



Evaluation of the potential to expand horticultural industries in Northern Australia

CRCNA Project International Field Study Report – China

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CRCNA Project International Field Study Report – China Chapter

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Background and purpose of the international information gathering visit

The evolution of the middle class in China means that sophisticated and seasoned shoppers—those able and willing to pay a premium for quality and to consider discretionary goods and not just basic necessities—will soon emerge as the dominant force (Barton et al., 2013). The growing middle-class with rising incomes and changing tastes have displayed strong demand for safe and quality assured fresh produce (Williams, 2015). China is thus expected to be a premium market for Australian fresh produce in Asian markets.

The CRCNA project focuses on three horticultural industries in Northern Australia. Mangoes and avocados are two established industries, while lychee is a newer industry with sufficient success to have a foothold in new markets. Australian mangoes have been approved for direct imports into China since 2004, where the unit import price is higher than the Asian average (Trade Map, 2018). While Australian avocados and lychees have not been approved for direct imports, they may have the potential to tap into the premium Chinese markets once approved.

The purpose of the field study in China is threefold:

- (1) Examine the market insights towards imported fruit, particularly mangoes, avocado and lychee in Chinese markets, which could provide valuable insights on supplying the products valued by Chinese customers;
- (2) Investigate supply chain strategies and operational models that are implemented by Chinese importers, including wholesalers and retailers, which could direct Australian suppliers to better serve their customers;
- (3) Identify the channel and sales regions for Australian mangoes in China, thus providing guidance to tap into premium channels.

Desktop research leading to the international visit

China has reduced mango imports from global markets over recent years, with imports decreasing by 81.4% from 27557 in 2012 to 5126 tonnes in 2017 (Trade Map, 2018). Interestingly, China has expanded its imports of mangoes from Australia at the same time, with imports increasing from 34 to 970 tonnes (Trade Map, 2018). The increasing demand is largely due to Australia's advantage of counter-seasonable production with China and the increasing market acceptance of Australian mangoes in Chinese markets.

Australian mangoes were approved for direct entry into China as early as 2004 (DAFF, 2005); however, the grey channel via Hong Kong is still the dominant channel for Australian mangoes into China given that large volumes of Australian mangoes enter the mainland China market through unofficial channels (Fresh Plaza, 2016). It is estimated by industry representatives in Australia and China that more than 90% of Australian mangoes sold in Chinese markets go into China via Hong Kong – the grey channel, rather than by direct import. Given that direct export to China, bypassing Hong Kong and various grey channels, has become the premier distribution method for foreign exporters of fresh fruit and vegetables to China (PMA, 2016), it is of interest to investigate why Chinese importers still rely on the grey channel for sourcing Australian mangoes, rather than turning to the official direct import channel.

Australian avocados and lychees have not yet been approved for direct imports into China. However, China has an increasing demand for avocados in recent years. Avocado imports saw a substantial increase from 2012 to 2017, with the import volume up from 154 to 32137 tonnes (Trade Map, 2018). As of 2017, China was the second largest importer of avocados after Japan. Although China's imports of lychees have been fluctuating over the past years, with the lowest import at below 15000 tonnes in 2017, it is still the largest importer of lychee in Asia (Trade Map, 2018). Because of the strong demand for avocado and lychee, it is valuable to identify the existing supply chain and market insights, which could help to identify export opportunities and market potential for Australian avocados and lychees.

Given the increasing demand for Australian mangoes in Chinese markets, it is essential to investigate the supply chains, sales channels and sales regions at regional or city levels, which could provide insights on how to tap into the high-end markets with innovative products. Also, analysing the strategic and operational performance of Australian mangoes into Chinese markets along the supply chain, as well as potential challenges in direct import, will support Australia's mango industry to successfully expand into Chinese markets. Furthermore, this information could help Australian avocado and lychee export industries gain valuable insights on how to cater for Chinese premium markets.

Companies visited

The companies interviewed during the field study included importers, wholesalers, service providers (customs brokers) and retailers. A structured interview protocol was followed to guide the interviews. Table 1 shows the companies interviewed by city, organisation and business name.

Table 1 Companies interviewed in China

City	Organisational type	Companies Interviewed
Shenzhen	Retailer	Walmart
	Service provider	Eternal Asia
Guangzhou	Importer, wholesaler and retailer	Qinguo
	Importer and wholesaler	Hesheng Development
	Importer and wholesaler	Berda fruit
Shanghai	Service provider (customs broker)	Oheng
	Importer and retailer	Well Fruit
	Service provider and importer	Hnair
	Importer and wholesaler	NongFu
	Importer and retailer	Fruit Day
	Importer and retailer	Xianfeng
	Importer and wholesaler	Wonong
	Importer and retailer	Hema Fresh
Beijing	Importer and retailer	Benlai
	Importer and retailer	7 Fresh (JD.com)
	Importer and wholesaler	Xinghuirong
	Importer and wholesaler	Yijia trade centre

Table 2 shows three key wholesale markets and several retailers, including general merchandise stores, premium supermarkets and convenience stores that were observed onsite across Shenzhen, Guangzhou, Shanghai and Beijing. The onsite observation was conducted to check their in-store cold facilities, store display, retail price, packaging and supplier information, etc.

Table 2 Wholesaler markets and retailers observed onsite in China

City	Wholesale market observed onsite	Retailers observed onsite		
		General merchandise store	Premium supermarket	Convenience store
Shenzhen		Rainbow; Sam Club; Walmart	BLT; Ole; Super Species; V-24 Fresh; YH Bravo	Pagoda
Guangzhou	Jiangnan wholesale market	Trust-Mart; Vanguard	Ole; Super Species	Loving; E-Fresh; Guoduoduo; Tiande tianyan
Shanghai	Huizhan wholesale market	Carrefour, Metro, Lianhua, Lotus	City Shop; Fresh Mart; Ole; Hema Fresh; Well Fruit	Xianfeng; Pagoda Xinchang Jiao; Luye Fruit
Beijing	Xinfadi wholesale market	Walmart; Wumart	Hema Fresh; BLT, BHG; 7 Fresh; City Shop; Aeon	Jenny Lou's; April Gourmet; Jingjie Fresh

General insights

The field study in China lasted for about two weeks from 5 to 18 May 2019. The trips were allocated as follows: 2 days in Shenzhen and Guangzhou respectively, 6 days in Shanghai and 3 days in Beijing. The length of stay in each city was determined by the number of participants and their availability. Market insights for imported fruit, particularly mangoes, avocados and lychees and their supply chain strategies and operation modes were investigated by interviewing importers, services providers, wholesalers and retailers.

1. Market insights for imported fruit

1.1 Import regulation

China is a protocol market, where countries must gain market access before exporting fresh fruit. Table 3 shows the countries that have gained approval for exporting mangoes, avocados and lychees to China. As of 15 January 2019, 10 countries can legally export mangoes to China, together with 4 countries for avocados and lychees. According to China's General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ), which has been recently restructured to state administration for market regulation. Mangoes from Australia, Philippine, India, Peru, Pakistan and Ecuador must use Vapour Heat treatment before export to China. According to Horticulture Exports Program (2017), all Australian mangoes for export to China must undergo one of the following phytosanitary treatments approved by AQSIQ: Vapor Heat Treatment (VHT), High Temperature Forced Air (HTFA); Hot Water Immersion (HWI). However, according to micor.agriculture.gov.au, all mangoes destined for export to China are subject to mandatory VHT (source: https://micor.agriculture.gov.au/Plants/Pages/China_CN/Mangoes.aspx).

Table 3 Countries approved to export mango, avocado and lychee to China

Fruit	Export country approved by China
Mango	Thailand, Philippines*, Vietnam, Myanmar (Entry from Ruili and Daluo land ports in Yunnan only), India*, Pakistan*, Taiwan, Ecuador*, Peru*, Australia*
Avocado	Mexico (2005), Chile (2014), Peru (2015), New Zealand (2018)
Lychee	Thailand, Malaysia, Vietnam; Myanmar

Source: General Administration of Customs, P. R. China (updated on 16 January 2019)

Note: *indicate Vapour Heat Treatment is required

Available at: <http://www.customs.gov.cn/customs/jyiy/dzwjyjqymd/zwjcp/2169866/index.html>

1.2 Avocado market in China

Although China has trialled the planting of avocados in South China's Hainan, Guangdong provinces and Guangxi Zhuang Autonomous Region as well as Southwest China's Yunnan Province (Li, 2019), there has been limited commercial production of avocados in China to date. Currently, nearly all avocados in Chinese markets are sourced from Mexico, Chile and Peru in South America (Trade Map, 2018). Based on an interview with the customs broker in Shanghai, avocados from South American countries are dominantly shipped by sea to China and mainly arrive at Guangzhou and Shanghai, from where they are distributed to different sales channels across China. Since avocado is an exotic fruit in China, one retailer indicated that Chinese consumers have a limited knowledge of the fruit and cannot exactly tell the difference between fruit from

different countries in terms of taste and quality. The retail price is often set at around \$2 per piece for a medium or small fruit, which is still not cheap for most Chinese consumers.

