Name _____

St Paul's
COLLEGIATE SCHOOL

Year 13 Agricultural and Horticultural Science

AS 91530

Demonstrate understanding of how market forces affect supply of & demand for New Zealand primary products

Version 3

External Assessment

5 Credits

CITRUS
NEW ZEALAND

Achievement Standard

Subject Reference	Agricultural and Horticultural Science 3.3				
Title	Demonstrate understanding of how market forces affect supply of and demand for New Zealand primary products				
Level	3	**Level**	3	**Level**	3
Subfield	Science				
Domain	Agricultural and Horticultural Science				
Status	Registered	**Status**		Registered	
Review date	31 December 2020	**Planned review date**		31 December 2020	

This achievement standard involves demonstrating understanding of how market forces affect supply of & demand for New Zealand primary products.

Achievement Criteria

Achievement	Achievement with Merit	Achievement with Excellence
• Demonstrate understanding of how market forces affect supply of & demand for NZ primary products.	• Demonstrate in-depth understanding of how market forces affect supply of & demand for NZ primary products.	• Demonstrate comprehensive understanding of how market forces affect supply of & demand for NZ primary products.

Explanatory Notes

1 This achievement standard is aligned with *The NZ Curriculum*, Learning Media, Ministry of Education, 2007, & based on the outcomes in the *Teaching & Learning Guide for Agricultural & Horticultural Science*, Ministry of Education, 2011 at http://seniorsecondary.tki.org.nz/.

2 *Demonstrate understanding* involves explaining how market forces affect supply of and demand for New Zealand primary products.

Demonstrate in-depth understanding involves explaining in detail how market forces affect supply & demand for NZ primary products. The detailed explanation includes quantitative data.

Demonstrate comprehensive understanding involves analysing how market forces affect supply & demand for NZ primary products. The analysis focuses on the significance & impact of the market forces selected.

3 *New Zealand primary products* are primary industry products that either earn significant export revenue in unprocessed or processed form, or allow for self-sufficiency within New Zealand.

4 *Market forces* are factors internal and external to New Zealand that impact on supply and demand. *Market forces* may include: seasonality, quantity available, quality requirements, reliability of supply, prices, market manipulations, promotion, market trends, consumer preference, political intervention, phytosanitary regulations, exchange rate, weather events, production costs.

MARKET FORCES

Specific Learning Outcomes:
At the end of this topic you should be able to:

1. Analyse the concept of a market
   - Define a market
   - Analyse market types
   - List a range of products & bi-products for a primary product

2. Analyse the effects of market forces on the supply of a primary product
   - Define supply
   - Explain the general factors affecting supply
   - Explain the market forces affecting supply
   - Construct & recognise simple supply trend patterns

3. Analyse the effects of market forces on the demand of a primary product
   - Define demand
   - Explain the market forces affecting demand
   - Construct & recognise simple demand trend patterns

4. Evaluate interactions between market forces operating on a primary product & its market
   Evaluate & compare the effects of market manipulation on supply through:
   - Political intervention
   - Grower organisations

5. Explain the effect of market trends on primary production

6. Link aspects of production to aspects of marketing

SUPPLY & DEMAND FOR PRIMARY PRODUCTS IN NEW ZEALAND

WHAT IS A MARKET?

Definition of a market: all the buyers & potential buyers of a product who profess some level of interest in it & who can afford it.

THE EFFECTS OF MARKET FORCES ON THE *SUPPLY* OF A PRIMARY PRODUCT

Definition of market forces: Forces of **demand & supply** representing the aggregate influence of **buyers** & **sellers** on price & **quantity** of the goods & services offered in a **market**. In general, excess-demand causes **prices** & **quantity** of **supply** to rise, & excess supply causes **prices** to fall.

Market forces could include: seasonality, quantity available, quality requirements, reliability of supply, prices, market manipulations, promotion, market trends, consumer preference, political intervention, exchange rate.

Market opportunities for Satsuma Mandarins

Local New Zealand Market
This is a **commodity** local market.
The following supermarkets - Pak'n'Save, New World, Countdown, & Woolworths / Foodtown run by Food Stuffs NZ & Progressive Enterprises are the major buyers of local NZ Satsuma mandarins. The local market can absorb approximately 600 tonnes of fruit per week before becoming saturated.

Preferred features of the fruit include:

- Large size – 65mm diameter
- Easy peel, skin removal in one or two pieces
- Brix acid ratio 7:1.2
- Cumulative blemishes 0.75cm^2 (medium) 1cm^2 Large
- Defect tolerances (shape, maturity, skin defects – colour, blemishes) 5% Tag 1 - 15% Tag 2.

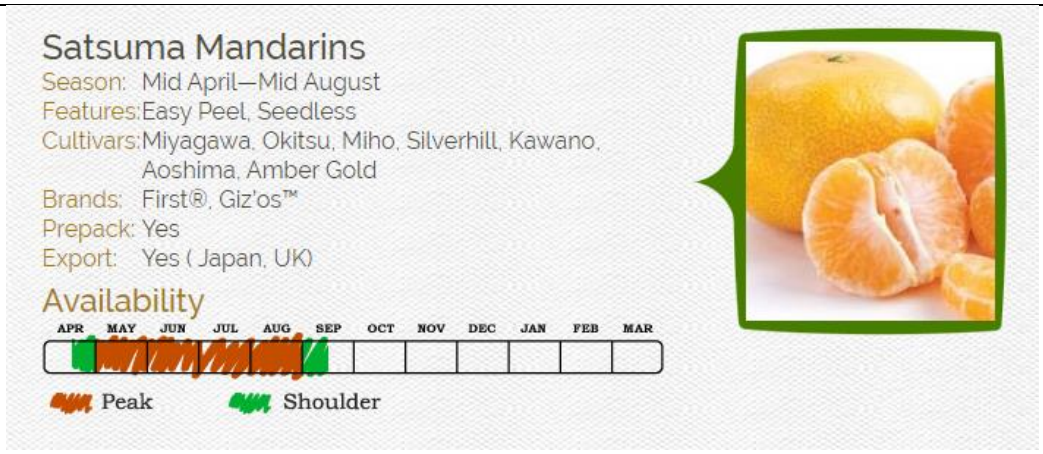
During the period of April/ May which is the export market window, all small, high grade fruit are picked & exported. All rejects are placed on the local market. Retail prices at this time tend to be low - $4.00/kg. On the shoulders of the season in March prices can reach $6.00 & in July August between $5 & $6/kg.

Export Market to Japan
This is a high end, high returns niche market. Export volumes total 6- 700 tonnes over the season, with a peak at 180 tonnes per week during early May.

Preferred features of the fruit include:

- Small size – 55-63mm diameter
- Brix acid ratio 10:1
- Easy peel, yet tight skin, removal in more than 4 pieces
- Cumulative blemishes – 0.5 cm^2
- Defect tolerances 2%

The market window is only open April – May as Japan produces its own mandarins during the rest of the year. This window & market opportunity is only there because the fruit is perishable & can only be stored for 3 weeks at 8°C. Since fruit on the Japanese market are expected to have a shelf life of two weeks this only allows a week for storage.



Exercise: *Describe TWO market opportunities for Satsuma Mandarins:*

a) Opportunity 1: The local market - where mandarins are sold & what features are required

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b) Opportunity 2: The export market - Japan - costs money to transport so cost more to buy there, what features do you think they need in comparison with the local market?

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c) Explain how these market opportunities are different from one another:

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Market opportunities for Zespri Kiwifruit

More than a third (34%) of the export revenue is attributable to kiwifruit at $1.86 billion. The kiwifruit sector had a strong season in 2019/20 with forecast export revenue of $2.3 billion for the year ending March 2020. A 0.5% rise in revenue on slightly reduced volume brings average export growth since 2015 to around 20% per year. This follows a 35% increase in the 2018/19 season, which was driven by increases in both yields and prices. Zespri has confirmed another tranche of kiwifruit variety license releases in 2020, including 750 hectares of Gold3 and 150 hectares of the newly commercialised red variety (Red19), indicating that the industry is well placed to grow these high value market segments.

Zespri® SunGold kiwifruit has proven popular in key export markets. It now accounts for around 40% of the crop. Kiwifruit has a total operating revenue from global kiwifruit sales & licence release exceeding $3 billion for the first time in 2019 & it continues to grow. Zespri sells consistently high-quality, great-tasting, premium kiwifruit in more than 50 countries around the world.

The Asian markets of China (including Hong Kong), Korea, Japan & Taiwan are all showing an increased demand. Japan continues to be the premium revenue-generating market. There is a significant growth in China as a market. ZESPRI® GOLD has a higher Brix (13 & above) than ZESPRI® GREEN (7-11) which appeals to the sweeter Asian palate. A sweeter tasting green variety called Sweet Green appeals to the expanding Asian market & is increasing in volumes in this market. South East Asia is another area where the potential for considerable & rapid growth. In the past year alone, GREEN & GOLD volumes have grown significantly.
Europe is the core region for ZESPRI® GREEN Kiwifruit selling about 60 percent of the crop. In Europe, ZESPRI® GREEN has, on average, a two point Brix advantage over competitor fruit meaning NZ fruit is noticeably sweeter tasting. Europe has showed an increase in volumes with Germany, The Netherlands & Spain being were the main recipients in this region. Other markets such as the UK show resistance to newer varieties. A strong performance in North America is driven by the earlier supply of fruit & developing retail programmes.

Exercise: *Describe TWO market opportunities for Zespri kiwifruit:*

a) Opportunity one:

b) Opportunity two:

c) Explain how these market opportunities are different from one another:

MARKET FORCES AFFECTING SUPPLY

Market forces affecting supply include:

1. Length of production
2. Climate
3. Weather Events
4. Seasonality
5. Reliability of supply
6. Quantity supplied
7. Quality supplied
8. Prices received by the grower
9. Production costs
10. Technological improvements

1. Length of production

The ***longer*** the period of supply & storage the easier it is to:

- Plan to supply when prices are high
- Take advantage of shortages & avoid gluts
- Be less susceptible to fickle weather conditions

Exercise: *Compare the length of production cycles & storage potential for mandarins, kiwifruit & your own product.*

Mandarins

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Kiwifruit

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2. Climate

The climate of an area determines the primary products that can be successfully grown there. Climate includes the environmental or physical factors of wind, frost, temperature, rainfall, humidity, sunshine (light) hours, air, and soil found in an area. Some plants are dependent on certain climatic conditions to produce a good quality crop.

The climate of a production site:

(a) Determines crop & site selection:

- Where it can be grown in NZ

- Aspect of site (sunny/ sheltered) impacts on timing & meeting market windows
- If shelter is required

(b) Affects crop production:

- Sunshine - Fruit ripening – brix levels
- Temperatures – Growing degree days available
- Frost – need for winter chilling &/or frost susceptibility of the crop
- Water supply – need for irrigation or irrigation control

For some products, they can only be supplied to meet the market if the environment is manipulated to provide optimum productivity of the product.

Exercise: *Describe the climate or environment required to provide optimum supply for Satsuma mandarins & kiwifruit.*

Satsuma mandarins

Kiwifruit

3. Weather Events.

Weather events are weather conditions that are not normal for a particular season. Examples are drought, above or below normal temperatures, out-of-season frosts or heavy snowfalls. These can affect the timing of production, crop physiology or production for both local and overseas out-of-season markets. Bad weather conditions are likely to reduce supply. Good weather conditions are likely to increase supply. Bad weather in a local area may affect individual farmers and reduce their supply without significantly affecting the total supply for the country. However, if unseasonal conditions are widespread, total supply for the country will be affected.

Exercise: *Research what weather events have had an impact on either kiwifruit or mandarins in New Zealand?*

4. Seasonality

The variation in ***seasons*** affects:

- ***Timing of production***:

Growers plan the ***production process*** by developing a **Calendar of Operations**

This is drawn up by:

(a) Setting the time of **harvest** to meet market demand
(b) Listing the **management practices** needed to produce a quality product to meet market demand
(c) Determining the **time** that these practices have to be used to ensure that the required **volume** of high **quality** product is ready at the **time** of harvest & demands

- ***Crop physiology***

The seasons dictate the ***biological cycles*** of crops: e.g.

- Leaf fall
- Flower initiation & production
- Fruit development
- Fruit ripening

These cycles impact on ***production timing.***

- ***Out of season production – Seasonal advantage***

Consumers demand fresh kiwifruit 12 months of the year; however, even with the use of cold storage, kiwifruit can only be supplied from New Zealand for 8 months of the year. *Zespri* has identified that in order to future proof, they need to be able to supply kiwifruit during the four months that kiwifruit is unavailable here in New Zealand.
New Zealand is located in the Southern Hemisphere, which has opposite growing seasons to the Northern Hemisphere. Often this gives New Zealand a seasonal advantage. If the seasonality of New Zealand crop production is managed well, crops can be produced to meet the lucrative Northern Hemisphere 'between markets' window – i.e. where the Northern Hemisphere crop has either finished or has not started; the New Zealand crop can fill this market space.

Example: Mandarins - New Zealand supplies mandarins to Japan between April and May before the start of the Japanese mandarin season, which starts in June. Once Japanese mandarins hit the market, there is no demand for New Zealand mandarins and New Zealand's supply ceases.

Example: Kiwifruit - Northern Hemisphere growers are contracted to grow New Zealand crop varieties when it is the New Zealand off-season to ensure continuous supply of freshly picked products in New Zealand throughout the year. See next section on Reliability of Supply for further details.

Exercise: *Explain how seasonality affects the supply of NZ Satsuma mandarins to Japan.*

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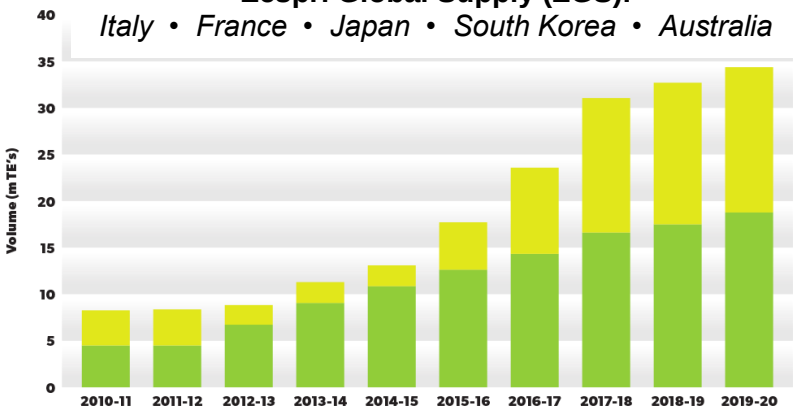
5. Reliability of supply

Zespri Global Supply (ZGS).

Italy • France • Japan • South Korea • Australia



Production of kiwifruit in NZ is seasonal with Gold being produced from April to September & Green May to November. To maintain market share in an increasingly competitive market, NZ is producing fresh fruit all the year round by growing kiwifruit in offshore partnerships in Northern Hemisphere countries such as Italy, Iberia, Greece, France, South Korea, & Japan & also Australia in the Southern Hemisphere under Zespri quality standards. During 2018/19, Zespri Global Supply sales reached 18.4m trays, up from 15.4m trays in 2017/18.

Sales of kiwifruit from Zespri's Northern Hemisphere supplying locations grew, driven mainly by SunGold vines coming into production in Italy. SunGold is produced in South Korea, Japan, Italy, Iberia & France. There is 1,040 North Hemisphere growers with 1,103 hectares of SunGold producing 10.1m trays of kiwifruit. Greece & Italy supply Green kiwifruit with 8.1m trays.

Non-NZ supply through the Zespri Global Supply business is a source of Zespri's competitive advantage & a key part of Zespri's "category management" work stream. Non-NZ supply is poised for strong growth in the five-year planning horizon, driven predominately by Gold3 recovery in Italy, & Zespri's ability to procure Zespri Green from Italy to meet rising global demand.

Zespri Global Supply Statistics 2018/19

Region	Trays supplied ('000)	Percentage of supply	Producing hectares[1]	Number of orchards[1]
Australia	18	0.0%	7	2
France	420	0.2%	143	53
Greece	504	0.3%	–	–
Iberia	44	0.0%	8	6
Italy	16,869	9.8%	1,608	598
Japan	163	0.1%	64	428
South Korea	521	0.3%	84	254
New Zealand	154,058	89.3%	12,747	3,201

Zespri are especially looking to increase the volume of Gold kiwifruit to meet the increasing demand & move into new markets with this product. Zespri Gold has a shorter storage life of four months than six months of Zespri Green & thus growing the variety off shore ensures high quality fruit available for a longer period. Zespri Gold is being grown in seven countries to meet the 12-month demand.

Exercise: *What impact does Zespri's contract with Northern Hemisphere growers have on the year round supply of kiwifruit?*

6. Quantity supplied

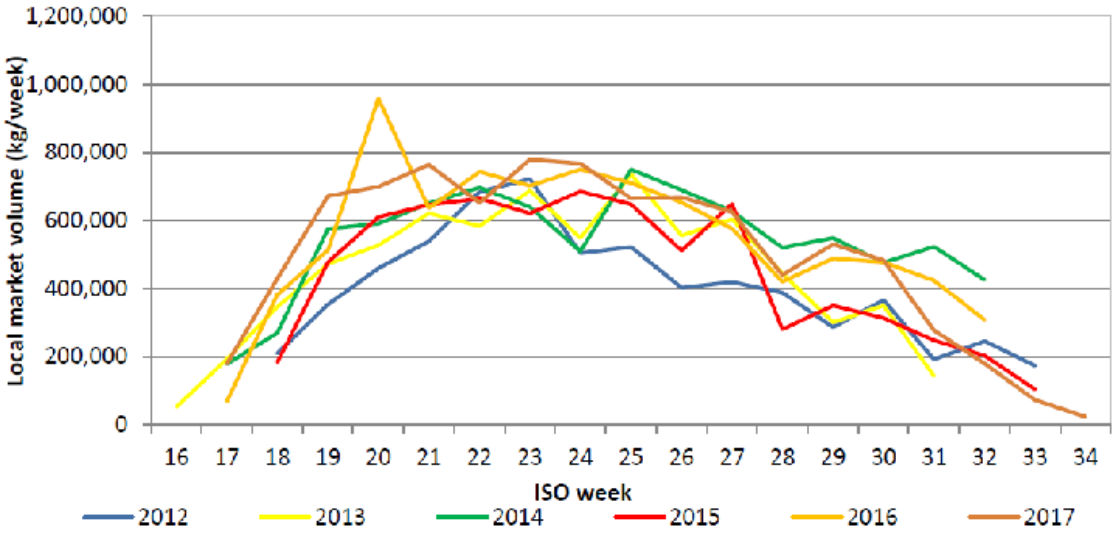
Sufficient ***quantity*** has to be supplied to meet ***market demand*** especially for ***export*** markets.
Retailers demand guaranteed volumes, of high **quality** product over a ***specific period.***
Growers must plan to meet this demand by:

- _____
- _____

Mandarins

Local Volume.

