 70 percent.

Among actinidia chinensis cultivars, the area planted to the red Hongyang had the biggest absolute increase, of 2,320 hectares. The biggest percentage increases were for two green varieties, Wuzhi No.3 and Guihai No.4. Two cultivars listed by Huang and Ferguson in 2002, a. deliciosa Keijan (940 hectares) and a. chinensis Yate (600 hectares) were no longer listed in 2013.

China: Area Planted to Main Kiwifruit Cultivars, 2002 and 2013
(hectares)

Cultivar	Color	2002	2002	2013	2013
		(hectares)	(percent)	(hectares)	(percent)
Actinidia Deliciosa					
Qinmei	Green	17,480	33.1	20,000	32.8
Hayward	Green	7,580	14.4	10,000	16.4
Miliang No. 1	Yellow-green	5,550	10.5	8,500	13.9
Jinkui	Green	2,340	4.4	4,000	6.6
Bruno	Green	2,000	3.8	2,500	4.1
Chuanmi No. 1	Green	1,800	3.4	1,000	1.6
Xuxiang	Green	850	1.6	1,000	1.6
Other	-	1,103	2.1	n.a.	n.a.
Total deliciosa	-	38,703	73.4	47,000	77.0
Actinidia Chinensis					
Hongyang	Red	2,180	4.1	4,500	7.4
Zaoxian	Yellow	2,330	4.4	2,700	4.4
Kuimi	Green-yellow	3,080	5.8	2,000	3.3
Jinfeng	Yellow	2,720	5.2	2,000	3.3
Wuzhi No. 3	Green	200	0.4	1,400	2.3
Guihai No. 4	Green	200	0.4	700	1.1
Lushanxiang	Yellow	1,450	2.7	700	1.1
Chuhong	Red	n.a.	n.a.	n.a.	n.a.
Other	-	1,900	3.6	n.a.	n.a.
Total chinensis	-	14,060	26.6	14,000	23.0
Grand Total	-	52,763	100.0	61,000	100.0

Source: 2002, H. Huang and A.R. Ferguson, The Chinese Kiwifruit industry -update, 2003 (unpublished)
2013, (unpublished).

Breeders and agribusinesses outside China have been intensely interested in the fate of many of the Chinese cultivars that have attributes different from the green and gold cultivars dominant in the rest of the world. Many have formed partnerships with Chinese colleagues to exploit some of these cultivars in international markets. A number of cultivars deriving from such partnerships have already been commercialized In Italy and New Zealand. One can expect efforts at innovation in the kiwifruit industry to intensify in the next few years. However, it is very difficult to determine how soon large volumes of commercial products will be available that can consistently generate high yields, high quality and premium prices like Hayward and Hort 16A have done.

The effect of PSA on different cultivars has been most dramatic in New Zealand. The table below shows the quantity and value of New Zealand exports of golden kiwifruit (mostly Hort 16A), green kiwifruit, and all other kiwifruit in calendar years 2011, 2012 and 2013.

New Zealand: Volume and Value of Kiwifruit Exports, by Type, 2011, 2012 and 2013

Type	Volume	Value	Volume	Value	Volume	Value
	2011	2011	2012	2012	2013	2013
	(mt)	($NZ million)	(mt)	($NZ million)	(mt)	($NZ million)
Gold	100,661	398,037	83,837	404,467	41,158	190,144
Green	297,863	639,282	282,128	638,635	275,670	636,115
Other	2,267	5,892	1,371	5,954	1,804	5,016
TOTAL	400,792	1,043,212	366,333	1,049,056	318,632	831,276

The volume of Gold kiwifruit exported in 2013 was almost 60 percent below the 2011 level. At the same time, the total value fell by over 200 million New Zealand dollars, a fall of over 50 percent. Virtually all the fall in export value was due to the reduction in Gold exports. In response, the average Gold price rose by 17 percent. The volume of Green kiwifruit exported fell 7.5 percent, but the value was virtually unchanged as a result of a 7.5 percent increase in average price. The volume of other kiwifruit (neither Gold nor Green flesh) 20 percent lower in 2013 than in 2011. It was still only about half of one percent of total shipments.

While the table shows the aggregate impact of PSA on the New Zealand industry, clearly some operations were more seriously affected by others. At the orchard level, the effect on productivity was varied, from total loss of orchards, to partial loss of vines, to partial loss of production. The costs incurred were similarly varied, depending on the severity of the infection and the measures required to salvage productive vines. There were also differential effects on the value of orchard investments. The lost volume also impacted both suppliers to the industry, and firms involved in the subsequent, packing, storage, shipping and marketing activities, all the way through to the final customer. The effects of PSA in other countries have been less dramatic, but equally varied in impact.

Because the New Zealand kiwifruit industry was hardest hit by PSA, it has been in the forefront of developing an industry strategy for recovery from the PSA crisis. Zespri has speeded up the granting of licenses to grow the Gold3 cultivar, which will generally be sold under the Sungold label. This means that the learning curve on how to grow, harvest, pack, store and transport Gold3, will be exceptionally steep. Such speed increases the chance for missteps along the way. Some of these have already been experienced. The commercialization of two other cultivars, Gold9 and Green 14, was also speeded up, but the main hope for rapid increases in gold kiwifruit volume now rests on Gold3.

Zespri's recovery strategy called for New Zealand production of the new gold cultivars to replace Hort 16A by 2015, and for gold production to resume its past growth path thereafter. However, while the planted area can certainly be replaced, it will be very difficult to ramp up average yields of high quality fruit fast enough to replace Hort 16A. In addition, productivity has been reduced in some green plantings because of PSA. The higher prices received in the last two seasons because of reduced world supplies are likely to stimulate more new, or replacement, plantings of both gold and green kiwifruit, in the next several years. However, those plantings may not reach their full bearing potential until 2020, so recovery by 2015 seems highly unlikely. PSA has also caused removals of both gold and green kiwifruit plantings in other countries, and reduced productivity in some cases. For producers or investors that can grow alternative fruits, uncertainty caused by PSA could sway decisions to invest in cops other than kiwifruit.

On the other hand, advances in breeding technology will make it quicker to develop and evaluate future new cultivars. The tremendous kiwifruit gene banks available in China means that the needed plant materials will be available. Gene mapping has made it possible to identify key genes associated with different desirable attributes. Advances in gene technology allow breeders to select much earlier the plant materials with the best chance to produce desirable offspring, and the cultivars with the best chance to be a commercial success. However, the process of bringing new cultivars to the point where they are ready for commercialization still takes years. Testing them against the rigors of the supply and marketing system takes additional years. The road to industry recovery could be a long and difficult one.

Future World Kiwifruit Supplies

Clearly, the advent of PSA has changed the future outlook for world kiwifruit production in many ways. There is considerable uncertainty about the level of susceptibility of different cultivars to PSA under different growing conditions. The PSA bacteria have also shown the ability to mutate to overcome various treatments, so future susceptibility is in question. It has created additional uncertainty about how yields on any particular cultivar might be affected. Any measures growers, packers and storage operators can take to prevent infections, or to mitigate their effects, will tend to increase costs, and to reduce potential return on investment. On the other hand, expected stronger prices for kiwifruit could partially compensate for higher costs and risks of new plantings.

It seems likely, therefore, that the area planted to kiwifruit in major producing countries outside China will continue to erode, at least through 2014 and 2015, as producers adapt to the PSA scourge. The process of replacing the lost area will be slow until one or more cultivars is found that can consistently resist PSA infections. Even after those replacement plantings take place, it will be several more years before the new plantings reach full bearing.

Taking all these factors into account, it seems likely that it will be close to 2020 before the world kiwifruit industry outside China again approaches production of 1.5 million metric tons, the level reached in 2011-12 before the full impact of PSA was felt. Production will continue to be dominated by the Hayward variety, since it has been less impacted by PSA. That is not all bad, since the Hayward variety has proven popular with consumers and retailers. However, it will probably be near to the end of the current decade before gold cultivars regain the share of world production that they enjoyed in 2011-12. The increased intensity of breeding programs means that there are likely to be an increasing number of specialty kiwifruits placed on the market with different attributes of size, skin color, flesh color, taste, etc. However, the total volume of these specialty kiwifruit is likely to remain small, at less than 2 percent of total production.

The damaging effects of PSA on world kiwifruit production is likely to lead to kiwifruit prices that are higher than normal. This will alter the challenge kiwifruit marketers face in competing with other fruits. That issue will be discussed further in later sections.

Production Trends in Major Producing Countries

PSA has created problems of different severity in all major kiwifruit producing countries, and will continue to have differential effects in coming years. In addition, kiwifruit production in each country is affected by specific resource, agronomic, marketing, economic, cultural and political conditions. Factors affecting trends in the kiwifruit industry in each of the major producing countries are discussed in this section.

Italy remains the second largest kiwifruit producing country in the world, behind only China. However, its production has a global influence because it is the largest supplier to the major kiwifruit markets in western Europe that have traditionally dominated world demand. The area planted to kiwifruit in Italy rose steadily for the first decade of the twenty-first century. Kiwifruit area peaked in 2010, and there has been modest attrition since. Some of that attrition may have been due to the removal of blocks infected with PSA. However, Italian producers have also been sensitive to the economic malaise in the domestic market and in much of Europe that has reduced purchasing power in many major markets. They also have a wider choice of alternative fruit crops that can be produced profitably under Italian conditions than have many of their competitors.

Production of kiwifruit in Italy has tended to display wide swings from year to year due to variations in weather and to the effects of alternate bearing. This causes problems for marketing and pricing within Italy and for other suppliers to Europe. However, Italy is likely to remain the leading European kiwifruit producer, capable of producing 500,000 metric tons of kiwifruit in a favorable year. It will remain a very important player in the European and world markets.

China has been the largest kiwifruit producer in the world for the last few years, and appears likely to maintain that position in the foreseeable future. Its influence on the world scene has been muted until recently by the fact that almost all of its production was consumed in the domestic market. More recently, imports of fresh kiwifruit have surged. They tripled between 2008 and 2012. China produces a wide array of green-flesh, yellow-flesh and red-flesh cultivars. Expanding breeding programs suggest that China will continue to add to the total volume of kiwifruit produced each year and to the range of cultivars produced, often with unique attributes.

While China has substantial resources of plant material, and has many areas suitable for growing kiwifruit, lack of marketing sophistication has limited the impact these Chinese cultivars have had in world markets. As long as domestic customers remain willing to accept increasing volumes of the current cultivars at reasonable prices, the Chinese kiwifruit industry has little incentive to acquire the marketing skills needed to compete in foreign markets. It has entered into a number of partnerships with foreign breeders and agribusinesses to exploit some of its cultivars in hopes of benefiting from their marketing expertise. However, to date, such partnerships have had limited payoff. The fact that imports of kiwifruit have been growing rapidly suggests that some Chinese consumers are willing to buy higher-quality products. If imports began to become a threat to domestic supplies, that could force the Chinese industry to improve its marketing.

New Zealand has been the leader in the world kiwifruit industry with its closely integrated product development, branding, marketing and promotional programs. Until PSA hit during the 2010-11 crop year, the New Zealand kiwifruit industry was on a strong upward growth path. It regularly obtained price premiums over its major competitors for its expanding supplies of Hayward kiwifruit. It dramatically expanded supplies of its Hort 16A under the Zespri™ Gold label while maintaining a substantial price premium over its own Hayward, sold as Zespri™ Green. And, it invested heavily in the development of new cultivars that could add to its marketing portfolio.

The devastating impact of PSA has derailed those plans. It now appears that production of Hort 16A will not be feasible in the near future. That will remove more than one quarter of total national kiwifruit production. Production of Hayward will be reduced somewhat until better protocols for managing PSA can be developed. Promising new cultivars, such as Gold3, Gold9 and Green 14, were scheduled to be rolled out slowly and cautiously, over the next few years. Because they appear to be less sensitive to PSA than Hort 16A, their scheduled introduction has been put on the fast track. Zespri has ramped up the number of production licenses issued either as a replacement for Hort 16A, or for new plantings. The current recovery strategy envisages that Gold3 production will have fully replaced the lost Hort 16A production by 2015. It is assumed that retailers and consumers in world markets will accept such a major product change. At this point, the New Zealand kiwifruit industry is in the middle of a large gamble that could affect its prosperity for years to come.

Chile appears to be once again undergoing a slowdown in new plantings of kiwifruit after strong increases in plantings between 2003 and 2008. Since over 40 percent of kiwifruit orchards are non-bearing or not yet fully bearing, production is likely to continue to grow for several more years. Because of its numerous micro-climates, Chile could experiment with many of the new kiwifruit cultivars that were being introduced in the last decade. Many foreign sponsors of new cultivars sought to have Chile as their Southern Hemisphere partner in building twelve-month supply systems. The only other viable alternative was New Zealand. However, its single desk marketing system made it difficult to operate there.

Recently, producers and investors in Chile have been discouraged by decreases in returns caused by the strength of the Chilean peso currency. The peso's strength was due largely to the strong demand for Chilean copper and other raw materials in response to rapid economic growth in emerging economies like China. PSA has also been discovered in Chilean kiwifruit orchards, but less than 8 percent of orchards have been affected, and most plantings are still Hayward cultivars and less susceptible to PSA damage than gold cultivars. Even though the area affected has been limited, some reduction in productive capacity is likely to occur. In addition, the risk of PSA has reduced the incentive to invest in kiwifruit plantings rather in many, possible alternative fruits.

France has experienced a slow erosion of kiwifruit area and production over the last decade. This experience has been similar to that of many other major fruits in France. The entire fruit industry has been under pressure from higher costs and non-farm competition for resources. The industry has sought to compensate for higher costs by seeking out premium price markets in the European Union and in third countries. However, that strategy has been made more difficult by the prolonged economic malaise in many European markets, and by the strength of the euro currency, which has made French product less competitive in many foreign markets. None of these conditions appear likely to change soon.

Greece has had the opposite experience to France in the last few years. Between 2000 and 2005, the area planted rose slowly, but production made little headway because of a series of unfavorable weather conditions. However, since 2005, area has continued to increase, and production now averages more than twice the level of 70,000 metric tons achieved in 2005.

The Greek kiwifruit industry has been affected by the prolonged economic crisis in the domestic market that has curtailed consumer spending power. However, the restoration of peace in the neighboring Balkan countries and growing economies in Eastern Europe and the Russian Federation have offered expanded opportunities for exports of kiwifruit from Greece. Greek kiwifruit tend to sell at lower prices than those of major EU competitors, Italy and France. Exports will continue to be the main driving force for growth in the industry.

Japan has suffered long-term shrinkage of its kiwifruit industry. The total area suitable for production of kiwifruit is limited by soil and climate. While area has continued to fall slowly in the last decade, production has stabilized at a much lower level than in the 1990s. Japan is now a major net importer of fresh kiwifruit. Until recently, those imports were dominated by Zespri™ Gold kiwifruit from New Zealand. As that product rapidly disappears from the Japanese market, both producers and importers will be forced to make major adjustments. It is not yet clear which direction those adjustments will take.

United States commercial production of kiwifruit is confined to a small number of growing areas in a single state, California. As a result, the United States is also a major net importer of fresh kiwifruit. Planted area in 2013 of 1,700 hectares was more than 40 percent below the peak level achieved in the early 1990s. Most variation from year to year in production is now due to weather conditions. So far, newer kiwifruit cultivars have not been a commercial success in California. However, with a wide choice of alternative crops, California growers can move very rapidly into or out of crops that offer superior returns. They continue to experiment with newer kiwifruit cultivars that might offer such returns.

Spain and Portugal have relatively small areas suitable for kiwifruit production. However, kiwifruit is a very popular fruit, especially in Spain. As a result, the area planted to kiwifruit, and kiwifruit production, have risen in both countries in the last decade. Further increases in area or production are expected to be limited in the next few years. Because of physical limitations on kiwifruit production, neither Portugal nor Spain are likely to become a serious challenge to EU market leaders like Italy, France or Greece. However, their productive potential in any year is now similar to that of the United States. In some years, production volume could affect other Northern and Southern Hemisphere suppliers to their markets.

South Korea also has relatively limited areas suitable for kiwifruit production. Area harvested has been slowly shrinking over time, and production has been relatively flat. As South Korea has opened its market to more foreign suppliers of fresh kiwifruit through various trade agreements, it signals that the government will no longer provide any special protection to the domestic industry. As a result, the industry is likely to change little in the near future.

Australia had a rapidly growing kiwifruit industry in the 1980s, but planted area peaked at 1,128 hectares in 1987-88, and is now one third of that level. Production now rarely exceeds 5,000 metric tons, so Australia derives most of its fresh kiwifruit from imports.

Iran is reported to have kiwifruit area and production very similar to that of Japan. However, data has been difficult to verify because of Iran's ongoing political and economic isolation. For example, exports reported by Iranian sources in some recent years have been greater than production reported by UN,FAO. Until further verifiable evidence is available, one must assume that Iran remains a minor player in the world kiwifruit picture.

Turkey presents similar data inconsistencies. For example, UN,FAO data reported that Turkey harvested 23,400 hectares of kiwifruit in 2011, but generated only 29,231 metric tons of production, less than 8 percent of the average yield in the rest of the world, excluding China. Industry experts considered that actual Turkish area could be less than one-tenth the quoted UN,FAO figure. Turkey reports very limited exports of fresh kiwifruit, so accurate measures of its production have minimal impact on other countries.

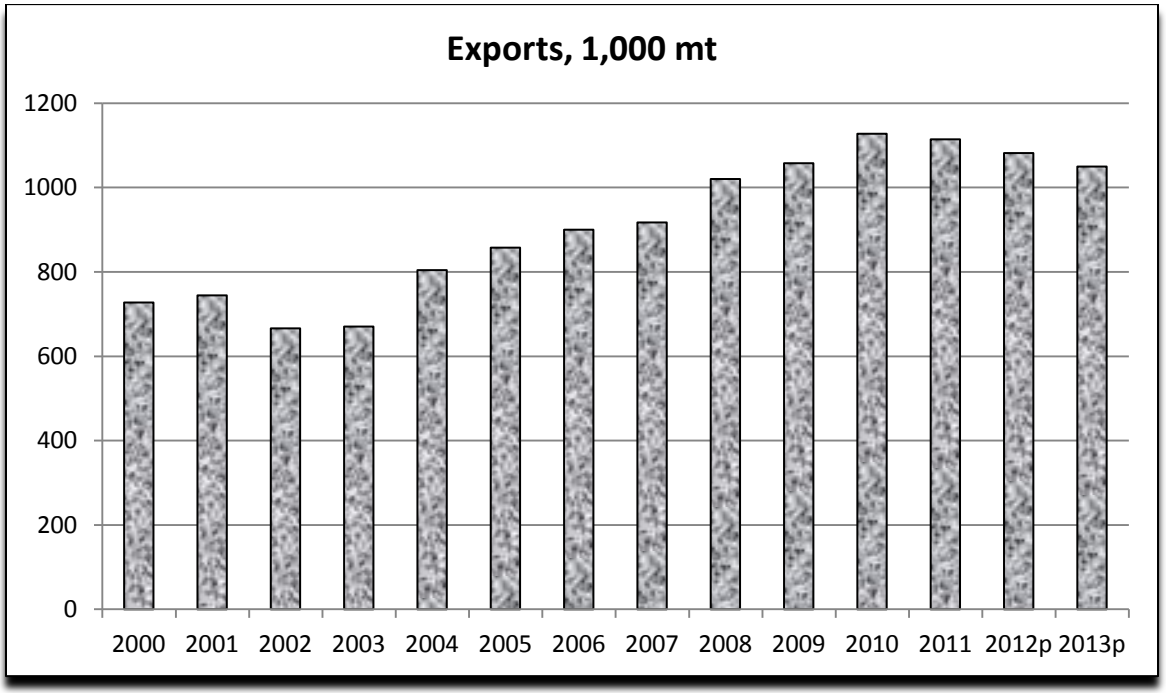
Other Minor Producing Countries As previously noted, UN,FAO reports kiwifruit production in eight other countries, Bulgaria, Canada, Cyprus, Israel, Kyrgyzstan, Slovenia, Switzerland and Tunisia. However, harvested area has been either small or decreasing in all countries except Israel, which accounted for over 70 percent of the area harvested and of production in 2011. Unofficial reports indicate that production has also been tried in Argentina, Brazil, Mexico and South Africa, but there is little evidence that these plantings have been a commercial success. For the foreseeable future, the few largest producing countries are likely to continue to dominate production and trade in kiwifruit.

2. Trade in Fresh Kiwifruit

Kiwifruit Export March Slowed

The volume of world exports of fresh kiwifruit increased for seven years in a row between 2003 and 2010 as any temporary slowdown in sales by one or other of the major exporters was offset by timely increases by other suppliers. However, UN,FAO reports that the volume of exports slipped by about 2 percent in 2011, and unofficial estimates suggest that further falls occurred in 2012 and 2013 due to the impact of either PSA or of adverse weather in the major producing countries. Normally almost 80 percent of production outside China is exported. However, the slowdown in exports appears not to reflect any weakening in the volume of exports demanded, but rather the decline in supplies available for export. Thus, export growth would be expected to resume as soon as the problems with PSA have been surmounted.

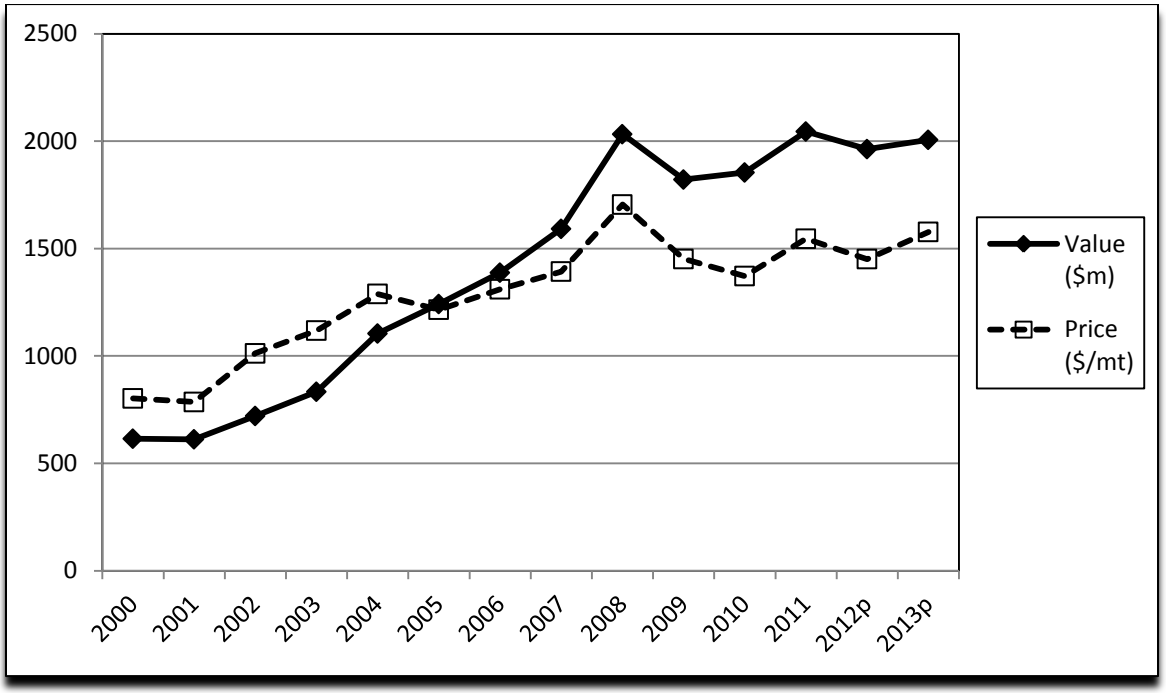
World: Volume of Exports of Fresh Kiwifruit, 2000-2013
(1,000 metric tons)



The chart below shows the total value of world fresh kiwifruit exports and the average price of those exports for the years from 2000 to 2013. Data for 2000 to 2011 were provided by UN, FAO, while those for later years are unofficial estimates. Like the volume trend shown on the previous page, the trend in value of fresh kiwifruit exports was positive for seven successive years from 2002 to 2008. However, the average export price fell slightly in 2005, and grew weakly in 2006 and 2007. Average prices peaked in 2008, then fell back in 2009 and 2010, possibly due to the effects of the global recession. Even in 2011, prices had not regained the level achieved in 2008. Between 2008 and 2011, the volume of exports increased by 11 percent, but the value increased by only 0.6 percent, and average price fell by 9.4 percent. This indicates that increases in exports of fresh kiwifruit were being secured at the cost of lower average prices. Events since 2010 have disrupted the normal growth of world kiwifruit exports. It is estimated that the volume of world exports fell in 2013, but the value increased modestly because of higher average prices. It remains to be seen if this price sensitivity will continue in the future after the effects of the Great Recession are behind us.

World: Value and Average Price of Exports of Fresh Kiwifruit, 2000-2013

(Value, US$ million; Price US$/metric ton)



Export and Import Dependence

The major kiwifruit producing countries continue to vary in their dependence on importing and exporting. Export dependence was measured as the percent fresh exports were of domestic consumption, and import dependence was measured as the percent fresh imports were of domestic disappearance. The latter data are discussed in more detail in chapter 3. Dependence was measured for the three-year averages, 2001-2004 and 2011-2014. Countries were ranked by their export or import dependence in 2011-2014.

Selected Kiwifruit Producing Countries: Export and Import Dependence, 2001-2004 and 2011-2014

Export Dependence			Import Dependence		
Country	2001-04	2011-14	Country	2001-04	2011-14
New Zealand	87.3	97.1	Spain	82.7	92.5
Italy	68.3	76.4	Australia	94.0	83.6
Chile	89.9	74.6	United States	78.2	75.5
Greece	41.0	61.8	South Korea	42.8	72.1
Spain	83.5	55.7	Japan	53.7	64.8
Portugal	6.0	37.4	France	52.2	56.0
France	40.2	35.0	Portugal	55.6	43.3
United States	47.5	32.7	Italy	35.0	31.8
Australia	78.8	8.5	China	14.3	7.6
China	0.1	0.2	Greece	9.4	5.5
South Korea	0.2	0.0	New Zealand	3.0	5.4
Japan	0.1	0.0	Chile	0.0	0.2

Not surprisingly, New Zealand, Italy, Chile and Greece were the most export dependent in 2011-14. Greece and Portugal had increased their export dependence most since 2001-04, while Australia had lost most of its export dependence. The United States had also suffered a notable loss in export dependence. Exports remained of negligible importance for the three major Asian producers. Spain and Australia were the most heavily import dependent in both periods. The import dependence of the United States remained in the high 70 percents. South Korea experienced the biggest increase in import dependence as it gradually dismantled trade barriers. Japan's import dependence increased as imports grew faster than domestic production. Of the three major exporters, only Italy had substantial import dependence, at almost 32 percent, in 2011-14.

World Patterns in Fresh Kiwifruit Trade

The data presented so far show broad trends in overall trade in fresh kiwifruit. They do not show how different suppliers compete in different markets. Ideally, one would develop a global trade matrix of all trade flows between countries. However, such data are not available for fresh kiwifruit for recent years. Accordingly, in previous issues of the World Kiwifruit Review we have presented a partial global trade matrix for individual calendar years that captures most of the main trade flows. The table is called partial because it excludes known exporting countries like Iran due to lack of timely data. The table on the next page shows such a partial global trade matrix for calendar year 2012. It can be used for comparisons with previous calendar years.

The partial global trade matrix includes flows between nine major exporting countries and all the major importing countries and regions. The nine exporting countries include Italy, Greece, France, Spain, Portugal, New Zealand, Chile, United States and China. Trade flows not specifically designated are included in an "Other" category. The table does not purport to be an exact summary of major global trade flows. Different statistical sources give slightly different measures of the trade between specific origins and destinations. This is a particular problem for countries within the extended European Union where customs declaration forms are no longer required on many land barriers. For example, over 60 percent of New Zealand exports to the EU-27 are landed in Belgium, which has only 2 percent of the EU-27 population. Much of Belgium's imports are destined for larger countries like Germany and France. As a result, the volume destined for Belgium is overstated and that for Germany, France and other EU-27 member countries is understated. However, the matrix should give a useful picture of the volume of fresh kiwifruit flowing between major regions and countries.

Traceable global trade in 2012 exceeded 1.33 million metric tons, about 6.5 percent above the level traceable in 2011, and about 14 percent above the level recorded in 2009 when the partial global trade matrix was first estimated. The biggest change between 2011 and 2012 on the supply side was the very large increase in exports from Greece. Italy, Portugal, New Zealand, Chile and the United States recorded small increases. Exports from China, relatively low in 2011, fell further in 2012. On the import side, small increases were recorded in almost all regions except the Middle East.

World: Fresh Kiwifruit, Partial Global Trade Matrix, 2012
(metric tons)

Exporters

Importers ↓	IT	GR	FR	SP	PR	NZ	CL	U.S.	CN	Other *	TOTAL
Canada	10,007	362	46	0	0	2,212	4,074	2,208	0	0	18,909
Mexico	0	0	0	0	0	1,745	6,425	5,839	0	0	14,009
U.S.	19,791	195	21	0	0	13,159	30,619	0	0	0	63,785
N America	29,798	557	67	0	0	17,116	41,118	8,047	0	0	96,703
S America	13,367	0	44	20	0	0	37,413	79	0	0	50,923
C America	356	0	0	14	0	0	687	92	0	0	1,149
S&C America	13,723	0	44	34	0	0	38,100	171	0	0	52,072
Belgium	10,310	750	5,333	130	0	94,352	385	0	0	6,471	117,731
France	24,806	1,494	0	1,222	5	274	5,333	0	0	19,061	52,195
Germany	65,181	7,280	3,252	12	0	26	406	1	0	32,601	108,759
Italy	0	5,672	87	769	0	17,342	23,117	0	0	2,580	49,567
Netherlands	14,515	2,256	1,477	111	0	47	24,797	0	0	33,807	77,010
Spain	41,600	3,192	3,954	0	9,896	43,821	17,402	0	0	6,040	125,905
U.K.	14,867	2,313	301	917	167	0	9,038	0	0	13,062	40,665
Other EU-15	22,113	1,462	428	6,520	12	0	0	139	0	19,308	49,982
EU-NMS	57,579	22,859	793	495	0	0	0	0	0	23,591	105,317
EU-27 Total	250,971	47,278	15,625	10,176	10,080	155,862	80,478	140	0	156,521	727,131
Russia	16,767	33,816	131	1	0	1,585	16,127	0	551	0	69,978
Other Europe	10,366	30,898	335	2	0	0	445	0	0	0	42,047
Russ/Oth Eur	27,133	64,714	466	3	0	1,585	16,573	0	551	0	111,025
Middle East	10,071	5,637	67	0	0	3,198	7,329	0	0	0	26,302
Africa	4,954	3,199	788	2,654	0	0	1,273	0	0	0	12,868
China	1,314	1,080	1,498	0	0	40,196	7,222	0	0	0	51,310
Hong Kong	0	0	0	0	0	8,725	2,564	0	0	0	11,289
Japan	0	0	0	0	0	70,145	2,678	1,591	0	0	74,414
South Korea	0	0	0	0	0	22,935	8,269	0	0	0	31,204
Taiwan	2,890	0	2,466	0	0	33,704	1,582	83	191	0	40,916
Other Asia	2,245	597	531	0	0	15,408	884	0	128	0	19,793
Asia Total	6,449	1,677	4,495	0	0	191,113	23,199	1,674	319	0	228,926
Australia	4,566	0	945	0	0	18,080	0	35	0	0	23,626
New Zealand	717	0	0	0	0	0	0	103	0	0	820
Other Oceania	45	0	0	0	0	492	31	2	0	0	570
Total Oceania	6,449	0	945	0	0	18,572	31	140	0	0	25,016
All Other	11,760	24,350	1,260	2,903	223	4,705	6,403	32	64	9	51,709
TOTAL IMPORTS	360,187	147,412	23,757	15,770	10,303	392,151	214,504	10,204	934	156,530	1,331,752

Footnotes: * Other includes origins not known. It may include re-exports from Belgium of kiwifruit imported from New Zealand, and re-exports from the Netherlands of kiwifruit imported from Chile, Italy and other primary producers. In 2012, exports from Belgium to key EU-15 member countries in metric tons included Germany (27,923), Netherlands (25,450), France (22,050) and other EU-15 (22,675). Exports from the Netherlands included Germany (9,628), France (3,458), Belgium (2,587) and other EU-15 (5,852).

Exporter Key: IT=Italy, GR=Greece, FR=France, SP=Spain, PR=Portugal, NZ=New Zealand, CL=Chile, U.S.=United States and CN=China.

The table below shows how the share of global imports has varied by region between 2007 and 2012. The most notable trend has been the decline in the share received by the European Union (EU-27). It has fallen by almost 12 percentage points. The share going to Oceania has declined modestly. In contrast, the shares going to Asia, South and Central America and Russia/Other Europe have each risen by over 2 percentage points. Asia has become firmly established as the second largest market after the EU-27. There have been more modest increases in market share in North America, the Middle East and Africa.

Major Importing Regions: Share of Global Trade in Fresh Kiwifruit, 2007-2012

(percent)

Importing Region	2007	2008	2009	2010	2011	2012
	(%)	(%)	(%)	(%)	(%)	(%)
North America	6.9	6.9	6.7	6.9	6.9	7.3
South & Central America	1.8	1.7	2.8	3.4	3.6	3.9
EU-27, Total	66.5	67.8	65.9	62.7	56.5	54.6
Russia/ Other Europe	5.7	5.4	5.8	6.1	6.1	8.3
Middle East	1.5	1.3	1.5	1.9	2.4	2.0
Africa	n.a.	n.a.	n.a.	0.5	0.9	1.0
Asia	14.5	14.4	14.2	15.3	17.1	17.2
Oceania	2.1	1.8	1.9	1.8	1.7	1.9
All Other	1.0	0.7	1.2	1.3	4.9	3.9
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

The table below shows the changes in the share of fresh kiwifruit imports received by the major importing regions from suppliers in the EU, the Southern Hemisphere, and all other suppliers in 2011 and 2012. In North America and the European Union, the EU share of supplies grew between 2011 and 2012, while the Southern Hemisphere share fell. The opposite occurred in South and Central America, Africa, Asia and Oceania, where Southern Hemisphere suppliers gained market share. For all regions combined, EU suppliers regained market share in 2012 that they had lost in 2011. These results suggest that both EU suppliers and Southern Hemisphere suppliers are holding their own in the battle for market share.

Major Importing Regions: Regional Sources of Fresh Kiwifruit, 2011 and 2012
(percent)

Importing Region	2011	2011	2011	2012	2012	2012
	EU	S Hemi	Other	EU	S Hemi	Other
	(%)	(%)	(%)	(%)	(%)	(%)
North America	27.9	64.5	7.6	31.5	60.2	8.3
South & Central America	39.1	60.1	0.8	26.5	73.2	0.3
EU-27, Total	40.9	33.4	25.6	46.0	32.5	21.5
Russia/ Other Europe	75.9	22.9	1.3	83.1	16.4	0.5
Middle East	51.7	48.1	0.2	60.0	40.0	0.0
Africa	100.0	0.0	0.0	90.1	9.9	0.0
Asia	8.6	90.7	0.7	5.5	93.6	0.9
Oceania	27.1	72.3	0.7	25.1	74.4	0.6
All Other	54.5	45.5	0.0	78.3	21.5	0.2
TOTAL	37.8	47.0	15.2	41.9	45.6	12.6

The table below shows how the competitive position of the big three exporters, Italy, New Zealand and Chile, and all other exporters combined, have fared in the three most valuable regions, the EU-27, Asia and North America. Italy has continued to hold its position as market leader in supplying the EU-27. The shares of both New Zealand and Chile have slipped over time. Much of their share has been grabbed by other EU suppliers such as Greece, France, Spain and Portugal. In the EU-27 markets, home teams have increased their competitive advantage.

In Asia, New Zealand has continued to play a dominant role with its share averaging over 80 percent between 2004 and 2012. Chile has just about maintained its market share. Italy and all other suppliers have played a diminishing role. Chile has been consistently the largest supplier to the North American market. It share jumped upwards sharply in 2012. Italy's share in that market has also had an upward trend. In contrast, New Zealand's share of the North American market fell sharply in 2012. New Zealand suppliers found it more difficult to earn the premiums they needed in that market, and diverted more product to Asia. All other suppliers to North America suffered a long-term decline in their share of the North American market.

Major World Regions: Market Share of Big Three, and All Other Suppliers, 2004-2012

(percent)

Importing Region	Major Supplier	2004 (%)	2005 (%)	2006 (%)	2007 (%)	2008 (%)	2009 (%)	2010 (%)	2011 (%)	2012 (%)
EU-27	Italy	31.6	32.5	38.6	36.2	32.7	38.7	36.9	32.2	34.5
	New Zealand	31.2	29.9	23.4	24.9	26.7	22.6	23.4	22.4	21.4
	Chile	15.4	12.3	13.1	12.9	13.8	13.3	11.9	11.1	11.1
	All Other	21.8	25.3	24.9	26.0	26.8	25.4	27.8	34.3	33.0
Asia	Italy	3.4	3.8	4.7	4.5	5.1	6.9	6.2	5.9	2.8
	New Zealand	81.1	81.5	77.1	79.0	85.5	82.0	80.7	79.6	83.5
	Chile	7.6	10.2	10.4	8.9	5.7	7.2	6.9	11.1	10.1
	All Other	7.9	4.5	7.8	7.6	3.7	3.9	6.2	3.4	3.6
N. America	Italy	18.1	23.6	18.3	23.3	26.3	22.4	24.3	27.1	30.8
	New Zealand	26.3	26.7	22.4	28.4	34.1	33.2	28.7	29.1	17.7
	Chile	36.3	39.9	44.9	37.7	30.5	33.8	37.8	35.4	42.5
	All Other	19.3	9.8	14.4	10.6	9.1	10.6	9.2	8.4	9.0

Italy's Exports Continue Erratic

During the last decade, Italy and New Zealand have battled for the title of leading world exporter of fresh kiwifruit. However, whenever Italy appears to be gaining an edge, it meets with a smaller than average crop and reduced exports, as occurred in the 2008-09 and 2012-13 seasons. As a result, Italy has faced setbacks in its efforts to expand exports beyond the European Union. Exports to the major markets in Western Europe have tended to take precedence in short crop years. This has meant that exports to the rest of Europe and to many other major destinations have been reduced in short crop years.

Despite that, Italy has continued to expand its presence in more distant markets, such as the United States, Central and South America, the Middle East, Asia and Africa. This success has occurred in spite of the fact that the euro currency has been relatively strong against many other major currencies, making Italian fruit more expensive in many markets outside the euro zone.

Italy: Fresh Kiwifruit Exports, by Destination, 2007-08 to 2012-13
(metric tons)

Destination	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Germany	57,784	67,829	72,653	63,050	60,461	57,431
Spain	39,711	52,528	48,818	45,812	39,343	40,222
France	23,775	31,980	25,827	21,416	24,161	21,632
United Kingdom	15,984	18,781	15,719	14,467	15,691	13,882
Netherlands	14,618	17,372	15,159	13,380	12,392	15,085
Poland	15,822	16,450	20,502	20,279	26,024	18,969
Other EU-28	51,386	62,567	74,505	68,824	67,210	50,776
Subtotal EU-28	219,080	267,507	273,183	247,228	245,282	217,997
Russia	15,504	13,339	17,841	15,837	18,396	11,896
Other Europe	10,289	11,616	12,623	11,241	9,654	9,951
Russia/Other Europe	25,793	24,955	30,464	27,078	28,050	21,463
United States	8,928	12,960	13,259	10,178	16,469	21,128
Canada	4,825	6,350	9,870	8,001	9,312	8,916
North America	13,753	19,310	23,129	18,179	25,781	30,044
Cen & South America	4,500	5,403	11,159	12,726	18,383	14,685
Middle East	4,952	5,311	8,825	9,002	11,437	10,295
Asia	6,272	9,569	11,534	13,287	12,299	14,510
Oceania	3,592	4,575	6,336	5,702	4,761	5,546
Africa	1,766	2,002	4,020	4,645	10,036	6,718
All Other	76	334	377	218	790	660
TOTAL	279,784	338,966	369,027	338,065	356,819	321,918

PSA Dents New Zealand's Export Juggernaut

New Zealand exports of fresh kiwifruit between 2000 and 2010 achieved two notable feats, both steadily increasing shipments to world markets and providing New Zealand growers with rising returns at the orchard level. Much of that success arose because the Zespri organization was able to use its Zespri™ Green brand to secure premium prices over comparable green kiwifruit from other countries. In addition, the new golden kiwifruit, Hort 16A, marketed as Zespri™ Gold, provided higher yields per hectare and higher prices per pack that boosted orchard returns even more.

New Zealand: Fresh Kiwifruit Exports, by Destination, 2007 to 2013
(metric tons)

Destination	2007	2008	2009	2010	2011	2012	2013
Italy	18,526	17,523	15,671	16,912	17,015	15,489	12,371
Spain	44,805	48,723	43,015	47,530	44,262	29,152	37,687
United Kingdom	6,813	590	537	148	0	0	0
Other EU-27	106,975	127,532	115,795	110,404	116,883	104,893	93,943
Subtotal EU-27	177,119	194,368	175,018	174,923	178,160	149,534	144,001
Russia	771	395	496	746	1,276	1,338	1,427
United States	18789	21,392	21,719	17,985	20,649	11,624	7,275
Canada	727	1,186	643	1,852	1,409	1,964	1,547
Mexico	1,612	2,793	3,763	2,830	3,232	1,561	814
Subtotal N America	21,128	25,371	26,125	23,667	25,290	15,149	9,636
China	6,693	16,110	21,664	25,329	32,956	34,078	27,672
Japan	57,937	58,916	57,903	61,346	63,733	60,294	59,426
South Korea	25,885	26,543	22,070	23,939	25,743	20,274	13,295
Taiwan	16,754	18,619	19,652	20,537	26,124	28,566	21,310
Other Asia	14,024	12,245	16,006	16,835	22,114	31,190	20,382
Subtotal Asia	122,393	132,433	137,295	147,986	170,670	174,402	142,085
Middle East	4,499	4,998	3,815	2,260	3,635	2,727	2,999
Oceania	19,180	15,175	15,344	15,316	18,062	17,052	15,273
All Other	2,826	4,027	2,933	3,628	4,405	4,138	3,211
TOTAL	347,916	376,767	361,026	368,526	401,498	364,340	318,632

However, in late 2010, PSA was detected in New Zealand kiwifruit orchards, and spread very rapidly. The damage was severe, particularly on the Hort 16A cultivar. Supplies of that cultivar fell dramatically, and it was forecast that the cultivar would disappear from New Zealand orchards unless an effective cure for PSA could be found. Exports reached a peak above 400,000 metric tons in 2011, but fell 9 percent in 2012 and a further 11 percent in 2013. Exports of Zespri™Gold were hardest hit. They fell from about 30 million trays in 2011-12 to an estimated 12.5 million trays in 2013-14. New Zealand adjusted to the decreased supplies by targeting reduced supplies to markets that would generate the highest revenue. Supplies to Japan, the most lucrative market fell by only 7 percent between 2011 and 2013 while those to North America fell by 62 percent.

New Zealand has attempted to replace Hort 16A with golden cultivars that are more resistant to PSA. That experiment is still in progress. The mix of cultivars produced and exported by New Zealand could change rapidly in the next few years. That could lead to further changes in the total volume of New Zealand exports of fresh kiwifruit, and in the markets that are most heavily targeted.

Chile Still on Growth Path

Export potential from Chile continues to grow as a result of area expansion in recent years. However, recent weather setbacks have reduced the supplies.

Chile: Fresh Kiwifruit Exports, by Destination, 2007 to 2013
(metric tons)

Destination	2007	2008	2009	2010	2011	2012	2013
Italy	29,863	27,930	32,821	27,920	23,785	23,117	23,563
Netherlands	21,440	31,674	24,903	22,198	19,858	24,797	28,582
Spain	19,135	17,135	19,276	19,475	14,611	17,402	14,858
United Kingdom	8,148	8,813	8,884	7,380	7,795	9,038	7,408
Other EU-28	13,656	15,052	16,295	12,212	11,342	10,662	10,560
Subtotal EU-28	92,242	100,604	102,179	89,185	77,401	85,016	84,971
Russia	8,627	11,389	11,899	14,116	16,061	16,127	18,622
United States	21,484	17,251	19,853	22,480	22,216	30,699	32,325
Canada	3,077	2,434	3,437	3,841	3,358	4,074	3,485
Mexico	4,164	3,013	3,314	4,791	4,811	6,426	6,768
Subtotal N America	28,725	22,698	26,604	31,112	30,385	41,199	42,578
Cen & South America	12,990	12,158	23,293	26,377	26,610	36,621	32,726
China	0	0	0	499	2,130	7,222	11,433
Japan	2,207	926	935	1,726	2,126	2,678	2,002
South Korea	6,947	2,546	5,428	5,806	4,056	8,269	6,657
Taiwan	665	638	804	76	291	1,582	1,333
Other Asia	3,914	3,840	5,587	4,475	6,269	3,567	1,447
Subtotal Asia	13,733	7,940	12,754	12,582	14,872	23,318	22,872
Middle East	2,978	3,880	4,752	7,779	8,220	7,329	7,852
Oceania	13	0	0	0	17	31	21
All Other	878	878	1583	1,290	719	4,843	3,357
TOTAL	160,186	160,252	182,771	181,870	178,131	214,484	212,999

Chile has continued to reduce its reliance on European markets and to expand its presence in North America, Central and South America, Russia, China and miscellaneous small markets. Market diversification is likely to continue as Chile aggressively pursues new trade agreements.