Although the promotion of avocado has made good progress in first-tier cities in the past few years, many consumers still do not fully understand the nutritional value and consumption choices for avocado and are unable to achieve the right ripeness at home to get the taste they want (Fresh Plaza, 2017b). Some companies with years of experience in the sales and promotion of avocado, such as Supafresh and Pagoda in partnership with Mission Produce, are committed to providing ready-to-eat avocados to end consumers, to enhance the acceptance of avocado products among Chinese consumers (Fresh Plaza, 2017b). Ripeness indicators are being printed onto avocado packaging, to help consumers accurately identify fruit ready for immediate consumption. Shanghai Supafresh avocados are sold in assortments of three respective groups of ripeness – 30%, 60%, and 90% (Golnazarian, 2017). Figure 2 shows the avocados packed in three ripeness stages. Currently, consumers can choose the “ready to eat” or mixed ripe avocados via JD.com. In addition, there are frozen avocados available online.



Figure 2 Avocado assorted in three groups of ripeness in China

There are no Australian avocados in Chinese markets due to the issue of market access. However, there are small volumes of avocados from New Zealand which gained market access into China in February 2018. After the official market access, Darling Group and Just Avocados have worked with Win-Chain Supply Chain Marketing Limited, the global sourcing centre for e-commerce giant Alibaba to bring New Zealand's premium avocado into Chinese markets (Fresh fruit portal, 2018). Also, AVANZA partnered with Good Farmer which is Zespri's agent in China to supply Chinese customers with large-sized avocados under a new brand for China “Chao Niu Guo” (literally translated as Super Avocado) (Fresh fruit portal, 2018). One of the companies interviewed said Good Farmer imported a small volume of New Zealand's avocados by air in

the early stage and then trialled a sea container last year, but their sales were not as good as expected due to higher sale price.

1.3 Australian fruit in Chinese markets

Table 4 shows whether the companies interviewed deal with and directly import Australian fruit (mangoes in particular).

Table 4 Profile of interviewed companies in China

City	Business type	Title of interviewees	Dealing Australian Fruit (Mango)	Direct import of Australian Fruit (Mango)
Shenzhen	Importer & O2Oretailer	Purchase Manager	Yes/No	Yes/No
	Service provider	General Manager	Yes/No	NA
Guangzhou	Importer & wholesaler	General Manager	Yes/Yes	Yes/Yes
	Importer & wholesaler	Manager	Yes/Yes	Yes/No
	Importer & wholesaler	General Manager	Yes/No	No/No
Shanghai	Custom broker	General Manager	Yes/Yes	NA
	Importer & O2O retailer	Purchase Manager	Yes/Yes	Yes/Yes
	Importer & retailer	Purchase Manager	Yes/Yes	No/No
	Importer & wholesaler	Purchase Manager	Yes/No	Yes/No
	Service provider & importer	General Manager	Yes/No	Yes/No
	Importer & O2Oretailer	Purchase Manager	Yes/Yes	Yes/No
	Importer & wholesaler	Purchase Manager	Yes/No	Yes/No
Beijing	Importer & O2Oretailer	Managers	Yes/Yes	Yes/No
	Importer & O2Oretailer	General Manager	Yes/Yes	No/No
	Importer & O2O retailer	Purchase and Sales Manager	Yes/Yes	Yes/No
	Importer & wholesaler	General Manager	Yes/Yes	No/No
	Importer & wholesaler	General Manager	Yes/Yes	No/No

All the companies interviewed deal with Australian fruit, particularly table grapes and oranges, although some companies have yet to be involved in direct imports. Indications are that the prices for Australian table grapes and oranges are reasonable enough to be accepted by Chinese consumers, despite being quite expensive compared with fruit from other countries. Six companies said that they don't deal with Australian mangoes due to higher wholesaling and retail prices. One Shanghai-based retailer indicated they normally set their prices over \$10 per piece (RMB 50) given their high procurement cost. Retail sales are quite slow given that Chinese consumers are used to cheaper local production. Relatively high demand only happens during the Chinese Spring Festival/Lunar New Year which includes a gift-giving tradition in China.

Australian mangoes enter Chinese markets through either the grey channel or direct channel. Compared with entry through the "grey channel" via Hong Kong, direct imports of Australian mangoes into China have been on the rise in recent years given the significant increase in the import volume from 2012 to 2017 (Trade Maps, 2018). However, the grey channel is still the dominant channel for Australian mangoes in China. It is estimated by some industry representatives in Australia and China that more than 90% of Australian mangoes sold in Chinese markets go into China via Hong Kong – the grey channel, rather than the official direct import channels.

Australian avocados and lychees have not yet gained direct imports into China; however, some Australian lychees have entered Chinese markets via grey channels and are sold in the Guangzhou Jiangnan wholesale market. The interviewees indicated that the Australian lychee that sold well is the brand “Sun Lychee (Figure 3). The variety is Kwai May Pink, which is the leading variety in Australia (ALGA). The “Sun Lychee” is marketed by United Lychee Marketing. The wholesale price in the Jiangnan market could range from \$60 to \$100 per 5 kg tray. Given the counter-seasonal production, most interviewees said there would be strong market potential for Australian lychees, particularly during the Chinese Spring Festival when local and Asian lychees are out of season.



Figure 3 The outer package of “Sun Lychee”

1.3.1 Market positioning for Australian mangoes

China is the world’s second largest mango producing country after India, with its supply windows starting in March in Hainan and ending in September in Yunan and Guangxi (Liu, 2017). Local production does not have much competition with Australian mangoes, which commences in August/September and runs until February/March (Frolov, 2018). The counter-seasonable production with China and other major mango producing countries in Asia, including India, Thailand and Vietnam provide a good market potential for Australian mangoes. However, Australian mangoes face some competition with mangoes from South American countries, including Ecuador and Peru.

Chinese retailers target Australian mangoes to high valued customers. This is because the procurement cost for Australian mangoes is much higher compared to local production and mangoes imported from Thailand and Vietnam. Australian mangoes are quite expensive and sold by the piece, while local mangoes and mangoes from Thailand and Vietnam are much cheaper and sold by weight in 500g lots. Australian mangoes (R2E2) are often sold at \$10 per piece at approximately 500 grams and even more at retail stores in Shanghai and Beijing. This seems to offer substantial potential margins to Australian mango growers if trading directly. However, this should be viewed carefully. Chinese local growers don’t receive much return, despite the high retail price for China grown mangoes.

Because of targeting high valued customers, both wholesalers and retailers have high requirements for fruit appearance and quality. In general, the fruit should be good-looking with a high ratio of blush and not have any blemish or black spot. Some retailers also have a requirement for fruit weight and/or size. Fruit weighed at approximately 500 g is the most preferred by Chinese retailers.

1.3.2 Market positioning for Australian avocado

Given variety similarity with the three major South American suppliers and the high price for Australian avocados, nearly all interviewees didn't see major current market potential for Australian avocados. There could be some niche markets if extensive education and awareness programmes are launched. They advise keeping an eye on the performance of New Zealand's avocados (Hass variety) in the Chinese markets, which could provide a good reference point if Australia wants to tap into Chinese markets.

1.3.3 Market positioning for Australian lychee

Production of Australian lychees is counter-seasonable with China, so there is no competition with local production. However, Australian lychees may compete with lychees from South Africa which have overlapping supply windows with Australia. Given that lychee fruit could be difficult to find in the winter season, particularly Spring New Year, there would be some market potential for Australian lychees in China.

1.4 Market preference

1.4.1 Preference for Australian mangoes

Variety: R2E2 is a well-accepted variety in China. People often literally call it 'Australian mangoes (Ao mang)'. There is also an increasing demand for Calypso in recent years, mainly driven by its appealing shape and colour for gift giving. Currently, Calypso mangoes, which are called 'Pearl mangoes' by some Chinese wholesalers, are more expensive than R2E2 in China. Interviewees agreed that good appearance is the driving force for purchase, but the taste is the key factor for repeat purchase. However, an interviewee indicated that while Calypso mangoes have small size and do not have a strong flavour compared with R2E2, there are niche markets for this variety in China. In addition, a small number of Australian grown KP mangoes are sold in China, which was not known to several interviewees.