Satsuma mandarin local market volumes (kg/week) over the 2012 to 2017 seasons.



A comparison of local market volumes from 2012 to 2017 is shown above. The 2017 peak weekly volume of 779 tonnes is far less than the 2016 peak of 958 tonnes but more in line with the trends shown in previous seasons.
Total local production for 2017 (8,903 tonnes) was comparable to the 2016 season at 8,809 tonnes. The average local production per week during the 2017 season was 495 tonnes.
The average local volume over the survey period was 495 tonnes per week. The peak volume entering the local market was just over 779 tonnes in ISO week 23 (week 7 of the season). This was closely followed by 763 and 767 tonnes in ISO weeks 21 and 24 respectively.
Northland's total local market crop was 4,258 tonnes while the Gisborne / BOP crop was slightly higher at 4,645 tonnes. Proportionally, 48% of the crop came from Northland and 52% from Gisborne, compared with 42% Northland and 58% Gisborne/BOP in 2016.

For the 2018 season, the average local volume was 548 tonnes per week. The peak volume entering the local market was just over 1,000 tonnes at the start of the season in ISO week 18. Volumes then decreased to between 489 - 796 tonnes from ISO weeks 19 to 30, then tailed off towards the end of the season (Figure 3). Northland's total local market crop was 3,706 tonnes while Gisborne / BOP was higher at 5,614 tonnes. Proportionally, 40% of the crop came from Northland and 60% from Gisborne. Compared with 48% Northland and 52% Gisborne/BOP in 2017, but similar to 2016 with 42% from Northland and 58% Gisborne/BOP.

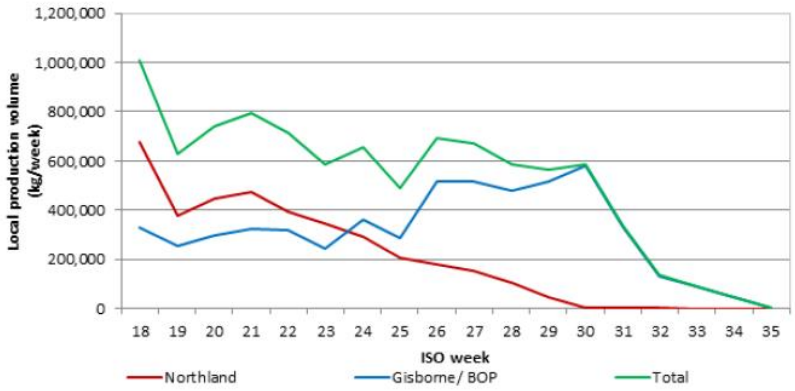
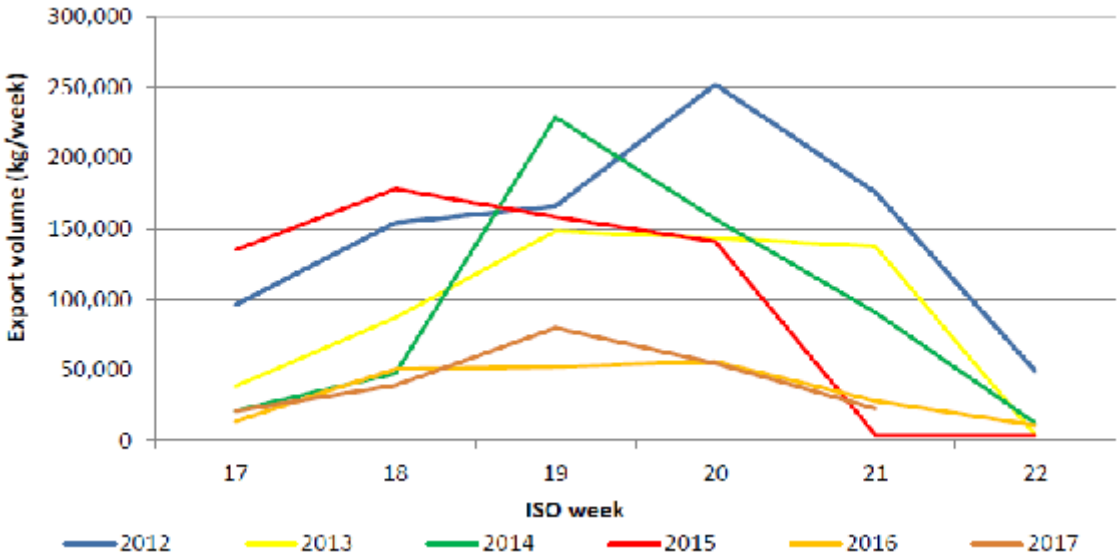


Figure 3: Satsuma weekly local market volumes (kg/week) for Northland and Gisborne/ BOP over the 2018 season.

Export Volume.

Satsuma mandarin export volumes (kg/week) for the 2012 to 2017 seasons.



A comparison of export volume is shown in Figure 7. In 2017, export volumes peaked in week 19 at 80 tonnes. This season's export volume was 5.5 tonnes more than last year's. This year the total export was 218 tonnes (representing 2.4% of the total production – a slight decrease against the 3% represented in 2016). This is very similar to the 2016 season export volume of 212 tonnes but still well below the 620 tonnes exported in 2015. This was because the Northland season started later and export demand in Japan decreased.
The major export market was Japan (with 92% of the volume going to this market) with the other 8% going to the Pacific Islands.
All exports were from Northland as was the case in 2016 and 2015. The reason Gisborne does not tend to export satsuma mandarins is that fruit quality and size profile from this region does not tend meet export requirements and there is only a very narrow window to export fruit to Japan.

Export volumes totalled 212 tonnes over the 2016 season. This was a decrease of 408 tonnes when compared to the 2015 season export volume of 620 tonnes. This was because the season in Northland started later & fruit quality in the bulk of the crop did not meet export quality requirements. In 2016, the total export was 212 tonnes (representing around 2% of the total production – a decrease of 6% from the 2015 export volumes of 8% of total production). In 2016, total export volumes peaked in week 20 at 56 tonnes.
The major export market was Japan (with 93% of the volume going to this market) with the other 7% going to the Pacific Islands. In the 2015 season, only 1% of export volume went

to markets other than Japan. 91% of the export volume was shifted offshore at the start of the season during April & May 2016.
100% of export was reported from Northland (Gisborne export volumes were nil this season) as was the case in 2015. The reason for the nil export from Gisborne was that fruit quality & size profile did not meet export demand & there is only a very narrow window for export to Japan. Gisborne fruit did not reach the export brix requirements due to a very wet summer & a larger size profile than normal (which is very unusual & not commonly seen in most seasons).

Total Production for the 2017 season.
This season's mandarin production (monitored over 18 weeks) totalled 9,121 tonnes. This is very similar to (100 tonnes more) as in the 2016 production of 9,021 tonnes (monitored over 16 weeks).

Value of the 2017 Satsuma mandarin industry.
Based on the $2.33/kg weighted average (for local fruit) and a local production of 8,903 tonnes, this estimates a domestic Satsuma mandarin industry value of ~$20.8m (which is virtually the same as the estimated $20m in 2016).

Comparison of volume from 2013 to 2018.
The cumulative total Satsuma production over each season from 2013 to 2018 is shown below.

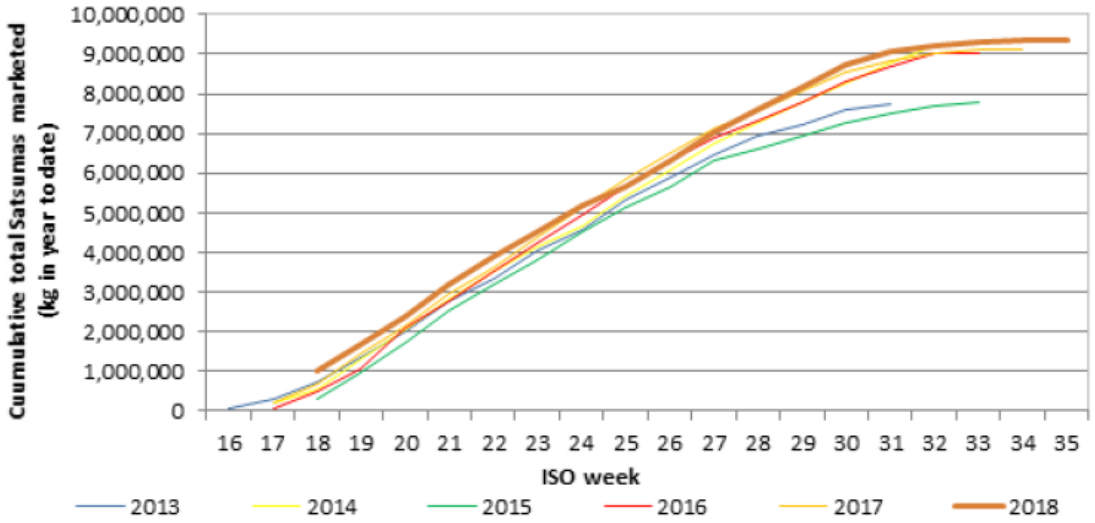


Figure 4: Satsuma mandarin cumulative total volumes (kg) for the 2013 - 2018 seasons.

Total Production for the 2018 season.
This season's mandarin production was monitored for 18 weeks and totalled 9,351 tonnes. This is 230 tonnes more than in 2017 (9,121 tonnes).

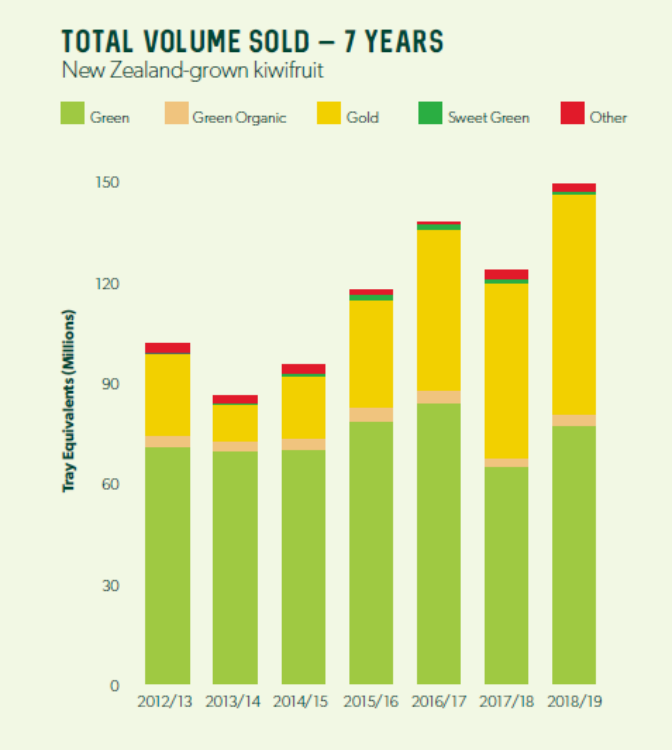
Value of the Satsuma mandarin industry.
Based on $2.30/kg weighted average (for local fruit) and a local production of 9,321 tonnes, this estimates a domestic Satsuma mandarin industry value of ~$21.4m (similar to $20.8m in 2017).

Kiwifruit:

Export Volume (New Zealand grown) million trays sold – 2007 to 2019

07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19
92.4	100	98.6	98.1	109.1	101.3	86.1	95.2	117.0	137.7	123.2	148.8

The number of trays exported has increased since 2008 from increased new planting becoming productive as well as improved management practices such as vine training & girdling. This is a direct result of the increasing demand from existing markets such as Japan & new market opportunities such as Korea & Taiwan. Worldwide consumer demand for high quality kiwifruit is increasing as more evidence becomes available on the health benefits of kiwifruit.



2008 export volumes were up 12% on the 2007 crop due to slightly greater bearing area & higher than normal yield/ha due to good pollination.

2009 export volumes reached 100m trays, an 8% growth as a result of increased production/ha due to good crop management & despite hail damage in some areas.

2010/11 volumes were slightly down with Zespri Green trays falling to 69.9m from 71.9m, Zespri Green Organic unchanged at 3.3m, & Zespri Gold trays down to 21.1m from 22m. The results were good considering the challenges facing kiwifruit growers. The industry, however, was benefiting from strong growth in Asian markets. Factors impacting on kiwifruit production & sales were; a stuttering economic recovery, rising oil prices, seasonal challenges, the impact of Psa on Zespri's orchards in Italy, and the confirmation of Psa in NZ orchards.

In 2012, there was an increase in production. Reasons for this increase were; an increase in world population & thus markets, rising middle class able to buy fruit across Asia, India, Brazil & Russia, and an increase in focus on healthy eating. Despite continued economic pressure on consumers around the world, demand for premium-branded Zespri Kiwifruit remained strong. A dry summer in 2012/13 delivered smaller-profile, high-taste fruit that was well received around the world.

2013/14 was the year Psa had the biggest impact on the NZ kiwifruit industry. Gold volumes were down 55% from 24.6m trays in 2012/13 to 11m trays. With the majority of Hort16A (old Gold) growers grafted over to Gold3 & a significant number of growers also chose to graft from Green to Gold3, there is now more than 4,000 hectares of this variety in the ground. Green volumes were almost unchanged at 68.9m trays in 2013/14, slightly down from 70.4m trays the previous year, with Organic Green volumes unchanged at 3.1m trays.

The 2014/15 season was extraordinary due to the shortage of Chilean kiwifruit in the market following a severe frost. This shortage meant a strong season for Zespri Kiwifruit. Zespri delivered a strong season against the backdrop of a worldwide economy still struggling to gain momentum, as many high-income countries continued to grapple with

the legacies of the global financial crisis (GFC), while growth in emerging economies was trending lower than in the past.

Zespri achieved a record production during 2015/16 due to the exceptional yield achieved by Green growers caused by favourable weather conditions. Average productivity was 11,048 trays per hectare. NZ kiwifruit growers have responded to the challenge of growing in a Psa environment by improving orchard management practices. SunGold's performance in the markets was very positive. The largest ever volume was sold in excellent time with positive customer & consumer feedback & achieved a return for the Gold pool of $8.21 per tray – well above the early season forecast.

Zespri sold more fruit faster than ever before during the 2016/17 season. The total volume from NZ was 137.7m trays, which is 18% above the previous year & 45% greater than two seasons ago. Sales from Zespri Global Supply also increased, by 14% to 16.6m trays, driven mainly by SunGold coming into production in Italy. Zespri sold almost double the volume of SunGold from NZ compared with 2015/16.

The reduction in volume for the 2017/18 season was driven by a sharp fall in Green supply from the exceptionally high yields of 2016/17. Despite a 27% decline in average yields for Green to 8,937 trays per-hectare, Zespri delivered an excellent sales result supported by good quality & low rates of onshore fruit loss. Sales volume for the total Gold category rose by 9% to 52.1m trays. Sales volumes through Zespri Global Supply (ZGS), critical in enabling Zespri to serve consumers with premium kiwifruit 12 months of the year, fell by 7%. Supply of Green was reduced because of a very damaging frost in Italy. However, SunGold sales increased to more than offset the fall in volume, with ZGS recording total sales revenue of $264m, up from $217m in 2016/17.

In the 2018-2019 season, total sales volumes reached 167.2m trays, a 21% increase on the 138.6m trays sold in the previous season. This has been another strong year for Zespri with continued growth in their largest markets including Japan, China and Spain, & in newer areas like the United States.

Forecast volume growth by category, forecast supply volumes to 2025

Exercise:

1. *Draw a seasonal supply sketch graph for volumes of Satsuma mandarin production for the export & local markets.*

2. *Draw a seasonal supply graph for volumes of Zespri Green & Zespri Gold kiwifruit. These should be simple enough to be reproduced in an exam.*

3. *Summarise the trends of these FOUR graphs in your own words to use as a part of an exam question. Remember to include values.*

7. Quality supplied

Quality is usually measured in ***grades***. This gives an indication to the ***buyer*** or ***consumer*** of the ***standard*** of the crop.

Grading Satsuma mandarins – Grade specifications

Product specification:
Cleanliness: Washed, waxed, free of all dirt
Shape: Oblate
Stem: Cut flush with fruit – no long stems

Grade standard allowances	EXPORT/Progressive	Tag 1	Tag2
Colour	Orange	5% light green flashing	<20% green flashing
Maturity: Brix	Av Brix>9.5	Av Brix>8.5	
Acid	<1.2	1.2	
Defect allowances			
***Major*:** Rots, physical, insect	NIL	NIL	NIL
Minor: Blemish, sunburn, etc.	0.5cm^2	0.5 – 1cm^2	1-2.5cm^2
Size - diameter	**Export**: 45-65mm	**Local:** 65 – 80mm	
Shelf life after arrival	**Export:** 2 weeks		

The two components in citrus juice that have the greatest influence on human taste perception are sugar levels (sweetness) & acid levels (sourness). NZ citrus can be the finest tasting in the world but picking & selling immature fruit can ruin its reputation. The industry must adhere to the fruit internal quality standards to prevent the marketing of an unacceptably sour product & loss of reputation & market share.

The quality of fruit is tested initially at the orchard before harvesting. Each consignment of fruit is subject to random testing. All fruit is checked manually & then graded through an electronically controlled grader.

Fruit is then packed, sealed & labelled with information tracing back to the grower.

Grading & quality control of Kiwifruit

Increased competition within the global market place has demanded an increased emphasis on fruit quality as a means to develop competitive advantage.

Appearance quality factors include size, shape, colour & freedom from defects & decay.
Textural quality factors include firmness, juiciness & mealyiness.
Flavour (taste) or eating quality depends upon sweetness (concentrations of sugars), sourness or acidity (percentage of acids) & aroma. These constituents in addition to starch, cell walls, minerals & seeds make up the kiwifruit dry matter (DM) content. Dry matter is used as a measure of taste. A minimum taste standard (MTS) has been developed for each variety.