Both New Zealand and Chile have been important suppliers of organic kiwifruit to world markets. Over 3 percent of the volume of New Zealand fresh kiwifruit exports, and over 2 percent of those from Chile, have been marketed as organic. The biggest markets have been the Netherlands, Italy, the United Kingdom and the United States. However, growers continue to complain that the price premiums available for organic kiwifruit do not adequately them for the higher average costs and lower average yields. As in many other fresh fruits, the volume of organic kiwifruit demanded continues to exceed the supply available. That situation is unlikely to change unless food safety concerns arise that drive up the prices of organic fruit.

Greece in Expansionist Mode

Exports of fresh kiwifruit from Greece have expanded dramatically since the lull between 2006 and 2008 caused by adverse weather conditions. In contrast to major rivals like France and Italy, Greece has been able to exploit expanding markets in Eastern Europe, Russia, Asia and the Middle East with its lower-priced product. Eastern European markets have included both countries that have become members of the European Union, like Poland and Bulgaria, and those that have not, like Moldova and the Ukraine. In recent seasons, exports to Eastern Europe have far exceeded those to western Europe, notably the rich country members of the EU-15. There has also been a dramatic increase in Greece's exports of fresh kiwifruit to the Russian Federation. These rose almost six-fold between 2006 and 2012, before slipping back in 2013.

Total Greek exports of fresh kiwifruit rose by almost 80 percent between 2011 and 2012. As a result, Greece had to scramble to find additional markets outside its traditional markets. It succeeded at the cost of even lower prices. However, the volume of Greek exports fell by 16 percent between 2012 and 2013. Reductions in supply were spread out over all Greece's major markets with the exception of North America, where Greek exports have traditionally been small. As a result, average prices of Greece's fresh kiwifruit exports rose by 14.5 percent to a still low €790.45 per metric ton in 2013.

Greece: Fresh Kiwifruit Exports, by Destination, 2007 to 2013
(metric tons)

Destination	2007	2008	2009	2010	2011	2012	2013
EU-15	5,709	8,367	5,660	13,417	8,468	24,420	21,116
EU-NMS	7,220	8,509	11,064	20,553	14,192	22,858	19,581
EU-27, Total	12,929	16,876	16,724	33,970	22,660	47,278	40,697
Russia	9,983	12,289	15,419	16,568	21,838	33,816	30,392
Other Europe	7,045	6,352	10,769	18,648	15,307	23,897	18,302
Russia/Oth Europe	17,028	18,641	26,188	35,216	37,145	57,713	48,694
United States	747	169	92	109	163	195	359
Canada	612	100	63	170	102	362	308
North America	1,361	269	155	279	265	557	667
Asia, Total	0	93	236	446	551	2,167	2,017
Turkey	1,542	1,491	3,457	1,841	1,887	1,795	198
Other Middle East	379	246	795	2,142	2,965	3,342	2,464
Middle East, Total	1,921	1,737	4,252	4,274	4,852	5,137	2,662
All Other	100	96	395	3,972	385	4,560	4,106
TOTAL	33,339	37,712	47,950	74,201	65,858	117,412	98,843

Exports from France Fluctuate Modestly

France remains the third largest European exports of fresh kiwifruit after Italy and Greece. However, France faces heavy pressure from Italian supplies on its domestic market. Accordingly, its exporters continue to seek higher-priced markets elsewhere. These have been shrinking because of the long recession in Europe and the continued strength of the euro. It has found the best opportunities for increased exports in Northeast Asia, especially China. Since French production has not been expanding, exports have tended to fluctuate within a narrow range. For example, the volume of fresh kiwifruit exported in the November-June period in 2012-13 was almost identical to that exported in the same period in 2006-07.

France: Fresh Kiwifruit Exports, by Destination, November-June Seasons, 2006-2013
(metric tons)

Destination	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13
Germany	3,725	4,215	3,248	2,920	2,592	2,773	3,710
Spain	10,066	7,778	6,341	5,941	4,494	3,423	3,932
Belgium/Lux	5,520	4,735	5,519	5,921	3,752	4,876	6,440
Other EU-27	4,312	4,624	2,981	3,850	3,197	2,689	3,021
EU-27, Total	23,623	21,352	18,089	18,532	14,035	13,761	17,103
Canada	320	67	20	224	267	46	62
China	0	0	0	769	1,169	1,327	3,849
Hong Kong	56	74	327	202	715	2246	451
Taiwan	2,280	1,082	1,800	3,217	2,495	1,790	3,575
Other Asia	70	250	327	375	590	332	605
Asia, Total	2,406	1,406	2,127	4,563	4,969	5,695	8,480
Australia	691	84	105	483	924	509	882
All Other	558	240	901	1,110	528	1,169	432
TOTAL	27,598	23,149	21,569	24,912	20,723	21,280	26,959

Import Surge Slows in China

Although China is the world's largest producer of kiwifruit, the quality produced often does not meet international standards. As a result, Chinese exports of fresh kiwifruit remain minimal. In contrast, Chinese imports doubled every three years between 2003 and 2012. Prior to 2009, only imports from New Zealand were permitted. Subsequently, the market was opened to imports from Chile, France, Italy and Greece. New Zealand remains the dominant supplier, but its share of total imports fell to 57 percent in 2013. Chile accounted for a further 24.3 percent, bringing the share from Southern Hemisphere suppliers to 81.6 percent. In 2013, Northern Hemisphere supplies, that compete directly with domestic Chinese supplies, reached their highest ever share of 18.4 percent.

China: Imports and Exports of Fresh Kiwifruit, 2003-2013
(metric tons)

Partner	2003	2005	2007	2009	2010	2011	2012	2013
Total Imports	2,975	6,730	13,554	26,830	33,161	43,112	51,955	48.243
New Zealand	2,649	5,467	11.485	22,034	25,472	29,153	36,930	27,666
Chile	325	1,264	2,069	4,705	6,093	11,122	11,652	11,711
France	0	0	0	19	865	1,291	1,222	3,735
Italy	0	0	0	71	731	1,506	1,284	4,011
Greece	0	0	0	0	0	39	868	1,121
Total Exports	1,545	4,487	3,748	1,749	2,041	1,891	934	1,478
Cent. Plan.	285	1,089	551	618	876	940	552	838
NE Asia	729	1,747	2,091	662	559	603	193	283
SE Asia	196	290	69	37	289	179	159	346
Europe	48	342	131	209	169	84	13	0
N America	280	741	327	15	10	0	0	0
Middle East	0	278	222	162	135	67	0	0
Other	7	0	357	46	3	18	17	11

The string of years of steadily rising Chinese fresh kiwifruit imports was broken in 2013, when total imports fell by about 7 percent. The fall was most severe for supplies from New Zealand. Those from Chile were flat, while imports from France, Italy and Greece rose sharply in percentage terms. By 2013, they accounted for over 18 percent of all China's fresh kiwifruit imports.

Similar slowdowns have been observed in Chinese imports of many other fresh fruits. However, it is difficult to measure how much of the slowdown in fresh kiwifruit imports was due to the reduced production in New Zealand because of PSA damage, and how much was due to a slowing in the economic growth of the Chinese economy. The volume of Chinese fresh kiwifruit exports in 2013 was less than one third of the peak volume shipped in 2004. Over half of all Chinese exports still go to Russia at average prices less than half the prices of Chinese imports. Clearly, China continues to supply mostly low-priced export markets.

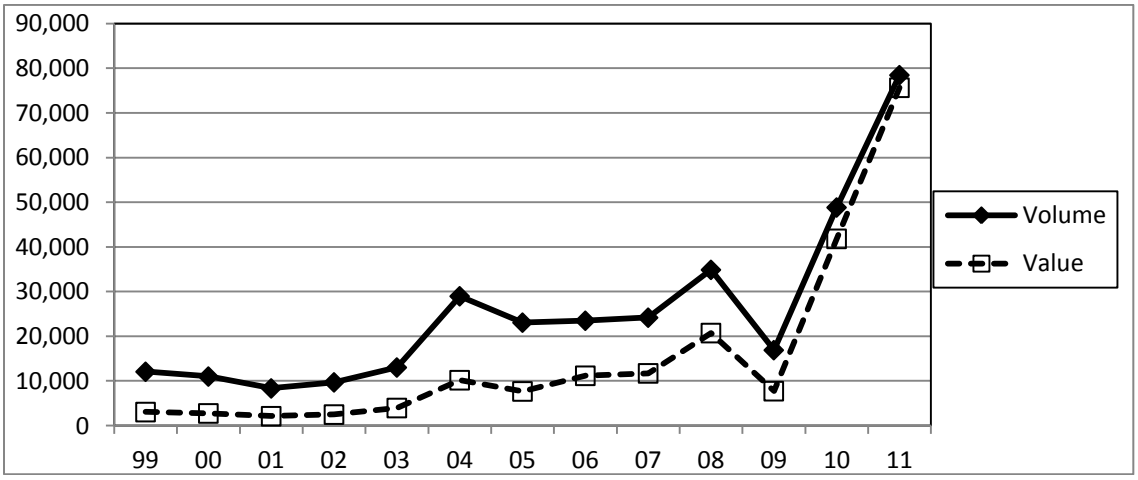
Iran Continues to Surprise

UN,FAO data on production and trade of kiwifruit in Iran is inconsistent. For example, FAO reported production of about 32,000 metric tons, zero imports, but exports of almost 78,500 metric tons, data that are impossible to reconcile. The chart below shows the trend in Iranian exports as reported by UN,FAO and the Iranian government. Iranian exports of fresh kiwifruit averaged about 11,000 metric tons between 1999 and 2003. They reached a new plateau of about 25,000 metric tons between 2004 and 2009. They then hit successive record levels of close to 50,000 metric tons in 2010 and almost 80,000 metric tons in 2011.

Between 1999 and 2003, export prices of fresh kiwifruit from Iran averaged only $265.27 per metric ton. For the 2004-2009 period, they jumped by over 70 percent to $456.81 per metric tons. They more than doubled between 2009 and 2011 to $964.21 per metric ton. The higher prices for exports tended to be charged to countries in the Middle East with substantial oil wealth, while the lowest prices tended to be charged to neighboring countries in Europe or Central Asia. The biggest single export market in 2011 was Iraq. It took over 60 percent of all Iranian kiwifruit exports. The next two largest individual markets were Russia (with over 10 percent) and Turkey (with over 8 percent). Clearly, if these data for Iranian exports are valid, it suggests that Iran is becoming a much more important player in world trade in fresh kiwifruit.

Iran: Volume and Value of Fresh Kiwifruit Exports, 1999-2011

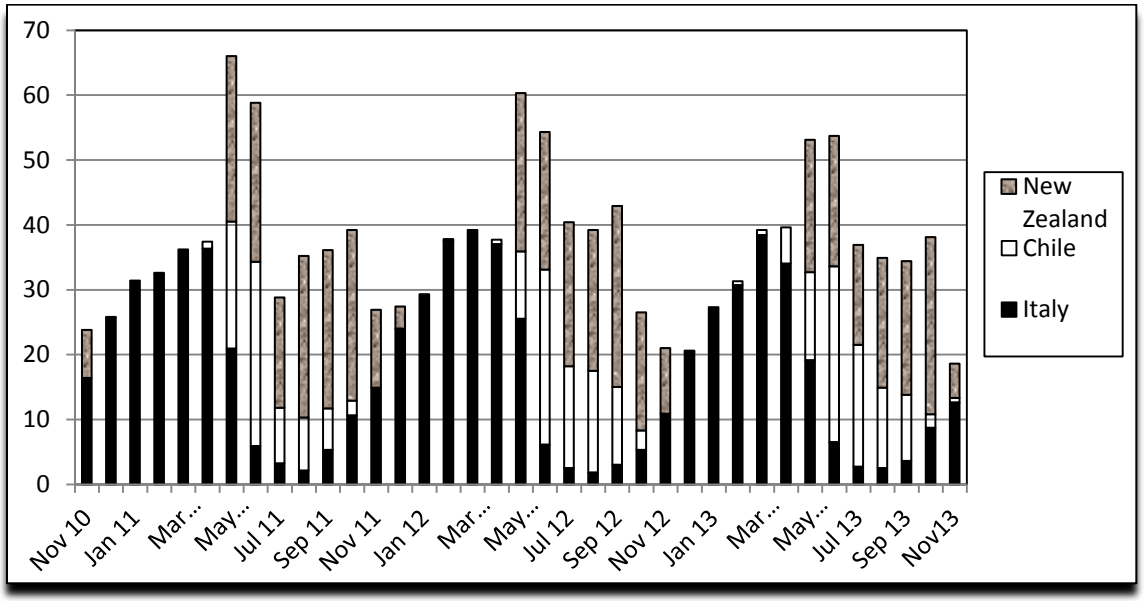
(1,000 metric tons and $1,000)



Influence of Seasonality on Fresh Kiwifruit Trade

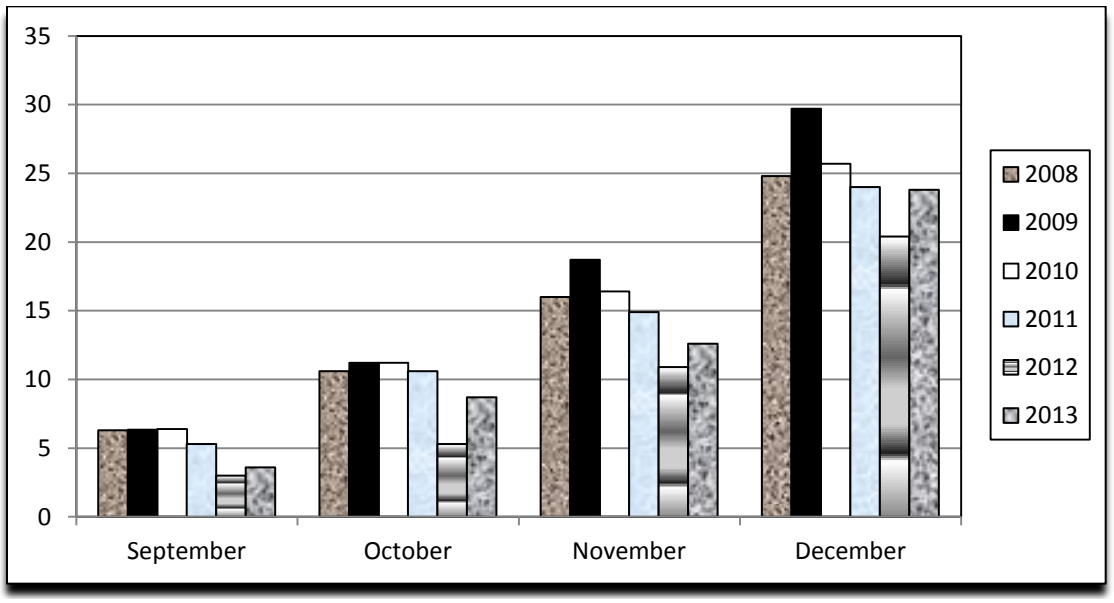
The rapid expansion of kiwifruit production in the Southern Hemisphere, primarily targeted at export sales, and the continued growth in supplies of Northern Hemisphere production raised concerns that supplies from the two hemispheres would increasingly overlap, leading to temporarily gluts and falling prices. Indeed, it appeared that such concerns were justified in 2009, when a record total of 90,000 metric tons of fresh kiwifruit were imported by the EU-27 from Italy, Chile and New Zealand in May 2009. However, the overlaps were less problematic in the next two seasons, partly because Southern Hemisphere suppliers had diverted more of their exports to Asia and other newer markets. The chart below looks at the overlap of the three major suppliers to the EU-27 for the three most recent seasons, from November 2010 to November 2013. For the third season in a row, total volume declined in May and June, the months of greatest overlap. It was below 60 thousand metric tons in both May and June of 2012, a far cry from the levels in 2009. One of the side-effects of PSA is that the overlap is unlikely to return in the near future.

EU-27: Monthly Volume of Imports of Fresh Kiwifruit from Italy, Chile and New Zealand, Nov 2010 to Nov 2013
(1,000 metric tons)



EU-27: Imports of Fresh Kiwifruit from Italy, September to December, 2008-2013

(1,000 metric tons)

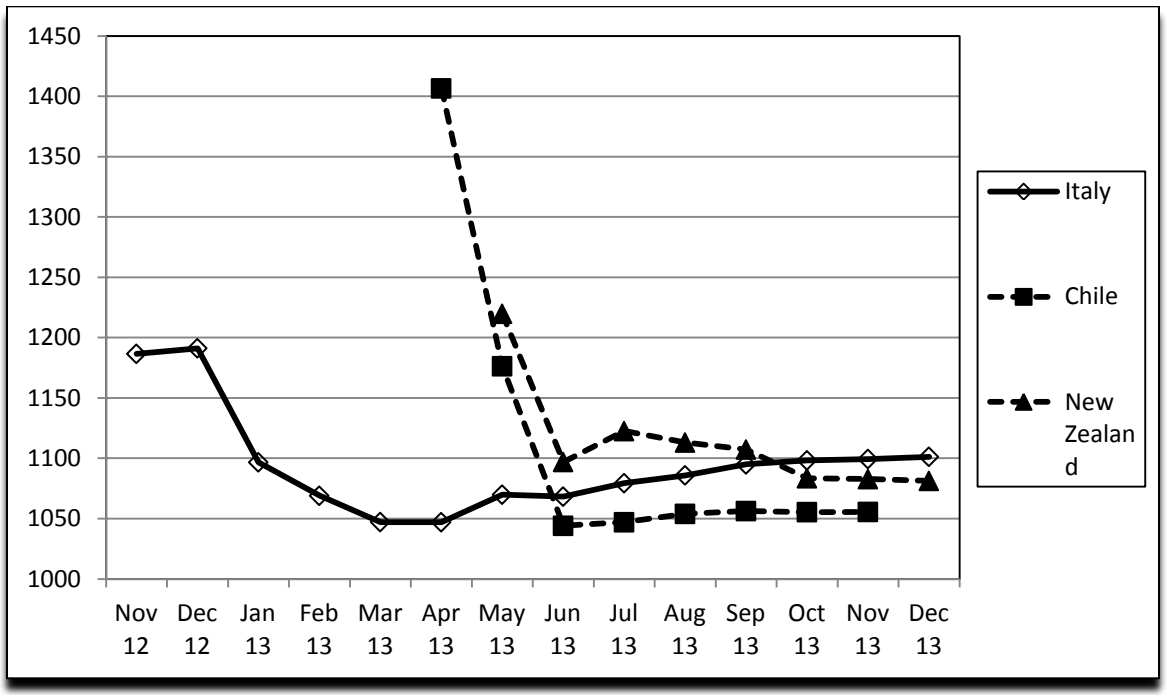


There was also a concern that increased plantings of early-maturing Hayward cultivars in Europe would increase the risk of overlap in the last four months of each calendar year. Indeed, between 2004 and 2009, there was a strong upward trend in imports of fresh kiwifruit from Italy by the EU-27. However, as the chart below shows, since 2009, the volume of imports of Italian kiwifruit either stabilized or declined in each of the months of September, October, November and December. Thus, early-maturing Hayward variants no longer threaten to increase overlaps or reduce prices in those four months.

In the 2011-12 season, moving average prices of fresh kiwifruit imports from Chile and New Zealand tended to converge as the season wore on, while those of Italian kiwifruit remained consistently below the Southern Hemisphere imports by over 100 euros per metric ton. In contrast, in the 2012-13 season, all three countries enjoyed premiums early in their shipping season, but moving average prices converged by June 2013. This suggests that quality was not a major differentiator between supplies from the three different sources.

EU-27: Monthly Moving Average Prices, 2012-13 Seasons for Imports from Italy, Chile and New Zealand

(euros per metric ton)



The table below, compares average FOB prices of fresh kiwifruit from Chile and New Zealand, side by side with average import prices in the EU-27 from these two sources. The two series tell quite different stories. For average export FOB prices, New Zealand had a premium of between $1,200 and $2,000 per metric ton in all 15 calendar years. However, in the case of import prices into the EU-27, In five of the eight calendar years between 1999 and 2006, New Zealand kiwifruit earned a double-digit percentage premium over Chilean kiwifruit. New Zealand prices exceeded 1,000 euros per metric ton in 7 of those 8 years, while Chilean prices surpassed that level in only three years. However, for the next five years, New Zealand imports sold at a discount to Chilean imports, and in the two most recent years, 2012 and 2013, the New Zealand premium was only about one percent. New Zealand prices did not exceed 1,000 euros again until 2013, while Chilean prices exceeded that level in 3 of the 7 most recent years. There are no obvious explanations for these price discrepancies.

Comparison of Annual Average Overall Export Prices and of Import Prices to the EU-27 of Fresh Kiwifruit from Chile and New Zealand, 1999-2013

(euros per metric ton)

Calendar year	Chile Average FOB Price	New Zealand Average FOB Price	New Zealand Premium at FOB	New Zealand Premium at FOB	Chile EU-27 Import Price	New Zealand EU-27 Import Price	New Zealand EU-27 Import Premium	New Zealand EU-27 Import Premium
	($/mt)	($/mt)	($/mt)	(%)	(€/mt)	(€/mt)	(€/mt)	(%)
1999	730	2,360	1,630	+ 223.3	950.48	1,051.23	100.75	+ 10.6
2000	670	2,630	1,960	+ 292.5	976.97	974.71	- 2.26	- 0.2
2001	600	2,330	1,730	+ 288.3	1,020.15	1,021.61	1.46	+ 0.1
2002	670	2,440	1,770	+ 264.2	1,050.52	1,040.74	- 9.78	- 0.9
2003	810	2,080	1,270	+ 156.8	973.50	1,199.53	226.03	+ 23.2
2004	810	2,640	1,830	+ 225.9	1,022.16	1,149.24	127.08	+ 12.4
2005	840	2,030	1,190	+ 141.7	887.81	1,174.67	286.86	+ 32.3
2006	870	2,450	1,580	+ 181.6	959.42	1,159.12	199.70	+ 20.8
2007	910	2,240	1,330	+ 146.2	890.22	855.60	- 34.62	- 3.0
2008	1,110	2,560	1,450	+ 130.6	1,005.86	919.43	- 86.43	- 8.6
2009	810	2,860	2,050	+ 253.1	879.10	763.64	- 115.46	- 13.1
2010	830	2,630	1,800	+ 216.9	838.94	821.21	- 17.73	- 2.1
2011	930	2,600	1,670	+ 179.6	1,000.67	927.80	- 72.87	- 7.3
2012	920	2,510	1,590	+ 172.8	944.84	955.25	11.61	+ 1.2
2013	1,090	2,300	1,210	+ 111.0	1,055.56	1,065.85	10.29	+ 1.0

Clearly, competition between major exporters remains intense, and the levels of advantage are shifting. Reduced supplies due to PSA will lead to further shifts in competitive advantage in the near future.

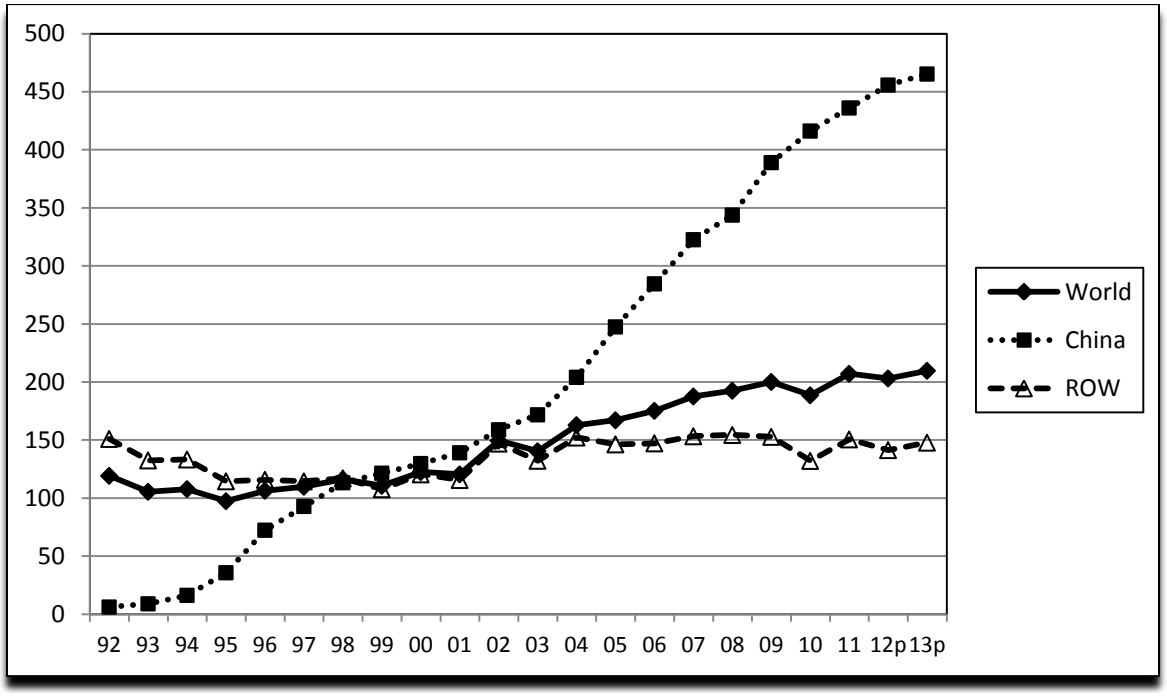
3. Consumption of Fresh Kiwifruit

World Per Capita Availability Slowing

World per capita availability of kiwifruit rose at a rapid pace between 1999 and 2009. It has since slowed, first due to crop reductions because of weather setbacks, and, more recently, because of the impact of PSA. Per capita supplies in China do not appear to have been affected so far by PSA. However, growth in Chinese supplies has had a significant effect on world averages. Per capita availability of commercial kiwifruit in China now tops 450 grams. China also harvests a substantial amount of wild kiwifruit. For the rest of the world (ROW) excluding China, per capita availability has remained at a plateau of about 150 grams per person since 2002. This is now only one third of the Chinese level. There could be temporary declines in per capita availability of kiwifruit in the rest of the world until the PSA problem is overcome.

World: Kiwifruit Availability, China and the Rest of the World, 1992-2013

(grams per capita)



Supplies for Consumption, by Country

In previous issues of the World Kiwifruit Review, we have examined supplies for consumption among major producing countries going back to the early 1990s. However, those earlier years are increasingly irrelevant to the current, dynamic world market for kiwifruit and competing fruits. Accordingly, in this issue, we examine more closely recent developments among the major kiwifruit producing countries. Three-year periods have been used to reduce the impact of temporary factors in a single season. Data are presented on the next page for the 12 major producing countries for which data are available for the periods 2000-03 and 2011-14. The table shows how changes in domestic production, imports and exports in each country affected the level and trends in domestic disappearance. Since domestic disappearance is presented as a residual, it is affected by any errors in the data on production, imports or exports.

In 2011-14, two countries, Greece and Chile, recorded domestic per capita disappearance greater than 3 kilograms per capita. Four countries, Italy, Spain, Portugal and New Zealand, exceeded 2 kilograms per capita. The three countries with the largest populations, China, the United States and Japan, all recorded per capita disappearance of less than one kilogram per capita. Of these three, the United States was by far the lowest with less than one quarter kilogram per capita.

Every country but New Zealand recorded an increase in per capita disappearance between 2000-03 and 2011-14. The biggest percentage increases were for Chile and China. However, both Greece and South Korea recorded increases in per capita disappearance of over 80 percent in the period. All other countries, except France, recorded double-digit percentage increases in the period. Per capita disappearance in France was only modestly higher.

Total disappearance of kiwifruit in any country tends to rise with increases in domestic production and imports, and to fall with increases in exports. Production increased between 2000-03 and 2011-14 in every country except France, Japan and South Korea, although the increase was modest in the United States and Australia. Among major producers and exporters, production increased by almost 100,000 metric tons in Italy, Greece, Chile and New Zealand, and by over 400,000 metric tons in China.

Major Kiwifruit Producing Countries: Production, Trade and Domestic Disappearance, Selected Three-year Periods

Country	Period	Production	Imports	Exports	Domestic Disappearance	Domestic Disappearance
		(mt)	(mt)	(mt)	(mt)	(grams/capita)
Italy	2000-03	351,458	38,047	262,143	127,362	2,225.5
	2011-14	444,807	48,979	339,846	153,940	2,525.8
	Change %	*+ 26.6*	*+ 28.7*	*+ 29.6*	*+ 20.9*	*+ 13.5*
France	2000-03	80,000	38,391	28,937	89,454	1,505.8
	2011-14	65,493	54,172	22,937	96,728	1,524.3
	Change %	*- 18.1*	*+ 41.1*	*- 20.7*	*+ 8.1*	*+ 1.2*
Greece	2000-03	56,200	1,579	25,378	32,401	2,937.3
	2011-14	153,467	3,405	94,900	61,972	5,427.4
	Change %	*+ 173.1*	*+ 114.2*	*+ 273.9*	*+ 91.3*	*+ 84.8*
Spain	2000-03	13,628	92,043	9,230	96,441	2,363.4
	2011-14	22,963	125,931	12,797	136,097	2,910.7
	Change %	*+ 68.5*	*+ 36.8*	*+ 38.6*	*+ 41.1*	*+ 23.2*
Portugal	2000-03	9,238	10,058	405	18,891	1,820.0
	2011-14	19,824	9,463	7,410	21,877	2,045.0
	Change %	*+ 114.6*	*- 5.9*	*+1685.5*	*+ 15.8*	*+ 12.4*
United States	2000-03	25,976	48,444	11,721	62,699	219.6
	2011-14	28,351	58,898	9,262	77,987	247.0
	Change %	*+ 9.1*	*+ 21.6*	*- 21.0*	*+ 24.4*	*+ 12.5*
China	2000-03	163,333	3,764	242	166,856	127.7
	2011-14	580,000	47,871	1,442	626,429	452.4
	Change %	*+ 255.1*	*+ 43.7*	*+ 495.9*	*+ 275.4*	*+ 254.3*
Japan	2000-03	41,967	43,135	40	85,062	675.7
	2011-14	33,700	61,987	5	95,682	756.8
	Change %	*- 19.7*	*+ 43.7*	*- 87.5*	*+ 12.5*	*+ 12.0*
South Korea	2000-03	13,775	7,293	23	21,045	455.4
	2011-14	11,687	30,252	4	41,936	863.2
	Change %	*- 15.2*	*+ 314.8*	*- 82.6*	*+ 99.3*	*+ 89.5*
Australia	2000-03	4,349	17,433	3,094	18,688	964.1
	2011-14	4,665	21,668	399	25,934	1,131.8
	Change %	*+ 7.3*	*+ 24.3*	*- 87.1*	*+ 38.8*	*+ 17.4*
Chile	2000-03	126,167	0	119,929	9,405	602.8
	2011-14	219,768	100	163,897	55,971	3,212.6
	Change %	*+ 74.2*	*n.a.*	*+ 36.7*	*+ 495.1*	*+ 432.9*
New Zealand	2000-03	245,399	357	241,938	18,698	4,985.2
	2011-14	346,113	565	336,156	10,522	2,358.6
	Change %	*+ 41.0*	*+ 58.3*	*+ 38.9*	*- 43.7*	*- 52.7*

Imports increased in every country except Portugal. Exports decreased in five countries, France, the United States, Japan, South Korea and Australia. However, increases in imports far outweighed decrease in exports in most countries. The biggest volume increase in exports was for New Zealand, but Italy, Greece and Chile also generated large volume increases in exports. Thus, both increased production and increased trade played an important role in increasing domestic disappearance of kiwifruit in these countries.

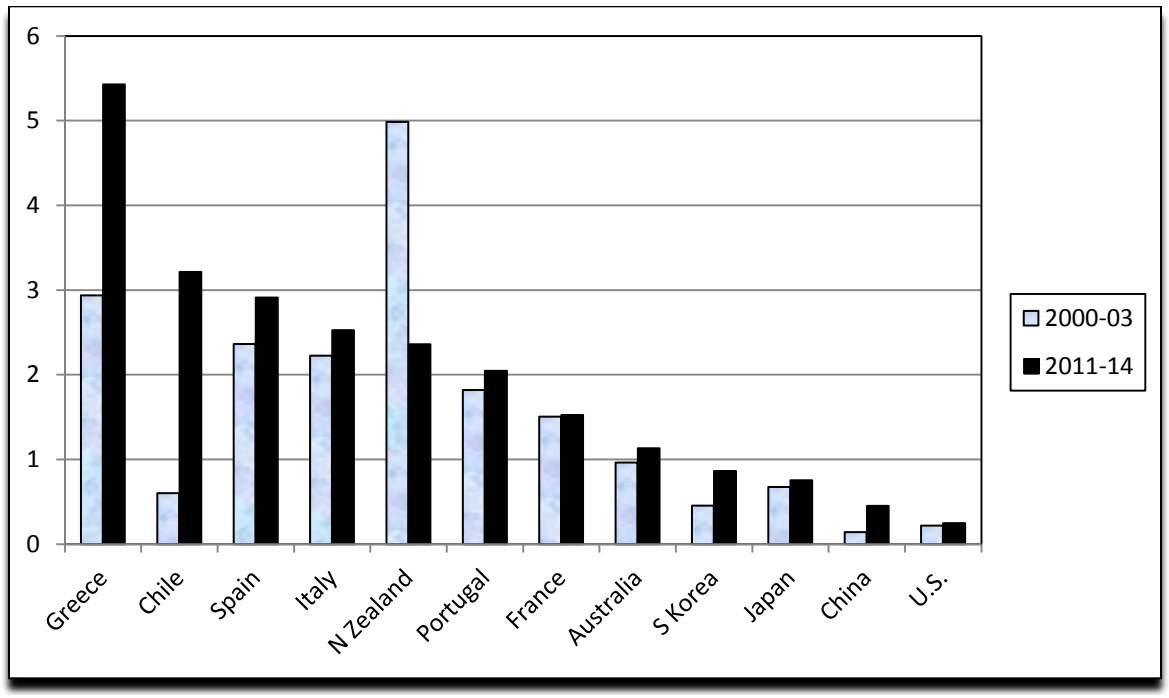
Per capita domestic disappearance is also affected by population growth over time. Population growth has tended to be relatively slow in most of these countries. Thus, per capita disappearance tended to grow slightly more slowly than total disappearance. The effect of population growth on per capita disappearance was most pronounced in Chile, Australia, the United States and Spain. It was least noticeable in Japan and Portugal.

The wide disparity between producing countries in per capita disappearance is shown dramatically in the chart on the next page. Data are shown for the same three-year periods, 2000-03 and 2011-14. Countries are ordered from left to right in terms of their per capita disappearance in 2011-14. The chart shows Greece as a major outlier, both in terms of per capita disappearance of over 5.4 kilograms in 2011-14 and in terms of the increase since 2000-03. Chile was also an outlier in terms of the extent of the increase over the period. New Zealand was also a major outlier for the opposite reason, that per capita disappearance was estimated to have fallen sharply between the two periods. However, the problem of residual effects tend to be highest with export-oriented countries like Greece, New Zealand and Chile, so these results need to be treated with caution.

There are no simple explanations for the wide disparity in per capita disappearance among these major producing countries. For example, per capita disappearance in France in 2011-14 was only 60 percent of that in Italy, and only 52 percent of that in Spain, despite the fact that these are neighboring countries at similar levels of social and economic development. Per capita disappearance in China was at twice the level in the United States, despite the fact that per capita income in the United States is ten times that of China. Clearly, traditional patterns of consumption, individual consumer preferences, relative availability and relative prices of different fruits have an impact on consumption of fresh kiwifruit. However, detailed country studies would be needed to trace cause and effect.

Major Producing Countries: Per Capita Disappearance, 2000-03 and 2011-14

(kilograms per capita)



Consumption in Non-producing Countries

The previous section demonstrated that there has been a steady increase in per capita disappearance of fresh kiwifruit in almost all the major kiwifruit producing countries in the last decade. (Per capita disappearance is a reasonable proxy for per capita fresh consumption where processing uses and waste are small.) However, continuing and substantial increases in production have required major producing countries to gradually expand their sales in many additional markets where there has been no tradition of consuming fresh kiwifruit. The most obvious target markets have been high-income countries such as Germany, that are next door to major producers like Italy, or countries like Spain or the United Kingdom that have long-established political, cultural and language links with more distant, Southern Hemisphere suppliers like Chile and New Zealand. However, the Great Recession of 2008 and its aftermath have dampened demand for many products in developed countries. As a result, exporters have focused increased attention on developing countries, especially those in the Middle East and East Asia.

For non-producing countries, estimation of per capita consumption is relatively straightforward. For each year, imports minus exports of fresh kiwifruit were divided by the relevant population. This method is fairly accurate for most countries because imports tend to dwarf exports. However, the method is subject to wide errors for countries like Belgium and the Netherlands where there are a lot of trans-shipments to third countries. Estimates for such countries need to be treated with caution.

Non-producing European Union Member Countries: Per Capita Consumption of Fresh Kiwifruit, 2002-2013

(Annual grams per capita)

Region	Country	2002-04 Average	2005-07 Average	2008-10 Average	2011-13 Average	2013 Annual
		(grams)	(grams)	(grams)	(grams)	(grams)
EU-15	Austria	915	1,228	1,270	1,347	1,093
	Belgium	n.a.	1,897	2,239	2,062	2,311
	Denmark	680	774	992	748	721
	Finland	490	578	627	633	639
	Germany	1,081	1,397	1,371	1,194	1,130
	Ireland	609	852	970	889	821
	Luxembourg	1,539	1,529	2,102	2,004	1,730
	Netherlands	992	1,280	2,053	2,793	2,275
	Sweden	934	1,102	1,124	1,104	1,086
	United Kingdom	528	653	556	491	479
	Subtotal	849	1,121	1,173	1,093	1,054
EU-28, NMS	Bulgaria	316	421	232	340	222
	Croatia	425	479	741	726	596
	Cyprus	789	963	1,004	879	903
	Czech Republic	1,065	1,299	1,158	719	558
	Estonia	558	749	922	880	763
	Hungary	688	424	337	306	336
	Latvia	785	802	827	834	744
	Lithuania	503	370	354	264	347
	Malta	1,427	1,209	1,369	1,154	881
	Poland	421	661	590	541	452
	Romania	111	359	289	342	396
	Slovakia	709	1,174	975	846	851
	Subtotal	478	640	570	513	464

Data in the table above are presented for 10 of the original EU-15 member countries and for twelve new member countries (generally substantially poorer countries) that joined the expanded EU-28 since 2004. Among the EU-15, the long-term trend has been upwards except for the United Kingdom. By 2013, two countries, Belgium and the Netherlands, were estimated to have per capita consumption of fresh kiwifruit greater than 2 kilograms. Four other countries, Austria, Germany, Luxembourg and Sweden, had per capita consumption greater than one kilogram. For all ten EU-15 non-producing countries, the average per capita consumption was close to one kilogram between 2005 and 2013. This was considerably lower than the average for the five EU-15 kiwifruit producing countries. Below average per capita consumption was reported for Denmark, Finland, Ireland and the United Kingdom.

Among the twelve NMS member countries of the EU, the trend in per capita consumption of fresh kiwifruit was positive in six and negative in six. The average for all 12 countries was trending downward over time, and was less than half that recorded for the richer EU-15 member countries. None of the NMS countries had per capita consumption above one kilogram in 2013. The highest level, above 0.8 kilograms, was reported for three relatively small countries, Cyprus, Malta and Slovakia. The former two are also highly-oriented towards tourists from Northern Europe. The lowest per capita consumption was for Bulgaria, Hungary, Lithuania and Romania, all countries that have had a difficult transition from central planning to free market economies in the last twenty years. Their per capita incomes have been relatively low, economic growth has been relatively slow, and barriers to imports of fresh fruit like kiwifruit have been slow to fall.

There are no simple explanations for the differences in per capita consumption of fresh kiwifruit among these non-producing European countries. For example, per capita consumption in Ireland was about 70 percent higher than that in the neighboring United Kingdom, while that in Sweden was about 70 percent higher than that of neighboring Finland. The Czech Republic and Slovakia were only recently part of a united Czechoslovakia, but per capita consumption in Slovakia in 2013 was more than 50 percent greater than in the Czech Republic. That of Estonia and Latvia was more than twice the level in neighboring Lithuania. In summary, it appears that per capita consumption has tended to grow more rapidly among the richer EU non-producing countries, and has been hindered in economies that have transitioned from central planning.

A similar methodology to that described for EU member countries was used to estimate per capita consumption of fresh kiwifruit in other non-producing countries and regions. Data were drawn from the UN,FAO database. To conserve space, results shown below are reported only for major regions and for selected countries that have substantial potential for further growth in fresh kiwifruit consumption. The most recent data at press time were for calendar year 2011.

Non-producing Countries outside the EU: Per Capita Consumption of Fresh Kiwifruit, 2002-2011

(Annual grams per capita)

Region	Country	2002-04 Average	2005-07 Average	2008-10 Average	2011 Annual
		(grams)	(grams)	(grams)	(grams)
Other West Europe	Iceland	862	870	713	717
	Norway	766	960	1,066	1,071
	Switzerland	1,397	1,396	1,599	1,498
	Subtotal	1,148	1,219	1,374	1,320
Russian Federation	Subtotal	193	348	476	597
East Asia	Hong Kong	728	1,022	1,491	1,829
	Singapore	486	541	681	757
Middle East	Bahrain	2,381	1,911	1,733	1,602
	Saudi Arabia	324	287	283	445
	UA Emirates	1,002	783	1,237	780
	Oman	812	578	284	362
	Qatar	2,030	1,192	1,364	267
	Subtotal	164	191	202	218
Americas	Canada	452	82	644	598
	Mexico	73	90	96	107
	Argentina	81	116	198	270
	Brazil	31	38	76	129
	Colombia	21	33	46	80
Africa	All	5	14	20	47
C America/Caribbean	All	10	17	21	29
Southeast Asia	All	13	13	28	40
South Asia	All	0.2	0.9	1.5	3

Between 2002 and 2011, strong positive trends in per capita consumption of fresh kiwifruit were observed for Norway, Switzerland, the Russian Federation, Hong Kong, Singapore, Mexico, Argentina, Brazil and Colombia. Per capita consumption in 2011 in Switzerland, Hong Kong and Bahrain was on a par with that in a producing country like France. Very rapid rates of growth were observed for the Russian Federation, and for three Latin American countries, Argentina, Brazil and Colombia, although per capita consumption in 2011 remained far below that of most producing countries.

Average per capita consumption of fresh kiwifruit in the Middle East was quite low. In addition, per capita consumption for individual, Middle Eastern countries showed wide swings over time. It is likely that the trade data reported by UN,FAO for these countries do not reflect actual movement across relatively fluid borders, particularly the role of Iran as a supplier to the region.

The last four entries in the table above show average per capita consumption of fresh kiwifruit for four large, heavily populated geographic regions, Africa, Central America/Caribbean, Southeast Asia and South Asia. In general, per capita consumption for these regions has been tiny - less than one-twentieth of a kilogram. However, in all cases, the rate of growth has been high. This suggests that further growth in per capita consumption can be achieved in these four regions.

The slowing in the expansion of kiwifruit production due to PSA has taken some of the pressure off major kiwifruit producing countries to find expanded markets for their exports. However, as world production capacity recovers, that pressure will return. Producers and markets need a more systematic way to identify which among many markets in the world offer the best future potential for profitable growth. They then need to use that information to develop marketing strategies that will make best use of the kiwifruit Industry's limited promotional resources.

4. Prices of Fresh Kiwifruit

Is There an Upside to PSA?

While PSA has had a devastating impact on the land values and incomes of the most affected kiwifruit producers, by reducing both current and prospective supplies it should have the same effect in boosting prices as would any other reduction in supplies. The extent of the impact on individual producers in different countries and producing districts would be expected to vary. At one extreme, producers that lost most of their current production capacity, would benefit little from any price increases. At the other extreme, producers whose output was not at all affected would gain additional revenue without incurring any additional costs. PSA would actually be a bonus for such producers. Most kiwifruit producers around the world probably occupy the middle ground, that is, facing varying levels of costs in either preventing or fighting PSA.

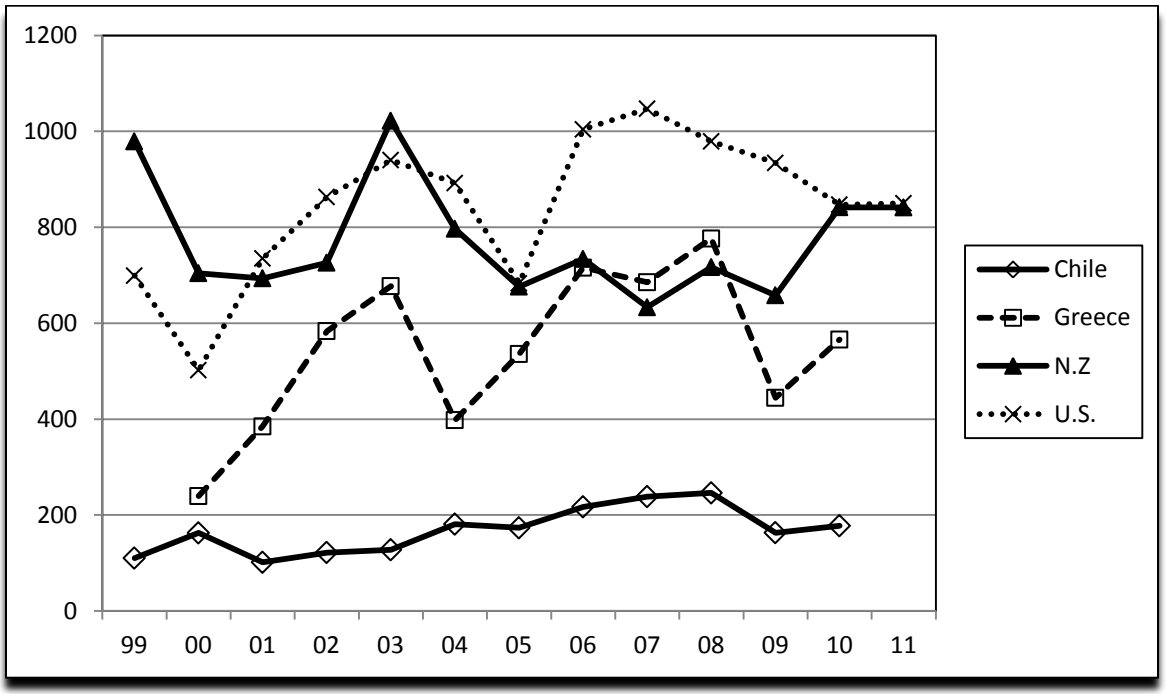
The bottom line is that while PSA has brought increased risk and uncertainty into the production of kiwifruit, the basic economics of kiwifruit production have not changed. Producers still need to generate revenue sufficiently greater than costs so that they can (1) earn adequate current returns on their investments in land, labor and capital, and (2) generate a surplus that can be ploughed back into updating their operations. For example, to stay competitive, producers need the resources to maintain their irrigation systems and support structures, to adequately compensate their employees, and to invest in the improved cultivars and advanced equipment needed to maintain the volume and quality of production. PSA is just one additional element, albeit a troublesome one, that producers must factor into their decisions about entering kiwifruit production, expanding or contracting their operations, or leaving the industry.

In most cases, production costs are reasonably predictable. However, revenue tends to be much more volatile, both because of changes in yields caused within the orchard environment and because of changes in prices caused by the global marketing environment. That environment is affected by aggregate supplies of kiwifruit and competing fruits, general economic conditions, conditions at ports or transportation systems, decisions of retailers and wholesalers, promotional programs, and many other factors. The rest of this chapter looks at how prices in major markets have responded in recent seasons to such factors.

International Comparisons of Prices

Data are available from UN,FAO on producer prices of kiwifruit in selected major producing countries, including three of the top four exporting countries, New Zealand, Chile and Greece. Data for the United States are also shown for comparison. These data show that at the grower level, prices have both varied widely between countries, and varied widely from year to year for each country. For example, between 1999 and 2010, the highest annual producer price for Greece was four times the lowest price. For both Chile and the United States, the highest annual producer price was twice the lowest. Even for New Zealand, with its monopoly marketing board, producer prices fluctuated more than 40 percent between 2002 and 2003.

Major Producing Countries: Producer Prices of Kiwifruit, 1999-2011
(US$ per metric ton)



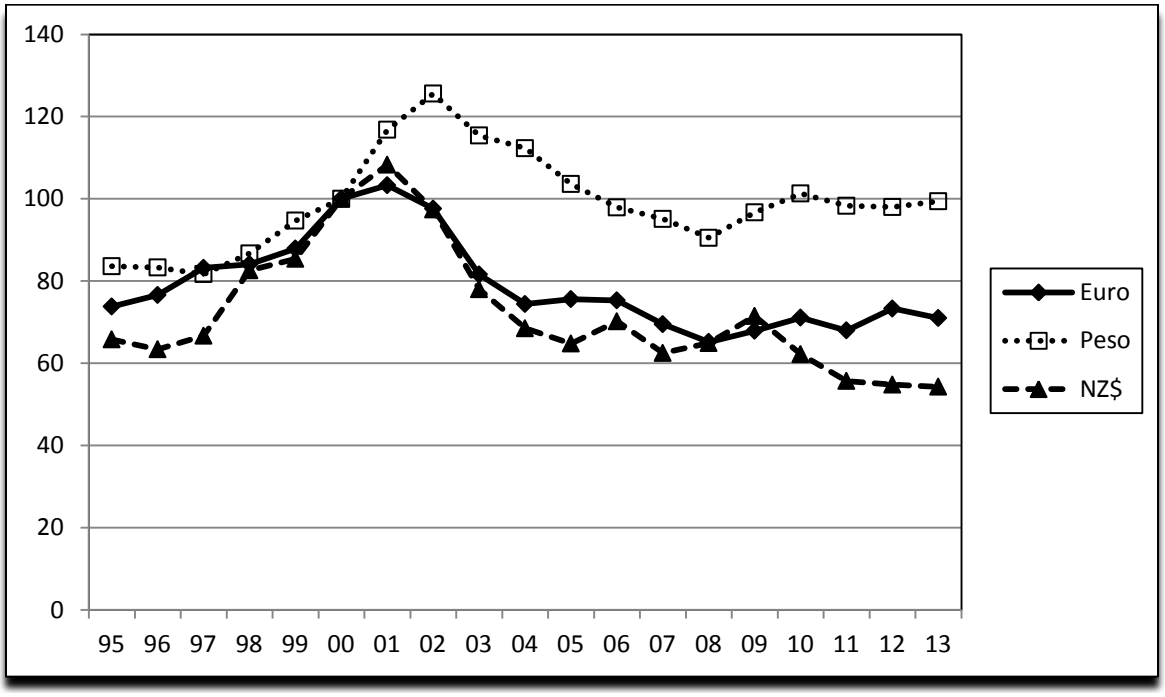
Of the four countries, producer prices for Chile were consistently lowest, and those for Greece next lowest in most years. Producer prices for New Zealand generally exceeded those for Greece. However, producer prices in the United States exceeded those of New Zealand in 10 of the 13 years. This is not unexpected given New Zealand's great distance from most of its final markets.

Producer prices appeared to be trending upwards over time for Chile, Greece and the United States. However, that result can be misleading for a number of reasons. It does not take account of fluctuations in exchange rates which would affect the value in US dollars of producer returns in other countries. Nor, does it take account of inflation, which reduced the value of the U.S. dollar by over 25 percent between 1999 and 2011.

The chart below shows how the exchange rate of the euro (used by Greece), the Chilean peso, and the New Zealand dollar varied against the U.S. dollar between 1995 and 2013. Each exchange rate (for example, between the euro and the U.S. dollar) is presented relative to the exchange rate in the year 2000. All three currencies weakened against the U.S. dollar between 1995 and 2001. Weakness continued for the Chilean peso into 2002. There was a reversal in both the euro and the Chilean peso against the U.S. dollar between 2001 and 2008, and a stable relationship between 2008 and 2013. However, the New Zealand dollar continued to strengthen against the U.S. dollar through 2013. All three countries have lost competitiveness since 2000 because of adverse trends in their exchange rates.

Major Producing Countries: U.S. Dollars per Selected Currency, 1995-2013

(Index, Year 2000 Rate = 100)

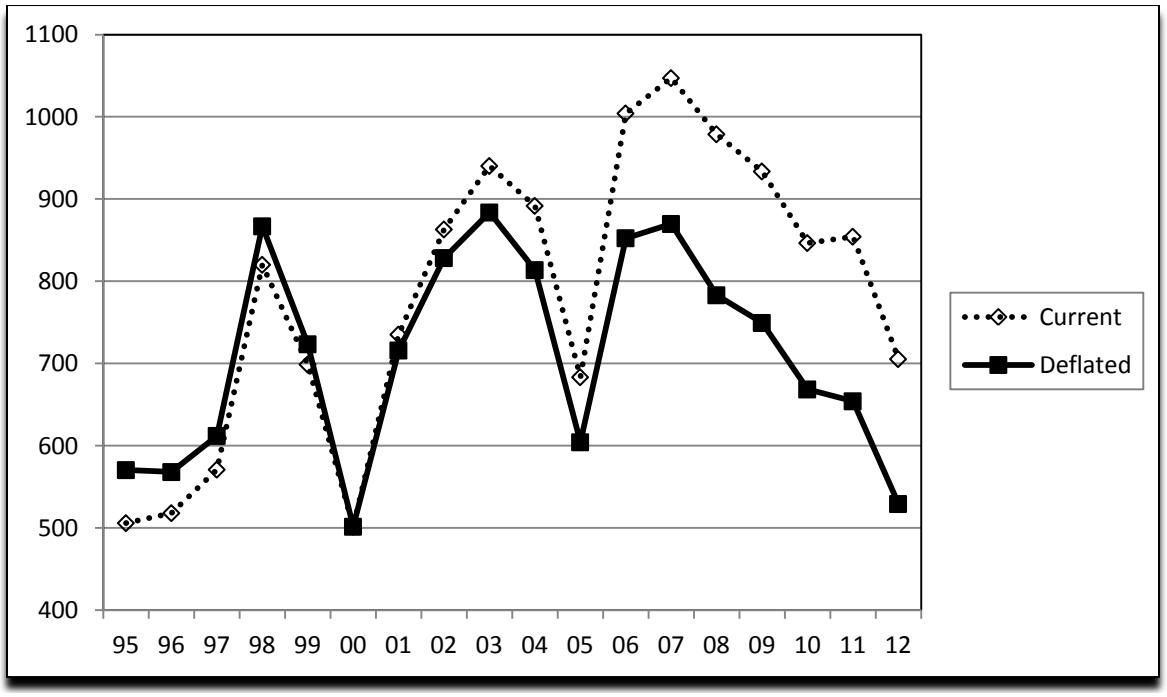


Effect of Inflation on Grower Price

While fluctuating exchange rates can affect producer returns over time, inflation can also silently erode apparent price gains. This has been particularly true in the last decade, when annual rates of inflation have been relatively low. However, an annual rate of inflation of 2 percent amounts to a cumulative reduction in real purchasing power of about 18 percent per decade. The chart below shows the impact that inflation has had on producer prices in the United States in the period from 1995 to 2013.

United States: Current and Deflated Grower Prices of Kiwifruit, 1995-2012

(US$ per metric ton)



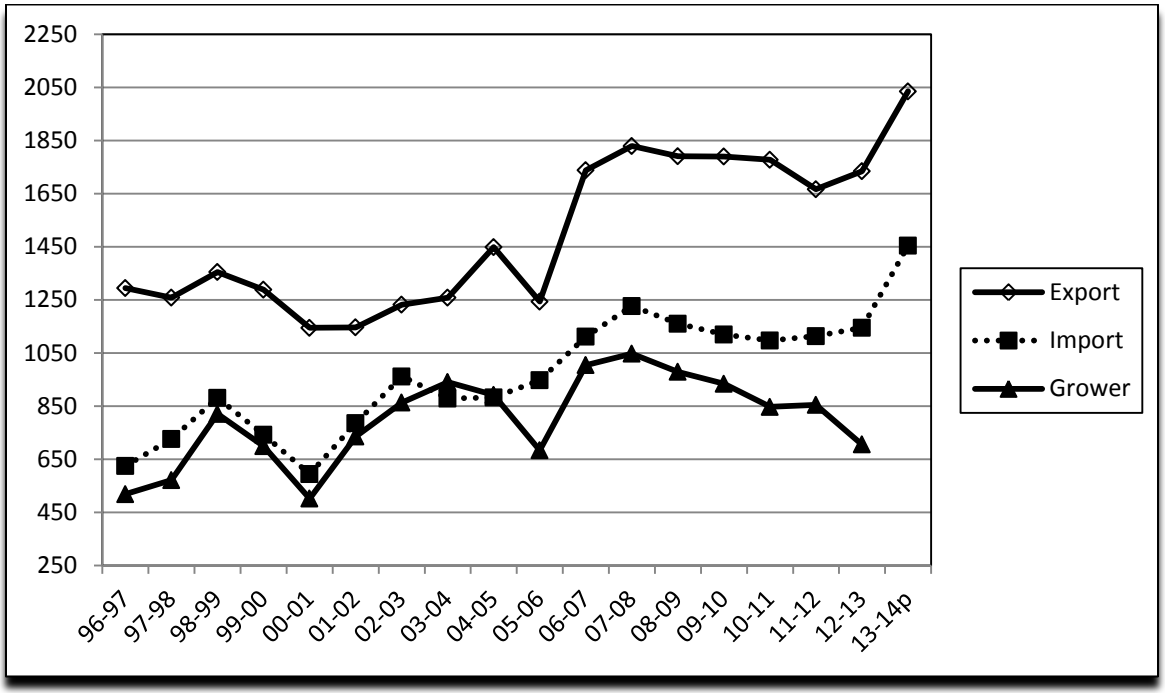
Since the year 2000, inflation has gradually eroded the real value of grower prices in the United States. The purchasing power of the dollars earned by the U.S. grower in 2012 was 25 percent lower than appeared from current price levels. A similar discount factor could be applied to prices in U.S. dollar terms received by Chile, New Zealand, Greece and other users of the euro currency like Italy, France, Spain or Portugal. The loss of purchasing power becomes an added problem as the industry attempts to combat the PSA epidemic.

Trade Links to Domestic Prices

The world kiwifruit industry is heavily involved in international trade, and almost all major producers of kiwifruit are also substantial importers or exporters of fresh kiwifruit. However, the links between prices of domestically produced fruit and those of traded fruit are far from obvious. A long data series is available for the United States showing the links between domestic, export and import prices. That series is updated through the year 2013 in the chart below.

United States: Export, Import and Grower Prices of Fresh Kiwifruit, 1996-2013

(US$ per metric ton)



In general, domestic, import and export prices for kiwifruit in the United States have had similar long-term trends, and similar short-term movements. However, the gap between domestic producer prices and export prices has widened substantially over time, and that between domestic producer prices and import prices has widened somewhat. As one might expect, prices of imports and exports are sensitive to the same international market conditions. However, in recent years, U.S. growers have seen domestic producer prices lag changes in prices of traded kiwifruit.

Role of Export Competition

The level of supplies available from exporting countries, and the competitive pricing strategies followed by each, also affect levels of prices in each country from year to year. For example, in western Europe, there is intense competition between the three major exporters, Italy, France and Greece. However, there has also been surprising stability in the relationship between export prices of fresh kiwifruit from the three countries. The table below shows export prices of fresh kiwifruit for each country, and for all three countries combined, between 1991 and 2013.

Italy, France and Greece: Export Prices of Fresh Kiwifruit, 1991-92 to 2012-13

(euros per kilogram)

Season	Italy	France	Greece	3 Countries
1991-96 Average	0.70	0.90	0.69	0.72
1996-01 Average	0.80	1.18	0.58	0.83
2001-06 Average	0.93	1.46	0.68	0.98
2006-11 Average	0.95	1.42	0.70	0.96
2001-02	1.09	1.46	0.77	1.12
2002-03	1.01	1.55	0.72	1.06
2003-04	1.00	1.57	0.74	1.08
2004-05	0.72	1.28	0.53	0.77
2005-06	0.86	1.38	0.63	0.90
2006-07	0.81	1.29	0.63	0.84
2007-08	1.15	1.62	0.80	1.17
2008-09	0.93	1.46	0.74	0.96
2009-10	0.82	1.26	0.59	0.82
2010-11	1.02	1.49	0.76	1.00
2011-12	0.83	1.23	0.72	0.85
2012-13	1.12	1.54	0.72	1.04

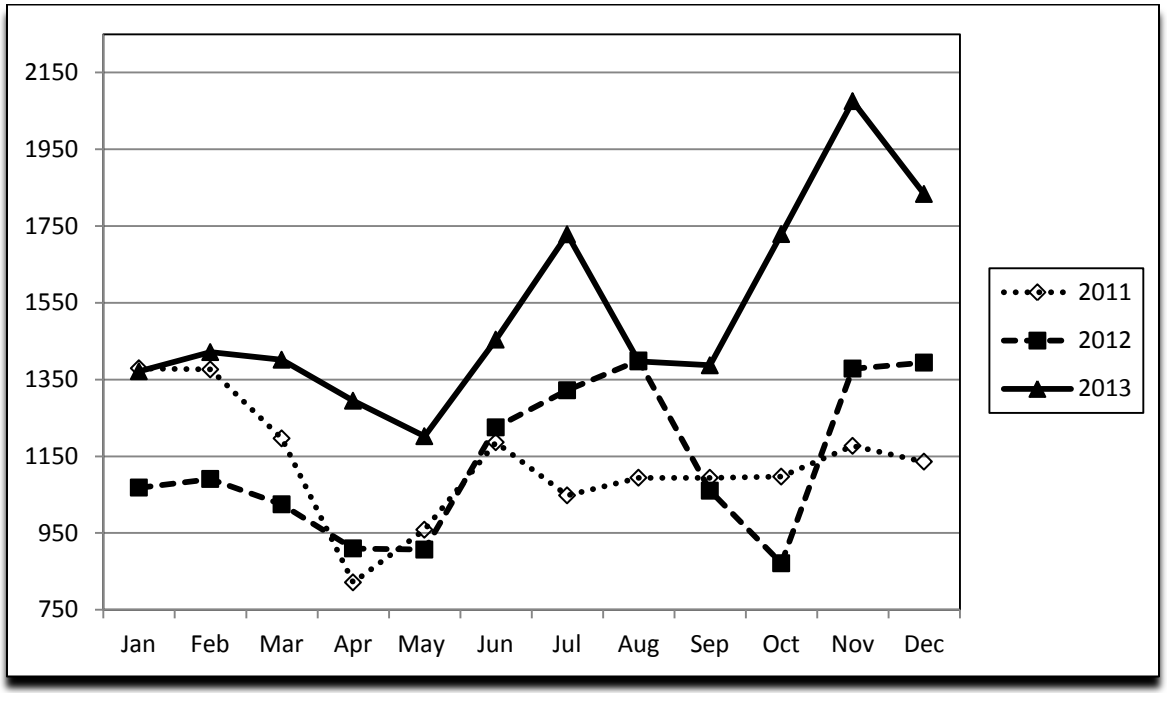
As by far the largest exporter, it is no surprise that Italy's export prices were close to the weighted average for the three countries combined. While there were major swings in prices from year to year, export prices for the three countries tended to move in sync.

However, French export prices averaged over 40 percent above the three-country average, while Greek export prices averaged over 20 percent below the three-country average. This suggests that there have been consistent quality differences between the typical exports from each country, with France continuing to earn a substantial premium throughout the two decades, and Greek exports selling at a substantial discount.

Influence of PSA on Kiwifruit Prices

While the volume of fresh kiwifruit traded, and existing quality differences between suppliers, would normally affect import and export prices, one would expect the disruptions to volume and quality caused by the PSA outbreak to have an additional impact on prices. The evidence on this from three major markets is mixed. The chart below shows average monthly prices of United States imports of fresh kiwifruit for the most recent three calendar years, 2011, 2012 and 2013.

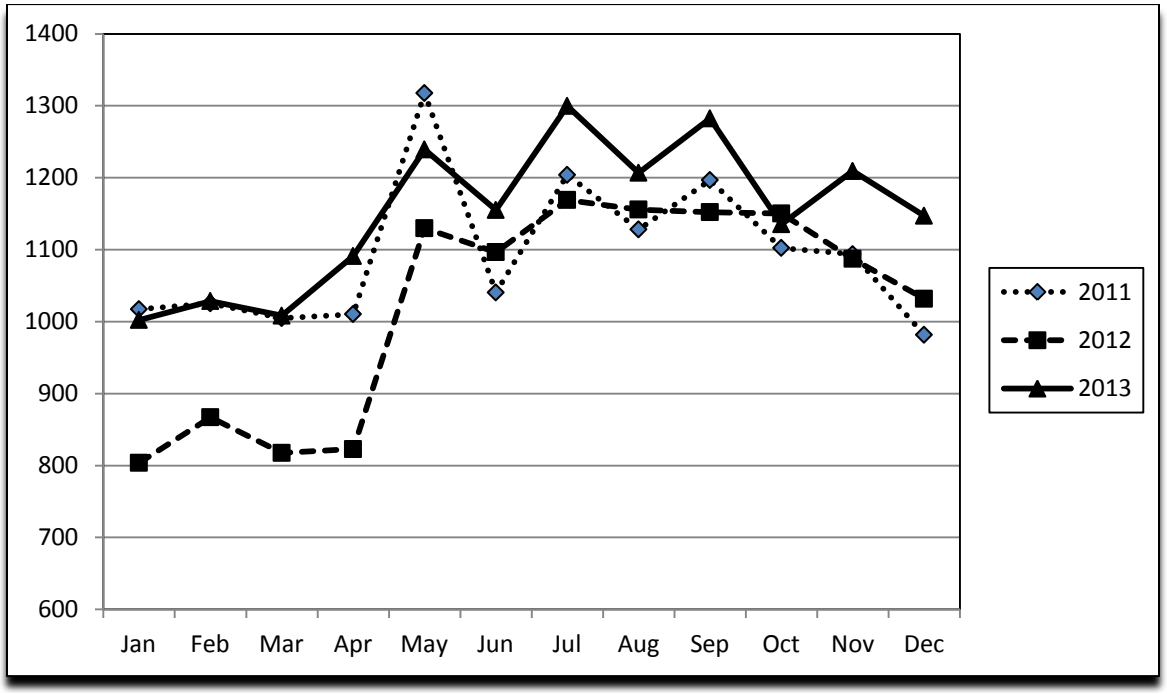
United States: Average Monthly Prices of All Fresh Kiwifruit Imports, 2011, 2012 and 2013
(US$ per metric ton)



Average import prices for 2012 fluctuated more than average import prices for 2011, but the annual average of $1,144.55 per metric ton was only 4.4 percent above that for 2011. However, beginning in November 2012, import prices moved sharply above the levels in each month of the previous year, and stayed substantially above those levels throughout 2013. The annual average import price for 2013 was $1,453.73 per metric ton, 27 percent above the 2012 average, while import volume was down only 2.6 percent. This suggests that shortages due to PSA had given exporters of fresh kiwifruit greater bargaining power in negotiating prices with U.S. importers.

EU-28: Average Monthly Prices of All Fresh Kiwifruit Imports, 2011, 2012 and 2013

(Euros per metric ton)

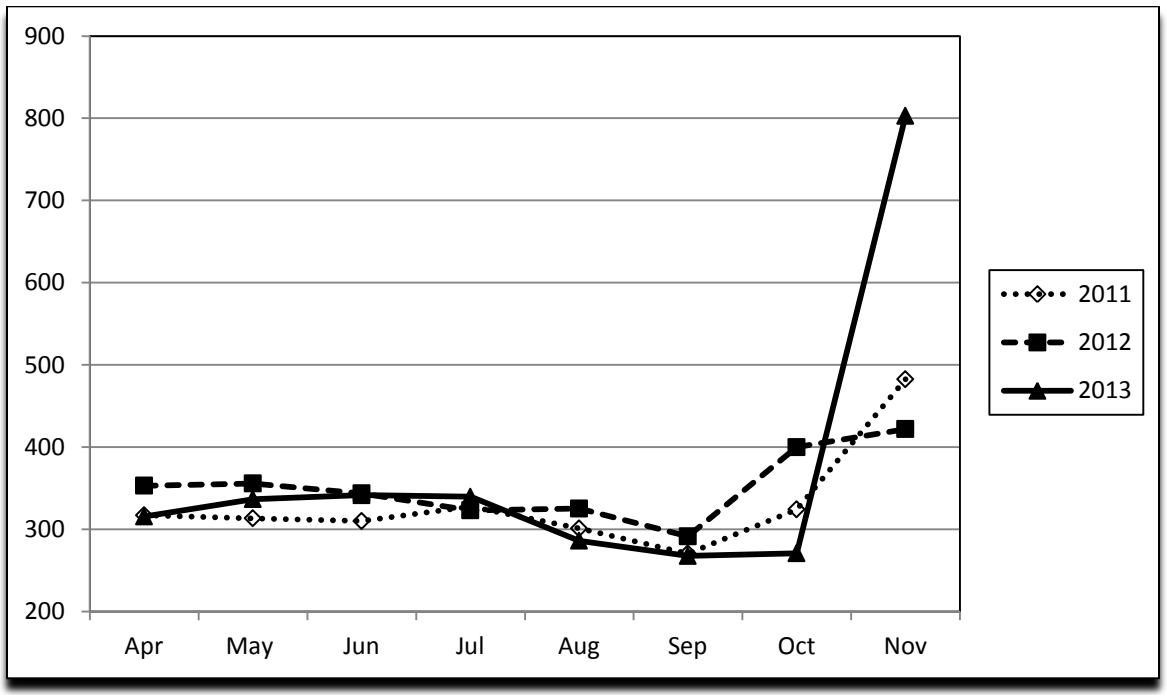


A similar analysis for the EU-28 did not show as distinct differences between years as did the chart for the U.S. Indeed, monthly prices in 2012 were below those for 2011 between January and May, and were very similar for the rest of 2012. However, in 2013, monthly prices were generally higher than in either 2011 or 2012. Average annual import price in 2013, of 1,151.07 euros per metric ton, was 11.2 percent higher than in 2012.

The differences between the EU-28 and the U.S. experience may reflect the greater importance of European imports in the EU-28. In general, European suppliers have not been as severely affected by PSA as have their Southern Hemisphere counterparts. European prices are affected particularly by the supplies available from Italy.

Imports of fresh kiwifruit by Japan continue to be dominated by New Zealand, with Chile and the United States having very small shares. The chart below shows average Japanese import prices of all fresh kiwifruit for April through November, for the same three recent years. In contrast to the experience in both the United States and the EU-28, average import prices in 2013 were lower than in 2011 and 2012 for the months of August, September and October, even though annual shipments were 8 percent below the 2012 level and 11 percent below the 2011 level. Since Japan was a heavy importer of the higher-priced golden kiwifruit from New Zealand, the lower price may reflect the increased share of green and other cultivars from New Zealand in Japanese imports in 2013.

Japan: Average Monthly Prices of All Fresh Kiwifruit Imports, April - November, 2011, 2012 and 2013
(1,000 yen per metric ton)



Influence of Cultivar on Kiwifruit Prices

The most complete time series on prices of different cultivars is available from New Zealand's Zespri™ organization. To qualify to use the premier labels of that organization, kiwifruit must meet demanding quality criteria. Qualifying Hayward are sold under the Zespri™ Green label, Hayward grown organically are sold under the Zespri™ Green Organic label, and Hort 16A are sold under the Zespri™ Gold label. A recent addition has been the G9 gold cultivar, currently sold under the Sungold label. The table below shows orchard gate returns for these four cultivars between 2001-02 and 2013-14.

New Zealand: Orchard Gate Return, by Product, 2001-2014
(NZ$ per tray)

Season	Zespri™ Green (Hayward)	Zespri™ Green Organic	Zespri™ Gold (Hort 16A)	Gold 3 (New)
2001-02	4.51	5.51	4.96	n.a.
2002-03	5.65	7.58	6.59	n.a.
2003-04	6.35	8.68	7.26	n.a.
2004-05	4.32	6.05	5.50	n.a.
2005-06	3.47	5.34	5.48	n.a.
Average 2001-06	4.24	6.63	5.96	n.a.
2006-07	4.09	6.54	5.18	n.a.
2007-08	3.11	5.32	4.45	n.a.
2008-09	3.68	6.26	5.41	n.a.
2009-10	3.70	5.67	7.73	n.a.
2010-11	4.21	6.07	8.89	n.a.
Average 2006-11	3.76	5.97	6.33	n.a.
2011-12	3.80	5.53	7.66	n.a.
2012-13	4.33	6.30	10.06	n.a.
2013-14 Prelim	5.01	6.65	12.39	9.50

While returns for the different cultivars have tended to move in similar directions from year to year, the premium received by Zespri™ Gold has increased over time relative to returns for Zespri™ Green. In contrast, the premium for Zespri™ Green Organic over Zespri™ Green has narrowed. Organic producers have complained that the current premium does not adequately compensate them for the lower yields and increased costs of organic production. Orchard gate returns for all three have increased in 2012-13 and 2013-14 as production has fallen. It is still too early to evaluate the trend in returns for G9.

Influence of Other Quality Factors on Kiwifruit Prices

The Zespri™ organization has also been able to use its single point of entry into world export markets to differentiate within cultivars on the basis of quality attributes and market acceptability. It provides New Zealand producers with a wide range of incentives to encourage them to qualify their products for the most lucrative pools, those earning the right to use the Zespri™ brand. These incentives have been adjusted over time to meet the Zespri™ organization's international marketing goals. The actual grower payments per tray, including incentives, are shown in the table below for recent seasons.

New Zealand: Returns from Kiwifruit Exports , 2001-13

(volume, million trays, and Grower Payments [1], NZ$ per tray)

Product	Unit	2001-03 Average	2004-06 Average	2007-09 Average	2010-13 Average	2012-13 Annual	2013-14 Annual p
Zespri™ Green	Trays (m)	50.7	61.4	73.3	73.8	70.4	65.5
	NZ$/tray	8.04	7.04	6.91	7.53	7.68	
Zespri™ Green Organic	Trays (m)	2,4	2.6	3.1	3.3	3.2	2.5
	NZ$/tray	9.75	8.73	8.94	9.16	9.07	
Zespri™ Gold	Trays (m)	7.3	15.6	22.5	25.2	24.6	7.0
	NZ$/tray	10.38	9.50	10.40	13.12	14.42	
Kiwi Green	Trays (m)	1.9	1.5	1.0	1.6	1.1	1.0
	NZ$/tray	5.51	5.01	4.31	4.20	3.77	
Kiwi Green Organic	Trays (m)	0.1	0.1	0.1	0.0	n.a.	0.0
	NZ$/tray	6.74	6.14	5.45	n.a.	4.81	
Kiwi Gold	Trays (m)	0.7	0.2	0.2	0.6	0.8	0.5
	NZ$/tray	4.19	4.99	5.54	6.73	7.33	
Non-standard	Trays (m)	1.4	1.0	0.5	1.2	0.9	0.5
	NZ$/tray	4.45	4.60	5.27	7.59	7.64	
Green 14	Trays (m)	n.a.	n.a.	n.a.	0.0	0.4	1.0
	NZ$/tray	n.a.	n.a.	n.a.	n.a.	n.a.	
Sungold [2]	Trays (m)	n.a.	n.a.	n.a.	n.a.	1.0	9.0
	NZ$/tray	n.a.	n.a.	n.a.	n.a.	n.a.	
Total All Pools	Trays (m)	64.5	82.4	100.0	104.6	102.9	87.0
	NZ$/tray	8.19	.84	7.69	8.87	9.32	

[1] Total fruit and service payments, including loyalty payments.

[2] Includes Gold3 and Gold9 cultivars.

n.a. = not applicable.

The results show a similar relationship between the three Zespri™ branded products shown on the previous page. They also show the strong premiums enjoyed by products bearing the Zespri™ brand product over those bearing the Kiwi brand and over non-standard products. All these relationships are likely to be shaken up in the future as the Zespri™ organization expands commercialization of new products.

Wholesale Market Prices in 2013

Although their influence has been waning as more and more retailers attempt to buy directly from producers, or from exclusive, tied buying agents, wholesale markets continue to play an important role in providing price signals to buyers and sellers of fresh produce, including fresh kiwifruit. Wholesale markets provide information on a wide array of transactions that direct buyers and sellers can use as a guide and as an early warning system of unusual supply situations in any district or product. In addition, large retailers continue to use wholesale markets to "top up" supplies when an unexpected shortage occurs. Thus, wholesale markets provide a real (if imperfect) barometer of produce price trends.

Monthly data for the year 2013 are presented on the three following pages for five important wholesale markets in North America and Europe, including New York, Rotterdam, Paris, Montreal and Toronto. All five markets handle fresh kiwifruit on a year-round basis from major Northern and Southern Hemisphere suppliers. The prices quoted here are the "mostly", or average prices by origin, pack type and size around the middle of each month. Almost all of the quotes are for the Hayward variety. Market reporters only provide prices for items that are of normal quality, and are sold in sufficient quantity to establish a representative price without divulging the price for any individual transaction. We further eliminated pack types that are not supplied consistently to any wholesale market. The pack types quoted in each wholesale market reflect the preferences of the buyers and sellers in that market. However, there appears to be a certain arbitrariness in the pack types that are traditionally popular in different markets.

In general, prices from Northern Hemisphere suppliers in 2013 were modestly above those for the previous two calendar years, while prices from Southern Hemisphere suppliers were substantially higher. This confirms the changes found in import prices in North America and Europe, reported earlier in this chapter.

New York: Wholesale Prices of Fresh Kiwifruit, 2013
(mid-month prices, US$, selected packs)

Origin & Pack	Size	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1 layer packs													
Italy	25		8.00										
	27	8.50	9.50	9.50	9.50							10.00	10.00
	33												
	36	9.00	8.50	8.50	8.50							9.00	9.00
	39												
Chile	27					11.00	8.50	8.50	8.50	9.50			
	33												
	36					10.00	8.00	8.00	8.00	9.50			
9kg Cont Loose													
California	25	21.00										23.00	
	27											23.00	
	30	21.00										23.00	
	33	19.00										19.00	
	36	19.00											
	39	19.00											
Italy	23											21.50	
	25	22.00	18.00		23.50						22.00	21.50	21.00
	27	21.50	18.00	21.00	23.50						22.00	21.50	21.00
	30	21.00	19.00	21.00	23.00						21.00	21.50	21.00
	33	21.00	19.00	20.00	21.00						22.00	18.50	20.00
	36	19.00	18.00	18.00	20.50						22.00	18.50	19.00
	39	16.00	18.00	18.00	20.50							18.50	18.00
Chile	23						19.00			22.00			
	25				23.00	24.00	19.00		17.00	22.00	22.00		
	27				21.00	24.00	19.00	17.50	17.00		22.00		
	30				23.00	24.00	17.50	17.50	17.50	24.00			
	33				20.00	24.00	17.50	17.50	16.50	23.00	22.00		
	36					23.50	17.50	16.50	16.50	22.00	22.00		
	39					23.00	16.00	16.50	15.00				
New Zealand	27							28.00	28.00	28.00			
Hayward	30							28.00	28.00	28.00			
	33							28.00	27.00	26.00		28.00	
	36								26.00	26.00			
	39									26.00			
New Zealand	20											28.00	
Yellow Kiwifruit													
	33								27.00				

There was very limited overlap between Northern Hemisphere and Southern Hemisphere quotes in New York, Rotterdam, Paris or Toronto, but considerable overlap in Montreal. The most extensive price quotes were available for the New York and Rotterdam markets. The most common pack types were large containers of 9 or 10 kilograms and single layer trays of 3.0 to 3.2 kilograms.

Rotterdam: Wholesale Prices of Fresh Kiwifruit, 2013

(mid-month prices, US$, selected packs)

Origin & Pack	Size	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3 kg containers													
France	27												8.20
Italy	25	4.01	5.55	5.53	6.53								
	27	5.35	5.55	5.53	6.53								
	30	5.02	5.21	4.88	6.53								
	33	4.68	4.88	4.88									
	36	4.35	4.56	4.55	6.20								
Greece	23			5.85	5.87							5.72	5.81
	25											5.38	5.47
	27		5.01									5.22	5.13
	30											4.88	4.79
	33											4.37	4.44
Chile	30							7.87					
	33							7.87					
10 kg Cont Loose													
France	27	19.40	19.37	18.86									19.83
	30	18.06											
	33	16.72	16.70	16.26									18.46
	36	15.38	15.37	14.96									
	39	16.05		13.66									
Greece	23	16.05	15.37								16.41	16.82	15.72
	25	15.38	13.34	15.61	15.01							15.82	15.04
	27	14.71	13.34	14.31								14.81	15.04
	30	13.05	11.70									13.97	13.67
	33											13.80	14.02
	36											13.63	
	39												
	42										16.41		
Italy	25	15.05	14.36	15.28								17.50	17.77
	27	15.38	15.20	15.77	17.62						17.78	16.82	17.09
	30	14.88	14.87	14.63	16.97						17.78	15.48	16.41
	33	14.76	14.27	14.47	15.67						17.10	14.80	15.90
	36	14.53	13.70	14.31	15.14							14.80	14.36
	39	13.95	13.37	13.50	15.01						15.04	13.46	13.67
	42	13.55	13.03	13.01	13.87						14.36	13.12	13.33
Chile	23				18.93	18.45	19.04	17.50		19.28	16.76		
	25				18.93	18.45	19.06	18.03		18.95	16.74		
	27				18.93	18.04	18.40	17.50		18.27	16.76		
	30				18.93	17.72	18.40	17.18		17.26	15.04		
	33				18.27	17.39	17.73	16.85		17.26			
	36				18.27	17.07	18.01	16.72		16.92	16.41		
	39					16.91	18.01	16.72		16.91	16.07		
	42							16.72		16.07	15.39		

Italy and Chile were the most prominent suppliers in the markets studied, with quotes for a broad spectrum of fruit sizes. California supplies were reported only

for the New York market. Greece was a prominent supplier to the Paris, Rotterdam and Montreal markets. New Zealand supplies were noted in the New York and Paris markets. Absence of quotes does not indicate absence of those suppliers, just that the quality and/or volume did not meet market reporter requirements. Finally, quotes for Paris were per kilogram, whereas those for all other markets were by pack type.

Toronto/Montreal: Wholesale Prices of Fresh Kiwifruit, 2013

(mid-month prices, US$, selected packs)

Origin & Pack	Size	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Toronto, 10 kg													
Italy	25	22.93	22.32	22.07	22.61	27.08	26.51	29.26	24.65	27.17	27.05		
	27	22.93	22.32	22.32	22.07	27.08	26.51	29.26	24.65	27.17	27.05	23.02	23.12
Chile	27											23.97	23.60
Montreal, 9kg													
Italy	25	22.52	21.92	21.68	22.58	28.77	25.51					22.44	24.54
	27	22.52	21.92	21.68	22.58	28.77	25.51					22.44	24.54
Greece	39	15.55	13.85	13.70	13.66	13.54	13.75	13.43	13.59	13.57	13.53		
	42	15.55	13.85	13.70	13.66	13.54	13.75	13.43	13.59	13.57	13.53		
Chile	25						25.50	21.19	22.81	24.46	25.60		
	27						25.50	21.19	22.81	24.46	25.60		

Paris: Wholesale Prices of Fresh Kiwifruit, 2013

(mid-month prices per kilogram, US$, selected packs)

Origin & Pack	Size	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
10 kg cont loose													
France	27	2.27	2.29	2.20	2.22	2.21							
	30	2.14	2.02	1.81	1.83	1.95							
	33	1.74	1.75	1.56	1.56	1.69							
Greece	30	1.46	1.41	1.36	1.43								
Italy	30		1.48	1.43	1.50	1.82							
New Zealand	36						2.68	2.74	2.79	2.80			
5.6 kg containers													
New Zealand	30								3.66	3.66			
	33							3.59	3.66	3.66			

As in previous years, there was a pecking order among countries in the general level of prices. New Zealand product consistently earned a substantial premium over competing products. Prices for kiwifruit from Italy and Chile tended to be quite similar. Kiwifruit from France tended to gain a substantial premium over those from Italy, which, in turn, held a substantial price advantage over kiwifruit from Greece.

As usual, prices were generally higher for larger sizes of kiwifruit, although very large sizes, such as size 23s, occasionally were quoted at lower prices than size 25s. In some markets, prices were uniform for sizes close together, such as 25s and 27s or 39s and 42s.

As noted for 2012, the range of packs reported on wholesale markets in 2013 was heavily dominated by traditional pack types and sizes. This suggests that the flurry of experimentation with new packaging seen in recent years has abated somewhat as the industry grapples with reduced supplies due to PSA and unfavorable weather. One can expect innovation in packaging to resume once supplies again begin to outrun demand.

5. Analyzing Demand for Fresh Kiwifruit

Kiwifruit Demand in Changing Times

The environment in which fresh kiwifruit is marketed has changed in a number of dramatic ways in the last few years. The first major shock to the system was the financial crisis of 2008, that led to severe recessions in many countries. Those recessions led to significant changes in consumer behavior, in the strategies of major food retailers, and in the policies of national governments and international governmental organizations.

Consumers in many countries lost their jobs, their incomes or their pensions. Many saw a rapid decline in the value of assets such as housing and stocks. Many were also saddled with debt that had been accumulated during the years prior to 2008 when credit was plentiful and cheap for housing, durable goods, travel and other luxury goods and services. During the subsequent credit crunch, banks and other financial institutions became more reluctant to lend, and placed more stringent standards on loans that they did make. Many consumers and households began a process of deleveraging, that is, reducing their outstanding debt. That, in turn, reduced consumer demand even further, precipitating further slowing of business and further job losses.

To offset deleveraging by consumers, many governments in 2009 and 2010 embarked on unprecedented stimulus programs, under which governments became more leveraged, with rising amounts of debt, in order to offset the reduced spending by individuals. However, many governments had entered the Great Recession with large amounts of debt already on their balance sheets. Gradually, fear that ever-increasing government debt could become unsustainable, caused some governments (such as the United Kingdom) to end their stimulus programs while others, such as the United States and China, continued theirs. The proportion of government debt to Gross Domestic Product has reached 100 percent or more in many major economies. Two costs are involved in servicing any debt, namely, the return of principal expected by the lender, and the rate of interest charged. Thus, for example, if the lender wants 10 percent of the principal returned each year, and charges 5 percent interest, annual debt service would amount to 15 percent of the loan value.

In the United States, not only did the federal government mount a massive spending program, but the U.S. central bank, the Federal Reserve Board, deliberately held interest rates at very low levels, and bought trillions of dollars in mortgage-backed securities (so called "quantitative easing") in an effort to stimulate greater economic activity. The long-term benefits of quantitative easing have been questioned by many independent economists. In addition, there is no precedent for what might happen to the U.S. economy as the Federal Reserve Board attempts to reverse quantitative easing.

In many cases, governments borrowed for much shorter terms, and at much higher interest rates, than would appear prudent. A classic example occurred in 2010 when Greece was unable to service its debt. Either lenders would have to write off some of their loans, or Greece would need emergency funds to allow it to continue to service its debts. To avoid wider calamity in Europe, the troika of the International Monetary Fund, the European Union and the European Central Bank patched together a rescue package. However, among the conditions for the bailout were severe cuts in Greece's public expenditures, reduction of public sector wages, increases in charges for public services, and sales of public assets held by the Greek government. Reluctantly, and with much procrastination, Greece was forced to accept the austerity policy dictated by the troika.

Since Greece was a member of the European Monetary Union with the euro as its currency, lenders worried about the solvency of other heavily-indebted euro zone members like Portugal, Ireland, Italy and Spain. There was even concern about the survival of the euro itself. That concern was only alleviated when a new president of the European Central Bank, Mario Draghi, in 2012 promised to do "whatever it takes" to protect the euro. Two years on, in early 2014, with European economies still sluggish, and the threat of deflation on the horizon, it appeared that the European Central Bank might imitate the U.S. Federal Reserve Board with even lower interest rates and its own quantitative easing program.

The debate over the relative effectiveness of austerity policies or of stimulus programs rages on without any clear resolution. In Japan, Prime Minister Shinzo Abe in 2013 attempted a mix of austerity and stimulus (so called "Abenomics") that appeared to have some temporary successes. However, his proposed tax increase in April 2014 mirrors a similar tax increase in April 1997 that sabotaged a previous Japanese economic recovery.

In the early days of the Great Recession in 2008 and 2009, consumers across all income groups cut spending, either because they were personally suffering financial distress, or because they feared that they were vulnerable to similar distress. Consumers moved to trim their standard of living. They began to patronize retailers that they would formerly have spurned. The biggest beneficiaries were retail outlets that offered low prices, such as limited-assortment stores like Aldi and Lidl, club stores like Costco, or discounters like Walmart. However, in general, higher income consumers suffered least from losses of jobs or incomes, and saw the value of their assets recover fastest. By 2012, analysts were reporting an increasing bifurcation between high-income and low-income consumers, with the former continuing to gain income and wealth, and the latter continuing to lose ground.

This bifurcation continued to affect the fortunes of different types of retailers. Limited-assortment stores continued to gain ground against the massive supercenters. Competing outlets like dollar stores and drug stores began to offer a small selection of food items at lower prices in order to attract shoppers for their general merchandise. Supercenters serving lower-income consumers felt the pinch in another way. For example, Walmart reported declines in its business as many of its clientele ran out of money between paychecks. At the same time, retailers that targeted higher-income consumers, such as Whole Foods and Waitrose, saw sales surge. In general, while low-end and high-end retailers flourished, mid-market, grocery retailers were squeezed. Even giants like Tesco and Carrefour struggled to maintain market share. Others, such as Supervalu and Safeway attempted to merge into larger entities in order to survive.

The increasing intensity of competition between food retailers has put new pressures on produce suppliers. There has been a renewed interest among major retailers in cutting costs and increasing efficiencies in the global produce supply system. One popular policy, pursued with different levels of zeal by different retailers, has been cutting out intermediaries and buying directly from producers. In practice, most produce items are not ready for sale directly from the farm or orchard. Items like kiwifruit need sophisticated storage, sorting, packing and marketing services in order to be in saleable form to distant buyers. Thus, most producers consign their output to larger storage companies, packers or marketers that can capture economies of scale in preparing the product for sale.

Considerable tensions have developed between retailers and these major intermediaries, and among the intermediaries themselves. For example, many retailers have shown a preference for working with intermediaries in producing districts that either grow, store or pack the produce to generate a marketable product. They have sought to bypass intermediaries that are more heavily involved in wholesaling, distribution, exporting or importing. The latter intermediaries have been attempting to increase their presence in producing districts, either through partnerships or outright acquisitions of operations there. Complicating the issue is the fact that these intermediaries often already overlap in the functions they perform. Some intermediaries that are heavily associated with a single producing district also have operations in other districts or countries, while some intermediaries that are heavily involved in distribution have occasional ownership stakes in specific producing districts. In addition, not all retailers follow the same procurement strategies. In particular, smaller retailers are still willing to rely on intermediaries for most of their supplies.

Another trend that has affected retail demand is the pressure on retailers to "buy local". Activist groups claim that buying produce locally reduces the carbon emissions that contribute to global warming, and also provides an extra stimulus to the local economy in times of recession. While both these claims are dubious, they have had sufficient popular appeal to affect the buying practices of both retailers and consumers. In most countries, since there are little or no local supplies of fresh kiwifruit, buying local would imply substituting other fruits that are grown locally for fresh kiwifruit. However, there is little evidence that consumers rationalize such substitutions. In countries where there is domestic production of kiwifruit, buying local would imply substituting domestic product for import product. However, there is also little evidence that such substitution is any more common than it was in the past. Price, size, quality and promotion continue to dominate consumer decisions on which kiwifruit to buy.

Many of the market forces that have emerged in recent years are difficult to quantify. For example, it is difficult to measure how successful major retailers have been in squeezing costs out of the supply chain. Nor is there a comprehensive data set available that would allow one to link the emergence of these forces to changes in demand for fresh kiwifruit. In the rest of this chapter, we attempt to examine the effect of these forces by looking at various measures of kiwifruit demand.

World Demand for Fresh Kiwifruit

Since so much of world kiwifruit production is exported to international markets, a logical place to begin examination of trends in fresh kiwifruit demand is at the global import level. In the past, most imports of fresh kiwifruit went to rich developed countries. Most of these countries have also been members of the so called "rich man's club", the Organization of Economic Cooperation and Development, better known by its initials, OECD.

Since 2012, the World Kiwifruit Review has presented an analysis of OECD demand for fresh kiwifruit imports. This has been updated for the current edition to include annual data from 1984 to 2011. The results are as follows:

OECD per capita quantity imported = 183.3514 - 0.230 Deflated import price
(2.590)* (8.094)*

+ 3.7766 OECD Income per capita $R^2 = 0.967$
(13.201)*

Both prices and incomes were measured in U.S. dollars, adjusted for inflation. The regression explained a very high proportion (almost 97 percent) of the variation in per capita quantity of imports of fresh kiwifruit. An asterisk indicates significance at the 95 percent level. On average a 10 percent change in deflated import price was associated with about a 5 percent change in per capita imports in the opposite direction. This indicates that rising prices were not a major deterrent to increased imports. In addition, a 10 percent increase in OECD incomes per capita was associated with a greater than 12 percent increase in per capita quantity imported. Real per capita income in the OECD rose by 159 percent between 1984 and 2011, while OECD population rose by 25 percent. Deflated average prices fell by almost two-thirds. Together, these forces would have given a tremendous boost to demand for fresh kiwifruit over more than a quarter of a century.

Examination of the data for the years between 2008 and 2011 indicate that the value of world imports of fresh kiwifruit in real terms shrank by over 12 percent at the depth of the Great Recession in 2009. There was a slight recovery in 2010, but it was not until 2011 that the real value of kiwifruit imports again exceeded the 2008 level.

However, the OECD countries have become less dominant in the importing of fresh kiwifruit. It is estimated that in 2011, they accounted for about 75 percent of all world imports. The rising importance of non-OECD countries in the world economy has led to new economic groupings such as the G-20 that have tended to overshadow the OECD. In addition, exporters have been more aggressively seeking additional markets, especially in Asia.

Accordingly, beginning in 2013, we looked at a similar relationship for world per capita quantity of fresh kiwifruit imported for the years from 1993 to 2011. The results were as follows:

World per capita quantity imported = - 102.871 - 0.01836 Deflated import price
(3.557)* (1.301)

+ 0.03905 World GDP per capita $R^2 = 0.928$
(13.937)*

The equation again explained a high proportion (almost 93 percent) of the variation in world per capita quantity of imported fresh kiwifruit. The income variable, world GDP per capita, was strongly significant. However, the effect of deflated prices was negative as expected, but was not highly significant statistically.

The results indicate that on average a 10 percent increase in price was associated with a reduction in per capita imports of less than 2 percent, whereas a 10 percent increase in world GDP per capita was associated with an almost 20 percent increase in per capita imports. This suggests that the average price level has not been as powerful a factor in influencing fresh kiwifruit imports as has been the growth in world affluence. Indeed, the average deflated price in 2011 was almost identical to the average price in 1993, while GDP per capita had risen by 43 percent and world population by over 25 percent.

We also examined the world import data for evidence of the effect of the Great Recession on world per capita imports of fresh kiwifruit. As in the case of the OECD, the real value of world imports fell by 11 percent between 2008 and 2009, recovered slightly in 2010, and exceeded the 2008 level by over 4 percent in 2011. The Great Recession disrupted, but did not derail world trade in fresh kiwifruit.

The regression results indicate that world demand for fresh kiwifruit has been on a strong positive trend. While the Great Recession affected demand for several years, there is every reason to expect that global demand will resume when global economic growth resumes. A Belrose, Inc. publication in 2013 called "Asian Import Demand for Apples, Pears, Sweet Cherries and Kiwifruit" attempted to quantify demand for fresh kiwifruit in 16 countries in Northeast Asia, Southeast Asia and South Asia.

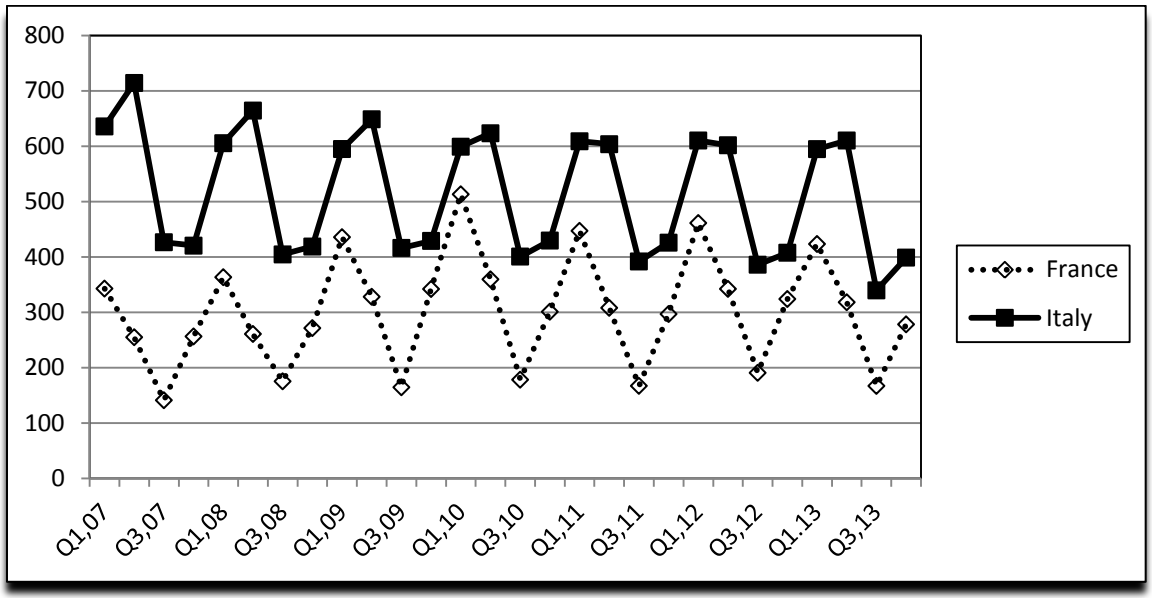
For a number of poorer Asian countries, there was not sufficient historical data to develop quantitative forecasting models for fresh kiwifruit. However, imports of fresh kiwifruit responded to increases in per capita income quite strongly in China, Taiwan, South Korea and Taiwan. Imports to Japan were expected to remain high, but not increase much, because Japan's per capita income is already high and growing slowly, and its population is aging and beginning to decrease. As long as economic growth continues in Asia, demand for fresh kiwifruit imports is likely to continue to increase. In every country except China, there are no competing domestic supplies of fresh kiwifruit.

Retail Demand in Western Europe

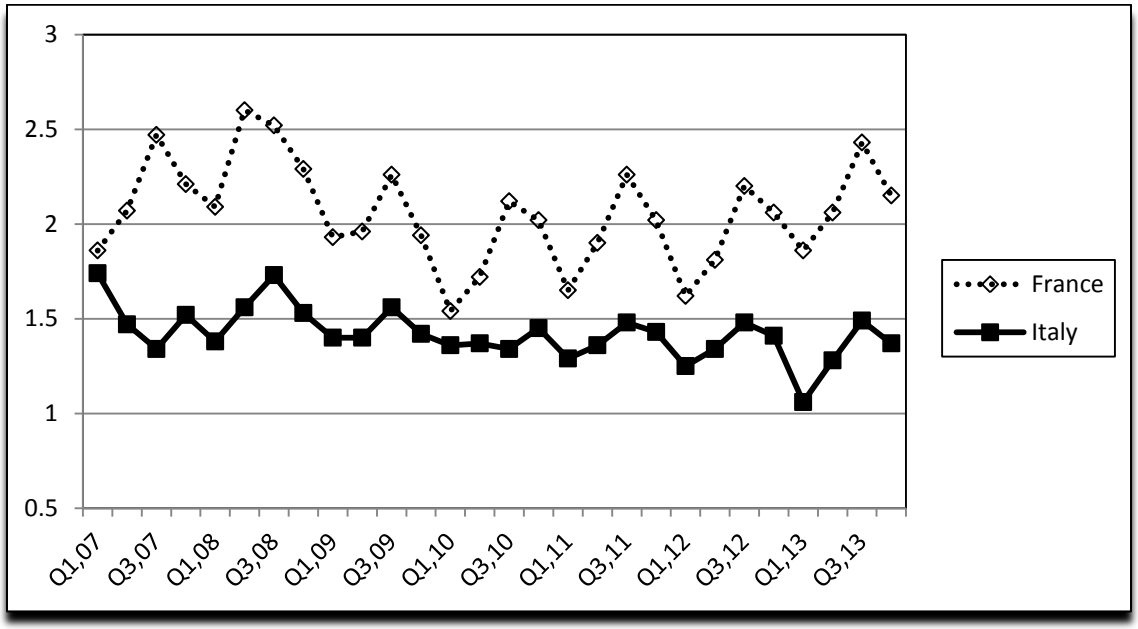
As previously noted, the countries of Western Europe have consistently been the earliest and most widespread adopters of the habit of consuming fresh kiwifruit. They still account for a very large share of all fresh kiwifruit consumption. Accordingly, it is important to understand demand trends in those countries. However, long-term audit data on sales by major retailers are available only for France and Italy. These major retailers are believed to account for only about 70 percent of total consumption in both countries.

The first chart on the next page shows the reported per capita quarterly sales of fresh kiwifruit in large retail stores in France and Italy for the years from 2007 to 2013 that include the period of the Great Recession. In general, per capita consumption in Italy ran about 50 percent higher than in France. While both followed similar seasonal variations, with highs in winter, and lows in summer, the variation between seasons was much higher in France. Per capita consumption was relatively flat over the period in Italy. In contrast, it trended upward in France until 2010, and then gradually declined thereafter.

France and Italy: Quarterly Sales per Capita of Fresh Kiwifruit in Large Retail Stores, 2007-2013
(grams per capita)



France and Italy: Estimated Quarterly Retail Prices of Fresh Kiwifruit in Large Retail Stores, 2007-2013
(Deflated euros per kilogram)



In the case of deflated retail prices per kilogram (bottom chart on the previous page), prices in France were consistently higher than those in Italy. They also tended to be more variable between seasons in France. Prices were strongest in both countries between 2007 and 2009. They strengthened again in France in 2012 and 2013, but weakened in Italy.

To investigate shifts in per capita sales and prices in recent seasons, we compared average quarterly data for France and Italy for the four calendar years before the Great Recession, 2004-2007, for the years 2008-2009 that included the worst of the Great Recession, and for the subsequent two years, 2012 and 2013, that included some recovery. For France, per capita retail sales, both quarterly and annually, were slightly higher in 2008-11 than in 2004-07 and slightly higher again in 2012-13, except for the fourth quarter. Average prices were slightly lower in real terms on an annual basis, and in the first and second quarters of 2012-13. In the case of Italy, per capita sales on an annual basis were lowest during the 2008-11 (recession) period, notably in the first and second quarters. Surprisingly, average prices were higher in real terms in the 2008-11 period, with the only exception being the fourth quarter. Thus, the Great Recession appeared to have some impact on per capita consumption and average prices in these countries.

France and Italy: Comparisons of Retail Sales per Capita and Deflated Retail Prices for Fresh Kiwifruit,

2004-07, 2008-11 and 2012-13

Country	Period	Units	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual
France	2004-07	Grams p/c	313.8	248.6	136.1	220.1	229.6
		€/kg	1.88	2.00	2.48	2.27	2.10
	2008-11	Grams p/c	439.9	314.2	171.3	302.9	307.0
		€/kg	1.78	2.01	2.29	2.06	1.98
	2012-13	Grams p/c	442.2	330.2	178.9	301.0	313.0
		€/kg	1.73	1.93	2.31	2.10	1.96
Italy	2004-07	Grams p/c	571.5	611.7	351.4	387.4	480.1
		€/kg	1.43	1.43	1.56	1.53	1.48
	2008-11	Grams p/c	480.2	506.3	403.3	425.8	458.3
		€/kg	1.68	1.75	1.53	1.46	1.63
	2012-13	Grams p/c	602.4	605.9	362.7	403.2	493.5
		€/kg	1.15	1.31	1.48	1.39	1.31

In order to make quantitative estimates of how much retail demand for fresh kiwifruit might have changed in France and Italy, we updated previous analyses of quarterly data through the fourth quarter of 2013. This gave 80 quarterly observations for both countries. The analyses examined the effects on per capita retail sales of deflated retail price, GDP per capita, a dummy variable for the two winter quarters each year (D Winter) and a dummy variable for the quarters of recession (D Recession). The results are shown below:

France: Retail sales per capita = 184.703 - 192.129 Deflated retail price
(2.265)* (12.161)*
+77.111 GDP per capita + 38.053 D Winter + 29.315 D Recession $R^2 = 0.823$
(5.661)* (3.743)* (2.130)*

Italy: Retail sales per capita = 51.330 - 446.564 Deflated retail price
(0.223) (8.226)*
+261.4735 GDP per capita + 6.176 D Recession $R^2 = 0.569$
(4.735)* (0.233)

In general, the results were quite similar to those presented in previous editions of the World Kiwifruit Review. The equation for France explained more of the variation in retail sales per capita than that for Italy. For France, the coefficients on all the variables were significant at the 95 percent level, but only on deflated retail price and GDP per capita for Italy. The results for France conform with the expectation of higher price due to lower production for sale in Europe. Retail sales improved during the recession, as the previous table shows. Retail sales in France, but not in Italy, tended to be significantly higher in the two winter quarters.

In response to a 10 percent change in deflated retail price, per capita retail sales in France moved 17.8 percent in the opposite direction, while those in Italy moved 15.7 percent in the opposite direction. Thus, price decreases would have a strong, positive effect on retail sales. In response to a 10 percent change in GDP per capita, per capita retail sales in France moved 16.8 percent in the same direction, and those in Italy moved 24.2 percent in the same direction. Any increases in GDP per capita had a strong, positive influence on per capita retail sales. In Italy, sluggish economic growth and real price increases during the Great Recession would have had a negative effect on demand for fresh kiwifruit. In France, the effect was moderated somewhat by lower retail prices.

In the period after the Great Recession, falling prices would have offset the somewhat lackluster economic recovery in France. In Italy, the economy remained in recession through the end of 2013. Any further growth in per capita retail sales of fresh kiwifruit will be dependent on the timing and speed of future economic recovery.

Demand in the United States

In previous issues of the World Kiwifruit Review, analyses of farm level demand for kiwifruit were presented for the United States. However, due to the effects of the government shutdown in October 2013, and other budget cuts, updated data were not available as we went to press. The long-run trends in U.S. demand reported in previous issues are likely to have continued. Deflated U.S. farm prices of kiwifruit have been shown to be negatively affected by per capita supplies (domestic plus imported) and positively affected by increases in per capita incomes. The recovery after the 2008 recession appears to have been quite rapid, as was the experience with many other fresh produce items in the United States.

In a separate analysis, it was shown that the volume of domestic shipments had a greater negative effect on farm prices than the volume of imports. A 10 percent increase in domestic shipments was associated with an 8.4 percent decrease in farm prices, while a 10 percent increase in imports was associated with only a 4 percent decrease in farm prices. However, over time demand conditions appeared to be becoming more favorable. Despite these results, per capita consumption of fresh kiwifruit in the United States still appears to be far below what one might expect for a country with such a high level of per capita income.

Influence of New Cultivars on Fresh Kiwifruit Demand

For more than a decade, the prime example of the influence of new cultivars on demand for fresh kiwifruit was the Hort 16A yellow-fleshed cultivar from New Zealand. It gradually built a substantial premium over the once dominant Hayward green cultivar, but did not unduly cannibalize that cultivar's market share. Hort 16A's value to the industry was heightened by the fact that yields per hectare were substantially higher than those for the Hayward cultivar. In addition, the commercialization program managed by the Zespri™ organization included branding as Zespri™ Gold, strict quality controls and targeted promotions.

Zespri™ Gold (Hort 16A) set a very high bar for the potential contribution that new cultivars could make to the enhancement of demand for fresh kiwifruit. Indeed, it may have set an unrealistic standard. The combination of factors that helped make Zespri™ Gold such a success may be difficult to duplicate with a different cultivar under market conditions that are now different from what existed when Zespri™ Gold was being rolled out.

A number of other kiwifruit cultivars have been commercialized in the last decade, including green, yellow and red-fleshed cultivars. A number have been developed to tap early-season markets. In addition, there have been efforts to differentiate existing cultivars through trademarks or protected geographical indicators, like those permitted under EU legislation. However, none of these efforts have so far come close to the commercial success enjoyed by Hort 16A.

Because of its vulnerability to PSA, that cultivar is expected to be rapidly phased out. The Zespri™ organization believes that it can replicate Hort 16A's success with a number of yellow-fleshed replacements, curently being marketed under the Sungold label. The goal is to increase production of Sungold to 50 million trays by 2019. However, it will be a daunting task to win over a large body of consumers to Sungold, while maintaining quality control, securing a premium price and avoiding cannibalization of existing cultivars. It will be several years before we can know whether or not the Sungold gamble will pay off.

In the meantime, other agencies around the world will continue to develop new cultivars either to serve niche markets or as a potential replacement for the Hayward cultivar. While the success of these efforts is uncertain, what is certain is that new cultivars will remain key to future trends in demand for fresh kiwifruit. New cultivars will be particularly important in breathing new life into established markets like Europe and North America, where consumers have become accustomed to being offered greater variety in their fresh fruits. In newer, emerging markets, the quality and pricing of the Hayward variety will remain crucial to stimulating demand.

6. Marketing Initiatives

Real Battles Ahead

A remarkable aspect of the PSA epidemic in kiwifruit is that it has not caused concern about product quality or safety to spill over into retailer or consumer consciousness. It appears that none of the activist groups that regularly use food fears to promote their own agendas saw lobbying against a naturally-occurring bacteria as potent an agenda as lobbying against scary Mad Cow Disease or artificially created GMOs (genetically modified organisms). GMOs have the advantage of offering endless opportunities for speculating about possible future cataclysmic effects. It also helped that most of the PSA problems occurred in distant producing districts and in a relatively small, little known industry. PSA also had least effect on the cultivar, Hayward, which represented kiwifruit to most retailers and consumers around the world.

The net effect of the PSA outbreak has been similar to any other natural occurrence that might have reduced the supplies of kiwifruit. Its unusual impact was that it so severely ravaged the second most important kiwifruit cultivar, the Hort 16A. Moving forward, the challenge for the kiwifruit industry is how to compensate in the short-term for reduced supplies, especially of golden kiwifruit, and how to adapt in the long-term to renewed growth in total supplies in a market environment that continues to change rapidly, and continues to offer new challenges to all fruit marketers.

Challenges in Traditional Markets

The first challenge for kiwifruit marketers is the continued economic malaise in many of its traditionally strongest markets in Europe, North America and Japan. The Great Recession and subsequent economic aftershocks have severely damaged the purchasing power of many consumers. From the limited data available, it appears that the financial situation of higher-income consumers has recovered much more rapidly than has that of middle- and lower-income consumers. As a result, higher-income consumers are making an increasing share of the purchases of all fresh fruits, and middle- and lower-income consumers are either purchasing less fresh fruit, or ceasing fruit purchases altogether.

Governments in many jurisdictions are struggling to restore economic growth. As previously noted, there is strong disagreement over whether stimulus or austerity policies are most likely to be effective, or what mix of such policies is most appropriate in each country's specific situation. Concern over mounting national debt has limited the ability of some governments to take further remedial measures. Uncertainty about future business prospects, and controversy about future taxation policies, have led many large corporations to hoard their cash rather than invest it in job-creating enterprises. Until these various dilemmas are resolved, it will be difficult to bring middle- and lower-income consumers back into the marketplace for many items.

A related problem is the adverse demographic trends in these traditional markets. Total populations are either growing slowly, or falling, as in the case of key markets like Japan and Germany. In addition, these populations are aging rapidly, and the pace of new household formation is falling. This means that suppliers of all foods, including fresh fruits, are competing for a market that is static. In many cases, expanding sales of any fruit will only be possible by taking market share from competing fruits. At the same time, the diversity of fruits available continues to increase. Not alone are new fruits being continually introduced, but even within fruits, more and more new, or unusual, items are being added.

The fresh fruit category itself is under siege from sophisticated, well-promoted manufactured items that are seeking to capture the taste and health niches once dominated by fresh fruits. For example, dark chocolate, once condemned as a harmful indulgence, is now being promoted as a heart-healthy food that makes one's skin younger and reduces stress.

A further challenge for fruit marketers is the turmoil within the food retailing sector. Prior to the Great Recession, many retailers expanded both the number and size of outlets to capture what appeared to be a continually growing market. Many also attempted to move upscale to capture the business of more affluent consumers. The general mood of optimism about the prospects of the retailing business encouraged well-capitalized mega-chains like Walmart, Carrefour and Tesco, to enter new markets, and encouraged banks to lend to their smaller rivals for expansion. Even prior to the onset of the Great Recession, there were already signs of over-capacity in food retailing.

The Great Recession brought further changes that magnified the problem. Limited-assortment food discounters, like Aldi and Lidl, expanded rapidly to capture the patronage of consumers that had become more frugal. Additional formats, such as general merchandise stores, dollar stores and drug stores, began to add more low-priced grocery items to boost store traffic for their other merchandise. Many mainstream retailers with high fixed costs of urban sites and unionized labor struggled to survive. Many consumers became more selective in their shopping, forcing large retailers with many different formats to begin questioning their mix of small, medium and super-sized store formats. Sentiment turned towards slowing the expansion of supercenters and speeding up the addition of small to medium-sized outlets.

Prior to the Great Recession, the retail food business had been dominated for two decades by the introduction of ever larger supermarkets and supercenters. One side effect had been greater space in such stores available for the produce section, and the ability, and even need, to stock a greater diversity of produce items. If that trend halts, or goes into reverse, as now seems possible, it could mean that an ever-increasing number of produce items will be competing for a shrinking amount of shelf space. As retailers increasingly apply sophisticated computer techniques and data mining, they will be able to measure the value to them of each item stocked in terms of sales per square foot, contribution to gross margins, attractiveness to store shoppers, and links to purchases of other items. Each item of fresh kiwifruit stocked will have to prove its superior performance on such business metrics in order to retain its position in the produce aisles.

Retailers will also continue to place additional hurdles for their suppliers to surmount. In addition to meeting rigid specifications for price, quality and promotional support, suppliers will have to meet broad standards, such as GlobalGAP, and each retailer's own environmental, packaging, labeling or other standards. There are moving targets for energy efficiency, lowered carbon footprints, sustainability, etc. Additional demands for standards and certifications continue to emerge under pressure from NGOs unconcerned about costs. Governmental standards on allowable pests or pest treatments, or on permissible levels of chemical residues also continue to become more restrictive. The cumulative effect of these demands has been to favor larger suppliers that can afford the trained personnel and advanced technology needed to win clearance from different retailers and quarantine authorities in different countries.

Even size of operation is no longer sufficient protection for a supplier. In a effort to cut costs and increase efficiency in their supply chains, many retailers are now attempting to cut out middlemen and buy as directly as possible from the source of production. In this ideal world, a retailer in London would be able to buy kiwifruit from a specific orchard in a specific province in Chile, and feature the producer on its packs and in its advertisements. The ostensible goal of this exercise is that the ultimate consumer can get to know the family farmer that actually produces what they eat.

However, the real world is often different. Few producers are large enough alone to meet the needs of a major retailer. Even those operations that are large enough, are often not owned by family farmers, but are owned by corporate investors, and run by professional managers. More and more of the produce industry is organized as integrated grower-packer-marketer operations that also handle produce for independent farmers. They carry out all the functions that make a product ready for sale. In most cases, they are the first point of sale for packed, fresh produce. Retailers tend to favor buying from these first sellers rather than from the multinational distribution companies that once dominated the supply chain, causing further turmoil in the produce supply system. Thus, different categories of large firms are jostling for preferred positions in the retail food supply chains.

Another threat to traditional long-distance suppliers arises from the revived enthusiasm of many large retailers for buying their produce supplies locally. While different retailers have different definitions of local, most of the major exporters of fresh kiwifruit would not qualify. Retailers are under activist pressure to replace fruit grown at a distance with fruit grown locally. However, consumers appear reluctant to give up the wide choice of fruits (including kiwifruit) that they currently enjoy, regardless of the origin. In theory, retailers could substitute products like kiwifruit produced at a greater distance with those produced at closer sources. This would appear to put Southern Hemisphere supplies of kiwifruit at a disadvantage. However, when such supplies are most plentiful, supplies of Northern Hemisphere products are most scarce, so opportunities for substitution are limited. Even among Northern Hemisphere suppliers, retailers want the option of either buying more expensive Italian kiwifruit from close by, or buying Greek product that has a bigger carbon footprint, but is cheaper. Thus, it appears that preference for buying local may be inconsistent at best.

Challenges in Emerging Markets

The term "emerging markets" usually refers to countries that are at earlier stages of economic development than the rich countries of Europe, North America and Japan. Obvious candidates are countries like China, India and Indonesia with very large populations and relatively low, but rapidly increasing per capita incomes. However, it also includes many countries that have recently become very rich due to oil or mineral wealth, such as Bahrain or Brunei. Both types of countries have been playing catch up with developed countries in terms of road, rail, air, port, telecommunications, power systems and other infrastructure needed for a modern economy. In general, their rate of population growth and rise in per capita incomes has been much faster than in traditional economies, meaning that growth in demand for many products has been much faster.

Distribution systems in these emerging markets have also been changing very rapidly. Sales of food through neighborhood "Mom & Pop" stores and local wet markets are gradually being supplanted by western-style supermarkets run both by indigenous retail chains and by the major, western-based, multinational retail chains. That transformation is moving at different speeds in different countries. While indigenous chains continue to stress price and quality, western-based chains are gradually introducing requirements on their suppliers similar to those they have been employing in their home markets. They have not yet been able to duplicate the retail systems now standard in the west. For example, there remain many breaches in the cool chain for perishable products both in internal transportation and within the retail outlets themselves. However, the growth prospects in emerging markets have encouraged major retailers to pursue further expansion in those markets.

In general, emerging economies suffered less setbacks due to the Great Recession, and bounced back more rapidly, than did developed country economies. There was a wave of optimism among produce suppliers that import growth in emerging markets would more than compensate for any sluggishness in developed markets. However, much of the recovery in emerging markets was triggered by surging demand in China for commodities, raw materials and equipment needed to feed the Chinese manufacturing and export juggernaut. The recent slowing of China's economy has reduced demand for many inputs, and led to a slowing in the growth of many other emerging economies.

As shown in chapter 3, the global kiwifruit industry is still heavily dependent on sales in its traditional markets. Given the different expected trajectories of demand growth in traditional and emerging markets, marketers of fresh kiwifruit will need strategies that help maintain and strengthen sales in traditional markets, and nurture sales in emerging markets. Different exporting countries will need to play to their strengths in charting their specific way forward.

Thorny Path Ahead for New Zealand

The New Zealand kiwifruit industry has built one of the most valuable franchises in the fruit world for its Zespri branded products. That franchise suffered exceptional turbulence as it faced the loss of its most valuable property, Zespri Gold™. Using all the resources it could muster from within the industry, from the New Zealand government and from the global research community, it has developed a strategy for reducing the impact of PSA on current cultivars and building up alternative cultivars, under the Sungold label, that will put the industry back on a growth path. Its strategy for assuring twelve-month supplies by licensing production of key cultivars in the Northern Hemisphere has suffered a severe setback that will only be overcome if its newer cultivars prove they are adequate substitutes for Zespri Gold™.

However, the virtual monopoly that the Zespri organization enjoys in the kiwifruit industry continues to face internal and external challenges. A legal challenge to the monopoly by a major New Zealand corporation, Turners and Growers, was beaten back in the courts and soundly rejected by a vote of Zespri member growers/shareholders. Turners and Growers owns the ENZA corporation that had global rights to a number of proprietary kiwifruit cultivars which they sought to commercialize independently in New Zealand and around the world. Turners and Growers has since been taken over by a German-based corporation, Baywa, which seeks to become a major marketer of fresh fruit in Asia. More recently, the Zespri organization has been blamed for inappropriate invoicing practices that its agent in China used to reduce customs and tax liabilities. Two separate groups of entrepreneurs have proposed the development of joint ventures with Chinese companies that would finance kiwifruit production in New Zealand and buy all the resulting product. These groups have been seeking permission, so far unsuccessfully, to bypass the Zespri marketing monopoly for their products.

In addition, many of the suppliers to Zespri have become large enough to mount their own foreign marketing campaigns. Zespri represents the type of intermediary that many large retailers would like to bypass in buying more directly from producers. Zespri argues that a single, united New Zealand marketing effort is in a better position to negotiate terms with major retailers than would smaller, competing New Zealand marketers. In addition, Zespri has the economies of scale and the expertise to meet the escalating demands of retailers for ever higher standards. Ironically, at a time when Zespri was planning to devote most of its energies to a recovery strategy for New Zealand kiwifruit industry, it is having to divert time to diverse challenges to its unique position of power in the industry.

Much of Zespri's power and influence in the New Zealand kiwifruit industry will rest on its ability to duplicate the success of Zespri Gold™ with its new cultivars. It has set a very high standard against which its future efforts will be judged. It will be attempting the feat in markets that are not growing as robustly as they were during the roll out of Zespri Gold™. It may be facing the most severe test ever of its marketing prowess.

Chile Seeks Tighter Standards

The Chilean kiwifruit industry has so far suffered limited effects from PSA, but has been forced to divert resources to monitoring PSA outbreaks and controlling them where they occurred. Unlike New Zealand, Chile has numerous exporters of fresh kiwifruit, of different sizes, corporate structures, levels of specialization and international contacts. This has made Chile an attractive partner for many of the new cultivars being developed elsewhere. At the same time, Chilean trade officials have been very successful in reducing barriers to Chilean kiwifruit in many markets, large and small. This combination of factors has enabled Chilean exporters to pursue many different market niches around the world.

However, the decentralized nature of the Chilean kiwifruit industry has made it difficult to control the quality of fruit exported and to project a uniform image of the Chilean kiwifruit industry to the world. To tackle these twin problems, the Chilean industry set up a Chilean Kiwifruit Committee backed by the organizations of Fruit Growers (Fedefruta) and of Exporters (ASOEX). Membership is voluntary, but it includes almost all the main exporting companies and over 80 percent of

the Chilean kiwifruit exported. In the early years, most of the Committee's efforts have been devoted to establishing export quality standards, winning broad acceptance for them and helping member producers and exporters to implement them. Almost one-fifth of the industry does not yet participate in the Committee's programs.

Until the Committee can be assured of the uniform quality of Chilean product overseas, efforts to meet the second goal, of improving the perception of Chilean kiwifruit in major export markets, have necessarily been muted. The heavy emphasis on discounting in many major markets as a result of the Great Recession and its aftermath, have provided continued openings for cheaper product and worked counter to the Committee's goals. In addition, many Chilean exporters have sufficient scale to participate in the direct buying programs of major Northern Hemisphere retailers. Such retailers set their own specifications for acceptable price and quality with the goal of satisfying their particular customer base. These specifications often differ from those that the Committee would prefer.

A further obstacle has arisen in 2014 when Chile is expected to have only half of its normal crop available for world markets, so demand for scarce Chilean supplies will be strong. Under such conditions, exporters have a strong incentive to move subpar product on to world markets. It is not clear how the Committee will adapt its programs for these changed conditions.

Italy Battles Multiple Woes

The kiwifruit industry in Italy has suffered substantial damage from PSA. Two of the major kiwifruit producing regions, Lazio and Piedmont, have been hardest hit, especially among yellow-fleshed fruit. Partnerships to produce Zespri™ Gold under license from New Zealand have been decimated. The growth path of the Italian kiwifruit industry has been slowed. It will be some time before the industry will be able to recover its recent losses.

Like Chile, Italy has many different arrangements of growers, packers and marketers of fresh kiwifruit. However, unlike Chile, it also has large local or nearby markets that can be served by firms of different sizes and capabilities. As a result, the Italian kiwifruit industry has struggled for many years with inconsistent

quality standards. Over the years, numerous efforts have been made to establish more rigid standards, but monitoring and control have been difficult to achieve in the highly-fractionated industry.

A number of consortia have been developed to bring greater economies of scale and greater discipline to Italian kiwifruit marketing. Many of these consortia have merged into larger organizations. However, large retailers can still buy directly from many Italian suppliers according to the retailer's own specifications. Since the retailer's primary goal is to gain a competitive advantage over retail rivals, such buying direct does little to enhance the overall quality or uniformity of Italian fresh kiwifruit. That continues to be a work in progress.

Greece as Price Taker

The kiwifruit industry in Greece has expanded so rapidly in recent years that it has found itself normally in the role of price taker, accepting whatever price it can get in different markets to sell its total crop. That role has been exaggerated by the deep recession in the domestic Greek economy since 2010, and the relatively low per capita incomes and consumer purchasing power in many nearby markets. Some of the more progressive Greek exporters have attempted to use branding, geographical indicators and promotions to earn premium prices, but that remains a minority of the total Greek crop.

Circumscribed Role of Other European Exporters

The role of other European exporters of fresh kiwifruit, such as France, Spain and Portugal is circumscribed by the fact that major producers like Italy and Greece set the general tone of markets. France has long followed a strategy of seeking premium markets for its kiwifruit through tighter quality standards. However, the greater prevalence of discounting by European retailers since the Great Recession have made this strategy more difficult.

Spain and Portugal are both very large net importers of fresh kiwifruit. Thus, they try to tap domestic and foreign niche markets and avoid direct confrontation with products from Italy or Greece. In general, demand conditions in Europe have become less buoyant over time. This condition is likely to persist until the major European economies escape their current prolonged troubles.

China's Untapped Potential

There are many positives in China's kiwifruit industry. It has the world's largest pool of kiwifruit plant materials. It has been building up the scientific expertise to tap those resources and improve the industry across the board. It has a large, and growing domestic market, that has been able to absorb all its domestic production. In addition, it has been able to absorb increasing supplies of high-quality imports.

China's major weakness continues to be in all aspects of marketing. In a sense, the large, and growing, domestic market takes the pressure off suppliers to bring quality and presentation up to international standards. Despite numerous efforts, Chinese marketers have been unable to expand sales in export markets because of their inability to consistently meet the standards set by international rivals. However, the Chinese government and industry is aware of the challenge. They have been more willing to enter into partnerships with foreign companies to exploit China's kiwifruit resources. More such partnerships are likely in the future.

Many foreign investors in food and agricultural projects continue to shy away from such partnerships because of uncertainty about land ownership, weak protection of intellectual property rights, and lack of transparency in the Chinese justice system. The new government leadership team in China is still establishing its policies, so it may be several years before any major reforms will be put in place.

7. Strategic Issues

Restoring Productivity

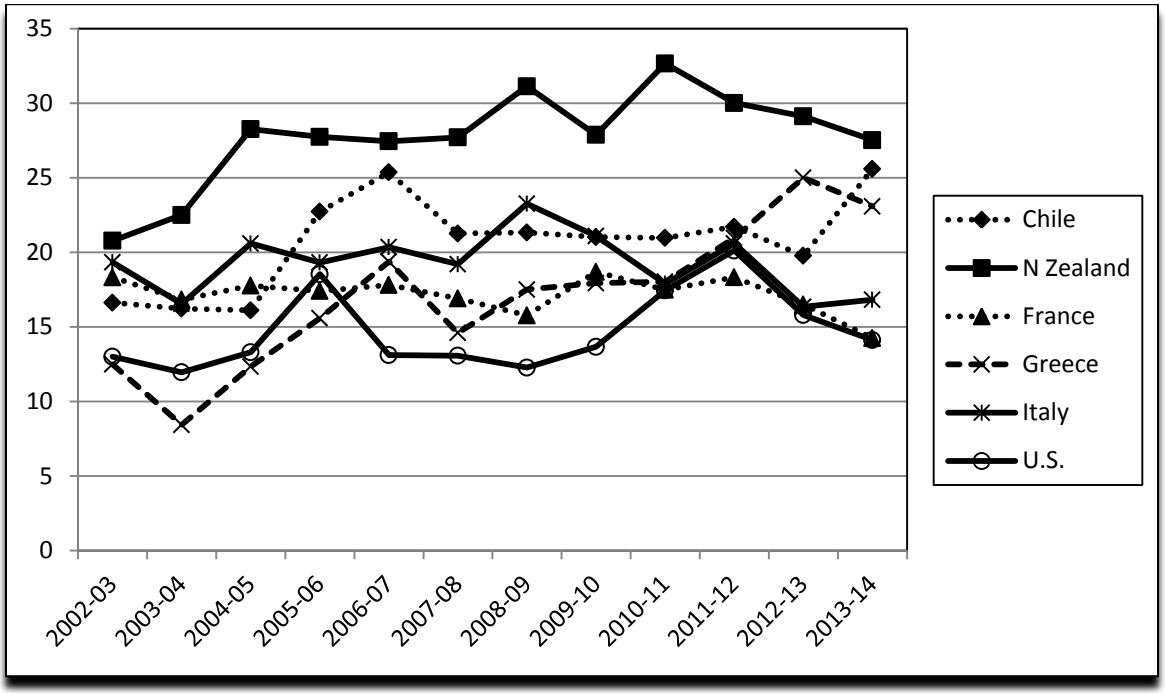
One of the consequences of PSA has been to reduce the average productivity of affected kiwifruit orchards. This has been accompanied by a rise in normal fixed costs per unit, and also brought abnormal costs associated with reducing the effects of PSA on surviving orchards. Average productivity also falls during the early years after new blocks are planted. This will be a particular problem in New Zealand where there has been extensive replacement of Hort 16A with newer Gold cultivars. Productivity in New Zealand also received a boost while plantings of Hort 16A were expanding because average yields on those plantings were much higher than on plantings of the Hayward cultivar. That could lead to additional downward pressure on productivity during the coming years of transition to newer cultivars.

Reduced output in kiwifruit orchards also affects the productivity of the entire kiwifruit supply and marketing chain. When the volume being handled falls, both suppliers of inputs to production, and providers of storage, packing, transportation and other marketing services, find it more difficult to exploit the full economies of scale for which their plant and equipment were designed. One response has been to either idle or close surplus capacity. Such capacity can be restored when the volume of production again returns to normal.

Lower productivity in the orchards can be more easily tolerated when average prices rise, as has occurred in the last year. However, restoring productivity will become more important when supplies of kiwifruit are again plentiful and when cost control becomes important in competing with other fresh fruits and manufactured snacks.

The chart on the next page shows recent trends in average yields per hectare for six of the major kiwifruit producing countries for the seasons from 2002-03 to 2013-14. The six countries are Chile, New Zealand, France, Greece, Italy and the United States. In general, average yields were increasing in the first half of the 12-year period. However, since then, yields have either stalled or declined, with the notable exception of Greece.

Selected Countries: Average Yields per Hectare, 2002-03 to 2013-14
(metric tons)



Average yields for New Zealand were consistently above those for its major competitors for most of the period. However, they fell for the last three seasons as the impact of PSA was felt. PSA was also a factor in reducing average yields for Italy during this period. Average yields in Chile have been lurching upwards as more new plantings began to mature. A similar upward movement has been apparent in the United States from a relatively flat acreage base. In the case of France, where acreage has been slowly eroding, average yields have tended to be flat. Average yields in Greece have grown strongly over the period. They were depressed earlier in the period due to adverse weather conditions, so the rate of growth may be exaggerated.

In general, the chart above shows that the major kiwifruit producing countries have been having difficulty in generating rapid increases in orchard productivity in the last decade. To remain competitive with other fruits, it will be critical to increase the value of output per hectare, for example, by increasing average fruit size, or by growing cultivars that are strongly preferred by consumers.

Bifurcation in Consumer Fortunes

One of the most worrying trends in fruit marketing has been the so-called "bifurcation" in the fortunes of consumers. While the more affluent segments of developed-country populations have recovered rapidly from the Great Recession, middle and lower income consumers have seen their fortunes turn negative. There are a number of reasons for this. Better-educated people have greater job opportunities in today's "knowledge" economy, that is increasingly dominated by new technologies. Those with ample resources have been in a better position to gain from the recovery in the value of housing and financial assets. In contrast, many of the manufacturing jobs suitable for blue collar workers, and many middle class clerical positions, have either been replaced by machines or have been outsourced to countries where labor is cheaper. This has forced many middle and lower income households to curtail their expenditures on a wide range of items. One of the biggest casualties has been purchases of fresh fruits.

In unique fresh fruits, like kiwifruit, expansion of markets has tended to follow an orderly sequence. When the fruit is a high-priced novelty, it first makes inroads among affluent consumers. As supplies become more plentiful, and prices drop, regular purchase and consumption gradually spreads down the income scale. At some point in time, when prices are affordable to most consumers, an individual fruit can become a mass market item. It is in such a manner that most minor fruits gradually become a part of the diets of most consumers. The spread in the popularity of fresh kiwifruit followed such a pattern in many developed countries.

However, if many lower income consumers are dropping out of the fresh fruit market, the normal path for expansion is placed in jeopardy. This is not necessarily a rational decision on the part of consumers. USDA studies have shown that the cost per calorie for many fresh fruits is less than what consumers would pay for junk food. In addition, fruits can claim many health benefits not present in junk foods. However, there is a widespread perception among consumers that fresh produce is expensive. The more their incomes are pinched, the more likely they are to make buying decisions based on those perceptions. Lower income shoppers with young children are more likely to overcome that perception for the sake of their children's health. However, when shoppers are purchasing for older children or adults, they are more likely to consider fresh fruit to be of less importance to their family's diet.

Many concerted efforts are being made to persuade consumers to eat more fresh produce. For example, in the United States, the Produce for Better Health organization has mounted a sequence of campaigns under slogans like "Five a Day" or "More Matters" to persuade consumers to eat more fresh fruits and vegetables. Other countries have had similar "Five a Day" or "Ten a Day" campaigns. However, none of these are geared to bridge the gap that has arisen between higher income consumers and the rest of society.

For the kiwifruit industry, as it prepares to enter a new era of expanded production, coming up with its own solutions to bridging the gap would be invaluable. Otherwise, the continued bifurcation of consumer fortunes could limit the scope that the industry has for profitable recovery.

Avoiding New Product Cannibalization

Because of PSA, the world kiwifruit industry is embarking on an unprecedented experiment in rapidly introducing a number of new cultivars. In doing so, it faces the risk that the newer products will cannibalize the market share of existing products, that is, they will simply replace existing products in the marketplace, and not add to the overall demand for fresh kiwifruit.

There are precedents for this occurring in many product categories, from computers to food to beverages. For example, the introduction of diet soft drinks took away market share from sugared soft drinks. Even within the soft drink category, the introduction of fructose sweeteners from corn syrup replaced sucrose sweeteners from sugar beet and sugar cane. In the fresh fruit category, the effect has been dramatic in the apple industry. In the last quarter century, many new apple varieties have been introduced to the market and gained wide acceptance. However, the total demand for fresh apples in many countries has either remained static or declined. The new varieties have mainly replaced the older varieties without enhancing overall demand for apples. There has also been collateral damage from this phenomenon. The more progressive producers have gained at the expense of those who have been slow to innovate. The larger, better capitalized producers have gained at the expense of smaller producers. And, the districts most suitable for production of the newer varieties have gained at the expense of other districts.

Because of unusual conditions, the kiwifruit industry has not yet had to deal with this phenomenon. The most successful new cultivar, Hort 16A, has not cannibalized the market share of the mainstream Hayward cultivar in any measureable way, but rather has added to the overall demand for kiwifruit. None of the other new cultivars that have been introduced have reached the critical mass where they might become a threat to the Hayward cultivar. However, there is a real danger that some of the new cultivars that are presently being commercialized could begin to cannibalize the market share of existing cultivars.

The kiwifruit industry needs to be aware of this inherent risk in introducing new cultivars. The problem can be partly avoided by careful market testing of new cultivars before they are introduced, and choosing those cultivars that appear most likely to add to the customer base for kiwifruit. However, such pre-testing is not foolproof. So, when a new cultivar is introduced, even though the industry will need to spend relatively more on marketing and promoting that cultivar during the early stages of commercialization, it will be equally important to maintain a robust marketing and promotion campaign for existing cultivars to ensure that they do not lose their appeal to retailers and consumers.

Innovation will remain an important weapon in helping kiwifruit compete against other fruits and manufactured snacks. However, the kiwifruit industry needs to be aware of, and take steps to mitigate, the negative aspects of innovation.

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