Class: Chinese importers only source premium fruit from Australian suppliers or Hong Kong agents

Blush: Chinese importers have a specific requirement on the ratio of blush on Australian mango skin. They often regrade the Australian mangoes into three locally recognized classes based on the blush ratio: premium fruit with over 80% blush, Class 1 with 60-80% and Class 2 with less than 60%.

Size and weight: Australian mangoes (generally referred to R2E2 variety) counted at 9-11 per 7 kg original box are the most preferred. This is followed by size counts 8 and 12. Mangoes at size count 13 are sometimes imported. Fruit weighed at approximately 500 g is the most preferred by Chinese online retailers and premium supermarkets.

Preferences for Australian mangoes in terms of blush and size can be lower if there is a limited supply of fruit in the markets. However, the requirement remains strict if there is a lot of fruit available in the market.

1.4.2 Preference for avocado

Hass is the only avocado variety imported by China. Chinese importers usually prefer to buy medium and small-sized fruit as they want to reduce the unit cost per piece. The preferred avocado tray from Chile and Peru weighs 4 kg with 18-24 fruit and weighs 6 kg with 30-35 from Mexico. In terms of the weight per piece of fruit, the larger fruit is weighed at 166-222 gram from Chile and Peru and 170-200 gram from Mexico. As avocado is an exotic fruit in China, consumers have limited knowledge about the fruit. Consumer awareness is mainly enhanced through aggressive promotions. Countries such as Chile and Mexico, which arrived earlier on the Chinese market, have already been carrying out awareness campaigns to promote the consumption of avocados (Fresh Plaza, 2019). When picking the fruit, consumers prefer smooth appearance given their concern about the fruit's appearance. Because of the aggressive campaigns, increasing numbers of people are aware of the properties of avocado and are incorporating it into their diets (Fresh Plaza, 2019). Since avocados are sold by pieces or in 2- or 4-piece batch in retail outlets (Figure 4), Chinese importers do not have any specific requirement on the packaging and often take the package provided by overseas suppliers, such as a 4 kg tray from Chile and Peru and a 6 kg tray from Mexico.

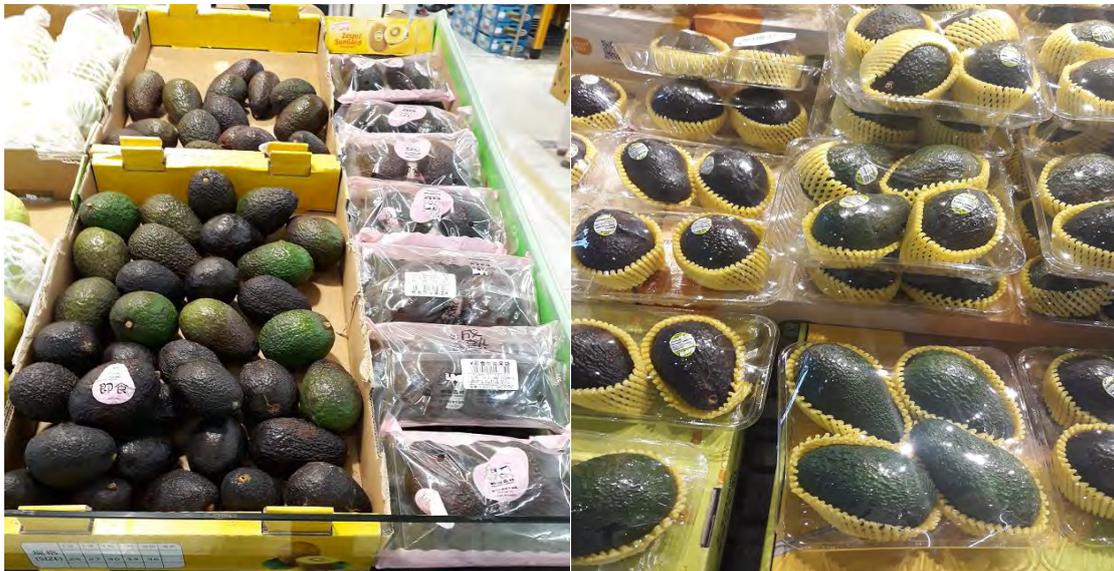


Figure 4 Avocados sold in relating outlets in China

1.4.3 Preference for lychee

Chinese wholesalers and importers have very limited knowledge of the Australian lychee industry, not to mention the variety and supplying seasonality. Some interviewees were even surprised to hear that Australia produces lychees. Chinese wholesalers and retailers mainly deal with locally produced lychees. In general, they prefer lychees with a longer shelf life, larger size, smaller seed and red colour.

1.5 Challenges in wholesaling and retail Australian mangoes

Chinese importers and wholesalers in Guangzhou Jiangnan market often re-grade Australian mangoes into three grades, i.e., Premium, Class 1 and 2, and re-pack the fruit in new boxes to differentiate the grades. Premium and Class 1 fruit can be sold at a higher price per tray, which would be \$10-16 (RMB 50-80) more than that of Class 2 fruit. Given the high procurement cost, repacking cost and significant price gap in different grades of fruit, Chinese importers and wholesalers bear a higher risk when dealing with Australian mangoes. While Chinese importers and wholesalers can get a good price for Premium and Class 1 fruit, they still run the risk of losing money if they have a high percentage of Class 2 fruit. Because of this, some Chinese importers and wholesalers do not want to deal with Australian mangoes. It is said that importers and wholesalers sometimes sell Australian fruit (mangoes) at a price lower than their procurement price.

Because of the high wholesale price, secondary-tier wholesalers only purchase a small quantity of Australian mangoes. A first-tier wholesaler in the Beijing Xinfadi wholesale market said that second-tier wholesalers from surrounding regions often buy 30-50 trays at a time, with large order quantities between 200 to 300 trays happening only during the Chinese Spring Festival.

The retail price of Australian mangoes weighted at approximately 500 grams is often set at over \$10 per piece (RMB 50), which is much higher than that of local mangoes. Given that Chinese consumers are used to cheap mangoes, Australian mangoes have slow sales at the retailer's end. Some interviewed companies mentioned that Chinese consumers often buy Australian mangoes for gift-giving, rather than self-consumption. Also, one retailer indicated that most Chinese consumers have limited knowledge to tell the difference in quality fruit, making it difficult to promote and sell quality fruit at a high price.

2. Supply chain strategic orientation

2.1 Overseas farm acquisition

All the companies interviewed, including importers/wholesalers and retailers, are cautious with orchard acquisition in a foreign country. They said it is too risky to operate an overseas farm. They would rather specialize in fruit wholesaling and/or retailing that they have the expertise in, instead of buying and operating an overseas farm. Some interviewees said that it is very difficult to manage farms in another country as they are not familiar with overseas farm operations. One Shanghai-based interviewee particularly mentioned a case of an overseas farm acquisition made by the Joyvio group, which is the sole strategic investment platform for food and agribusiness of Legend Holdings. He said Joyvio found they had bought an empty farm as all experienced staff and key resources were gone when they took control of the farm.

While most Chinese local companies are not positive about overseas farm acquisition, many overseas Chinese have stepped into the agri-food industry by making agricultural investments, and directly buying

farms with a view to substantiating exports into China. Some interviewees mentioned that several Chinese Australians have invested in seafood farms, cattle stations and fruit orchards in Australia and sell Australian fresh foods to China. They said that some Chinese-Australian businesspeople work with Chinese wholesalers, while others are aggressively involved in the retail outlets.

2.2 Sourcing strategies

Chinese importers and wholesalers expressed their willingness to develop a long-term relationship with their overseas suppliers for continuous and consistent supply. However, given that fruit trade is mainly dominated by opportunistic spot transactions, it is not an easy task to find a good supplier to work with over a long time. With regard to sourcing from Australia, they hope that the Australian suppliers can offer proper assistance when the market performance is weak in China. For example, they can send smaller volumes of fruit or postpone the delivery when there is abundant fruit available in the markets.

Most retailers want to directly source fruit from Australian suppliers, preferably trading companies with farms or with close relationships with farms; however, their small procurement volumes make it uneconomical and infeasible. As a result, they choose to either procure from the wholesale markets or work with several wholesalers so that they can buy quality products at a lower price. They still have strict quality requirements when buying from local wholesalers. One Shanghai-based retailer pointed out: “since we cater for middle and high-end customers, we do not want to put poor-quality fruit into our channels. We would stop buying and selling if we cannot find good quality fruit in the wholesale market”. Some retailers have worked to expand their capacity for direct sourcing. For example, Benlai, a Beijing-based retailer has established a new business under the umbrella of Benlai, which directly sources fruit for its e-commerce platform and supply other retailers and grocery stores as well. They have a strategy for direct sourcing from Australia but have not yet engaged as they don’t have supplier resources. Another example is Pogoda and Xianfeng who have been expanding their store numbers so that they can have large procurement quantity. However, they have not yet started direct imports of Australian fruits, despite having a relevant import strategy.