Right:
Minimum Taste Standard by Cultivar in 2019

Cultivar	Dry Matter average required
Hayward	70% of fruit at or above 15.5%
Gold3	70% of fruit at or above 16.1%
Green14	16.8% or more
Hayward Organic	70% of fruit at or above 15.5%

Before fruit is harvested, it must be mature enough to ripen when it is off the kiwifruit vine. The fruit needs to have black seeds, meet the MTS, be the right colour, & reach a Soluble Solid Concentration (SSC) or brix (sugar content of an aqueous solution) of more than 6.2% for Green & 8% for Gold. When it is time to harvest, an independent company called Eurofins will test the kiwifruit's maturity & if it meets the standard will give clearance to pick.

The Taste ZESPRI® Programme seeks to continually improve the taste of the kiwifruit - both GREEN & GOLD – to provide consumers with the best possible taste experience. Over the past year, growers have improved the overall taste of the crop by increasing the amount of dry matter. Market research shows repeat purchase of ZESPRI® Kiwifruit is influenced mainly by taste & consistency, rather than by price. To deliver a consistent supply of high taste ZESPRI® Kiwifruit to market, a range of smart on-orchard production techniques & robust post-harvest technologies are being explored & validated scientifically. Some examples are; root pruning & trunk girdling to increase dry matter.

Grading:

Attribute	Zespri Green	Zespri Gold3
Preferred average size	31.8 per tray	29.3 per tray
Colour	Green fractile 109.3^{o} hue	Gold fractile of 109^{o} hue
Firmness	>11.8	>11.8
Sugar (Soluble solids)	6.2-7 Brix	11-13 Brix
Dry matter (average)	15.5%	16.1%

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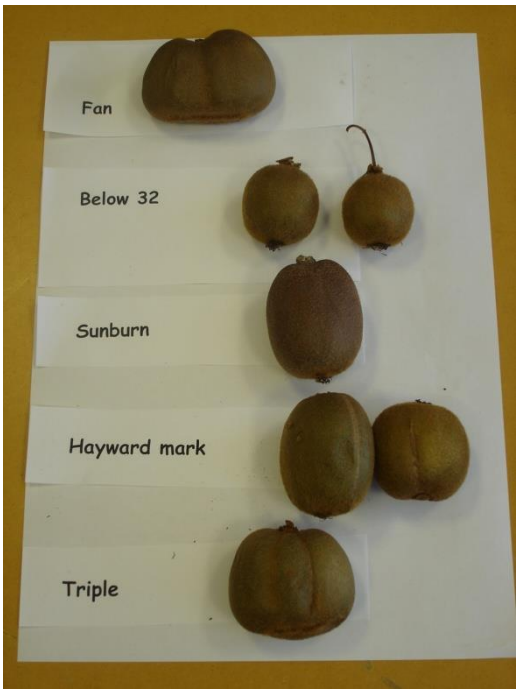

No fruit can be picked from a block until it has been tested by Zespri & passed as ready for harvest. Fruit is carefully checked manually at the pack house & random checks on Brix level & acidity made. The electronic grader sorts for size & weight so that each tray carries 3.6kg of fruit. The fruit is individually packed & sealed for export. Kiwi fruit is stored at 1°C 90% humidity to ensure quality is maintained.

Phytosanitary assurances are also required when importing products into New Zealand, and New Zealand has to ensure that it meets any phytosanitary requirements for export to other countries. A phytosanitary certificate is issued by the exporting country, in accordance with the requirements of the International Plant Protection Convention (IPPC), which confirms that the requirements of the relevant import health standard have been met. All Zespri products are free from harmful microorganisms & contaminants & comply with accepted quality standards for hygiene & nutrition.

The grower has to ***plan*** to produce a crop with the ***quality*** required by the market they have chosen.

Different markets have different ***quality*** requirements e.g.

Exercise:

Export niche:

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- Local commodity:

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The management practices within the ***production process*** have to be manipulated to ensure the ***quality*** is produced e.g.

- Tyrek mulch under mandarin trees because it _____

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- Trunk girdling kiwifruit vines because it _____

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Ensuring a high quality product is consistently supplied to consumers is essential for maintaining markets. Explain in detail, how quality assurance programmes at production stages ensure that a high quality product is supplied to consumers for Satsuma mandarins & Zespri kiwifruit.

Satsuma mandarins

Zespri kiwifruit

8. Prices received by the grower

There are TWO prices:

- Prices received by the grower (grower returns)
- Prices paid by the consumer (this may be the retailer or exporter)

(a) The price of the product

As the prices increases, it becomes more profitable for the supplier to produce the product. HOWEVER, if the price is too high, demand may decrease, OR if increased product is supplied, this decreases the "rarity" value & the price becomes lower.
Price trends can be demonstrated over a season (short term) or over three years (long term). These trends allow the grower to plan:

- When to release their product to gain highest returns
- Whether growing the crop has long-term viability or if diversification is needed (e.g. sticking with Green kiwifruit, or top working some of the vines into gold or considering diversifying into new kiwifruit varieties).

Satsuma mandarin price trends

Short term price trends to the grower

This is the average wholesale price for all fruit sent to retail - regardless of grade or size. This was averaged over the 18 weeks to give an average wholesale price of all fresh fruit over the season. Wholesale volume and price was recorded for three sizes split into Tag 1, 2, and 1 kg prepack. This enabled calculation of a wholesale price for each category over the season based on a weighted average (figure 1).

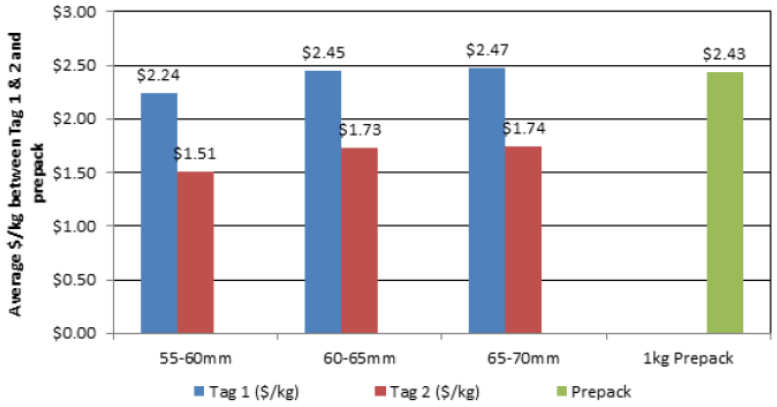


Figure 1: Average wholesale weighted price averages ($/kg) for 55-60mm, 60-65mm, 65-70mm Tag 1, Tag 2 and 1kg prepack fruit.

Weekly change in wholesale prices over the season is illustrated in Figure 2 for Tag 1 for three sizes and prepack. Total domestic volume is also shown in Figure 2. Prices for prepack and loose mandarins were relatively consistent throughout the season.

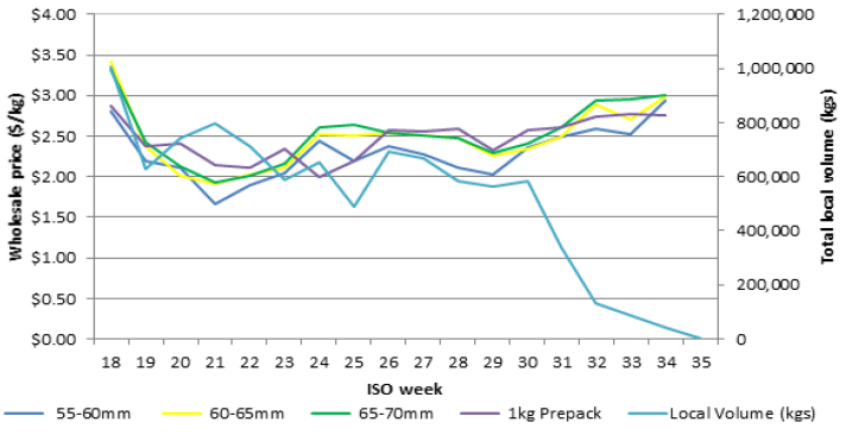


Figure 2: Average wholesale price for 55-60mm, 60-65mm, 65-70mm Tag 1 and 1kg prepack fruit against the total local volume.

Long term price trends

Wholesale prices (for Tag 1 55–60mm fruit) from 2012 to 2017 are shown below. On average wholesale prices were 16 cents lower than the 2016 season. The lowest recorded wholesale price for Tag 1 55–60mm fruit in 2017 was in week 29 of $1.78, compared with the highest price of $3.96 in week 17 at the very start of the season.

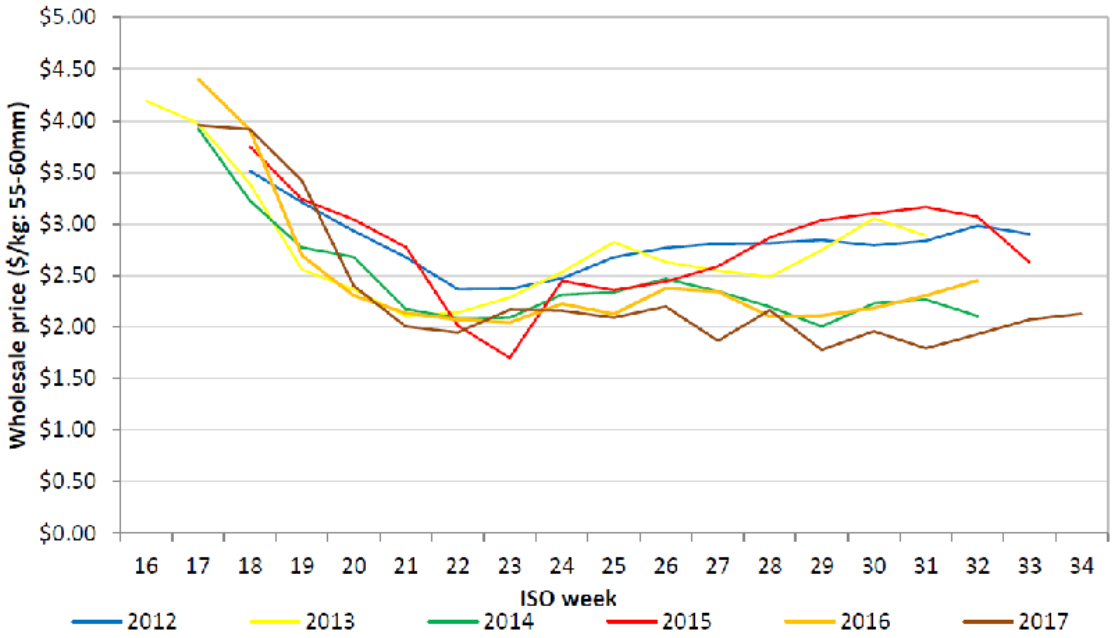


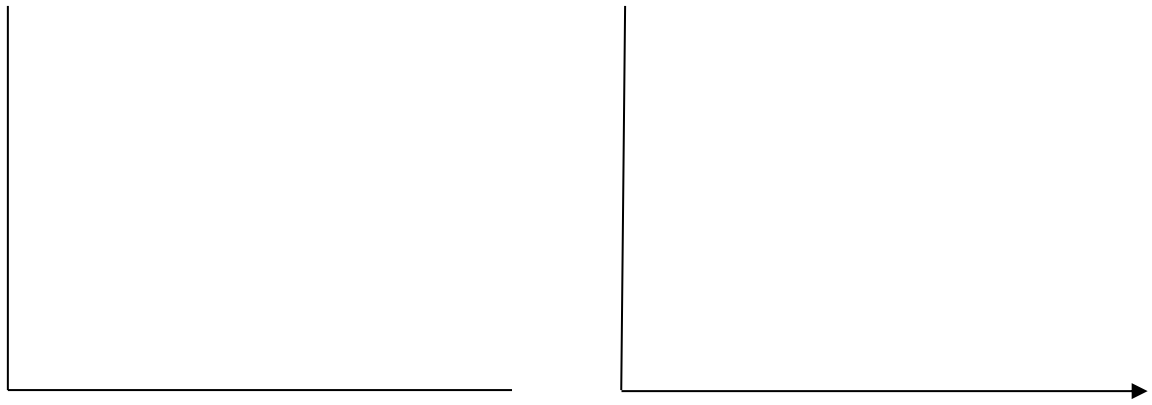
Figure 9: Satsuma mandarin wholesale prices ($/kg) for the 2012 to 2017 seasons (Tag 1 55 - 60mm fruit).

Export prices

Returns follow the volumes pattern where growers supplying on the shoulders of the season – Mid April or late May are more likely to gain higher returns of $4.41/Kg while returns in the peak of the season - mid May – will be lower – down to $2.05/Kg.

Exercise: *Draw sketch graphs that you can use in the exam of:*

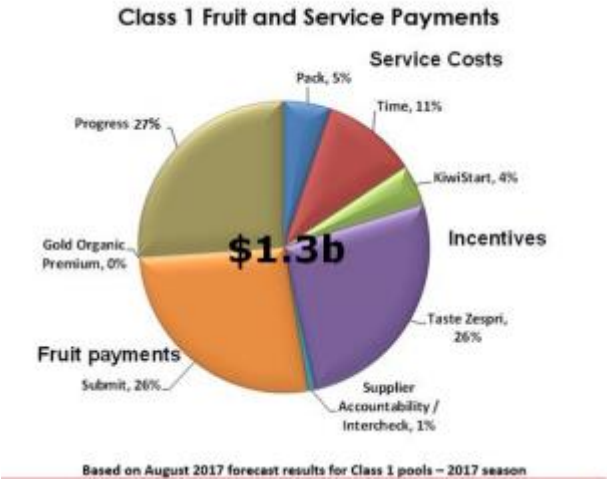
- *Short term prices of mandarins (local & export)*
- *Long term prices of mandarins (export)*



Kiwifruit price trends

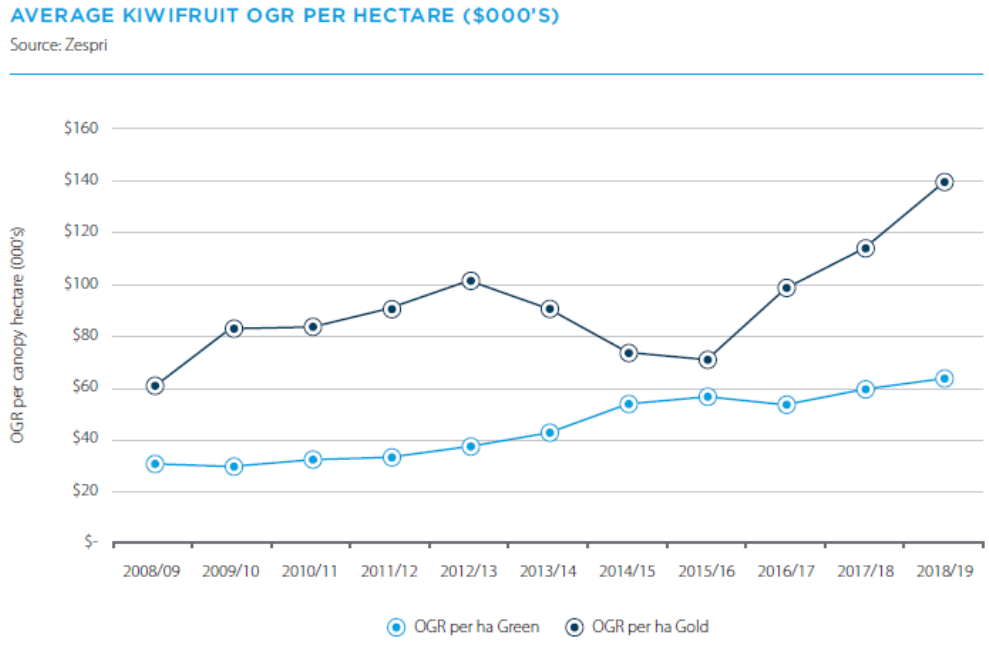
Orchard Gate Return (OGR)

Kiwifruit growers are paid on the number of trays they supply to Zespri. However, with increasing consumer demands & customers who are prepared to pay more for better quality fruit, the sole focus on production has been challenged by an additional focus on quality attributes. This means that as well as a base fruit payment, there are also several premiums that act as commercial incentives to encourage the supply of fruit demonstrating a range of product specifications demanded by Zespri's customers. The graph below shows the components which make up the Total Fruit & Service Payments. It is illustrative only but shows the approximate allocation of money paid out for the various premiums available. Class 1 Fruit and Service payments are made up of Service Costs (16%), Incentives (31%), and Fruit Payments (53%).



OGR is the revenue received by an orchardist after post-harvest costs are deducted. OGR is driven by yields, fruit size, dry matter content, market prices & other off-orchard costs such as coolstore, packing costs, marketing, logistics, etc. It is noteworthy to mention that Orchard Gate Return is not a measurement of orchard profitability, as it does not take into consideration orchard costs such as pruning, pollination, fertiliser etc.

OGR has improved over the past decade. In the 2018/19 season, the OGR was $63,033/ha for Green & $145,991/ha for SunGold.



So, what is wanted by growers for OGR is; good price premiums, high yield, good sized fruit & good tasting fruit (high dry matter). Overall class 1 yield per hectare & fruit size are the most significant drivers of revenue & profitability for both major varieties.

In 2019, Green orchards are valued around $300k-450k per hectare, with SunGold orchards around $800k-1,000k per hectare.

The **2017/2018** was a year of lower volume but higher value as strong consumer demand & excellent market performance support returns. In a season in which sales of NZ kiwifruit reduced by 11%, Zespri was able to deliver an increase in value to growers, with fruit & service payments (including loyalty premium) rising by 6% to $1.47 billion. The reduction in volume was driven by a sharp fall in Green supply from the exceptionally high yields of 2016/17. Despite a 27% decline in average yields for Green to 8,937 trays/ha, Zespri delivered an excellent sales result supported by good quality & low rates of onshore fruit loss. The average per hectare return for Green across the industry was $59,981. The result for SunGold gives Zespri further confidence in their long-term outlook, with Zespri achieving a strong increase in returns at the same time as continued growth in volumes. Sales volume for the total Gold category rose by 9% to 52.1m trays & the average return per hectare across the industry was up 16% at $114,345.

2018/19 was a year of growth in volume & value with international demand continuing to support strong returns. Zespri's returns to growers & the industry reached higher levels in 2018/19. This stemmed from strong growth in both volume & value, with total operating revenue from their global kiwifruit sales & licence release exceeding $3 billion for the first time.
Total sales volumes reached 167.2 million trays in the 2018 season, a 21% increase on the 138.6m trays sold in the previous season. Global revenue generated by fruit sales & Zespri's SunGold licence release also increased to $3.1 billion, while Zespri's total fruit & service payments (including the loyalty premium) to New Zealand growers was up 24% to $1.8 billion in 2018/19. Growers have also seen an increase in 2018/19 average OGR. This included a 6% increase in the average per-hectare return for Green to $63,622, & a 28% increase in the average per-hectare return for SunGold to $145,991. While SunGold also returned record levels on a per-tray basis, Green returns per tray were down due to higher-than expected volumes & the associated extended sales window & greater fruit loss. Strong yields & a growing demand for organic kiwifruit saw average returns per hectare for Green Organic increase by 40% to $73,350. The increased returns are expected to help growers meet the rising operational costs they face including labour.