2.3 Direct sourcing challenges

While most companies interviewed deal with Australian mangoes, only two companies – a Guangzhou-based wholesaler and a Shanghai-based retailer are involved in the direct import of Australian mangoes. The two companies face several challenges in the direct import of Australian mangoes. The two key challenges mentioned by the Guangzhou-based wholesaler are that

- (1) Australian suppliers cannot exactly match their procurement specifications when sending fruit. The interviewee indicated: “we tell our suppliers to pack based on our requirements on the ratio of blush, but they seldom exactly follow our requirements.”
- (2) It often takes too long to go through the import customs clearance for the fruit to remain fresh and presentable. The import customs clearance time can vary from 2 days to 7 days in Shenzhen.

The service provider based in Shanghai indicated that the import customs clearance time in Shanghai could be a little bit faster than in Shenzhen, but it depends on the procedures of import customs. While the fastest could be the same day if direct release, the longest would be 3-5 days if under surveillance by customs. It generally takes 1-2 days if inspected by customs.

The Shanghai-based retailer indicated that Australian suppliers often have a minimum order quantity of 400-500 trays per order, which poses a major challenge for direct sourcing as they often have a small order quantity. Another two challenges singled out by the retailer are:

- (1) Higher procurement cost, which is often higher than sourcing from local wholesalers. The direct import cost for direct imports calculated based on Cost, Freight and Insurance (CIF) ranges from \$60 to \$84 per 7 kg tray (note the exchange rate for AUD and RMB is set at 5.0, hereafter), while the procurement price for the wholesalers graded quality fruit (Premium and Class 1) from local wholesalers ranges from \$40 to \$96 per tray).
- (2) Shorter shelf-life of about 7 days after receiving the fruit from Australian suppliers. The length of shelf life is based on their sales experience.

2.4 Import handling

Many Chinese importers, particularly the newly established retailers who don't have a license for direct fruit import often use a middleman (e.g. an agent or customs broker) to import on their behalf. Given that the speed for import customs clearance is a big challenge in China, some wholesalers or retailers who have an import license sometimes also work with a customs broker who can reduce the time of customs clearance as they maintain a good relationship with customs management.

After receiving Australian mangoes from the grey channel via Hong Kong, Chinese importers and wholesalers in the Guangzhou Jiangnan market often re-grade fruit into three grades based the ratio of blush before re-packing with new boxes which are quite similar to the original ones in outer appearance, but with a lid and often a little bit heavier than the original ones. As a rule, they normally reduce 1 piece of fruit in the new box to cover the extra cost for re-grading and re-packing. The re-grading and re-packing are often conducted in a plant near the Jiangnan market. Some importers outsource the re-grading to others, while some conduct it themselves. A wholesaler in the Jiangnan market indicated that the re-packing cost, including the box and labour could be \$1.6 (RMB 8) per tray. As re-grading and re-packing can reduce shelf life and increase their handling cost, they do not re-process the fruit when the market demand is strong. Interviewees said that wholesalers in the Jiangnan market only re-grade and re-pack Australian fruit. This is because Australian fruit is very expensive compared with others, and re-grading and re-packing fruit can fetch a good price. Another reason for re-packing is that some original boxes are worn out after arriving at the wholesalers, which is mainly due to rough handling in transit and transportation. They also need good-looking boxes to sell at a good price.

2.5 Fruit storage and sales

Most Chinese importers and wholesalers in the three major wholesale markets do not have cold storage warehouses. While some do have cold storage facilities, their storage facilities are not well built and often have limited capacity. Since they can retain the containers a couple of days after receiving the fruit, they often put the fruit in the containers for temporary storage. The customs broker interviewed in Shanghai indicated that they have 200 truck racks available to be used by their customers to stack the containers. Figure 5 shows the truck rack provided by a Shanghai-based customs broker.



Figure 5 Truck rack provided by a Customs broker in Shanghai

In contrast, some online retailers, such as Benlai and Fruit Day and chain store retailers, such as Pogoda and Xianfeng have developed regional distribution centres which are equipped with cold storage facilities. As a result, they can store fruit that is directly imported in their distribution centres upon arrival. However, there is a cold chain break for the fruit that they buy from wholesale markets as they pick the fruit from the market and then transport to their distribution centres.

Currently, imported fruit is mainly sold at room temperature in the major import wholesale markets. In the winter season, there could be a small impact on the fruit quality due to low room temperatures. However, in the summer season, fruit quality is negatively affected by the temperature variation between temperature-controlled containers and room temperature. It is reported that avocados often arrive in a container at below 4 °C and sold outdoors at temperatures over 30 °C in summer. The huge temperature variation leads to quality degradation, such as bruising and black spots (FreshPlaza 2017). Because of this, importers and wholesalers try to move the fruit as quickly as possible. It should be noted that as the Australian mangoes in Chinese markets are sold in the winter season, temperature-induced damage is less of an issue.

2.6 Sales channel preference

Chinese importer and wholesalers prefer to sell Australian mangoes through the traditional wholesale channel, although they also sell to supermarkets, chain store retailers and grocery stores. Most wholesalers indicated that they want to move the fruit as quickly as possible upon arrival as they do not have much cold room to store fruit. The wholesale channel can move fruit quickly given that there are several secondary wholesalers in the markets, who can together take a whole container/pallet in a short time. However, the movement of fruit is slow if it is only sold to retailers and supermarkets who often have small procurement volumes. Also, compared with secondary wholesalers, supermarkets and chain stores retailers tend to be picky and often have higher quality requirements, which make this channel not unattractive for most wholesalers. As there is demand from supermarkets and retailers, they also work with some retailers to diversify their sales channels. But in general, the wholesale channel is preferred by most importers and wholesalers, which make it the dominant sales channel for Australian fruit, particularly Australian mangoes which are too expensive for a single buyer to have a large procurement volume.

3. Supply chain operations

3.1 Mode of procurement

Chinese importers and wholesalers procure Australian mangoes either from grower exporters or marketing companies who have an export business. They indicated that they prefer to work with a trading company who have orchards or have a strong relationship with several growers across regions, which enable them to procure mangoes with consistent quality and a stable price over an extended time. Also, they prefer to work with a small number of overseas suppliers, all the interviewed companies do not have more than three suppliers. They indicated that working with a small number of suppliers can help to build a good close relationship, thereby ensuring quality consistency and a stable price as much as possible. Most of their procurement is conducted based on a transactional relationship.

The procurement of Australian mangoes conducted by Chinese retailers can be categorized into three groups: (i) direct sourcing from either Australian grower exporters or marketing companies who have export business, (ii) buying from local wholesalers in the nearby wholesale market and (iii) working with a local wholesaler/distributor for customised packing and distribution.

Fruit Day is the only retailer interviewed who directly imports Australian mangoes, as well as procure from local wholesalers when they have small procurement volumes. The reality for most retailers, including Pogaoda, Xianfeng and Benlai, is that they procure Australian mangoes from importers and wholesalers in the local wholesale markets and pack fruit in their designated package at their warehouses before sales.

In contrast, several premium supermarkets, including Ole, Hema Fresh and Blt directly work with big importers and distributors, such as Joyvivo, Yunsum (Yuanxing) and Dole, who supply them with customised packaging. For example, Yumsum distributes imported mangoes from Thailand to offline retail channels such as Olé and other high-end supermarket chains.