Domestic kiwifruit prices
Domestic kiwifruit prices are generally at their lowest in June & July. Both domestic & export prices peak around March each year when domestic supply is short – just before most harvesting begins. Small volumes of higher-valued other kiwifruit exports influence the peaks of the export price. Fruit is supplied from cool storage between December & March to meet demand. About one-third of exports occur in April & May, which corresponds with the bulk of harvesting, & then decrease towards the year's end. Our biggest export market by volume of kiwifruit is the European Union, while the biggest export market by value is Japan.

Export kiwifruit prices
As the majority of kiwifruit is sold offshore & Zespri has total control over the release of the fruit into the market, growers are paid on an annual basis rather than during the season. They are paid an "interim" payment to cover costs but there is then a "final pay-out" at the end of the season, when all the deductions have been made by Zespri for managing & promoting the export market. Thus, there are no real "short term trends" other than on the local market, which is small & subject to the competition from other seasonal fruit.

Long term trends for Export prices

NZ Grown – average orchard gate return (OGR) NZ$ per tray to the grower.

	05/06	06/07	07/08	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17	17/18	18/19
Green	3.47	4.09	3.11	3.68	3.70	4.21	3.80	4.62	5.23	6.01	5.13	4.36	6.71	5.45
Gold	5.48	5.18	4.45	5.41	7.73	8.89	7.66	10.45	12.91	9.80	8.21	8.64	10.06	10.89
Organic Green	5.34	6.54	5.32	6.27	5.67	6.07	5.53	6.18	7.07	7.37	7.18	6.86	8.93	9.22
Sweet Green								6.65	9.77	7.08	7.01	5.79	5.61	7.23

The price received for kiwifruit has fluctuated over the last twelve years mainly due to seasonal production differences & the fluctuation NZ dollar.

In the **06/07** season, growers received a higher price because of improved in-market pricing & reduced offshore fruit losses.

In **07/08**, returns to growers were down due to the high exchange rate against the Euro & the Yen & the GFC.

In **2009** prices for Green remained the same but increased for Gold due to high demand & the value of the NZ$ had decreased. Even with a flat market due to the recession, the demand for kiwifruit remained high. Gold kiwifruit continued to extract a premium from the market over Green despite an increase in the production. This high price reflected the superb quality of the fruit & the fact that consumers prefer Gold kiwifruit compared to other fruit. The demand for Gold kiwifruit exceeded supply in 2009, which led to strong market pricing. Price increases in most markets was the major factor that contributed to the increase in per-tray returns but it was partially offset by the increase in fuel cost.

As in **2009/10**, economic conditions were challenging, with the effects of the GFC lingering, particularly in European economies & the United States. By contrast, the Asian economies grew strongly. Domestically, growers faced challenges as well.

Demand in **2010/11** continued to be strong for Green in all markets. In Asia, demand for high-quality produce was being driven by economic growth & the continued emergence of a relatively wealthy middle class. Because of Zespri's ability to deliver high quality fruit to market, Green returns per kilogram still remained much higher than those of competitors. The health & taste platforms was critical for the continued differentiation of premium Green. The 2010/11 result reflected a strong performance in Japan & across the Asia region. This was boosted by very high levels of dry matter (the key indicator of great taste - brix), which drove repeat purchases by consumers, & partial price recovery in most markets following the 2008 GFC. However, the Psa incursion in NZ was potentially very damaging at both an individual grower & an industry level. As a result, the industry was confronted with a period of horticultural & financial uncertainty as it developed the expertise & technical tools to manage Psa in NZ. The 2010/11 Gold season was characterised by short supply volumes & very strong demand. Demand was driven by both increased demand from new markets & increasing penetration of Gold in existing markets. The short supply resulted in higher pricing across all markets & this pricing, coupled with a strong Yen, were key drivers of the higher per-tray returns in 2010/11.

The **2011/12** Green season was characterised by high yields with average volumes per hectare increasing from 7,660 to 8,709m trays resulting in an increase in total trays sold to 73.3m. Slower maturity meant that the fruit was about one week later to market than is usual & the season was characterised by steady sales in Europe, with strong growth in China & Southeast Asia. Very good fruit storage performance & a strong promotional programme enabled Zespri to increase pricing moderately, but this was offset by higher time-related costs, negative market mix, & foreign exchange impacts. These issues were further compounded by the significant impact of the record volume of fruit. This, combined with a late start to the season, meant a much later close in some markets. Per-tray OGR at

effective foreign exchange rates were down from $4.21 to $3.80. The Gold season was characterised by significantly increased supply as volume sold increased by 8 million to 29.1m trays, demonstrating strong demand. Demand increased in new markets & through greater penetration in existing markets. In particular, Europe increased from 5m trays to 6.7m trays. Southeast Asia, Taiwan, China, Hong Kong & Korea all showed considerable growth, taking an additional 4.7m trays, increasing from 8m to 12.7m. Despite favourable growth in all markets, the large crop did mean the Zespri needed to sell later & this was supported by the excellent storage quality of the fruit in 2011. Per-tray OGR at effective foreign exchange rates were down from $8.89 to $7.66 due to an unfavourable US Dollar & Euro exchange rate, & a negative market mix due to the significantly increased volume.

A dry summer in **2012/13** delivered smaller-profile, high-taste fruit that was well received around the world. Zespri balanced the volumes of Green to avoid a low price per tray due to high volumes, weak demand & high $NZ by; encouraging the grafting of Green across to Gold & other varieties (around 450 hectares of mostly green were grafted across to Gold3), continued focus on marketing the health benefits of kiwifruit & the taste & quality of the Zespri brand to make Zespri kiwifruit a compelling "must have" regular fruit item for consumers. The result was an increase in returns per tray by 82c despite an exchange rate impact of 48c per tray. Despite improvement, it is important to note that any gains were offset by the strength of the $NZ. Zespri Gold varieties contracted to a combined varietal volume of between 12m trays in 2013, as significant Hort 16A volume was lost in heavily affected Psa areas. Gold3 targeted the developing world as well as being maintained in established markets in Europe & Japan, based on consumer demand for superior tasting Gold. Around half of the total one million trays of Gold 3 were sold in Europe, this fruit was well received by consumers who have a strong taste preference for this variety of gold kiwifruit. The remainder was sold throughout Asia. A 55% reduction in Gold volumes due to Psa & ongoing foreign exchange volatility cost the industry around $280m. This was partially offset by strong pricing & a favourable market mix, which meant at an individual level growers received record or near-record returns.

In **2013/14,** Green per-tray OGR was up 13% from $4.62 to $5.23 & Organic Green was up 14% from $6.18 to $7.07. Gold per-tray returns were at record levels – due to the short supply with the changeover to Gold3. These strong returns were due to actions right across the supply chain – growers delivering high-taste fruit that Zespri consumers value, the lowest onshore fruit loss ever recorded for Green, solid post-harvest performance, & strong pricing & tailored marketing strategies in each of the 53 countries where Zespri sells the fruit. With only around 500 hectares of Hort16A remaining at March 2014, growers had grafted or planted more than 4,000 hectares of Gold3, showing their confidence in this new Gold variety. Despite continued economic pressure on consumers around the world, demand for premium-branded Zespri Kiwifruit remained strong. Importantly, Gold3 was well received by markets & the learnings over the past year positioned growers well to deliver great tasting fruit.

An important feature of the **2014/15** season was the remarkable rebound in Gold kiwifruit production, driven by SunGold. The increase from 11.1m trays in 2013/14 to 18.6m trays in 2014/15 contributed to a reduction in per-tray & per-hectare returns, as the supply & demand balance stabilises. The story of Green kiwifruit over this season was startling for different reasons. Average ORG per tray exceeded $6 & growers achieved the highest-ever average per-hectare Green return for the industry of $53,884. This outcome owes a great deal to sales performance & to productivity increases with average yields now at nearly 9,000 trays per hectare. The shortage of Chilean kiwifruit in the market, following severe frosts in Chile, also contributed to the strong Green returns. The anticipated recovery of Gold volumes & the subsequent rapid growth of Zespri SunGold (Gold3) means markets will invest heavily to grow demand for Zespri SunGold, while maintaining premium market pricing. Gold is a recognised category but there is strong competition from alternative Gold varieties. To maintain Zespri's competitive advantage in the Gold category, it is critical that growers focus on growing great-tasting, high dry matter Gold fruit – for all markets that have come to appreciate the sweet taste of Zespri Gold kiwifruit.

A significant factor during the **2015/16** season was the exceptional yield achieved by Green growers. Average productivity was 11,048 trays per hectare, which helped to lift per hectare returns to an average of $56,673. Across the industry, NZ kiwifruit growers have responded to the challenge of growing in a Psa environment by improving orchard management practices. Combined with favourable weather conditions last season, the result was a very large crop. On the market side, strong sales performance in the final weeks helped to lift returns to $5.13 per tray. SunGold's performance in the markets was very positive. The largest-ever volume was sold in excellent time with positive customer & consumer feedback & achieved a return for the Gold pool of $8.21 per tray – well above the early season forecast.

2016/17 was the third season in a row that Zespri has delivered average Green returns of over $50,000 a hectare. The Green return per tray was $4.36, down from $5.13 per tray in 2015/16.
SunGold delivered an outstanding result. Zespri achieved an average per-tray return for the Gold pool of $8.64 – up from $8.21 in 2015 – despite supply increasing to 48.5m trays from 32.6m trays in 2015/16. Average per-hectare returns increased by 39% to $98,838. The customer & consumer response to SunGold continues to be very positive, supporting Zespri's confidence in market demand. Zespri was satisfied overall with performance in the season, with a good result delivered despite the challenges of a sharp increase in supply & a relatively late harvest.

The **2017/18** season began relatively late. High autumn rainfall, warm temperatures & low sunshine hours impacted both Green & SunGold dry matter accumulation, slowing down clearances & harvest, & contributing to a significantly larger size profile. The Green crop was characterised by greater-than-expected yield volatility. The 2017/18 crop volume fell by almost
30% to 65m trays, from the record crop of 91m trays in the 2016/17 season. The reduction in supply impacted the ability to meet customer expectations on sales programmes, but Zespri was able to work with their customers to create good value from a lower volume supported by strong consumer demand. The industry also achieved a good result on quality with onshore fruit loss at 1.30%. The average per-tray return for Green was considerably stronger at $6.71, supported by strong performance in all the markets, particularly Europe. The Organic Green return per tray was $8.93, reflecting pricing improvements in Europe & the major markets & an improved market mix. The SunGold result gives Zespri further confidence in their long term outlook, with Zespri achieving an increase in average returns at the same time as continued growth in volumes. The average return per tray was $10.06 (2016/17: $8.64). Zespri sold just over 1.2m trays of Sweet Green, almost exclusively into Japan & Europe. The average per-tray return was $5.61 (2016/17: $5.79). Sweet Green was line priced with Green, but the per-tray result was impacted by a smaller crop profile. The focus ahead remains on supplying a high taste offering, as early as possible, to complement the Green sales programme by getting the season off to a great-tasting start.

2018/19 was a long season with teams working hard across the industry in NZ & in the markets to manage quality, drive sales & finish the year as cleanly as possible. A challenge was to manage the 24% rise in Green supply to 81m trays, sustaining run rates while minimising fruit loss. The average Green per-tray return decreased to $5.45. The sales window for Green was extended because of higher volumes than expected & this exposed Zespri to higher fruit loss at the end of the season. As quality deteriorated faster than expected, suppliers & Zespri teams around the world worked hard to achieve an optimal result. The Organic Green average return per tray was $9.22. The result reflected a strong yield & growing demand for organic kiwifruit.
The SunGold average return per tray was $10.89, which was achieved not only due to the increase in average yields as SunGold orchards come into full production, but also through stronger consumer demand supporting pricing – helping to increase average returns on a per-tray basis even with more supply. The result supports Zespri's confidence in the category & the opportunity to increase supply to fulfil strong demand. Sweet Green

achieved an average return per tray of $7.23, helped by market mix improvements, which helped offset the impact of a reduction in average yields, of 11 percent to 6,159 trays per hectare. The reduction in yields, alongside reduced productive hectares, has seen Sweet Green volumes supplied decrease from 1.2m trays in 2017/18 to just under 900,000 trays in 2018/19. Zespri is continuing to manage Sweet Green as an earlier & sweeter proposition to Hayward in order to maximise the value of this variety.

NZ kiwifruit continues to achieve premium prices over producers from other countries due to;

- Consistent supply of superior quality & taste fruit.
- Consistent supply has come about by producing fruit all year by growing fruit to Zespri quality in eight countries.
- Strong relationships between the industry & buyers.
- Food safety regulations as all Zespri products are free from harmful microorganisms & contaminants & comply with accepted quality standards for hygiene & nutrition.
- Establishment & monitoring of environmental management systems & their impact.
- Successful promotion of the Zespri brand & the range of products such as; Zespri Green, Zespri Gold, Zespri Organic, KiwiBerry (Zespri argute - a new bite sized kiwifruit) & the new Red kiwifruit.

Exercise: *Draw sketch graph that you can use in the exam, for the prices of Zespri Green & Zespri Gold over the last 3 years (on the same axes).*

(b) Prices due to gluts & shortages

If the season produces high quantities of a product, it may not be economic to supply the market because the prices will be too low.

Exercise: *Explain how being able to store fruit as opposed to a crop being highly perishable impacts on gluts & shortages (Use prices & volumes to back up your argument).*

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(c) Competition

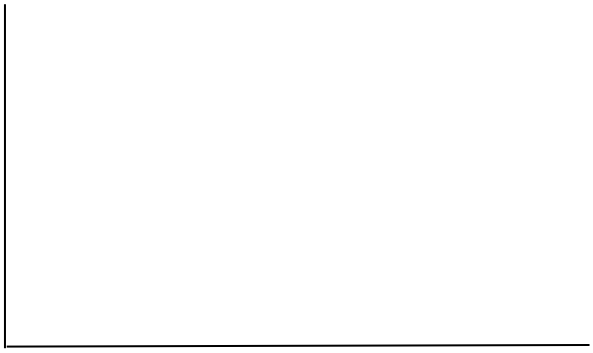
i. **Substitutes** - A change in ***price*** may occur if a ***substitute*** product comes on to the market.

Substitute fruit products and kiwifruit.

Kiwifruit is having to work hard to gain market share at higher prices against much cheaper alternative fruit e.g. cheap pip & summer fruit in the EU & a decreasing fruit consumption. NZ kiwifruit will only remain competitive because of its ability to produce a consistent high quality product all year round under the Zespri brand. Zespri continues to carry out high profile marketing campaigns to attract consumers by using its position as the only quality grower of gold-fleshed kiwifruit to promote the green-fleshed variety. Despite Zespri's global leadership kiwifruit represents less than 0.5% of global fruit consumption. This presents an enormous opportunity for growth within the fresh fruit category. It is therefore essential that NZ growers continue to produce consistently high quality tasty kiwifruit to maintain demand & the competitive edge in this increasingly competitive market & to ensure good returns to compete against low-cost competition from other countries & fresh fruit.

Exercise:

a) Copy the graph of price trends shown for Satsuma mandarins on the local market over an annual cycle.



b) On the graph indicate where substitute fruit may affect the prices & name some of the possible substitute fruit for Satsuma mandarins.

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c) Explain in detail how the substitute fruit could affect the prices of the Satsuma mandarins on the local market.

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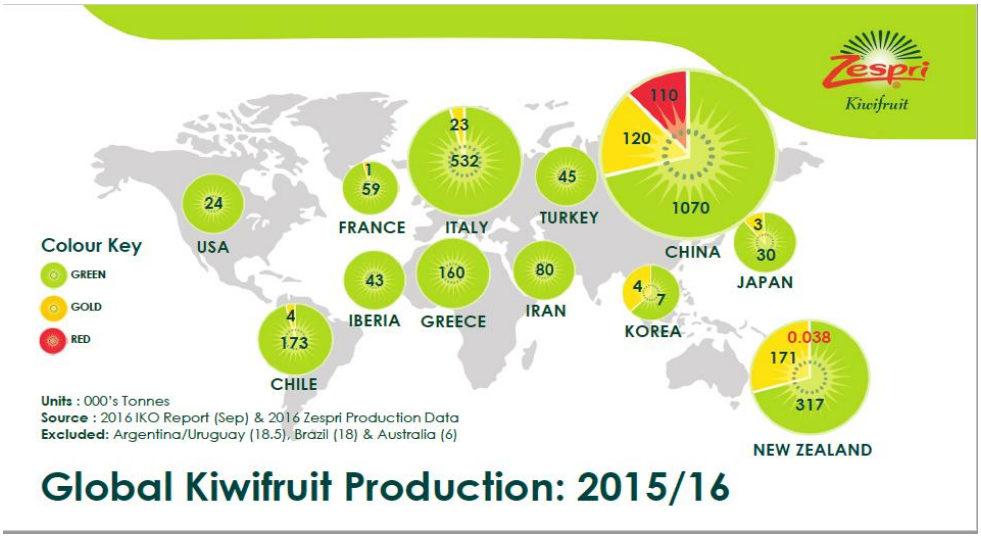
ii. Competition from other growers

Grower competitors for Satsuma mandarins

At present NZ has the monopoly in supplying Satsuma mandarins to Japan during the April- May period. The only competition comes from the local Japanese growers who cannot produce mandarins during this time. Other Southern Hemisphere countries such as Australia, Chile & South Africa have not been able to produce mandarins of the quality the Japanese market requires at this time. If competition did arise, then the profitability of growing the crop would be reduced, as the market could be quickly saturated. The reputation of the crop could be lost if another country attempted to supply a crop of a slightly lesser quality.

Grower Competitors in the Kiwifruit market.