3.2 Import and procurement challenges

Importers and retailers said that they face several challenges in their import and/or procurement of Australian mangoes. These challenges are summarized as follows:

- 1) Lack of information sources or channels to find reliable mango suppliers or mango farms in Australia. Some interviewees indicated “they lack information channels to find Australian suppliers and more importantly, they do not know which supplier can supply quality fruit. They are happy to go through direct import if they can find an Australian supplier who can supply good quality fruit”.
- 2) Quality inconsistency upon receipt, which makes it difficult for them to sell directly. Because of this, they have to regrade and re-pack fruit for sale. This further reduces shelf life and increases the cost. A Guangzhou-based wholesaler said that they often put the fruit into the packing room and collect re-graded fruit for sales the next day, with the repacking cost around \$1.2 (RMB 8) per tray.
- 3) Higher cost for import via the grey channel – it can cost \$26-30 (RMB 130-150) per 7 kg tray to go through the grey channel. Also, consistent and assured quality could be a big issue through the grey channel for Australian mangoes entering Chinese markets via Hong Kong. Importers run a high risk of losing money on receiving poor quality mangoes. The quality variation in the mangoes on arrival also leads to re-grading and re-packing of the fruit to get a good price. However, this also increases the cost of the final product.
- 4) Direct imports require Vapour Heat Treatment (VHT) that could negatively affect mango quality and shelf life. Some interviewees said that VHT processed mangoes have unstable quality and the shelf life is much shorter and not controllable, which is a key factor for making direct imports unattractive. Mangoes with VHT have shorter shelf life is also verified by Peru mango suppliers (Produce report, 2015).
- 5) Direct import of mangoes from Australia is costly. Generally, some interviewers in Shanghai reported the CIF price for a tray of 7 kg mangoes could be at \$ 60-80 (RMB 300-420) after official customs clearance. Table 5 compares import costs for Australian mangoes from the direct channel and the grey channel. The cost of importing a tray of Australian mangoes via the grey channel, including landed cost and extra cost, varies from \$49 to \$79, while the direct import cost ranges from \$60 to \$84. A Guangzhou-based importer and wholesaler said that the import cost via the grey channel is lower than the direct channel, because low-quality mangoes can enter from Hong Kong. The landed cost in Guangzhou would be much lower if the mangoes are not good quality. Because of quality variation in the mangoes they receive, most wholesalers attempt to achieve a return by re-grading and re-packing the fruit. However, this also gives rise to extra cost. In addition to the re-packing costs, wholesale market entrance charges and commission fees if selling through a market agent are also components of extra cost, which can total up to \$4 per tray (Table 5).

Table 5 Comparison of import cost from direct channel and grey channel

Entry channel	CIF Guangzhou market (\$/Tray)			
	Grey channel cost	Landed cost	Extra cost	Total cost
Direct import	-	-	-	60-84
Grey channel via Hong	26-30	45-75	4	49-79

- 6) Australian exporters often have a minimum order quantity (MOQ), which is a problem in case of direct imports by retailers who usually have much smaller order quantities compared with wholesalers.
- 7) Airfreight cost is very expensive for shipping mangoes from Australia to China as indicated by Chinese importers. As Chinese importers know the CIF cost, rather than the air freight cost, the air freight cost was gathered from a Brisbane-based exporter. The total shipping cost, including loading cost and inspection, from Brisbane to Shanghai for an AKE air container is around \$2300, while the total shipping cost for an MPC air pallet is around \$5000. The unit shipping cost is approximately \$1.59 per kg with an AKE (maximum loading weight at 1450kg) and \$1.11 with an MPC (maximum loading weight at 4500kg).

The speed for import customs clearance is often a challenging issue for some importers, particularly newly established importers. To speed up the import customs clearance, they often work with a customs broker who has good relationships with customs management for quick import clearance.

3.3 Entry channels for Australian mangoes

Although there is an increasing export of Australian mangoes via the direct channel into China (Trade Map, 2018), it is estimated by some industry practitioners that more than 90% of Australian mangoes into Chinese markets mainly go through the grey channel via Hong Kong into Guangzhou Jiangnan Wholesale market, from where they are distributed to other regions of China, including wholesale markets in Shanghai and Beijing. Two wholesalers in Guangzhou Jiangnan wholesale market indicated that only some wholesalers in the Jiangnan market know how to handle the grey channel, while the wholesalers in Shanghai and Beijing have no idea of how it works. This statement is validated by wholesalers in Shanghai Huizhan markets who said they buy Australian mangoes from Jiangnan-based wholesalers as they don't know how to handle the imports via the grey channel.

Direct imports of Australian mangoes into China are predominantly shipped by air and mainly go into Shanghai, Beijing and Guangzhou, from where they are sold in the local markets or to other parts of China.

3.4 Distribution Channel for Australian mangoes in China

Although Guangzhou Jiangnan market is still the biggest wholesale market for imported fruit and serves the whole Chinese market, wholesaling of imported fruit has become regional, with one major wholesale market serving surrounding regions. The Guangzhou Jiangnan market mainly serves the southeast of China, Shanghai Huizhan market serves the east of China, while Beijing Xinfadi market and Shenyang Deli market serve the north of China. Figure 6 shows the location of four major wholesale markets.



Figure 6 Distribution path of Australian mangoes across China

Australian mangoes are mainly sold via the traditional channels from Jiangnan market-based wholesalers to second-and third-tier wholesalers from other parts of China (Figure 6) with Guangzhou Jinan market as the main entry point. A Guangzhou-based importer and wholesaler said that their sales are largely in the north of Guangdong province, and further elaborated that Australian mangoes are mainly sold to the middle of China. This includes Wuhan, Zhengzhou, and even north to Liaoning as the Guangzhou Jiangnan market is the largest wholesale market for Australian mangoes in China making the sales very competitive. It is estimated by an experienced wholesaler in Guangzhou Jiangnan market that 30% of Australian mangos in Jiangnan market are sold to Guangzhou and surrounding regions, followed by 25% to Beijing Xinfadi wholesale market, while only 5% are sold to the Shanghai Huizhan market.

Although the traditional channel is still prevalent for Australian mangoes, in the evolution of market regionalisation, it should be noted that wholesalers who are based in one wholesale market are partnering with wholesalers in other wholesale markets to complement their resources to expand sales regions. For example, a wholesaler in the Jiangnan market sends Australian mangoes to a partnered wholesaler in Shanghai and collects sales commission fees.

3.5 Road transportation for Australian mangoes in China

Second-tier wholesalers often arrange transport to pick up and deliver the fruit they buy from the major wholesale markets in Guangzhou, Shanghai and Beijing to their sales destinations. Given their small procurement volume of Australian mangoes, for example, 30-40 trays, they mix Australian mangoes with other fruit in one shipment. Given that Australian mangoes are mainly sold in China from October to February (winter), the fruit is often transported without temperature control for a short travel distance. The temperature-controlled vehicles are only used when the travel takes more than 10 hours.

3.6 Sales region for Australian Mangoes

The sales regions for Australian mangoes are scattered given they are mainly purchased by high-valued consumers who are distributed across different regions. Figure 7 shows the sales share of Australian mangoes distributed from the Guangzhou Jiangnan market, as estimated by an experienced wholesaler in Guangzhou Jiangnan market. The volume for direct imports of Australian mangoes into China is not considered as there is no data available from our interviewed wholesalers and retailers.



Figure 7 Sales regions of Australian mangoes in China
(Estimated by an experienced wholesaler in the Guangzhou Jiangnan market)

Guangzhou Jiangnan wholesale market is the collection and distribution centre for Australian mangoes, which are sold to these surrounding provinces, including Guangdong, Guangxi, Fujian, Hunan, Hubei, Sichuan and Guizhou as well as other major wholesaler markets in Shanghai, Beijing and further north and west. The largest market for Australian mangoes is in the middle and north of China, which accounts for 50% of total sales from the Jiangnan market. This is followed by 30% to Guangdong province and surrounding

regions which are Chinese major mango producing regions. Hainan province, also a major mango producing region in China, takes 15%.

Shanghai Huizhan market only takes 5% of Australian mangoes from the Guangzhou Jiangnan market. Australian mangoes in the Shanghai Huizhan market are mainly sold to wholesalers and retailers in Shanghai, Zhejiang and Jiangsu, where there are millions of affluent consumers. However, the demand for Australian mangoes is quite small in Shanghai and the surrounding regions. Two Shanghai-based retailers said that the demand for Australian mangoes has not yet developed in Shanghai and sales are quite slow at their retail stores.

Approximately 7.5% of Australian mangoes from the Guangzhou Jiangnan market flow to the Beijing Xinfadi market, where most of Australian mangoes are sold to the surrounding regions, such as Shandong, Inner Mongolia, Liaoning, Jilin and Heilong Jiang. Two wholesalers in Beijing Xinfadi Wholesale markets estimated that no more than 30% are sold to Beijing markets.

4. Channel positioning

4.1 Retail channel evolution

Retail channels have significantly evolved over recent years in China. Several new retail channels have emerged, including a new retail chain (O2O), premium (high-end) supermarkets, online sales, fruit store chains, fruit factory stores and WeChat sellers.

New retail stores, including Hema Fresh, 7 fresh and Suning have integrated offline and online sales for exceptional customer experience. These new retail stores cater to middle and high-end customers, with stores mainly opened in the municipality and big capital cities, such as Beijing, Shanghai, Guangzhou, Tianjin, Xi'an and Chengdu. While they tend to conduct direct sourcing when they have a large order quantity, they often work with local wholesalers for sensitive fruit in small quantities.