The global production of kiwifruit has grown strongly over the last 10 years increasing by nearly 70%. NZ has managed to hold on to its position as the third largest producer despite the ravages suffered by Psa. The competitive environment for kiwifruit continues to increase with main competition from China, Italy & Chile in the Asian & European markets. Their current problems of quality & supply chain management are likely to be quickly overcome making these countries an increasingly strong competitor with NZ. As Green kiwifruit can be stored for up to 6 months at 1°C & 90% humidity, there can be an overhang of Northern Hemisphere green fruit spilling out into the Southern Hemisphere season. World production of kiwifruit is expected to rise over the next few years as the consumption of kiwifruit is still increasing, despite static of falling consumption of most other fruit. Prices of NZ kiwifruit are expected to remain reasonably stable due to high quality standards & a good reputation & good market management. NZ is estimated to account for around one third of the global trade in kiwifruit by volume, but captures a significantly high proportion of the value. This testament to the power of NZ's brand, better market access, strong supply chain relationships & intellectual property in producing & exporting quality fruit.

9. Costs of production

A producer is generally ***not*** willing to supply a ***primary product*** *unless price of the product is greater than the price of production.*

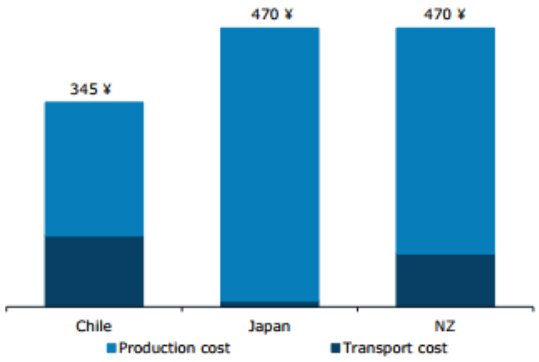
Exercise: *Why does the* ***price*** *need to be GREATER than the* ***costs****?*

Describe in detail (volumes & prices) how Satsuma mandarin growers must be careful when to release their crop onto the local market & how this impacts on covering the costs of production.

Cost of Kiwifruit production

Kiwifruit returns are influenced by many factors right from the orchard through to end consumption. NZ is fundamentally considered a high cost producer given our distance to market & higher cost of labour, transport & handling, compared to our main Southern Hemisphere rivals in Chile.

FIGURE 10. COST OF PRODUCTION TO DELIVER HAYWARD TO JAPAN

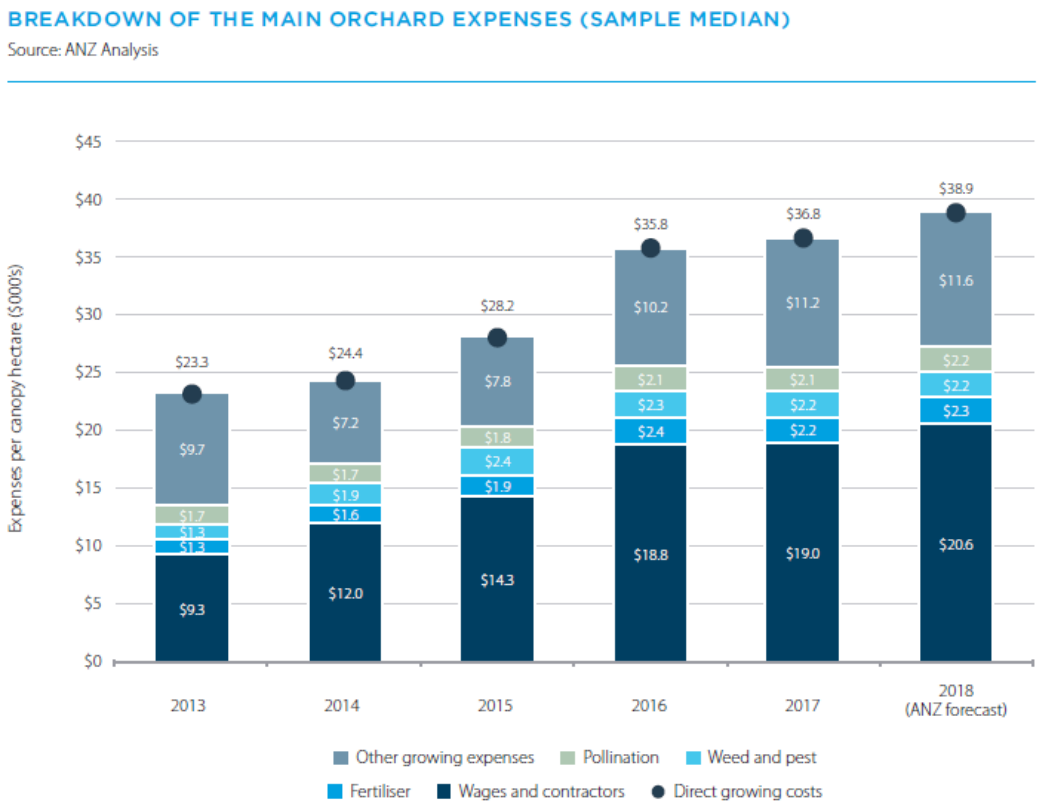


Costs directly affect grower returns, with the fluctuating NZ dollar, freight costs fluctuate with changes in oil prices. It is estimated these costs can save or cost the grower an estimated 33c/tray or $34m across the export crop. The cost of inputs such as fertilizer & agrichemicals have stabilized reducing costs & improving returns to growers.

Breakdown of on-orchard costs

The graph below summarises the median wages, pollination, fertiliser, & weed & pest expenses per canopy hectare for both Green & SunGold orchards. Direct growing costs

have increased over the past three years, with the median Green & SunGold cost per canopy hectare rising from $28k per hectare in 2015 to $37k per hectare in 2017. The growth in direct growing costs was driven primarily by wages between 2015 & 2016. Wages per hectare stayed relatively constant between 2016 & 2017. Orchards with the same canopy hectares in both 2016 & 2017 had an average wage increase of $1k per hectare. It is forecasted that there will be an increase in direct growing costs to $39k per hectare, largely from an increase in wage costs to $20.6k per hectare.
The median wage expense typically ranges between 45-55% of direct growing costs. The Government has pledged to increase the minimum wage to $20 per hour by 2021, a 21% increase from the current $16.50 per hour, which is likely to lift wages over the next two years.
Pollination, fertiliser, & weed & pest typically represent about 15-25% of an orchard's direct costs. These expenses have increased but at a slower pace than wages.



10. Technological improvements

Technological improvements in Satsuma Mandarin Production

Reflective mulch

'Extenday' reflective mulch placed under the trees reflects light up into the underside of the tree. This is placed under the trees at the end of December & is lifted at the end of March. This gives even light throughout the tree ensuring that photosynthesis is at its optimum throughout the tree, producing a high yield of fruit (a minimum of 15kg), at the high brix level of 10 & above, is ready for the narrow Japanese export market window of April/May to gain maximum returns. The mulch also stops rain getting to the shallow roots of the trees during deficit irrigation & controls weeds.

Controlled deficit irrigation

Trickle irrigation is provided to the trees from October to the end of December. During this time, the fruit size increases. Deficit irrigation or no irrigation is provided from January to the end of March. This stresses the trees, which causes the Brix levels to increase to 10 & hardens the skins, preventing them from becoming too thick which overseas consumers do not like. Irrigation is resumed in April. This swells the flesh, which fills the fruit & makes the skins tight but remaining easy-peel, attributes preferred by the Japanese market. The later irrigation reduces the acid to 1%, which tends to build up during stressing. Thus fruit with the ratio 10Brix:1acid are produced by the end of April ready for export to Japan.

Technological improvements in Kiwifruit Production

Hi-Cane

Hi-Cane is a chemical growth stimulant - hydrogen cyanamide. This reduces the effect of lack of winter chilling, stimulating uniform budbreak & flower production over a shorter period. The fruit produced tend to be uniform in size & shape having a high dry matter & are less likely to rub against each other forming blemishes. It is known to increase crop volumes by 40%. It is hoped that well-timed girdling & new cultivars of rootstocks will reduce the need for chemical flower stimulation.

Trunk girdling

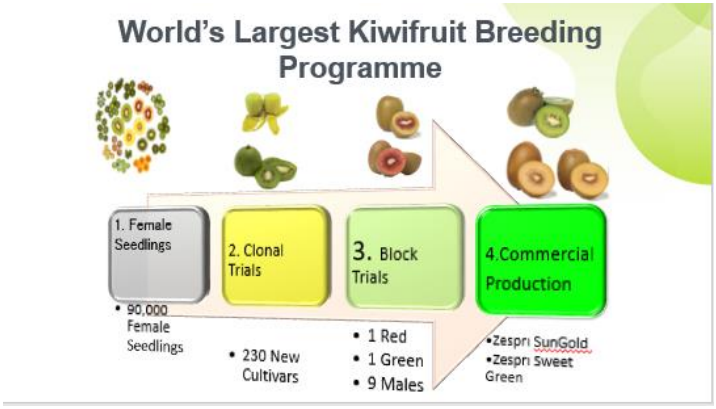
Trunk girdling of kiwifruit vines cuts the phloem cells in the stem. This prevents the movement of carbohydrates produced by the leaves being transported to the vines extensive root system for a period of time. The wounds close over in about 6 weeks. The effect of the girdling on the productivity of the vine varies with the time that it is done. Girdling in spring - September/October – stimulates flower production & reduces the need for winter chilling &/or the use of Hi-Cane. December girdling increases the size of the developing fruit, while autumn – March - girdling increases the fruit sugar levels to above 6.2 quickly also improving the dry matter /flavour (Zespri taste grade TZG Y & T grades), allowing for early harvest & entry in the export market possibly gaining premium prices. This activity can only be practiced on a vine for about three years at a time as it has the effect of reducing the vine vigour.

New varieties

Zespri invests around $20 million a year in kiwifruit research & innovation. Continuing investment in developing new cultivars is critical. Around half of Zespri's innovation spend is on new cultivars. The development of new & proprietary kiwifruit cultivars will provide a fundamental platform on which to ensure Zespri can achieve higher returns & have a stronger market influence than other current & future kiwifruit producers. As new cultivars are released to the industry, an increased emphasis on research to support their establishment, sustainable production & market differentiation will be required to maximize the return on investment.

For over 25 years now, Zespri have been working to this end together with The NZ Institute for Plant & Food Research. In close consultation with growers, researchers & customers,

Zespri have set up the largest, most advanced plant-breeding programme in the world, involving no fewer than 70,000 kiwifruit varieties. Using a complicated (100% natural!) process of cultivation, selection & cross-fertilisation, Zespri looks for promising seedlings, which are then further cultivated by means of cuttings. If these meet the expectations, they are grown in small numbers & tested on the market. A natural plant-breeding process of this kind only yields results after six to ten years! During this period, the kiwifruit varieties are constantly assessed & tested, by both growers & consumers.



New varieties include:

- High nutritional value
- Exceptional & differentiated flavour (each cultivar much have a unique flavour)
- Good convenience attributes (longer eating window, more consistent eating experience, improved texture)
- Plus production attributes – good size & shape, colour helps differentiate each cultivar, pest & disease tolerance, productivity/yields & storage potential

The priorities for breeding are improvements on existing Green & Gold cultivars such as consumer liking, yield etc., & Zespri is also very focused on commercializing the world's best red kiwifruit & kiwiberries into the future. It takes over 10 years to develop a new cultivar, & only 1 or 2 will succeed within every 10-15 years, so it is a very robust programme to ensure that the successful cultivar has the attributes that deserve the application of a Zespri fruit label.

<u>New red kiwifruit cultivar to be released</u>

Plant & Food Research is excited that a new red kiwifruit cultivar from the NZ kiwifruit breeding programme will now be available to Zespri growers. Zespri® Red Kiwifruit is the first red-fleshed cultivar to be commercially released from the breeding programme, a partnership between Plant & Food Research & Zespri. The programme has previously released several cultivars, including 'Hort16A', the first yellow-fleshed kiwifruit cultivar, marketed as Zespri® Gold Kiwifruit, and 'Zesy002', known as Gold3 and marketed as Zespri® SunGold Kiwifruit.

The red variety is the result of a natural breeding cross which took place in 2007. The first fruit from the cultivar were produced in 2009 & were identified with superior characteristics required for successful commercialisation, including a strong red coloured centre, sweet taste & good texture. "It is always exciting for our breeding team when a new cultivar is released to commercial growers," says Dr Zac Hanley, GM Science New Cultivar Innovation at Plant & Food Research. "The release of a cultivar is the culmination of about 15 years of research across a range of science disciplines - from the breeders who initiated the original cross, the teams that studied the best way to grow the plants & harvest & store the fruit, & the sensory scientists who tested whether the fruit meets consumer expectations." Zespri will be releasing at least 150 hectares of Zespri® Red Kiwifruit to growers in 2020.

Exercise: *Explain in detail how technological improvements in the supply of Satsuma mandarins & kiwifruit affect the supply to export markets.*

Supply Summary Exercise

Market forces can influence primary producers' willingness or ability to supply their product to market. Some market forces will have a greater influence than others, affecting the supply of your specific product.

Explain in detail how a market force (from the list below) has affected the supply of your chosen Primary Product. Use specific examples, including recent units and values where appropriate.

- price received by the grower
- production costs
- weather events
- phytosanitory regulations
- quantity available

Market force: _____

MARKET FORCES AFFECTING DEMAND

Market forces affecting demand include:

1. Consumer Preference
2. Promotion & Branding
3. The size of the market
4. Quantity Demanded
5. Reliability of Supply
6. Quality Required
7. The effect of Demand on Prices
8. Market Trends
9. Political Intervention
10. Exchange Rrate
11. Grower Organisations & Cooperatives.

1. Consumer Preference

Most market research indicates that sensory characteristics (appearance, texture, taste, odour & flavour) are the primary reason consumers purchase a particular type of fruit. Consumer expectations vary with consumer age & ethnicity. Japanese consumers generally prefer sweeter fruit & European consumers more acidic fruit. Different age groups can also have markedly different preferences. Children tend to respond more positively to attributes of sweetness & flavour than adults who tend to respond to texture & sourness. Therefore, fruit quality should not be considered as an absolute, unchanging variable but, rather, a concept that can change with time as individual consumers expectations change. Failure to meet consumer expectations of quality may be detrimental to an entire industry as well as to a particular cultivar. Marketing of fruit-lines with particular attributes that appeal to consumers, such as guaranteed sweetness, has been shown to stimulate repeat buying &/or to command higher prices.

Consumer preference is driven by a number of factors:

- Advertising e.g. _____
- Tastes or fashions e.g._____
- Climate e.g. _____
- Previous quality e.g. _____
- Availability e.g. _____

Consumer Testing of Grade Standards for Mandarins.

Consumer preferences were determined for mandarins with different Brix & Acid levels. Sixty consumers assessed fruit from six treatments ranging from below to above the current grade standard.
The main findings were;

- All treatments were given high scores for overall liking, acceptability, & purchase intent.
- There was considerable variation in liking & acceptability of individual fruit within a single treatment. For example, mean scores for individual fruit from Treatment 1 (Brix = 7.7 to 8.5; Acid = 0.77 to 1.5) varied between 2 (like very much) & 5 (neither like nor dislike).
- Consumers indicated that they were significantly less likely to purchase fruit from Treatment 1 (Brix = 7.7 to 8.5; Acid = 0.77 to 1.5) than Treatment 3 (Brix = 9.6 to 10.5; Acid = 1.04 to 1.19). There were no significant differences in purchase intent between other treatments. It is possible that the high scores given to the fruit by consumers

reflect that the fruit had been harvested towards the end of the season when maturity would be optimum - hence flavour development was good.

- The study suggests that consumer preferences cannot be met by a single target grade standard - the quality attributes that are preferred by one consumer may be disliked by another consumer.
- This suggests that quality attributes beyond Brix & Acid may be influencing consumer preference.

Japanese consumers prefer;

- Sweet fruit Brix >10 Acid <1.
- They are also particular about external appearance – size small 55 – 63mm diameter, easy peel, yet tight skin, cumulative blemishes – 0.5 cm2, & defect tolerances 2%.
- Removal of skin in more than 4 pieces.

NZ local consumers treat the fruit as a commodity & are less fussy. They look for;

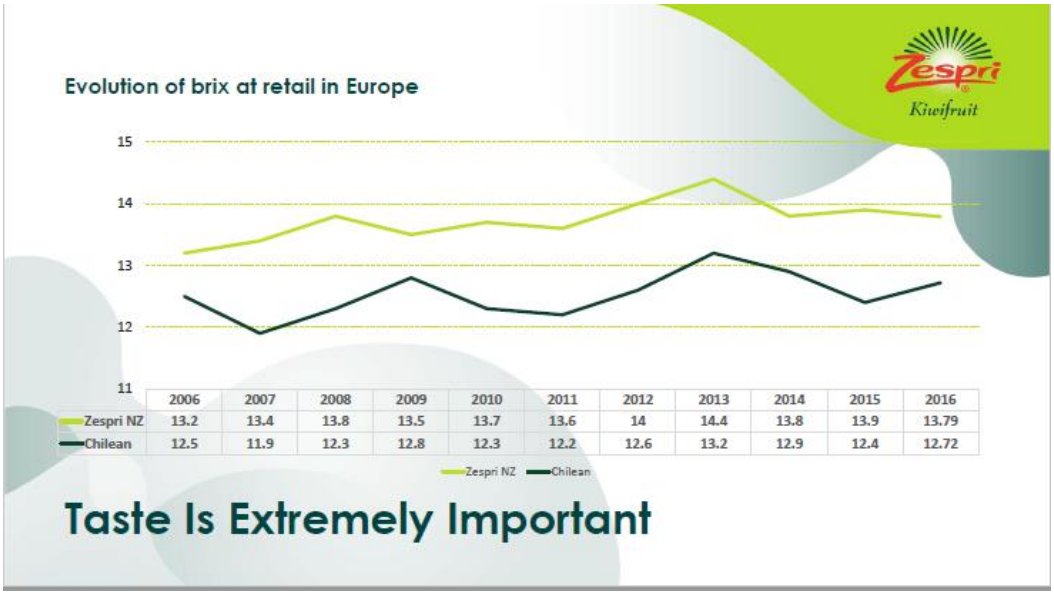
- large size – 65mm diameter as better value for money,
- for convenience, they look for very easy peel, skin removal in one or two pieces,
- like a tart flavour & are more tolerant around the - Brix acid ratio 7:1, &;
- are more tolerant of blemishes - 0.75cm^2 (medium) to 1cm^2 (large).

What Consumers Look For in Kiwifruit?

Taste & health issues along with sustainability are key drivers of consumer demand. There is an increasing demand for kiwifruit worldwide by health conscious consumers. Research has shown that consumers rate health as an important factor when purchasing fruit, kiwifruit in particular. Kiwifruit has a nutrition value, high in vitamin C & E, other minerals, high in dietary fibre, low in calories, sodium & fat & a good source of folic acid. With the increasing issues in food safety kiwifruit is seen as not only great to eat but also safe.

Fruit with high dry matter >15% tastes better to consumers. Taste is a key focus for Zespri to producing consistent quality. This is reflected in a fruit quality standard & incentives paid for higher dry matter fruit. Market research shows repeat purchase of ZESPRI® Kiwifruit is influenced mainly by taste & consistency, rather than by price. Kiwifruit is a versatile product that can be easily eaten.

Variety	Vitamin C mg/average sized fruit
Zespri Green	80-120
Zespri Gold	108-162



Refer to "Ten fabulous facts about kiwifruit" http://appforhealth.com/2013/09/ten-surprising-facts-about-kiwifruit/

Exercise: Consumer preference is a major driver in demand for a product. Explain in detail, how consumer preference influences demand for both Satsuma mandarins & Zespri kiwifruit.

2. Promotion

There is often a great deal of misunderstanding about marketing. People often consider marketing to be the same as advertising. It is not. Advertising is only one part of marketing. Very simply put, marketing is the wide range of activities involved in making sure that you are continuing to meet the needs of your customers & getting value in return.

Promoting Satsuma Mandarins.

Export - Japan.

Mandarins are a relatively small industry & rely heavily on low cost promotional strategies organized by suppliers such as First Fresh. Personal association with retailers has been an essential part of promoting mandarins in Japan. Growers initially went to Japan to meet with potential retailers & establish the exact market requirements. Potential customers were then invited to NZ to view orchard operations. This gave them confidence that NZ could fulfil large orders, that production practices were in place to produce consistent, high quality product & re-enforce the concept of the "clean green image".

This association has been followed up with growers & managers often flying over with the first shipment in April to ensure that it is treated with care & arrives in top condition. The quality of the first Satsumas that go on the market will determine if consumers will return to buy the next shipment at a competitive price, which may be as high as $12/kg.

Local NZ promotions are through supermarkets. These include short-term low price offers for loose fruit - $3/kg & pre-packs of smaller (<60mm) fruit.

Local – New Zealand.

Citrus NZ carries out many promotional activities such as Facebook adverts, school competitions, & tasting opportunities in supermarkets.

Exercise:

1. *Explain why promotion is needed to sell products.*

_____

_____

2. *What is "personal selling" & how is this used in promoting Satsuma mandarins in Japan?*

_____

_____

_____

Marketing & Promotional Activities of Kiwifruit.

In the 2018/19 financial year, growers through Zespri invested NZ$161million in marketing, representing approximately 6.1% of sales revenue. Zespri's marketing strategy is focused on rapidly growing demand ahead of supply. It includes attracting new con sumers to the category, building penetration among fruit eaters & increasing consumption among occasional users. Zespri has made strong progress in strengthening their marketing fundamentals globally, building a globally meaningful & different brand, understanding consumers & improving the efficiency of marketing spend.

Zespri will sustain the advertising & promotion investment to successfully market & position Gold3 as the premium gold kiwifruit, & build consumer demand & trade acceptance & confidence ahead of volume growth. The increase in Hayward volumes has required additional investment driven primarily by volume growth. Concurrently, Zespri will increase relevance of the Zespri brand & consumer engagement in the category.
They are also focused on increasing the overall frequency of consumption. In addition to the focus on growing the overall level of Gold demand, the consumer marketing objectives over the next five years aim to:

- Increase awareness & consumption through promoting the great taste, quality & health benefits of Zespri kiwifruit.
- Activate kiwifruit consumption through a focus on digestive health benefits within the context of a positive halo of health & vitality.
- Build high brand & preference by consumers for the Zespri Brand, underpinned by a taste & quality premium position & supported through emotive brand values of vitality, trust, enjoyment & care.

Successful marketing strategies have increased demand in Asian. This involves using popular Japanese actors in TV commercials with the aim of targeting the young Japanese market. The aim was to get younger Japanese to eat the sweeter Gold kiwifruit, which are ready early in the season, then to try the green & organic. TV campaigns are backed up with roadshows, in-store sampling, & demonstrations with target promotion on Kiwi day on September 1. Korea, China & Taiwan are increasing markets.

Another marketing strategy is to promote the health benefits of kiwifruit to enhance the body's natural immunity as well as a way to improve your sex life because it has amino acids, which improved impotence.

In the EU, tailored marketing campaigns are delivered in each market through TV advertising using consumer contests & other promotions through school & community events (Green Groove programme). These campaigns have increased brand awareness by about 30%. In-store promotions of fruit label collections & shopping cart filling competitions have also been successful. On-line promotions through Delia Online & Mums.net have increased brand awareness & access to a larger audience.

In-store impact & appeal drives consumption.

- ✓ Prominent in-store display with Zespri brand
- ✓ Positioned with mainstream fast moving fruits
- ✓ Cut n Scoop imagery to showcase flesh colour
- ✓ Health messaging
- ✓ "Ready to retail" fruit firmness & quality management
- ✓ Sampling activity (where possible)
- ✓ Per weight pricing e.g. per kg
- ✓ Consumer packaging with relevant messaging to activate consumers.

3. *What are pull & push strategies & give examples of how each of these are used to promote Satsuma mandarins & kiwifruit.*

4. *List the four methods of promotion & give examples of how Zespri has used each of these methods to promote kiwifruit recently.*

5. *How has Zespri moved into the global advertising arena?*

Branding is a form of promotion, which allows for **traceability** of the product.

A brand is meaningful to someone if it both meets their needs & is appealing to them. By differentiating the Zespri brand in a positive way, this allows consumers to justify paying a price premium for Zespri. Marketing plays an important role in creating a unique brand meaning & experience that is consistent across the world but also relevant to the needs of local consumers & market conditions, based on deep consumer understanding.

The development of brands is the only way to remove a product from commodity status & price competition. A brand can be defined as a complex symbol that represents a variety of ideas & attributes. It tells the consumer many things including the quality that can be expected & where the product comes from (traceability). If a consumer has a good experience with a brand, they will return to buy more. Branding consists of awareness, recognition, & top of the mind awareness of the product amongst consumers; positive brand associations; perceived quality & brand loyalty. Branding will result in price premiums, consumer & trade loyalty, trade co-operation & joint marketing efforts & pride of ownership among a company.

Branding of Satsuma Mandarins.

NZ mandarins are marketed & branded by a number of companies as this industry does not have a single marketing board.

The Sunfirst & Ezypeel brands are marketed by T&G Global (originally Turners & Growers). Both brand names have an overseas reputation of consistent, high quality & reliable supply of mandarins to Japan. Orchards from Gisborne & Northland contribute to the volume, which is sold under these brands. The pack houses ensure that a consistent Tag1 product with >10 Brix:<1Acid, between 55–63mm diameter fruit, is sent to Japan through careful grading. This consistent supply of high quality product since 1995 has ensured that T&G Global has the major market share of the Japanese market.

First Fresh is a NZ company which brands mandarins. This is family owned & based in Gisborne. Established in 1989, the First brand is oldest brand in the First Fresh stable & remains their primary export brand - reserved for the very best produce they supply. As the name & imagery suggests, the First brand symbolises Gisborne's premium freshness & taste - the "go-to" brand for those looking for the very best in their fresh produce.

The First brand is used on all export product & is their premium brand for the New Zealand domestic market. First Fresh has been built over many years & comprises of long serving staff, growers & customers. The value of a business lies in its people & at First Fresh the grower & client relationship is paramount - both are seen as stakeholders jointly shaping the future of this ground-breaking Gisborne business.

Branding of Kiwifruit.

Marketing for agricultural products has often been left up to single desk marketing boards that have focused on increasing production efficiency, price competitiveness & product quality in order to develop a competitive advantage. After years of poor returns & the inability of NZ producers to differentiate their products or earn price premiums for superior quality, Kiwifruit NZ (formally the Kiwifruit Marketing Board) developed ZESPRI™.

Zespri is a market-driven, consumer-led international marketing company &, as such, is structured from the market back to the orchard, rather than the other way round.
The brand challenge for Zespri is:

- Every Zespri kiwifruit is the perfect combination of vitality boosting nutritional goodness & exceptionally rewarding taste that makes you ready to enjoy life.
- Delivering a premium, consistent brand that delivers on our brand values of Trust, Quality, Care, Vitality, Enjoyment & Healthy.
- Ensuring there is alignment between what they do inside the business & how they are perceived outside the business.

Zespri's success is a direct result of the strength of the ZESPRI® brand, which stands for vitality, premium quality & great taste. Zespri continues to invest heavily in the brand through implementing brand architecture to position Zespri kiwifruit as a premium product.

In Taiwan, the 'Vitality' campaign to communicate the health benefits of Zespri Kiwifruit was perfectly timed to match a bicycle usage craze. This helped drive a 20% increase in brand awareness amongst the target audience.

Traceability.

Consumers also want to know where the crop is grown & under what conditions. Zespri crops are all traceable back to the grower through bar codes on boxes. In addition, product can be tracked the other way to the shelf. Consumers are demanding traceability of product right through the production process as part of the greater emphasis on food safety globally. Zespri was one of the first to use the pallet card to track fruit from the market to the orchard it was grown on. Zespri are again on the leading edge in the fruit industry by moving to pack level traceability to ensure visibility throughout the supply chain. EAN128 barcoding was first introduced five years ago. Zespri can now track

by pack rather than pallet. This series of audits & checks ensures the customer can have confidence in Zespri to meet their requirements & provide them with consistent product quality.

In-market quality.
Zespri in-market representatives sample product to ensure that Zespri standards are maintained up to point of delivery to customers. In-market results are fed back to growers to complete the quality cycle & drive constant improvement.

Consumer demand for organic produce continues to rise worldwide as they become more concerned with food safety. Consumers want to know the food they are eating is free of pesticides, additives, & preservatives & not genetically engineered. There is an increasing demand for NZ organic kiwifruit & the supply is expected to increase over the next five years. Organic Kiwifruit is a niche market, which would not be available under normal production methods.

In their established markets, Zespri found that their consumers perceived kiwifruit (relative to other fruit) functionally convenient. It is very easy to cut & scoop, there is relatively little waste or mess, & it requires few utensils. However, this is not the case for emerging markets or for non-kiwifruit consumers. The inconvenience of kiwifruit primarily relates to the unpredictable eating experience, difficulty, & lack of predictability in ripening. Zespri therefore has to teach them how kiwifruit can be convenient for them. Convenience is one of the top three global factors influencing purchase decision-making for kiwifruit. Zespri's convenience programme aims to give the best eating experience across all Zespri varieties by ensuring the consumer can eat their kiwifruit at optimal ripeness & optimal taste. Zespri therefore promotes their cut & scoop story.

Exercise: Different promotional campaigns are used by producer organisations, processors & producers to increase consumer demand for primary products. The increase in demand can take the form of higher prices received by the producer, higher quantities sold, or both.

Using either Satsuma mandarins or Zespri kiwifruit as examples explain, in detail, how promotional campaigns have affected the demand for the product.

3. The size of the market

The BIGGER the market, the BIGGER the returns. NZ population is small approximately 4.6 million. Therefore, consumer demand is small. Thus, horticulture in NZ relies on export for returns.

Exercise: The NZ domestic consumption of kiwifruit is around 5-10% of the fruit produced. Using the information on the proportion of domestic Satsuma mandarin consumption compared with the volume exported in the supply notes. Explain in detail the difference in demand for the two products.

_____

_____

_____

_____

_____

_____

4. Quantity demanded (See supply for trends)

Export market demand large volumes. Individual growers may find it difficult to meet this demand. Cooperatives or producer boards provide sufficient volume for large demand, often over a prolonged period of time (Also refer to Political Intervention). Marketing companies work hard to ensure that the demand is fulfilled.

Mandarins
Ezypeel and T&G Global are the major suppliers, which ensures 700 tonnes of high quality Tag 1 fruit are exported to Japan between April – June every year. Growers produce around 11,310 tonnes of mandarins each year, majority going on the domestic market.

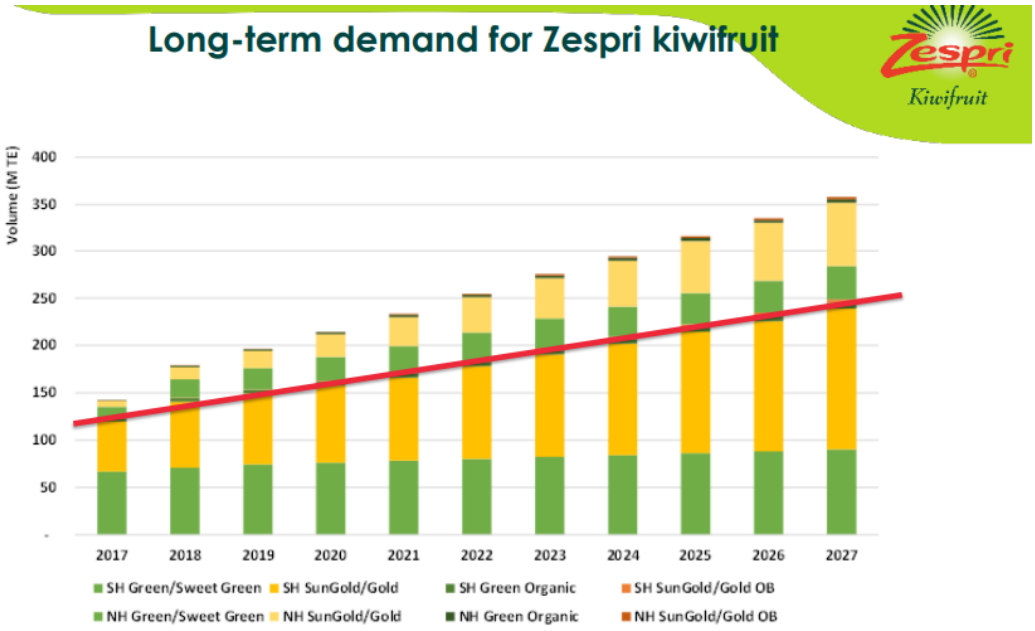
Kiwifruit.
Zespri International is the single desk producer board that exports 148.8m trays of premium quality fruit to over 50 countries. The demand for kiwifruit is expected to increase, as kiwifruit is still an underdeveloped category within the fruit bowl, with a huge growth potential. If Zespri does not meet demand, they will

- Give up shelf space to other kiwifruit suppliers
- Give up shelf space to other fruit
- Lose share within the fruit bowl (therefore it will be more costly to rebuild mental & physical availability
- Forfeit the opportunity to bring further value back to their growers, & the industry

It is a dynamic race… standing still means falling behind.

China demands the most kiwifruit, Japan second with Spain & Portugal third. See graph below.


Zespri
Kiwifruit
Healthy eating
Global demographics
Position in the fruit bowl
Demand for SunGold
Leadership in innovation
Leadership in global kiwifruit industry
A confident view of demand…


Long-term demand for Zespri kiwifruit
Zespri
Kiwifruit
Volume (M TE)
400
350
300
250
200
150
100
50
-
2017
2018
2019
2020
2021
2022
2023
2024
2025
2026
2027
SH Green/Sweet Green
SH SunGold/Gold
SH Green Organic
SH SunGold/Gold OB
NH Green/Sweet Green
NH SunGold/Gold
NH Green Organic
NH SunGold/Gold OB


All Varieties, NZ & ZGS Supply
Zespri
Kiwifruit
China
Japan
Spain & Portugal
Taiwan
Germany
Benelux
France
Italy & Med
Korea
United States
0
5000000
10000000
15000000
20000000
25000000
30000000
Zespri Green
Zespri Green (Organic)
Zespri Gold & Zespri SunGold
Zespri Sungold (organic)
Zespri Sweet Green
ZGS Supply
Sales Volume (TE) Top 10 Markets 2017

5. Reliability of Supply – keeping consumer demand.

If regular orders are to be made for a product from a grower, a large, consistent ***quantity*** of ***quality*** product must be guaranteed to meet market demand. If in one year, the grower fails to provide the quantity of quality product at the right time & price, the market may be lost. The reputation for reliability will be lost. It is very easy to lose a market. It is very difficult to regain that market.

How Zespri ensures it meets market demand for kiwifruit.

Over the past 10 years, NZ volumes sold have almost doubled from 51.8m to 148.8m trays. The size of the Zespri operation allows for some flexibility of supply.

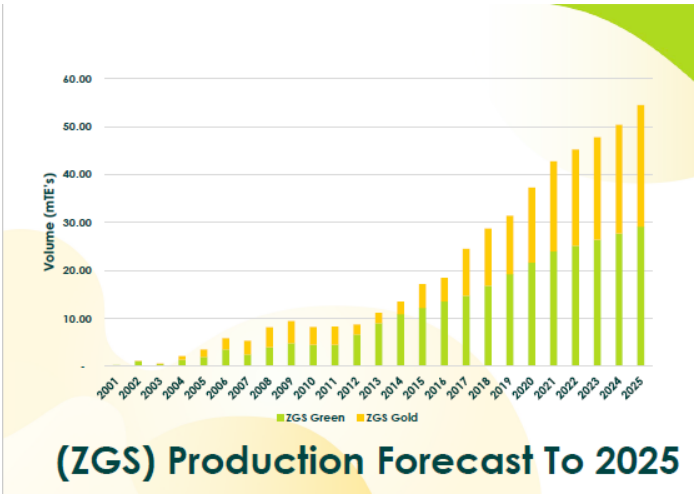
Non-NZ Supply

The year-round supply programme supports Zespri's brand & distribution strength by partnering with growers around the world to supply premium-quality kiwifruit to consumers outside of the NZ supply window. The programme supports NZ growers by securing year round shelf space & is core to the business.

Zespri Global Supply Statistics 2018/19

Region	Trays supplied ('000)	Percentage of supply	Producing hectares[1]	Number of orchards[1]
Australia	18	0.0%	7	2
France	420	0.2%	143	53
Greece	504	0.3%	–	–
Iberia	44	0.0%	8	6
Italy	16,869	9.8%	1,608	598
Japan	163	0.1%	64	428
South Korea	521	0.3%	84	254
New Zealand	154,058	89.3%	12,747	3,201

About the turn of the century Zespri came up with the farsighted notion of growing kiwifruit in Northern Hemisphere countries to supply countries with fruit during the four months it did not come from NZ. So was born Zespri Global Supply (ZGS), with the first plantings in Italy but now in France, Spain, South Korea & Japan. Other countries are being sized up for their potential.