High-end (Premium) supermarkets target middle and high-end consumers with quality consumable products, including packaged food, fresh food, cosmetics and imported products. Ole, BLT, Super Species, YH Bravo and City Shop are examples of the emerging premium supermarket in China. Compared with traditional supermarkets, their shopping environment is much cleaner and the display more attractive. As premium supermarkets cater to a small group of high-end customers, they cannot aggressively expand store numbers like hypermarkets, community supermarkets, and convenience stores, which means relatively small procurement and sales volumes. The small volumes are because they target small groups of high-end consumers, and often have limited number of stores in a city. On the other hand, fruit chain stores are more like community convenience stores and can take slightly larger volumes.

Online sales sites, including Yiguo, Fruitday and Benlai, are fighting intensively for market share (and burning through venture capital). There are also open platform sites like Tmall.com and JD.com, which are provided by Alibaba and JD respectively. Online retailers mainly focus their sales regions in big cities, such as Beijing, Shanghai, Guangzhou and Shenzhen and their surrounding regions given the constraints in fresh fruit delivery. These online retailers have distribution centres in Beijing, Shanghai and Guangzhou (Shenzhen), where fruit is pre-packed and distributed to their customers. Online retailers often face fierce price competition as consumers can compare prices between several sellers. To compete with other online sellers, they often offer customers discounts or coupons to stimulate their purchase intention. Fruitday sells Australian mangoes on their online platform, but they said they only sell in no more than 400 trays during Chinese New Year.

Fruit chain stores are developing at a rapid rate and are competing with the old-style family store. The largest, Pagoda, has more than 1000 franchised stores, while Xianfeng has more than 600 franchised stores. There are other fruit chain stores, such as Benlai Fresh. These fruit chain stores focus on sales volumes as they mainly cater to the middle- and lower-class customers. Their fruit is all re-packed to help reduce wastage. The franchised stores do not have cold storage facilities, though all fruit is distributed from regional delivery centres which have cold storage facilities. Although most fruit is pre-packed, all chain stores have flexible sales in either loose or package format and provide a free cutting service at a store. Figure 8 shows store display and cutting service in a pagoda franchised store. Premium fruit only accounts for a small portion of their sales. The interviewee from Xianfeng indicated that they deal with both local and imported mangoes. Locally produced mangoes rank first at 70% of volume, followed by mangoes from Thailand and Vietnam (20%) and Peru (7%). In contrast, Australian mangoes only make up 2-3%. Australian mangoes are mainly sold in gift packs during the Chinese Spring New Year.



Figure 8 Store display and cutting services in a Pagoda franchised store

Fruit factory stores are selling fruit by the whole box, which distinguishes it from other retail channels. Well Fruit is a typical example in this case. It is based in the Shanghai Huizhan wholesale markets, with 32 stores in Shanghai and 3 stores in Kunshan, Jiangsu province. They are often located in non-downtown locations and have a low mark-up as they sell by the original carton. All their fruit is displayed with the original box and each store is equipped with cold storage facilities as shown in Figure 9. They have not yet sold Australian mangoes as a whole box of Australian mangoes is too expensive for consumers.



Figure 9 Store display and in-store cold storage facilities

WeChat sellers sell small portions of fruit through their social media (the channel data is unavailable given the difficulty in making estimation). Although these are small sales volumes currently it is changing the market dynamic given that there are over 650 million active users on WeChat, which has developed to be a business platform, as well as a social media tool. Private WeChat sellers often buy fruit from wholesalers and sell via their friend groups. In addition, lots of fruit retailers have launched WeChat selling platforms.

Two new trends in the fruit retail business have emerged in recent years in China. The first is the mergers among different online or offline retailers, which can enable two or more retailers to work together to configure their upstream supply chains. For example, Xianfeng Fruit fully acquired K-Fruit Garden in 2015 (Produce report, 2015). Another trend is that retailers have worked to integrate online and offline sales. For example, Yiguo fresh took over all the shares of Lianhua Supermarket held by Yonghui Supermarket in 2016 and Fruitday fully acquired city shop supermarket in 2017 (Shao and Chen, 2017).

4.2 Supply chain structure for Australian mangoes

Figure 10 shows the supply (cold chain) structure for Australian mangoes in China, including emerging retailing channels. The dominant distribution channel for Australian mangoes in Chinese markets is marked with the thick arrow lines. The emerging retailers in China mainly source Australian mangoes from local importers and wholesalers, rather than direct sourcing from Australia. There is a cold chain break in the

existing supply chain structure, where the red arrow line indicates where the cold chain break occurs. This is a consequence of the under-developed cold chain facilities in China. On the other hand, there could be low risk of cold chain breakdown if retailers work with importers/agents and directly transport arrived fruit to the distribution centres as marked with green arrow line. However, this channel has not yet significantly developed due to small procurement volumes from retailers.

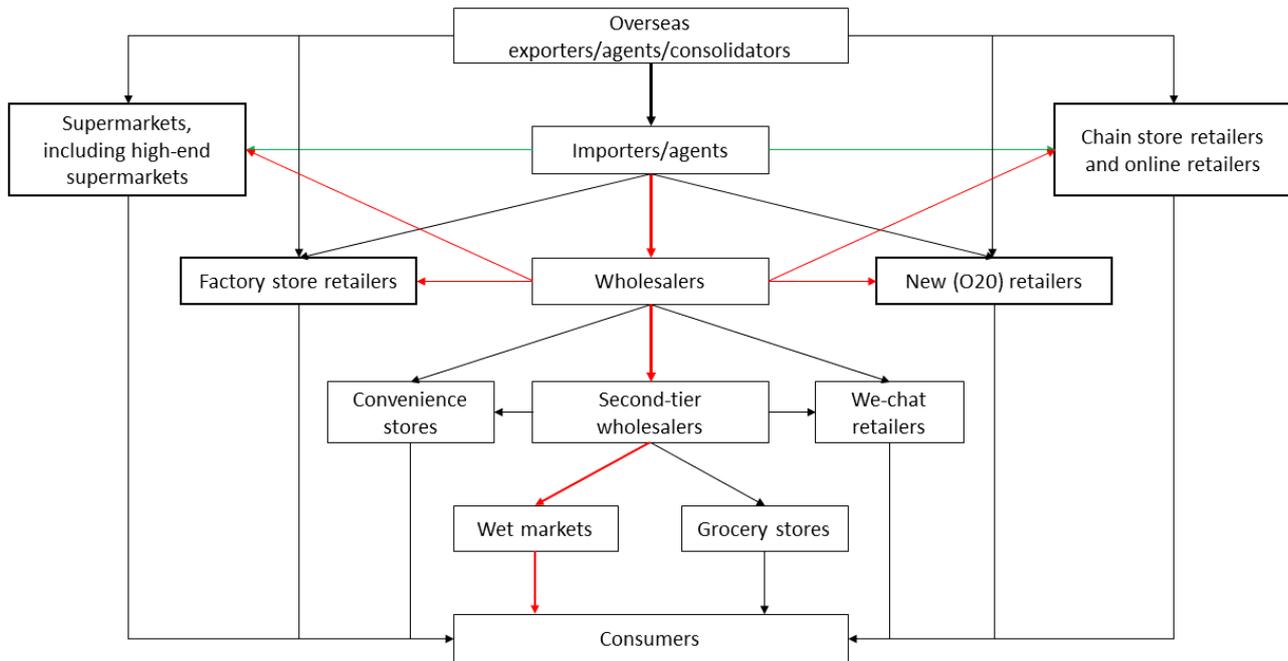


Figure 10 Supply chain structure for Australian mangoes in China

4.3 Challenges with directly supplying retailers

The retailing channels for imported fruit have expanded over recent years given the emergence of several retail stores. It seems that there would be a good opportunity for foreign suppliers to directly supply Chinese retailers. However, some significant challenges need to be addressed if considering direct supply to retailers. The challenges indicated by interviewed wholesalers are summarized as follows:

- 1) Retailers often need to supply diversified fruit in small volumes
- 2) Premium retailers often have very high requirements on fruit quality
- 3) Long payment cycle of 45-60 days after receiving fruit
- 4) Offline retailers and high-end may often need financial support from the suppliers towards their tasting and promotion campaigns as they often run in-store sampling sessions for tasting.
- 5) E-commerce retailers prefer to procure the fruit that they can sell in a large quantity
- 6) Retailers often ask for the distribution of sensitive fruit to designated warehouses or distribution centres. This could increase extra costs as high-end retail retailers have small numbers of stores in a city and the stores are geographically distributed across regions.

5. Benchmarking analysis

3.1 Market penetration strategy by competitors

Market penetration strategies include special launch events, social media, brand promotion and other avenues to increase awareness of the imported product for both retailers and consumers. For example, Ecuador's first mangoes exported to China by air to Shanghai were launched at the Huizhan Market on 24th October 2016 by holding a special ceremony. The event was co-organized by the Ecuador Export and Investment Promotion Agency (PRO ECUADOR), the Ecuadorian exporter Picaler Ecuadorian Mangoes, the mango importer Henro (Shanghai) International Trading Co., Ltd. and the distributor Yuhua Fruit (Produce report, 2016).

Ecuador also commenced e-commerce sales for better promotion. Yiguo fresh held a special press conference to announce that Ecuadorian mangoes officially entered the field of e-commerce sales on 15th November 2016. Ecuadorian mangoes were mainly sold through online shopping platforms such as Yiguo Fresh and Tmall, where relevant promotional activities were launched to achieve better publicity and improve awareness among Chinese consumers (China fruit portal, 2016).

Camposol, one of Peru's largest supplier of mangoes, teamed up with a leading importer Dole to offer Chinese consumers "Peruvian Flame Mangoes" for Springtime Festivities (FreshPlaza, 2018). They brought Kent mangoes, under the Peruvian Flame Mango branding, to the Shanghai market in 2018.

3.2 Fruit quality and price

3.2.1 Mango quality and price

Australian mangoes are mainly sold from December to January in China – the time before the Chinese Spring Festival. This means that Australian mangoes do not compete with local products as well as with mangoes from Thailand and Vietnam. They may compete with mangoes from Peru and Ecuador which are available during the Chinese Spring Festival. However, one of our interviewees in Shanghai said that Peru's Kent mangoes are not well accepted by consumers as their quality is not as good as promoted.

Australian mangoes rank high in quality in terms of appearance and flavour compared with mangoes from Peru and Ecuador; however, their direct import cost and/or wholesale price is higher in comparison. The wholesale price for Premium and Class 1 Australian mangoes initially stands at \$80-96 per tray in October and would come down to \$60-80 per tray before plunging to \$40-70 per tray in December and ending with \$60-80 per tray. A Shanghai-based retailer said that they buy an Australian mango at about \$6 per piece (approximately 500 grams) of fruit (RMB 30) from the wholesalers and set the retail price at \$10 (RMB 50).

The interviewees who have direct import said that CIF cost for direct import from Australia to Shanghai could be higher, at \$60-84 (RMB 300-420) per tray.

In addition to Australian R2E2, there are R2E2 (generally directly called Australian mangoes in China) produced from Vietnam and Thailand and China which are sold in Chinese markets. During the field study from 5 to 18 May 2019, there were locally produced R2E2 sold in fruit chain stores, such as Pogoda and Xianfeng, where the fruit is packed with fresh plastic wrap and protection net. The retail price for local R2E2 is \$5.38 (RMB 26.9) per kilo in a Pogoda store in Shenzhen. Thailand produced R2E2 was seen in Ole Supermarket in Shenzhen and Guangzhou. The fruit is also packed with fresh plastic wrap and protection net (Figure 11). The retail price for Thailand produced R2E2 ranges from \$15.96 to 16.98 (RMB 79.8 to 84.9) per kilo. Note that the retail price must be carefully considered as it is only a price in a premium (high-end) supermarkets and cannot be taken as a widely marketed price.



Figure 11 Thailand produced R2E2 sold in Ole supermarket

Companies interviewed indicated it is not very useful to compare different varieties of mangoes in terms of quality given that they have different appearances and flavour. However, it could provide valuable insights if comparisons were made across the same variety. One wholesaler in the Beijing Xinfadi wholesale market compared the quality of R2E2 produced from Australia, Vietnam, Thailand and China, although they have different supply windows. The order of R2E2 in terms of perceived quality was Vietnam's R2E2 > Australian R2E2 > Chinese R2E2 > Thailand's R2E2. Figure 12 shows the Vietnam mangoes packed in plastic boxes. Although the quality of R2E2 produced from Vietnam is better than Australia's, its wholesale price is \$3 to \$3.40 (RMB 15-17) per kilo, which is rather lower than Australian mangoes. The interviewee said that the price is unfortunately determined by their harvesting season, rather than the quality. If Vietnam R2E2 were in the same season as Australia's, they could sell for a good price. The wholesale price for Vietnam's R2E2 and local R2E2 is almost similar; however, Thailand's R2E2 is sold a bit cheaper due to poorer quality.



Figure 12 Vietnam produced R2E2 mangoes sold in Beijing Xinfadi market

3.2.2 Avocado quality and price

Currently, avocados sold in China are mainly imported from Mexico, Chile and Peru. New Zealand was approved for direct access only in early 2018. Hass is the only variety accepted in Chinese markets. Some of the interviewees said that New Zealand’s avocados have the best quality as compared to avocado from South American countries, but the price is too high for consumers to accept. When comparing the avocados from Mexico, Chile and Peru, the quality of Mexican avocado is better in terms of appearance and the percentage of dry matter. As a result, its price is a little bit higher than that of Peru and Chile. Figure 13 compared the avocados from Peru sold in Jiangnan wholesale market. The standard green fruit (Figure 13 left) is taken as good fruit by second-tier wholesalers and retailers and are sold at a much higher price given they have longer shelf life. On the other hand, the dark coloured fruit (Figure 13 right) is sold much cheaper as they have a shorter shelf life compared with the green fruit.



Figure 13 Avocados from Peru sold in Jiangnan wholesale market

3.2.3 Lychee quality and price

All the companies interviewed only deal with locally produced lychees. They said that the lychee produced from Thailand and Vietnam cannot compete with local production in terms of quality and price. Given the short shelf life of lychees, several Chinese wholesalers or distributors transport local lychees in foam boxes which are filled with ice to maintain the freshness as much as possible along the journey. The retail price for lychee in a fruit chain store could be over \$8 (RMB 40) per Kg in the early season, while it could be up to \$16 (RMB 80) in a premium supermarket (Figure 14). The retail price in supermarkets and fruit chain stores would come down to around \$4 (RMB 20) when there is a large supply in the market.



Figure 14 Retail price of pre-packed Feizi Xiao lychee at Pagoda (left) and Olé (right)

Although direct import has not yet been approved, some Australian lychees are sold in China. The “Sun Lychee” marketed by United Lychee Marketing is making small footholds. The wholesale price could range from \$60-100 per tray (equal to \$12-20 per kilo). One Shanghai retailer said that the quality of Australian lychee is not better than local ones, but the big advantage is counter-seasonal production.

3.3 Supply chain performance

3.3.1 Strategic performance

Chinese importers often work with either exporters or grower exporters when sourcing mangoes and avocado from South American countries. It is the same case for sourcing mangoes from Australia. In the early stage, Chinese importers would provide a supply program, which turns into relationship-based transactions over time. In terms of the trade mode, it depends on their negotiation and business relationship. A Guangzhou-based importer and wholesaler said that some suppliers work with consignment or minimum

guarantee payment, some with a percentage of upfront payment, but most of the time, payment is made after receiving the fruit.

It could be a different story when Chinese importers source mangoes from Vietnam and Thailand. Although working with exporters or grower exporters for direct sourcing is a common practice, several importers go to the farms and buy all the fruit before the harvest. Then, they pay a packer to pack based on their requirements or directly rent a packhouse to pack by themselves. The two wholesalers interviewed in the Beijing Xinfadi market follow this rule. They said sourcing like this can help them control the entire process to reduce cost and ensure quality consistency.

3.3.2 Operational performance

The obvious advantage for Australia’s fruit export to China is the shorter transport time compared with the USA, South Africa and South American countries. The comparison of supply chain lead time from origin to destination is shown in Table 6.

Table 6 Comparison of supply chain lead time from origin to destination

Departing region/country	Mode of transport	Port of arrival	Shipping time	Road transport from Guangzhou to Shanghai	Road transport from Guangzhou to Beijing
South America	Sea	Shenzhen	20-30 days	1 day	1.5 days
	Air	Guangzhou	3-5 days		
Australia	Sea	Shenzhen	12-15 days		
	Air	Guangzhou	1 days		

Source: Data collected from interviewees.

Sea freight is the most used mode of transport for transporting avocado from South America to China as it is cheaper compared with air freight. A Guangzhou-based wholesaler said that air freight is about 4-5 times more expensive than sea freight. But the issue with sea freight is that it often takes 20-30 days to get to China and the quality is not predictable upon arrival. Airfreight is often used for mangoes and sometimes for avocados as it is much faster and usually takes about 3-5 days with the inclusion of waiting and transit time (Tina, 2018). Given the risk of cold chain break in transit and waiting in traditional air freight, some importers, such as Yiguo, have tried air charter to import Mexico avocados. The air charter only takes 25 hours from Mexico to China, which can ensure fast and reliable delivery. In contrast, the transit time from Australian exporters to Chinese importers is much shorter, at 1 day by air and at 12-15 days by sea.

Road transport is the most used mode of transport when importing mangoes from Thailand and Vietnam. Normally, the fruit is transported to the land port (Pingxiang Port) in Guangxi and then transported to Guangzhou, Shanghai and Beijing. A Beijing-based wholesaler said that it takes one week to get to Beijing. Given the overlapping supply windows with local mangoes in Guangdong and surrounding regions, mangoes produced in Thailand and Vietnam are not competitive any more in the Jiangnan market as a result of the improved production and quality of local mangoes.

3.4 Supply chain cost and sales performance

Table 7 compares supply chain cost and sales price for mangoes by country of origin. Peru and Ecuador have much higher shipping cost in terms of air freighting mangoes to China. The cost of air freight from Peru and Ecuador is at least \$4.30 per kg compared with \$1.58 per kg from Australia. Because of the higher cost of air freight, Peru and Ecuador have to target premium market channels through quality and taste, rather than competing on price (Produce report, 2016). A high-end retailer said that their procurement price for Peruvian mangoes from local importers and wholesalers are sometimes higher than Australia's. As a result, the retailing price for air-freighted mangoes from Peru and Ecuador is quite similar to that of Australia's at the high-end retailer's end. To further improve their competitiveness, Peru and Ecuador have trialled sea shipment to reduce their freight costs. The first sea shipment of Peruvian mangoes landed in Shanghai in February 2017 (Fresh Plaza, 2017a) and Ecuador will send their first-ever sea shipment during the 2019/2020 Season (Produce report, 2019).

Table 7 Breakdown of supply chain cost and sales price for mangoes

Country	Variety	Tray weight (kg)	Air freight cost (\$/kg)	CIF Guangzhou market via direct import (\$/Tray)	Wholesale price (\$/Tray)	Purchase price by high-end retailers (\$/piece (approx.500 grams))	Retail price (\$/piece (approx.500 grams))
Australia	R2E2	7kg	1.58	60-84	40-96	6	10 +
Peru	Kent	6kg	4.3+	NA	NA	7	9.8
Ecuador	Kent	6kg	4.3+	NA	NA	NA	8

Source: Data from some interviewees and online sources.

Table 8 compares supply chain cost and sales prices for avocados by country of origin. The cost of sea freight from the three South American countries to China is approximately similar, at \$0.29 per kg in 2018. New Zealand secured the approval for direct import of avocado into China. As the volumes imported at this stage is low, New Zealand exporters are using air freight with the shipping cost of around \$2.59 per kg from New Zealand to Shanghai.

Table 8 Breakdown of supply chain cost and sales price for avocados

Country	Variety	Tray weight (kg)	Mode of transport	Freight cost (\$/kg)	CIF Shanghai (\$/Tray)	Wholesale price (Tray)	Retail price (Piece)	Fruit size in retail
Mexico	Hass	6kg	Sea	0.29	\$32 +	NA	\$2	Medium and small fruit
Peru	Hass	4kg	Sea	0.29	18	NA	\$2	
Chile	Hass	4kg	Sea	0.29	18	NA	\$2	
New Zealand	Hass	5.5kg	Air	2.59	NA	NA	\$6	Large fruit

Source: Data retrieved from interviewees and online sources.

The wholesale price for avocados from South America has shown a downward trend in China in recent years. In August 2017, the wholesale price for Peru's avocado in Shanghai fluctuated between \$16-20 and \$30-34 per 4 kg tray, while the wholesale price for Mexico's avocado varied from \$32-34 to \$56-60 per 6 kg

tray (Fresh Plaza, 2017b). A Guangzhou-based importer and wholesaler said that the lowest wholesale price for avocados occurred in 2018 when Chile's avocados hit \$10 per 4kg tray in October and November and this price lasted for about 3-4 weeks. Although their prices rebounded in the following months, they only reached \$20-24 per tray. Mexico's avocados also saw price reductions, although Chinese customers prefer them to Chile and Peru's avocados in terms of taste and appearance. The price reduction is mainly because of larger volumes flooding in with more countries gaining market access to China. As indicated by one retailer, avocado is not a luxury fruit any more as the retail price (\$2 per piece) is much lower than in previous years. New Zealand is supplying Chinese markets with large sized fruit to differentiate from other key suppliers (Fresh fruit portal, 2018). As shown in JD.com that a piece of New Zealand's avocado weighted over 330g and sold at around \$6 per piece.

6. Reference models for Australia's action

- 1) Some Chinese local governments built a third-party quality assurance program to guarantee producers supply wholesalers/retailers with quality consistent fruit with the aim of expanding fruit sales. Under the scheme, local government would cover the full cost once quality inconsistency is spotted by participating wholesalers/retailers upon arrival of fruit.
- 2) The Chilean government has worked an industry plan for exports of cherries into China. They plan the total export volume from an industry perspective before the season and pre-book express chartered ships to shorten the transit time from 30-35 days to 25 days.
- 3) South Africa has tried to replace container liners with the refrigerated vessels when sending oranges into Japan and China, aiming to reduce the transit time and ensuring better quality control along the journey.
- 4) Zespri – a New Zealand Kiwi fruit company and brand is successful in selling 'Zespri' branded Kiwifruit into Chinese markets. They have well-established standardised production in New Zealand to ensure quality consistency and size conformity. Meanwhile, they undertake regional sales strategies and sign sales agreements with regional sellers to promote and sell Kiwi fruit under their brand in China.

7. Development strategies for Northern Australia's fruit industry

- 1) A united export strategy/platform to coordinate several fresh fruit growers for exports of mangoes, avocado and lychee could be implemented, which would help different growers work for a consistent brand and deliver their fruit in one shipment. The branding "Sun Lychee" provides a good example to follow. One of the interviewees based in Shanghai said that Lindsay Transport has already worked to establish a trading company using their relationship with growers. They have directly exported Australian fruit, including mangoes into China.

- 2) Work with big and reliable regional distributor/wholesalers in China to sell fresh fruit to regional customers and offer proper assistance to the regional customers for chain-wide quality control. This can help avoid oversupply in a region and potential competition among different customers
- 3) Grade and pack the fruit based on customers' exact requirements to ensure quality consistency and maintain a good reputation of a quality producer or supplier. Since direct import cost is sometimes higher than sourcing from the wholesaler market, importers generally have higher expectations on fruit quality from the direct channel. If the direct channel cannot guarantee quality consistent fruit, they have no interest to source through the direct channel. Based on this, an export market-oriented grading system could be implemented for mangoes and avocado to guide the order fulfilment by growers and exporters, which would help ensure the continuous supply of quality consistent fruit.
- 4) Identify the segmented markets for Australian fruit by grade and size, and pick and pack for the right need, which could help to reduce double handling at the wholesalers' end. For example, supplying online retailers with mangoes (R2E2) at around 500g/piece and packing mangoes based on their ratio of blush.
- 5) Build differential branding or packaging to distinguish different classes of fruit and implement differential promotion and sales strategies
- 6) Conduct country-and/or industry-level promotion to improve the recognition of Australian fruit to middle and high-end customers.

8. Summary

It is a major challenge to connect directly with Chinese retailers to improve export supply chain efficiency. Some key points for consideration are: (1) Individual Chinese retailers often have very small procurement volumes compared with wholesalers who can import a large volume of fruit and supply several different downstream customers. (2) Chinese retailers, particularly premium retailers often have very high standards and prefer to work with local importers for pre-pack service and distribution; (3) Chinese retailers normally have a long payment cycle – about 1-2 months. For example, JD.com normally pay their suppliers in 2 months.

The best solution to tap into the premium channels would be working with a large reliable regional distributor/wholesaler in China who sell different grades of fresh fruit to segmented regional customers, which cannot be achieved by Australian suppliers alone. Also, working with a regional customer could help to avoid oversupply in a region and potential competition among different customers.

To tap into the premium channel, differential branding or packages should be developed to distinguish different classes of fruit, more importantly, to distinguish new or innovated fruit from other prevalent fruit in the market and implement differential promotion and sales strategies. Given the success of Zespri in China, it could be good to compare and learn from the case of Zespri, which may generate valuable insights. Also, it

is valuable to monitor the performance of New Zealand's avocados in the Chinese markets, which could provide a good case reference point for Australian avocados if Australia wants to tap into Chinese markets.

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