During 2018/19, Zespri Global Supply sales reached 18.4m trays, up from 15.4m trays in 2017/18. This is expected to increase as demand increases. See graph for production forecasts to 2025.

Satsuma Mandarin Import volumes to Satisfy Demand.

NZ imports about 2,190 tonnes of mandarins from Australia. All imports were at the end of the NZ season in July (32%) and August (68%) with no imports during May and June. The August volume entered the market when the NZ satsuma season was ending and NZ supply had decreased.

Meeting the market window: Satsuma Mandarins.
In 2008, there was a very cold & wet winter, which resulted in late flowering of the mandarin trees in August. This resulted in the brix of the mandarins being slow to reach 10 by May 2009 & the brief market window to export 700 tonnes of Tag1 fruit during April to June was lost. The fruit were ready in June but the Japanese demand was gone. The potential returns of average $3.50/kg was not realised & the mandarins were put on the local market, which was oversupplied, & returns slumped to 10c/kg. In the 2010, the Japanese demand was hesitant as there had not been reliable supply in the previous year & confidence in reliability of supply from NZ had to be renewed.

Exercise: Explain in detail, using examples, how the demand for export **Satsuma mandarins** is dependent on reliability of supply.

Explain in detail how Zespri International ensures the global demand for kiwifruit is met.

6. Quality Required – attributes demanded by specific markets

If the ***quality*** of a product is maintained by a supplier, discerning consumers will prefer to buy the product. With high quality reputation INCREASES. With high quality, demand INCREASES. This is the basis of a niche market. NZ has a global reputation for high quality product produced in a sustainable manner.
Different markets demand different types of attributes & different standards of quality. This may be due to;

- Ethnic preferences
- Level of disposable income
- Festivals & holidays (timing)

Quality Demands of Satsuma Mandarin Markets.

Local NZ Market.
This is a commodity local market.
The following supermarkets - Pak 'n' Save, New World, Countdown, & Woolworths / Foodtown run by Food Stuffs NZ & Progressive Enterprises are the major buyers of local NZ Satsuma mandarins. The local market can absorb approximately 400-600 tonnes of fruit per week before becoming saturated.

Preferred features of the fruit include:
- Large size – >65mm diameter
- Easy peel, skin removal in one or two pieces
- Brix acid ratio 7:1.2
- Cumulative blemishes 0.75cm2 (medium) 1cm2 Large
- Defect tolerances (shape, maturity, skin defects – colour, blemishes) 5% Tag 1-15% Tag 2

The consumers are looking for convenience – easy peel & perceived value for money in larger fruit >65mm diameter, as these fruit will be eaten as part of family meals or lunches. The NZ palate tends to prefer tarter fruit & thus the 7:1.2 Brix: acid ratio is more acceptable.

Export Market to Japan.
This is a high end, high returns niche market. Export volumes total 700 tonnes over the season, with a possible peak at 180 tonnes per week during early May.

Preferred features of the fruit include:
- Small size – 55-63mm diameter
- Easy peel, yet tight skin, removal in more than 4 pieces
- Cumulative blemishes – 0.5 cm2
- Defect tolerances 2%
- Brix acid ratio 10:1

The market window is only open April – May as Japan produces its own mandarins during the rest of the year. This window & market opportunity is only there because the fruit is perishable & can only be stored for 3 weeks. The fruit are purchased by Japanese higher income earners who have disposable income for luxuries. They demand a very high level of quality as the fruit are given as presents, often individually, & appearance is as important as taste (they “eat with their eyes”). The Japanese prefer sweet fruit & demand a minimum of 10 brix & low acid 1, which might be considered a bland taste to NZ consumers.

Matching Quality & Attributes to Kiwifruit Markets.

To remain competitive Zespri must continue to encourage NZ kiwifruit growers to produce the quality requirements for the specific market opportunities. Taste is an increasingly important part of the quality required by markets. In the Japanese market, taste is more important than fruit size & price. Consumers are prepared to pay premiums for fruit with a high dry matter as they have good flavour. Y band fruit is exported to Japan. Growers who produce high dry matter fruit with good taste are rewarded being paid a TZG premium.
- Y band = 60c/tray equivalent (TE)
- T band = 40c/TE
- R band = 20c/TE

The preferred count size in all markets is 30-36 although the European market will not take small 32 count fruit. It is important that fruit size matches consumer demand. Fruit is sized by weight. The size profile of each cultivar is quite different. Gold3 tends to grow quite large while Green14 is much smaller. Different markets & different customers have different size preferences. It is important that growers produce a range of sizes to meet this demand. Market demand for very large & very small fruit is limited. The table below shows the average size of fruit the market prefers for each cultivar.

Right:
Market size preference for fruit by cultivar in 2019

Cultivar	Preferred average size
Green	31.8
Organic Green	33.5
Sweet Green (Green14)	33.0
Gold3 and Organic Gold3	29.3

Quality Market requirements

Market Opportunities	Market requirements
Export Asia (Japanese)	• Gold colour grade >0.42 • Smooth haired • Sweeter 13 Brix & above • Size (Count 32 - 18) • Dry matter > 15% better taste & storage • TZG Y band
Export Europe	• Green / Organic • Brix 6.2 at harvest for good storage & taste • Dry matter >15% for good taste • TZG Y or T band • Count size (33 - 18) • Oval shape • Chemical residue free Green fruit (traceability)

Kiwifruit represents only 0.5% of global fruit consumption, retailers thus offer limited space for sale. It is essential that the best quality fruit fill the limited space offered. Therefore, it is important to meet the high demand for fruit, which maintains its appearance when it is displayed at the retailer, & a preference for sweeter fruit > 7 Brix.

Exercise: Quality standards are followed by producers in order to maintain product quality & help to maintain consumer demand for the product.
Explain, in detail, how **specific** quality standards have **maintained or increased consumer demand** for either Satsuma mandarins or Zespri kiwifruit.

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7. The effect of Demand on Prices

(a) The consumer income level

A high-income level generally gives consumers disposable income encouraging a demand for high quality even if prices are high. A lower income level produces a demand for lower prices. The lower prices are for products of a lower grade quality. If a country goes into economic recession, the overall income is reduced & demand is reduced.

(b) The quantity available

The smaller the quantity available, the higher the price gained, if the product is preferred by the consumer who is willing to pay. The price of perishable products tends to be high on the "shoulders" of the season when volumes are lower.

Kiwifruit a less seasonal fruit.

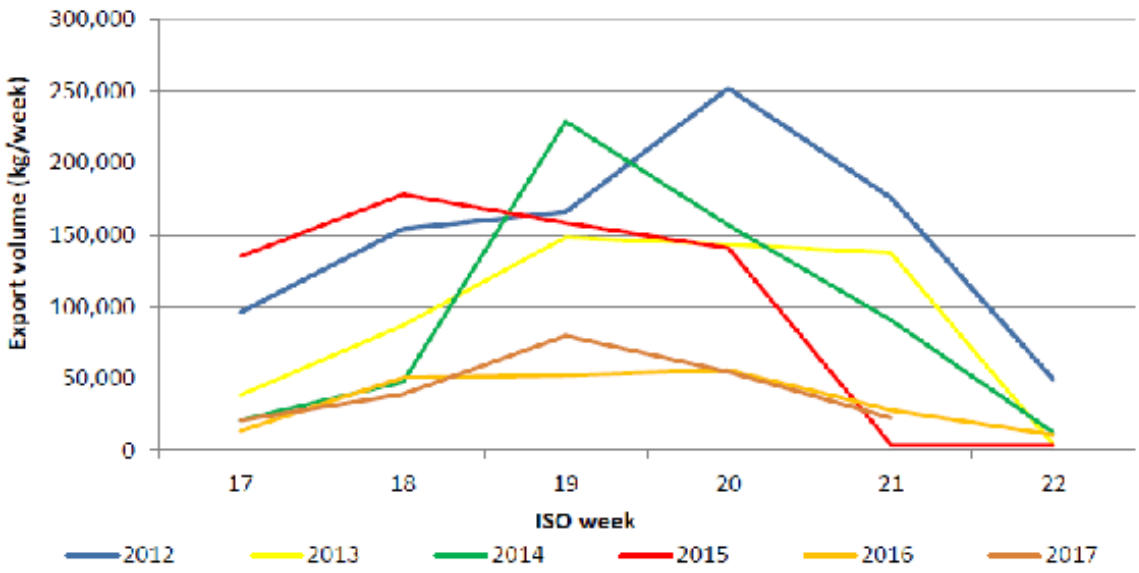
Kiwifruit can be stored at 1°C / 95% humidity in the case of Zespri Green for up to 6 months. Gold have a shorter storage life of around 3 - 4 months. The fruit keep their firmness 4-5 Kgf & sugar content 7 brix well in a controlled atmosphere. This means that they can be released when the Northern Hemisphere competitors have cleared their stocks to ensure good prices of around $7/tray for Green & $12/tray Gold. Quality is maintained by all year round supply through trays being produced through licensed growers in Northern Hemisphere.

Satsuma Volumes & Prices.

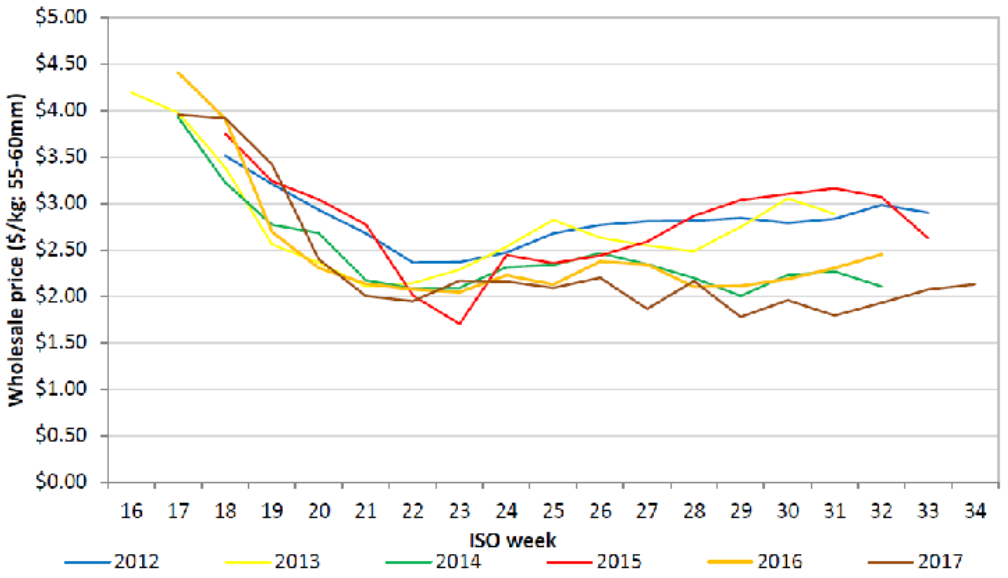
The lowest recorded wholesale price of $1.78 for Tag 1 55 – 60mm fruit in 2017 was in week 29, compared with the highest price of $3.96 in week 17 at the very start of the season.

Prices of $4.00/kg can be gained on the early shoulder of production in mid-April when only 2,000kg mandarins are available. Demand will be high as the fruit will be new on the market & there will be competition between retailers to get quantities of the early fruit. However, prices are reduced to $1.50/kg when 250,000 kg are available mid-May.

Satsuma mandarin export volumes (kg/week) for the 2012 to 2017 seasons.



Satsuma mandarin wholesale prices ($/kg) for the 2012 to 2017 seasons (Tag 1 55 – 60mm fruit).



Exercise:

When consumers purchase primary products, one of the significant factors influencing the quantity they buy is price. For either Satsuma mandarins or kiwifruit;

- Explain, in detail, why a **10% increase in the price** of the product would have a **significant effect** on the quantity of the product consumers would purchase; or
- Explain, in detail, why a **10% increase in the price** of the product would have **little or no effect** on the quantity of the product consumers would purchase.

8. Market Trends

The modern retail markets are characterised by concentrated retail buying power of supermarkets, demands for product traceability & increasing pressure on the margins at all stages in the commodity chain. Consumers also now have a greater range of choice in fresh fruits than was historically available, & such fruits are available year round. Increased competition within the global market place has demanded an increased emphasis on fruit quality as a means to develop competitive advantage. The highest value markets to the NZ industry are the Asian markets, particularly Japan.

a) Short term trends – Seasonality (Refer to quantity & quality graphs in supply).

Two main aspects of seasonal demand are:
- Climate - what is available
- Alternate seasons with the Northern Hemisphere - seasonal advantage – fulfilling demand for all round supply.

b) Long term trends - Trends which fall over three years or more.
(Refer to quantity & quality graphs in supply).

Exercise: Refer to quantity & quality graphs in supply for Satsuma mandarins.
- *State & describe the major market for NZ Satsuma mandarins.*

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- *Describe the long-term trend for volumes produced.*

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- *Give TWO reasons for the trend patterns of this market.*

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- *Explain what threats there could be to the market.*

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- *Suggest how NZ growers could overcome these threats.*

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Exercise: Refer to quantity & quality graphs in supply for Zespri Kiwifruit.
- *State & describe the major markets for Zespri Kiwifruit.*

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- *Describe the long term trend for volumes produced & prices gained.*

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- *Give TWO reasons for the trend patterns of this market.*

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- *Explain what threats there could be to the market.*

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- *Suggest how NZ growers could overcome these threats*

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9. Political Intervention

a) International Commodity Agreements or Free Trade Agreements (FTA)

Trade agreements involve two or more countries agreeing on the terms & conditions that help them to trade successfully with one another. They determine the quotas, tariffs & duties each country imposes on imports & exports. Trade agreements affect international trade & how much is imported or exported to those countries. Free trade is where all the barriers have been removed to allow easy trade between those countries. This allows producers to gain access to a wider range of markets and consumers to access a wider range of products at lower prices. Free trade has the advantage of allowing countries to specialise in certain products that they are best suited to producing & to buy products that they could possibly only produce at a higher cost.

What is The World Trade Organization (WTO)?

The WTO is the only global international organization dealing with the rules of trade between nations. It is an organization for trade opening & a forum for governments to negotiate trade agreements. It is a place for them to settle trade disputes & it operates a system of trade rules. Essentially, the WTO is a place where member governments try to sort out the trade problems they face with each other. At its heart are the WTO agreements, negotiated & signed by the bulk of the world's trading nations. These documents provide the legal ground rules for international commerce. They are essentially contracts, binding governments to keep their trade policies within agreed limits. Although negotiated & signed by governments, the goal is to help producers of goods & services, exporters, & importers conduct their business, while allowing governments to meet social & environmental objectives.

The system's overriding purpose is to help trade flow as freely as possible — so long as there are no undesirable side effects — because this is important for economic development & well-being. That partly means removing obstacles, but it also ensures that individuals, companies & governments know what the trade rules are around the world, & giving them the confidence that there will be no sudden changes of policy. In other words, the rules have to be 'transparent' & predictable.

Trade relations often involve conflicting interests. Agreements, including those painstakingly negotiated in the WTO system, often need interpreting. The most harmonious way to settle these differences is through some neutral procedure based on an agreed legal foundation. That is the purpose behind the dispute settlement process written

into the WTO agreements. The WTO's current Director-General is Roberto Azevêdo, who leads a staff of over 625 people in Geneva, Switzerland.

Exercise: *List the principles behind WTO:*

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Closer Economic Relations (CER)

CER is a free trade agreement (FTA) between the governments of NZ & Australia. It is also known as the Australia NZ Closer Economic Relations Trade Agreement (ANZCERTA) & sometimes shortened to (CERTA). It came into force on 1 January 1983, but the actual treaty was not signed until 28 March 1983 by the Deputy Prime Minister of Australia & Minister for Trade, Lionel Bowen & the NZ High Commissioner to Australia, Laurie Francis in Canberra, Australia.

CER built on the earlier NZ Australia Free Trade Agreement (NAFTA), which was signed on 31 August 1965 & came into force on 1 January 1966. NAFTA had removed four-fifths of the tariffs between the two countries & quantitative restrictions on trade across the Tasman Sea. However, it came to be seen as too complex & bureaucratic, & in March 1980, a joint Prime Ministerial communiqué was released that called for "closer economic relations". The two major sticking points in the negotiations were NZ's wish for better access for its dairy products in Australia & Australia's wish for NZ to remove export incentives & quantitative restrictions. After the two hurdles were overcome, the Heads of Agreement was signed on 14 December 1982 & came into force on 1 January of the following year.

One of the most important results of CER was the Protocol on the Acceleration of Free Trade in Goods, which resulted in the total elimination of tariffs or quantitative restrictions between the two countries by 1 July 1990, five years ahead of schedule.
Other parts of CER include:

- A good that can be legally sold in one country can also be legally sold in the other.
- Anyone registered to practise an occupation in one country may practise in the other (with some exemptions including medical practitioners).
- Service providers may provide services in either country (except in certain areas such as airway services)

Exercise: *List the advantages & disadvantages of CER to NZ growers.*

Advantages

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Disadvantages

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b) Trade barriers

A country will not accept another countries produce because they wish to maintain their own production monopoly without competition. Trade barriers may be imposed for biosecurity or phytosanitary reasons. This is when a country is known to have pest or disease & the potential importing country does not want it introduced as it may threaten those countries crops, e.g. NZ's ban on honey imports to stop the entry of "American Foul brood".

Will NZ apples ever be allowed into Australia?
9:02 AM Tuesday Apr 13, 2010

NZ has won its long-running apple war against Australia. A WTO decision issued in Geneva early this morning ruled against Canberra's efforts to block imports of NZ apples. Australia has refused for 90 years to let NZ apples be sold there; claiming fire blight in NZ apples would infect its apple & pear orchards. "NZ's WTO victory will allow NZ apples into Australia & I know that the pip fruit industry will be extremely excited by the news," Damien O'Connor said. It is clear that the WTO ruling will allow NZ pip fruit growers to access a valuable market & is expected to be worth at least $30m a year to the industry.

50-year import ban on Australian honey lifted
5:00 AM Wednesday Jul 12, 2006

Australian honey is to be allowed into NZ, breaking a ban of more than half a century. Honey from Western Australia - which does not have European foulbrood disease in its bees - will be allowed to enter the NZ without treatment. Other Australian honey will have to be treated with heat & some other bee products may be treated with radiation.

Exercise: *Explain why both Australia & NZ would try & stop imports from coming into their countries?*

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c) Tariffs

A tariff is a tax which has to be paid by the supplier (exporter) before the produce, enters the country. This is another method of supplier protection. Tariffs potentially cost individual commercial growers tens of thousands & has a significant impact on the affordability of products in many of the offshore markets. Tariffs are a real cost of trade that hit the profitability of the NZ export industry while protecting domestic producers in these markets. Quantifying these costs is a key step in dismantling them. These punitive tariffs add cost without adding value at the market end. Consequently, demand for NZ horticultural products is suppressed. The benefits of removing tariffs are illustrated in the Closer Economic Partnership (CEP) between NZ & Thailand. Traceability through barcodes automatically ensures that tariffs are collected from the country of origin.

Tariffs Continue To Cost NZ Horticulture Millions
http://www2.nzherald.co.nz/the-country/news/article.cfm?c_id=16&objectid=11785890
Te Puke Times 4:00 PM Friday Jan 20, 2017

Horticulture has experienced a spectacular 40% growth in export earnings since 2014, with tariffs on exported produce down by 22% since 2012. Horticultural produce exporters paid an estimated $190 million in tariffs, a reduction of 22% on 2012's $241million. About 60% of NZ's total horticultural production of fruit & vegetables is exported, valued at just over $3.4 billion (to NZ's economy).

Mandarins:
No tariffs imposed are by Japan, the major importer, thus profits are not eroded by payment of tariffs.

Kiwifruit tariffs.
A number of NZ's major markets impose significant tariffs on kiwifruit imports.

- In the 2008 free trade talks, China agreed to reduce tariffs from 20% to zero over the following 8 years. 2016 was the first year with no tariffs on kiwifruit. China earnt Zespri $500m that season, selling 40m of the 140m trays harvested. "It has become a significant business in its own right, coming from only 10m trays back in 2011".
- Zespri has welcomed the NZ Government's decision to go ahead with ratifying the Trans Pacific Partnership (TPP) Agreement, despite President Donald Trump's to pull the US out of the TPP. "The TPP would eliminate tariffs on kiwifruit exports into all 11 Asia-Pacific nations & the most immediate impact would be in Japan, where kiwifruit growers paid around $25m in tariffs last season," says Lain Jager. "If this tariff relief was passed straight through to NZ growers, it would equate to savings of around $1,900 for every hectare of kiwifruit grown in NZ."

- Europe is NZ's largest market where a tariff of approx. 8% resulted in an approx. $33m tariff in 2016 (on $433m of exports).
- Korea imposes the highest percentage tariff at approx. 30% ($19m p/a). However, at 3% of the export volume the figure is less significant than other markets & due to the free trade agreement (FTA) with Korea this will reduce to zero by 2020.

Changes to tariffs will ultimately impact the OGR received by growers.

Exercise: Describe the effect tariffs will have on the profit a kiwifruit grower can make.

Explain how this affects the amount of product a NZ grower will export.

Tariff avoidance

A grey market is the trade of a commodity through distribution channels that are legal but unintended by the original manufacturer. They are often used & are commonly relied on by international firms wanting access to Chinese markets & to avoid tariffs, difficult regulatory hurdles, & inefficient distribution networks. Grey channels employ "thousands of people" known as transporters, who are prepared to truck product from Hong Kong or ship it to the mainland ports in small boats, to distributors who then move it through the country. For food products, grey channels involve risks such as unreliability in delivery & inadequate cool chain management. Grey trading was "rife" & NZ exporters like Zespri & the meat industry were always concerned about perishable goods with their name on it being removed from a cool store chain to far-flung destinations. However, even with the removal of import tariffs, VAT tax of 13-17% would still make it worthwhile for a grey trader to operate. Smuggling would only tail off when it became more expensive to truck untaxed product to a final destination than to pay duties.

Kiwi skincare exporters use grey channel to reach Chinese market

ANUJA NADKARNI. Last updated 05:00, June 12 2017

Small NZ cosmetics companies opposed to compulsory animal testing regulations in China are opting for a backdoor export channel using diagous, even if they do not prefer it.

Diagous, which translates to 'buy on behalf' are personal shoppers who sell products to individual Chinese consumers through social media sites like WeChat & Weibo & websites like Taobao (Chinese equivalent of Trade Me). Diagous can be small business owners or souvenir shops that stock NZ products, or Chinese students or immigrants that want to help friends & family or earn extra money. Linden Leaves chief executive Peter Allard said the diagous channels have formed despite NZ's free trade agreement with China because the non-tariff barriers like animal testing being implemented were stopping free access to the market. "The diagous channel doesn't sit well with us at all because we don't have the control over where we are sold, how we are sold & at what price. The discounting that goes on is just ridiculous," Allard said. "It's very much a case of 'if you can't beat them join them' because some of our competitors are very heavily invested in those channels & that gives them a competitive advantage over us in our domestic market."

Sales to diagous are counted as domestic sales, calculated in NZ currency; while sales made by diagous to Chinese consumers are generally use the Chinese renminbi. Allard said the grey area here was that these products were being sold overseas making them technically exports, but they were still considered domestic sales. Export consultant Paul O'Brien said the diagou system in NZ was still small with only about 100 businesses actively selling to diagous. But many NZ brands were passively in the diagous chain because their products might be bought by individual customers & sold overseas. "Many Kiwi businesses try to find diagous, but in most cases, if a brand is doing well the diagous find them," O'Brien said. Businesses can gauge the success of their products based on the number of mentions, retweets, or direct comments on the social media sites. Allard said after discovering two diagous that had made purchases to ship to China but resold them locally, Linden Leaves began actively tracking all its products to its specific buyers with a marking system that alerted the company if the products had been resold into NZ. He said larger Kiwi businesses in the health & skin care industry were exempt from animal testing if they were manufacturing in China & then distributing there too. But Allard said this was not a possibility for many small & medium enterprises. "We have to sell it this way even if we don't like it, because eventually when the animal testing goes, which it will, we'll be far behind those that already have a presence in China," Allard said. O'Brien said the diagous market will not last long due to unpredictable Chinese regulations, but for the time being, it was a good way for small companies to test their market in China or beat animal testing regulations. "At first I was critical of the channel, but for small & medium businesses with turnovers of about $1m that cannot afford to reach China it's a legitimate way of doing business. "If we don't take advantage of this channel that other countries are using, including Australia, we'll just lose out on growing our brand awareness in a huge market", he said.

Kiwi exporters face trouble in China
17 Feb, 2017 6:00am

For Comvita, an unofficial "grey" channel into China has played a big part in its success. The company, NZ's biggest Manuka honey maker, has enjoyed a dream run for years, based on strong offshore demand - particularly from China. Cracks in that performance started to emerge last year, when the company reported tough trading conditions in the first four months of the year to June. Sales were significantly lower than in the prior year, resulting from a slowdown in the NZ & Australian informal channels into China. Making things worse, unfavourable weather means Comvita now expects its net profit to be just $5m to $7m, compared with $18.5m in the 18 months to June 2016. It is not the only company to hit a snag in the so-called "daigous" channel - Chinese for "buying on behalf". The slowdown has hit other Manuka honey producers & played a part in the spectacular fall of Tasmania-based infant formula company Bellamy's. Health supplements company Blackmores has also suffered from problems in the grey market. Comvita chief executive Scott Coulter says the company has benefited from the unofficial channels, which it has used to build its brand in China. For Comvita, the simplest unofficial channel has been

through Chinese tourists buying product at a gift store or airport, helping the brand to build its reputation.

Exercise: *Explain in detail how grey trading affects market access for kiwifruit to China & why this system might have problems.*

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d) Quotas

The maximum quantity of a primary product, which will be accepted by an importing country. This is used to protect the home producers. Satsuma mandarins & kiwifruit are not subject to any quotas.

Mandarins

The mandarin market window is very small 6-8 week period April/May when 700 tonnes are exported. After which the Japanese mandarins become available & the premium price of $3.50/kg available to NZ growers will be reduced as the local product begins to compete on the market.

Kiwifruit

Over 489,000 tonnes of premium quality kiwifruit is sold to over 50 countries every year & the only restriction on volumes sold is from the consumer. Since kiwifruit are only 0.5% of the fruit consumed globally, the restriction to volumes will be from competition from other fruits & kiwifruit produced by other countries. However Zespri predict that the markets, particularly in Asia, are far from saturated & there is the potential for up to 200 million trays to be sold worldwide.

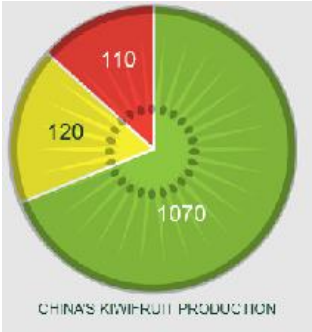
e) Financial Incentive, Grants, Tax Concessions & Subsidies

A subsidy is a government payment to producers to help them produce a given product or a quantity of a given product. Subsidies can come in two forms – direct (e.g. cash grants & interest-free loans) & indirect (e.g. tax breaks, insurance, low-interest loans, accelerated depreciation, & rent rebates).

A financial incentive is an offer from the government for producers to produce a certain type or number of products. Financial incentives are designed to reduce the cost of production, which artificially makes a product cheaper & helps to maintain international competitiveness.

The NZ Government removed any financial incentives, grants, tax concessions or subsidies to NZ primary producers in 1985-87, since there was not enough money to ensure “floor prices”. This forced growers to become independent & follow a business model. As a result, many small producers went out of business. However, NZ growers have to compete in the global market where subsidies are still paid e.g. in the US & China, making it difficult to sell into these markets.

Beginning in 2008, the Shaanxi Fruit Industry Council first announced it would support kiwifruit farmers with a yearly cash subsidy of 300RMB for each Chinese "mu" harvested for kiwifruit (the equivalent value would be approximately $267 USD per acre based on the exchange rate of December 31, 2009). After an initial review of the program's benefits over the last two years, the Shaanxi government reconfirmed support to maintain the program through to 2015. Shaanxi Province is China's largest growing area for kiwifruit. In particular, Shaanxi Qinling mountain area is the most fertile growing area for kiwifruit, which can grow 96% species of kiwifruit known worldwide.



Exercise: *Subsidies can be money paid to the producer to grow a specific product for export. Explain why a government would do this?*

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Explain why a government would offer tax concessions to primary product producers?

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10. <u>The NZ Dollar & Exchange Rate.</u>

The exchange rate is the value of one currency against another – the price for which a NZ dollar can be exchanged for another country's currency. The price of primary products on export markets is governed by the strength of the NZ$. When the NZ$ is high, it makes products cost more overseas. Therefore, importing countries buy less, & returns go down. Importing countries look for better markets opportunities. NZ export contracts could be cancelled BUT the cost of buying equipment, seeds etc. from overseas and bringing into NZ becomes less, & therefore, production costs become less.

When the $ is low, NZ products cost less overseas. Therefore, countries are willing to buy more (if quality, quantity, timing & price are right) BUT importing equipment, seeds etc. into NZ cost more, reducing profit margins.

If NZ supplies a small ***niche*** market this is more vulnerable to fluctuation.

Falling NZ dollar great news for Kiwi exporters
Stuff January 2016.

Kiwi exporters benefit from sharp drop in NZ$. NZ exporters have had a stellar year thanks to the falling NZ$, resulting in more cash in hand. The NZ$ fell from above US78c in January to a low of US62.70c in September. It ended the year about US68c, below where it began. Export NZ executive director Catherine Beard said it had been a positive year for exporters, who are remaining positive despite the slight increase to 68c. "Basically, it gives them more margin & therefore more profitability – it also gives them confidence. "They have really been battling for quite some time & then this year the pressure came off quite significantly. But because they have been battling for quite some time, I think they were in a really good position to take advantage of the lower exchange rate." Exporters would have "screwed down every bit of productivity that they could", Beard said. "So, essentially, they are extremely efficient otherwise they would have gone out of business." Most exporting sectors had a great year, with manufacturing & food & beverage exports the clear winners. However, a couple of sectors were "challenged", she said. "There were categories that were challenged, such as dairy, where they had low commodity prices".
Westpac senior market strategist Imre Speizer said economists noticed a "short, sharp rise" in dairy prices as a result of the NZ$ rising in the last four months. "The last third of the year was a rebound, which caught a lot of people by surprise – including us – & that was caused mainly by a sharp rebound in dairy prices. "That rebound in itself has stalled but it was quite a sharp rebound & was partly caused by fears of a drought, which people thought would see dairy prices pick up again." Accelerating the decline to the year's low were a couple of things that were unique to NZ, & one of those was the fall of dairy prices, he said. "In addition to that we had the Reserve Bank of NZ cutting interest rates, which was pre-empted quite a while ago. "So I'd say number one factor was the US$ & two secondary factors being dairy & interest rates, which basically caused the NZ$ to go the same way."

NEW ZEALAND DOLLAR EXCHANGE RATES TABLE

Top 10 — Apr 18, 2020 00:09 UTC

New Zealand Dollar	1.00 NZD	inv. 1.00 NZD
US Dollar	0.603291	1.657575
Euro	0.554907	1.802105
British Pound	0.482265	2.073548
Indian Rupee	46.153027	0.021667
Australian Dollar	0.947948	1.054911
Canadian Dollar	0.844790	1.183726
Singapore Dollar	0.858086	1.165384
Swiss Franc	0.583264	1.714489
Malaysian Ringgit	2.636336	0.379314
Japanese Yen	64.870564	0.015415

Exercise: *Explain how the strong NZ dollar is less likely to affect the Satsuma Mandarin export market than the export kiwifruit sales & what exporters can do to continue to make a profit.*

11. Grower Organisations & Cooperatives.

Grower Organisations

Grower or producer organisation are formal rural organisations whose members are smallholder farmers or growers who organise themselves with the objective of improving their income through improved production, marketing, and local processing activities. Most of these organisations are regulated by government legislation.
Single growers, however large, generally need Government legislation or other growers to ensure:

- Production of enough volume for export
- Ensure regulation of quality
- Find new markets & re-establishing old ones
- High quality promotion

Citrus New Zealand

Citrus NZ is the national citrus growers' organisation, which operates to promote citrus grower interests, & to maximise their productivity & profitability in a sustainable way. Citrus NZ provides information for & about the citrus industry, & is a forum for the discussion of industry issues. They provide research & development & act as a liaison with the NZ Government. For example, reducing barriers to export markets, & the ongoing effort to keep NZ free of biosecurity threats such as fruit fly, citrus canker & citrus greening. They do not govern sales of mandarins.
Growers pay a levy to Citrus NZ. This is a legal requirement which is based on the grower's total volume for the 2019 season. Citrus levy rates are;
• Fresh mandarins, oranges, tangelos, grapefruit, lemons and limes: - 1c/kg
• All processed citrus : 0.3c/kg

New Zealand Kiwifruit Growers Incorporated (NZKGI)

NZKGI was formed in 1994 to give kiwifruit growers their own organisation to develop a secure & stable kiwifruit industry. NZKGI represents kiwifruit growers & protects their political & commercial interests. Key roles include; safeguarding the Single Point of Entry (SPE), supporting grower wellbeing & welfare, consulting with growers on industry initiatives & reporting on Zespri's performance, with a bottom line aim to increase growers' returns. A grower levy is used to fund the operations of NZKGI. The levy is set at 1c/tray ($0.0028/kg).

Cooperatives

A cooperative ownership structure is used by people usually in the same industry or sector such as farmers, growers, or consumers. These people have decided to work together to achieve business goals that may not be possible or as easily achieved by themselves. They are called shareholders or members, & they all contribute the start-up capital to the business & then take a share in the profits of the business in proportion to their participation – the greater the participation, the larger the proportion of profits.

There are different types of cooperatives.

- Retail cooperatives – e.g. Farmlands Co-operative. Retail cooperatives have greater purchasing power based on volume; while the discounts the cooperative receives are passed on to shareholders.
- Marketing cooperatives – e.g. Zespri. Marketing cooperatives have greater marketing power, as the amount of advertising used means the cooperative can purchase & pay for marketing at lower rates. A cooperative may market their products locally, nationally or internationally under one brand. The Zespri brand represents high quality, nutritious kiwifruit. All New Zealand kiwifruit go through Zespri & are branded as Zespri kiwifruit, kiwifruit supplied to the local market is owned by post-harvest facilities & distributors.
- Processing cooperatives – e.g. Silver Fern Farms. By their sheer size, processing cooperatives have greater processing power. Processing cooperatives have invested in infrastructure where all their products go for manufacturing, processing, transport, export logistics & often marketing. These cooperatives control the value chain, which means shareholders receive higher returns for their stock.
- Worker cooperatives – e.g. organic producer shops or cafes like Tui Balms. These agribusinesses are owned & managed by the people who work and sell their products there.

Cooperatives can:

- Share large grading/packing facilities.
- Fulfil very large orders for overseas export.
- Institute a level of quality control & grading
- Extend the seasonal supply from "shoulder" to "shoulder"
- Sell under a collective brand name
- Share transport costs

Zespri

Zespri is a limited liability company, owned by past & present New Zealand kiwifruit growers, which in addition to its role as the single desk marketer also provides logistics services & research & development management for the kiwifruit industry. All NZ grown kiwifruit have to be sold through Zespri, which is a single desk marketing and exporting cooperative.

The advantages of having a grower cooperative such as Zespri are;

- Determine & set quality requirements to meet consumer demand.
- Find markets & produce a range of products suited to consumer wants.
- Regulate supply by controlling the production of Gold so as not oversupply the market & maintain the product & the top end of the niche market.

- Carry out research & development to improve production, dry matter % therefore taste & develop new products such as KiwiBerry.
- Organise the transport of large quantities of fruit to reach markets on time.
- Brand Zespri is well promoted & known around the world & is seen as a reliable high quality product produced under a set of monitored regulations.

Zespri charges a royalty of 3% to licensed growers which is split between Zespri & Plant & Food Research. Zespri's share of those royalties was $28.4m in 2018/19, an increase of 37% from the previous year reflecting both higher volume & value earned on sales this season.

Exercise: *NZ exporters of primary products can be controlled by grower organisations & cooperatives when selling their produce to foreign countries. Referring to either Satsuma mandarins or Zespri kiwifruit. Explain, in detail, how producer board control affects the quantity &/or quality of the product that can be supplied to a major market & discuss the advantages & disadvantages of this control.*

Demand Summary Exercise

Market forces can influence consumers' willingness to demand primary products. Depending on the market force, the demand may increase or decrease for your primary product.
Explain in detail how a market force (from the list below) has affected the demand for your selected Primary Product (needs to be different from the primary product you used in the supply summary exercise). Use specific examples, including recent units and values where appropriate.

- promotion
- exchange rates
- consumer preferences
- market trends
- reliability of supply.
- quality requirements of processors or buyers
- price

Market force: