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# Trends in Organic and Green Food Consumption in China: Opportunities and Challenges for Regional Australian Exporters

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# Trends in Organic and Green Food Consumption in China: Opportunities and Challenges for Regional Australian Exporters

**Abstract**
For regional producers of organic food, the growth of the 'green food' market in China and the signing of a free trade agreement between Australia and China is critically important. An online survey of 250 Chinese consumers was conducted and it shows that the purchase of organic food is motivated by altruistic concerns (i.e., environment and animal welfare concerns) and self-interest (i.e., personal and familial health concerns, food safety concerns). Individuals who consume 'green food' and organic food are likely to distrust the Chinese food system. Age is an influential factor affecting purchase of certified organic food. Consumers aged 36 and over are more likely to buy certified organic food. The presence of children in the household is also an influential factor. The survey revealed gaps in respondents' knowledge of green food and only half of those surveyed could distinguish between organic and green food. Fruit and vegetables are the most popular type of green food purchased. This study helps fill a gap in the academic literature given that comparatively little is known about the factors that influence organic food consumption in China. Recommendations include the development of a generic branding strategy, appropriate segmentation strategies and consumer education.

**Keywords**
Organic food, China, consumer behaviour

## Introduction

The organic food industry in China has experienced rapid development (Li, Ge & Bai, 2013); its size has quadrupled in the past five years (Soil Association, 2012) and it is expected to double by 2015 (Euromonitor, 2011). Market reports suggest that the rising demand for organic food in China is associated with increasing disposable income and a belief that imported food may provide protection from the various food scandals that have beset China (Marchesini, Hasimu and Spadoni, 2010; Euromonitor, 2011; ITC, 2011; Mintel, 2012). Given that China is the largest importer of food and beverages in the world (AusTrade, 2013), this market cannot be ignored. Relative to the literature on Western consumers, the literature on organic food consumption in China is sparse (Roberts and Rundle-Thiele, 2007; Darnhofer, Somsook, and Vogl, 2008; Roitner-Schobesberger, 2008; Marchesini, Hasimu and Spadoni, 2010; Yin, Wu, Du and Chen, 2010; Sirieix, Kledal, and Sulitang, 2011; Lobo and Chen, 2012; Marchesini, Huliyeti and Canavari, 2012; Thøgersen and Zhou, 2012; Truong, Yap, and Ineson, 2012).

This study aims to identify the factors that motivate the purchase of green or organic food in China. The 'Green Food' label refers to a category of food that is grown in a safe and ecologically sound manner. There are two standards for green food: the A grade green which represents a transitional level between conventional and organic food, allowing restricted use of chemical fertilisers and pesticides, and the AA grade green food, which represents full organic status. The majority of food sold in the domestic market is of 'A' standard, not 'AA' (Saunders, 2006).

This research has four objectives: firstly, to understand the opportunities and challenges that the Chinese market poses for regional Australian agri-food exporters. Secondly, the aim is to identify the demographic characteristics of the green/organic food buyer in China. The third objective is to identify the reasons why consumers buy green/organic food. Specifically, are those factors motivated by altruistic concern (i.e., environment and animal welfare concerns) and/or self-interest (i.e., personal health concerns). The final objective is to identify whether certified organic food consumers differ from green food consumers in terms of demographic characteristics.

## Challenges and opportunities faced by regional Australian exporters

Chinese food consumption trends are critically important to regionally-based Australian food producers. Horticulture Australia (HAL) has identified China as a potential export market for horticultural produce (HAL, 2013). It is widely acknowledged that the increase in household disposable income and the prevalence of food safety scandals in China have helped boost imports of food and beverages (Austrade, 2014). The ABARES report *What Asia Wants* (2013) shows that the value of fruit and vegetable consumption in China is projected to be US$118 billion and US$551 billion in 2050, respectively, over 50 per cent higher than in 2007. Chinese export demand is likely to drive an increase in farm-gate returns in the future (AusVeg, 2012). Phrases such as 'the Asian Century' abound in policy documents (Department of Agriculture, 2013), but this term is not precisely defined. Although the emerging middle class in China poses opportunities for Australian food producers, this middle class may not be as wealthy as we might believe. This internet-based survey sheds some light on Chinese consumers' willingness to pay for certified green food.

The recent *Green Paper on Developing Northern Australia* (2014) highlights the importance of agricultural crops to the regional economy. More than 90 per cent of Australia's mango and banana production takes place in the region. Northern Australia's proximity to Asia's large and growing economies provides a competitive advantage for exports over its southern and international counterparts. This can mean shorter transit times for exported agricultural products (Commonwealth of Australia, 2014). Claims are being made that Queensland, along with Northern Australia, will become a 'food bowl' for Asia, but these perceptions are not well informed (CSIRO, 2009). The expansion of irrigated agriculture has historically been limited due a challenging climate. Issues to consider include the environmental impacts of irrigated agriculture, insufficient water, Indigenous water rights, poor quality soil, isolation, and distance from major population centres which reduces access to skills and labour (CSIRO, 2009).

Since Queensland is Australia's leading state for fruit and vegetable production, China's growing food demands are of interest to policy makers. Queensland's agricultural exports are worth $8.9 billion per annum, but it is recognised that the sector has to become more export-focused (Department of Agriculture, Fisheries and Forestry, 2013). Figure 1 shows the value of agricultural production to Queensland, and while cattle and sugar cane are the most significant sectors, vegetables and bananas are also important in terms of value (DFAT, 2012). The

last agricultural census found that Queensland had an estimated 4,021 horticultural businesses in 2009-10. The gross value of Australia's horticultural exports was $1.9 billion (ABS, 2012), a fraction of total agricultural exports. Horticultural exports remain at low levels. In 2012, Australia had a trade deficit for fresh and processed fruit, nuts and vegetables of $863 million (Department of Agriculture, 2012). There are a wide range of factors explaining Australia's poor export performance. Market access remains a significant issue. In general, it is easier for processed foods to access the China market. Export of fresh produce (particularly fruit) is limited by quarantine restrictions. An ABARES (2014) study of vegetable growers found that the majority of growers believed exporting was too difficult or time-consuming. Inadequate prices for exported vegetables and shipping costs were the most commonly stated impediments to developing export markets (Valle, Caboche and Lubulwa, 2014). The agricultural sector faces many challenges, including competitive challenges in overseas markets (i.e., Chile, New Zealand, South Africa), a high Australia dollar, globally high production costs, limited supply capability, shelf life for perishable products, supply chain logistics and a highly variable climate (Department of Agriculture, Fisheries and Forestry, 2013). However, despite these barriers, a recent market report on market opportunities for Australian vegetables in China concluded that export barriers are not insurmountable (Morgan and Wright, 2014).

With rising populations in middle and higher income brackets, there is an opportunity to export certified organic products at a premium price (Commonwealth of Australia, 2014). According to the BFA (Biological Farmers Association), Queensland has the largest amount of certified organic production land in Australia. Queensland has the highest value of farm-gate organic agricultural production in Australia at 32 per cent or $140 million, including almost 70 per cent or $52 million of Australia's growing organic beef industry. Many farmers who move to certified organic farming are attracted by the high growth rates. Organic agriculture is the fastest growing sector in agriculture. Exact figures for organic exports are difficult to ascertain but exports are estimated to be valued at $126m which is 10% of overall industry value. The organic meat and dairy sector are success stories but exports overall remain suppressed due to lack of supply (Monk, Mascitelli, Lobo, Chen and Bez, 2012).

In China, certain categories of organic products have good prospects, including processed and frozen food, dairy products, cereals, wine, infant formula and baby food as well as non-food items such as cosmetics (Chen, 2012). Therefore, there may be opportunities for regional producers to add value to their products or diversify. Compliance costs exist in China; for instance organic products that have not been certified by the Chinese authorities cannot be labelled 'organic' and must

have the 'Green Food' label (Austrade, 2014). Australia and China recently signed a Free Trade Agreement and exporters should be able to take advantage of a reduction in tariff and non-tariff barriers. This internet-based survey sheds some light on Chinese consumers' knowledge of certified organic food and the relationship between organic food consumption and demographics.

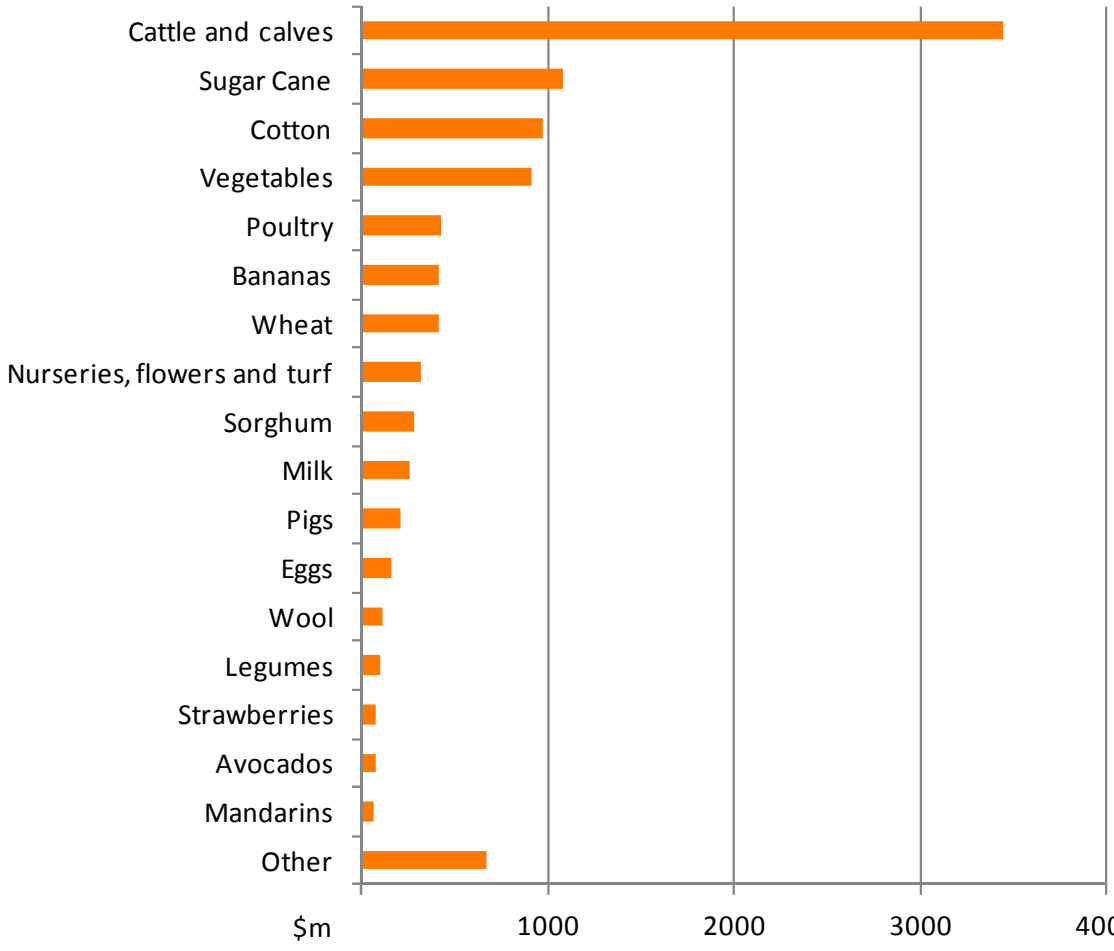


**Figure 1**: Value of agricultural production to Queensland, 2011–12

Source: Department of Foreign Affairs and Trade (DFAT) and Australian Bureau of Statistics

## Literature Review

### Role of demographics

Studies into who buys organic food highlight demographic variables like gender, age, income, education and presence of children in the household (see Yiridoe et al., 2005 for a review). The role of women in the food system is emphasised as they tend to be responsible for food preparation and food shopping and are concerned about their children's eating patterns (Little, Ilbury and Watts, 2009). Females with children are likely to be organic consumers (Dettmann and Dimitri, 2009; Van Doorn and Verhoef, 2011) and concern for young children is likely to increase organic food consumption (Kriwy and Mecking, 2012).

There are mixed messages in the literature regarding the influence of household income on organic consumption; some studies have found that income is insignificant (Smith et al., 2009) but others conclude that while income does not influence the initial decision to purchase organic food, it does affect expenditure on organic food quite significantly (Kriwy and Mecking, 2012). Howie (2004) found that consumers on low incomes (less than $50,000) are more likely to purchase organic food. Lockie et al., (2002) found that non-price attributes are important to consumers such as shelf-life, family acceptance, quality and the avoidance of waste.

Education is one of the few demographic variables to be consistently associated with organic or local food purchase (Yin et al., 2010). Zepeda and Deal (2009) suggest that education is a measure of one's level of knowledge and information-seeking behaviour; indeed, scholars refer to the rise of the 'reflexive' consumer (Moore, 2008) as consumers actively seek information from the Internet and the mass media. Likewise, studies on both organic and green consumption in China highlight a high level of education (Zhang, 2005; Thøgersen and Zhou, 2012; Zhu et al., 2013).

The following hypothesis has been advanced:

H1: Green food consumption in China is influenced by certain demographic factors, notably gender, family life cycle stage, education and income.

### Role of trust

The organic food literature shows that distrust of food processing has a strong influence on organic food consumption (Grunert, 1992; Kristiansen and Grunert,

1991). Furthermore, consumers who lack confidence in regulators and in the mainstream food industry are more inclined to be heavy organic food consumers (Squires, Juric and Cornwell, 2001). According to Marchesini et al., (2012), the trust deficit in China is enormous and it has played a key role in boosting all certified food purchases.

Organic foods are 'credence goods' because many of the attributes that consumers may consider important are not obvious or easily verified – in other words simply looking at the food does not give the consumer any idea of how it was produced (Gifford and Bernard, 2011). The relevance of credence attributes "underlines the considerable role played by certification and labelling aimed at reinforcing consumers' confidence in organic food" (Guido et al., 2010, p. 99). Bildtgård (2008) argues that certification schemes help maintain people's trust in food in modern society. This study aims to test the influence of trust on green food consumption in China:

H2: Individuals who consume green/organic food are likely to distrust the Chinese food system.

**Purchase motivations**

In the food marketing literature, there is a general consensus as to why people buy organic food. Many studies posit that organic food purchase behavior is motivated by the perceived healthiness of such products (Guido, 2009; Guido et al, 2010). Health concerns are based mostly on the presence of pesticides and additives in conventionally grown food as well as genetically modified ingredients (Siegrist 2008). Together with personal health concern and concern about the degradation of the natural environment, product attributes such as taste and quality are important (Baker et al., 2004; Didier and Sirieix, 2008; Hill and Lynchehaun, 2002; Honkanen et al., 2006; Lyons, 2006; McEachern and McClean, 2002; Pearson, Henryks and Jones, 2010; Torjusen et al., 2001). In a large-scale study of the adoption of organic food by Chinese consumers, healthiness, taste and environmental friendliness were found to be important attributes (Thøgersen and Zhou, 2012). Health concerns outweigh environmental concerns in terms of influencing the purchase intentions of Chinese consumers (Yin et al., 2010).

Researchers argue that ethical principles, such as ecological sustainability, care for farmers' welfare and care for animal welfare, which constitute a philosophy for organic farming, drive consumers' choices of organic food (Guido et al., 2010). Researchers have linked moral attitudes, namely the positive, self-rewarding feeling of doing the right thing, to the consumption of organic food (Arvola et al., 2008). For instance, studies show that animal welfare concerns

(Hutchins and Greenhalgh, 1997) influence organic food consumption. Animal welfare concerns are more important for particular organic produce (i.e., eggs, chicken and pork products) and in countries where intensive animal farming systems are commonly used (Pearson, Henryks and Jones, 2010).

Research suggests that organic food consumers rank private or personal benefits higher than the social benefits of organic agriculture (Yiridoe et al., 2005). Kriwy and Meckling (2012) recommend marketers to stress self-interested reasons for buying organic food instead of emphasising altruistic aspects. There is some evidence that organic food consumers value health benefits as well as concern for the environment (Oude Ophuis et al., 1992; Davies et al, 1995; Wandel and Bugge, 1997; Squires, Juric and Cornwell, 2001). Pino, Peluso and Guido (2012) emphasise ethical motivations and conclude that ethics affect the purchase intentions of regular consumers, whereas food safety concerns influence the purchase intentions of occasional consumers. While some studies conclude that ecological concerns (i.e., protection of water supplies, wildlife and overall balance of nature) are important in explaining consumption of organic foods (Goldman and Clancy, 1991; Oude Ophuis et al., 1992; Fotopoulos and Krystallis, 2002), others show that they are not so important and environmental concern ranks slightly lower than healthy content (Jolly et al., 1989; Paul and Rana, 2012). In a study of Chinese consumers, Sirieix et al., (2011) concluded that consumers were driven more by self-oriented motives rather than altruistic or other-oriented motivations (i.e., support for small-holder farmers, animal welfare and environmental preservation).

As the organic market in China grows, a natural question is what motivates consumers to buy organic/green food? The following hypothesis emerges from the literature review:

H3: Chinese consumers are motivated to buy green/organic food for health and environmental reasons.

## Research Design

The population of interest was consumers of certified green food and organic food, since most consumers do not understand the distinction between organic and green food rating-systems. Green food is a solely Chinese certification and is comparable to, but differs from, organic products (Marchesini, Hasimu and Spadoni, 2010). The ecological labels are shown in Figure 2.


**Figure 2:** Chinese Green Food and Organic Food Quality Certification Signs.

The survey instrument was originally developed in English and translated into Chinese. The survey contained a section on socio-demographic information, purchase motivation, sources of information used in decision-making, outlets used to buy food, familiarity with green food and organic food, willingness to pay and consumer attitudes towards food safety. The survey was informed by the literature and it was pilot tested on a convenience sample. Based on feedback from the participants, some questions were reworded to avoid ambiguity.

An online survey was conducted in May and June 2014. The survey was promoted by a major online wine merchant in order to attract the educated and affluent Chinese consumer. Data collection is ongoing and hence this paper reports preliminary findings only. A total of 250 consumers responded to the survey to date and this includes 199 individuals who had previously bought green food. Most of the respondents come from Beijing, Shanghai, Guangdong and Chongqing. These cities are geographically dispersed – being located in the north, south, east and west of China, and they are considered first tier cities that contribute strongly to China's economic development.

Data processing and analysis included descriptive analysis (frequency distributions) and bivariate analysis (t-test). Parametric (t-test) methods were used to detect significant differences between consumers of green food and consumers of certified organic food. A chi-square test was used to analyse the relationship between demographic characteristics and organic/green food consumption (Bryman and Cramer, 1997).

## Data findings

Table 1 offers a demographic profile of the sample. Females were over-represented in the survey, with 70% females and 30% males. The Chinese census data shows more males (51.3%) than females (48.7%) in the general population (National Bureau of Statistics on China, 2013). The female bias is quite marked and may be due to fact that women were more interested in the topic than men. A gender bias towards females is common studies of organic food (Hughner et al.,

2007; Lockie, Lyons, Lawrence and Grice, 2004) and in Chinese studies (Thøgersen and Zhou, 2012). Most respondents were young, with 79% of respondents in the 26-45 year age bracket. Main occupations cited were administrative/clerical (36%), teacher/researcher (27%), university student (15%), public servant (12%) and businessperson (4%). The majority of respondents were married (73%) and most respondents (62%) had a child. Household income was relatively high, with 24% of the sample earning between $1,732 and $3,464 a month. The respondents were well educated. Analysis of statistical data shows that 27% of the Chinese population of tertiary age were in tertiary education in 2011 (UNESCO, 2013) so this sample is more educated than the general population.

**Table 1:** Summary of findings on demographics

| **Variable** | | **Responses** | **Percentage** |
|---|---|---|---|
| Gender (n=187) | Male | 56 | 30% |
| | Female | 131 | 70% |
| Age (n=190) | Below 18 | 0 | 0% |
| | 18 - 25 | 31 | 16% |
| | 26 - 35 | 71 | 37% |
| | 36 - 45 | 79 | 42% |
| | 46 - 55 | 8 | 4% |
| | 56 and over | 1 | 1% |
| Married (n=191) | Yes | 139 | 73% |
| | No | 52 | 27% |
| Children (n=191) | No children | 20 | 10% |
| | Young children – aged below 12 | 88 | 46% |
| | Older children – aged 12 and over | 31 | 16% |
| Household Income Per Month (n=190) | Less than 3000 RMB | 8 | 4% |
| | 3,001 to 6,000 RMB | 50 | 26% |
| | 6,001 to 10,000 RMB | 51 | 27% |
| | 10,001 to 20,000 RMB | 45 | 24% |
| | 20,001 to 30,000 RMB | 15 | 8% |
| | 30,001 to 50,000 RMB | 14 | 7% |
| | More than 50,000 RMB | 7 | 4% |
| Education (n=180) | Senior High School or below | 2 | 1% |
| | Technical and/or Vocational School | 5 | 3% |
| | Junior colleges | 12 | 6% |
| | Undergraduate | 84 | 45% |
| | Post-graduate | 85 | 45% |
| Occupation (n= 192) | Company staff/clerical | 70 | 36% |
| | Public servant | 23 | 12% |
| | Business person | 8 | 4% |
| | University student | 29 | 15% |
| | Military | 1 | 1% |
| | Doctor | 0 | 0% |
| | Teacher and/or researcher | 51 | 27% |
| | Labourer and related | 2 | 1% |
| | Home duties | 4 | 2% |
| | Retired | 0 | 0% |
| | Other | 4 | 2% |

Note: approximately 1 Chinese Yuan/Renminbi = 0.1732 AUD.

## Demographics and certified organic food consumption

The majority of respondents (80%) had bought green food and 66% had bought certified organic food. Bivariate analysis, defined as relationships between pairs of variables, was conducted. Cross tabulations were used to explore relationships between organic food consumption and demographic variables. No significant effects of gender, marital status, occupation, city tiers or overseas experience were found. After collapsing the age groups into two categories: aged 35 and below and aged 36 and over, age was found to be an influential factor and was related to the purchase of certified organic food. Consumers aged 36 and over were more likely to buy certified organic food (51.6%). The marital status variable was further collapsed to two groups: households with no children and households with a child. The presence of a child in the household was found to be significant, with 67.5% of households with a child being more likely to buy organic food.

**Table 2:** Impact of Consumer Demographics on Certified Organic Food Consumption (p value/Pearson Chi-Square)

| | | Buy certified organic food | Pearson Chi-square |
|---|---|---|---|
| Age | 35 and below | 48.4% | $X^2 = 5.616$; sig.=.018* |
| | 36 and above | 51.6% | |
| Child | Have no child | 32.5% | $X^2 = 4.915$; sig.=.027* |
| | Have child | 67.5% | |

## Purchasing patterns and knowledge of green food and certified organic food

Table 3 illustrates the purchasing patterns of the sample. Fruit and vegetables were the most popular type of green food purchased (81%), with milk and dairy products being the second most popular (48%), followed by meat (34%), pre-packaged goods including ready meals, snack food, breakfast cereals (23%) and bread and bakery products (12%). International supermarkets such as Carrefour and Walmart were the most popular food purchasing channels (59%) followed by Chinese supermarkets (53%). One fifth of the sample (20%) purchased food from health food stores, from wet markets/farmers' markets (20%) and from a local food shop (19%). An interesting finding was that online fruit and vegetable box delivery was used by 16% of the sample and 8% obtained produce from Community Supported Agriculture (CSA) schemes.

One area of interest was willingness to pay for green food and most respondents were willing to pay much more for green food than conventional food. An estimated 42% said they were willing to pay up to 30% more for green food; 41% were willing to pay between 31% and 50% more and 14% were willing to pay

between 51% and 100% more. Average weekly expenditure on green food was $21 (125.35 RMB). Green food accounted for approximately a third of total food expenditure (37.7%).

One question was designed to capture Chinese consumer's knowledge of green food. A five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used and respondents were asked the question: to what extent do you agree or disagree with the following statements concerning your knowledge of green food? While Chinese consumers have heard of green food and know a little about it, they were not inclined to agree that they had good knowledge of green food. The survey showed that the Chinese consumer's ability to distinguish organic food from green food was restricted. Less than half of the sample (41%) was aware that 'green food' was different from organic food.

**Table 3:** Purchasing Patterns

| **Variable** | **Description** | **Percentage** |
|---|---|---|
| Green food category | Fruit and vegetables. | 81% |
| | Milk and Dairy | 48% |
| | Meat | 34% |
| | Pre-packaged goods | 23% |
| | Bread and bakery products | 12% |
| Distribution outlets | Carrefour and Walmart | 59and |
| | Chinese supermarkets | 53% |
| | Health food stores | 20% |
| | Wet markers and farmers' markets | 20% |
| | Local food shop | 19% |
| | Online fruit and vegetable box delivery | 16% |
| | Community Supported Agriculture (CSA) schemes. | 8% |
| Green food as a percentage of total food expenditure | Green food expenditure | 37.7% |
| Willingness to pay for green food | Willing to pay up to 30% more for green food | 42% |
| | Willing to pay between 31% and 50% | 41% |
| | Willing to pay between 51% and 100% more | 14% |

## Trust in food systems and motivations for purchasing green food

The survey was designed to assess Chinese consumers' level of trust in the food system and their attitudes towards food safety. A five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used and respondents were asked the question: to what extent do you agree or disagree with the following statements concerning your level of trust in food? The data shows that consumers feel they are not provided with enough information to judge whether food is safe or not; they are not satisfied that additives in food are not harmful to their health; they do not believe that their food is as safe as it once was; they do not trust the government to ensure that pesticide residue levels are safe. Some items received a neutral score (imported food brands can be trusted; food sold by supermarkets can be trusted) and respondents disagreed with the other statements: Chinese food brands can be trusted; food sold in farmers' markets can be trusted; food consumed in restaurants can be trusted.

A comparison of the motivations of respondents who purchased green food and those who did not purchase green food was conducted. A five-point Likert scale ranging from 1 (very important) to 5 (not at all important) was used and respondents were asked the question: how important are each of the following factors in motivating you to buy food? From Table 4, we can see that green food purchasers attach greater importance to most of the motivating factors than the non-purchasers. Food safety receives a higher score (which offers some support for hypothesis 3). The non-purchasers attach slightly more value to the freshness of the product, whether it has a well-known brand and whether it is free of genetically modified ingredients; however, statistics from independent t-test indicate that most of these differences are not significant, apart from the factor 'helps support Chinese farmers', which green food consumers rate significantly higher than those who did not consume green food (t=2.013; sig.=.046).

**Table 4:** Motivations of green food purchasers and non-purchasers – a comparison

| **Motivating factors** | **Purchasers** | **Non purchasers** |
|---|---|---|
| Green food will improve the future health of my family. | 4.29 | 4.22 |
| Green food will improve my future health. | 4.26 | 4.19 |
| Green food is safe. | 4.25 | 4.09 |
| Environmentally-friendly in the way it is produced, packaged and transported. | 4.18 | 4.18 |
| The food I buy has the green label and is lower in pesticides | 4.13 | 4.03 |
| Comes from humanely treated livestock. | 4.14 | 3.97 |
| Does not contain genetically modified ingredients. | 4.09 | 4.10 |
| Green food is high quality and has high nutritional value. | 4.07 | 3.97 |
| Produce is fresh. | 3.73 | 3.82 |
| The green food I buy helps support Chinese farmers.* | **3.81** | **3.47** |
| Sourced within season. | 3.74 | 3.68 |
| The green food I buy is competitively priced. | 3.70 | 3.65 |
| Tastes good. | 3.68 | 3.55 |
| Green food is easy to prepare. | 3.48 | 3.47 |
| The green food I buy comes from a farmers market and there is a long-term, trusting relationship with grower. | 3.34 | 3.48 |
| The green food I buy has a well-known brand name or comes from a well-respected region. | 3.31 | 3.33 |
| Green food is easy to buy. | 3.30 | 2.97 |

Figure 3 shows that while most of the motivating factors were considered important, health concerns (i.e. family and personal health) and food safety received the highest score. Other important factors were whether the food was lower in pesticides; comes from humanely-treated stock; is environmentally-friendly; is of high quality and has high nutritional value and contains no genetically modified food ingredients.

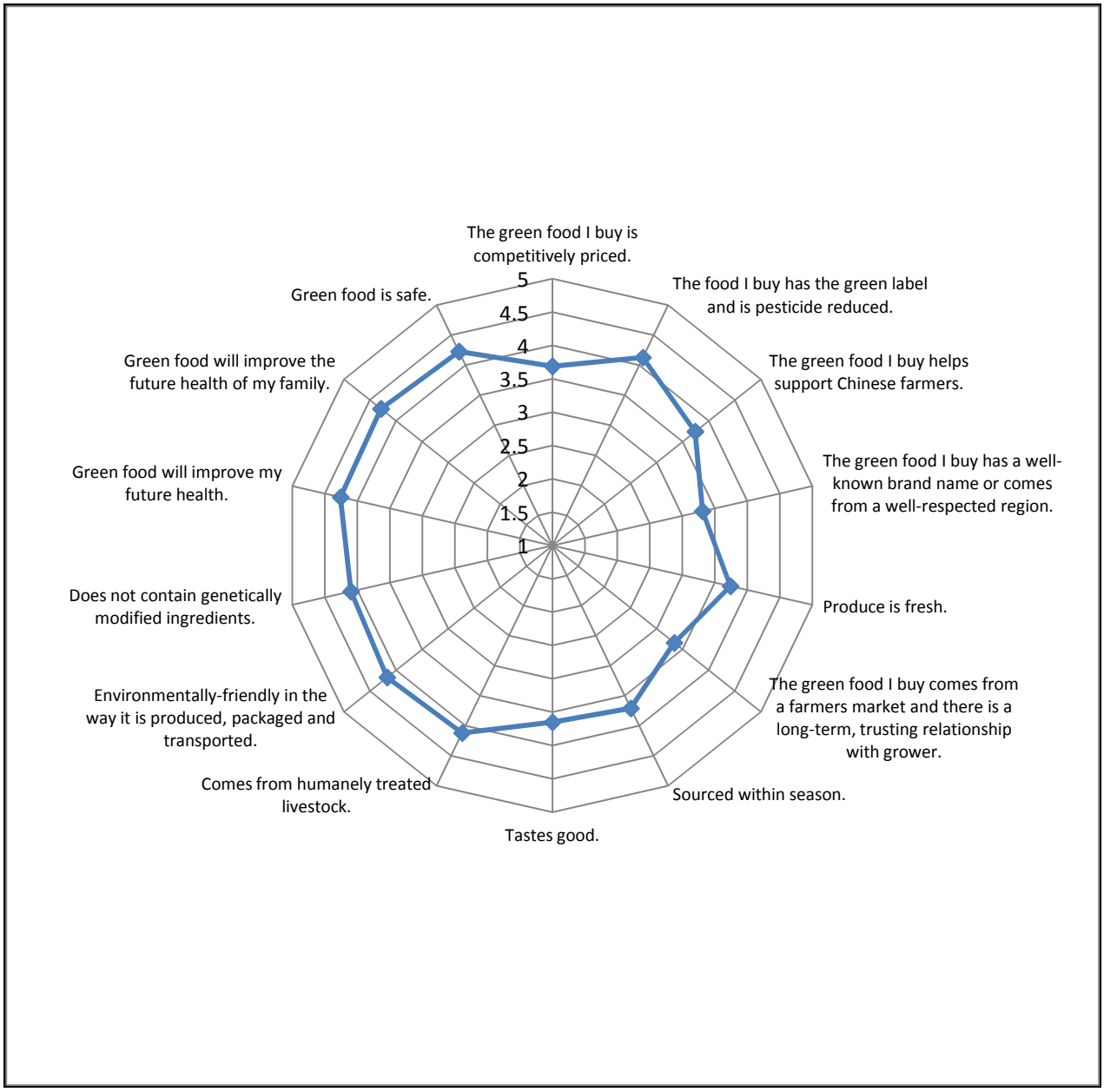


**Figure 3:** Motivations for purchasing green food

## Survey findings and discussion

This study contributes to the literature by explaining the factors that influence green/organic food consumption in China. One objective was to identify whether consumers of certified organic food differ from green food consumers in terms of demographic characteristics. Age was found to be an influential factor affecting purchase of certified organic food. Consumers aged 36 and over were more likely to buy certified organic food. The presence of children in the household was also found to be an influential factor. However, other factors such as gender, education and income were not found to be significant. These findings do not fully accord with the literature. Research on organic food consumption in China highlights high income (Yin, Wu, Du and Chen, 2009) and a high level of education (Thøgersen and Zhou, 2012). Studies on Western consumers show that concern for young children is likely to increase organic food consumption (Kriwy and Mecking, 2012); the organic food buyer is likely to be female (Lockie et al., 2004), female with children (Dettmann and Dimitri, 2009; Van Doorn andVerhoef, 2011) and is likely to be highly educated (Govidnasamy and Italia, 1990; Kriwy and Mecking, 2012). Studies using demographic profiling often report inconsistent findings, therefore the lack of clear trends arising from this study is not surprising.

The survey revealed that there were some gaps in respondents' knowledge of green food and only half of those surveyed could distinguish between organic and green food. This finding is not surprising given that that "organic food is a new and not very well known concept" in China (Thøgersen and Zhou, 2012, p. 328). The organic label competes strongly with the green food label in terms of image and positioning in the market and they are often confused (Marchesini, Hasimu and Canavari, 2012).

There was support for the third hypothesis, that Chinese consumers are motivated to buy green food for health and environmental reasons. The consumers of green food were motivated by several factors, in particular, health concerns; whether the food is lower in pesticides and carries the green label; animal welfare; whether the food is environmentally-friendly in the way it is produced and packaged; whether it is free of GM ingredients and is of high quality and has high nutritional value. There were no significant differences between green food purchasers and non-purchasers, apart from one factor, 'helps support Chinese farmers', which the green food consumers rated significantly higher than those who did not consume green food. This suggests a sense of altruism or care for the welfare of others. The importance given to health, environmental factors, farmer welfare and animal welfare is not surprising in the context of the literature review. In general, personal health and environmental considerations are strong motivating factors

(Baker et al., 2004; Didier and Sirieix, 2008; Hill and Lynchehaun, 2002; Honkanen et al., 2006; Kriwy and Mecking, 2012; Lyons, 2006; Makatouni, 2002; McEachern and McClean, 2002; Pearson, Henryks and Jones, 2010; Squires et al., 2001; Torjusen et al., 2001).

The study provided support for hypothesis 2 - that individuals who consume green/organic food are likely to distrust the Chinese food system. This finding is in accordance with the literature. Bing et al., (2011) found that purchase of green food in China is related to food safety concerns. Although China has plenty of product quality regulations, enforcement is weak (Jin, Lin and Yao, 2011). One survey found that 36% of respondents are strongly dissatisfied with food safety conditions (Xu and Wu, 2009). The problem of fraud, where companies falsely advertise pesticide-treated produce as organic, is an ever-present concern, leading to a large trust deficit (Marchesini et al., 2012; Li, Ge and Bai, 2013).

## Opportunities for regional food producers

There is good potential to export certified organic products to wealthy Chinese consumers. While Northern Australia is unlikely to become a 'food bowl' to Asia, strong export opportunities exist. While export barriers cannot be underestimated, the signing of the Australia-China Free Trade Agreement should be a boost to the industry. The (phased) removal of tariffs should make imported organic food more affordable to Chinese consumers and Australian exports more price competitive.

This survey has practical implications for regional food producers, along with Australian food policy makers and organic certifying bodies in Australia. In line with the trade literature (Mintel, 2012), the study shows that fruit and vegetables are the most popular type of green food purchased and the main distribution channels are supermarkets. Regional food exporters could increase the effectiveness of their marketing activities by appropriate segmentation strategies. This study suggests that segmenting the organic food market on the basis of age and presence of children in the household would be useful. It would be prudent for food producers to segment the market, not just on family life cycle stage, but also on behaviourial aspects such as benefits sought from green/organic food. The food attributes that regional food producers promote must be relevant and important to their consumers. They need to emphasise the health and safety benefits of Australian food, particularly in the light of Chinese consumers' high level of distrust in the domestic food system. Tamper-proof packaging, labelling and traceability schemes from the point-of-sale to the point-of-origin could be a point of differentiation and could reassure Chinese buyers that the produce is

genuine. The survey shows that Chinese consumers are willing to pay a premium price for green food, although the literature reports that high prices are a barrier to purchase in China, particularly in the case of organic food (Yin et al., 2010; Marchesini et al., 2010). Regional food producers in Australia should price their produce carefully and consider setting a modest premium in the 31% to 50% range. Given that the literature shows that willingness to pay for organic/green food is affected by demographics, notably age, gender, family size and household income (Xia and Zeng, 2008), more in-depth studies are needed before detailed pricing recommendations can be made.

A generic branding strategy spearheaded by AusTrade, HAL, Department of Agriculture or organic certifying bodies is needed to take advantage of the demand for safe, chemical-free produce. Organic certifying bodies in Australia could tackle knowledge gaps by providing information on organic production methods and philosophy (such as lower pollution, biodiversity preservation and other environmental aspects, the absence of antibiotics, chemical fertilisers, pesticides, GM ingredients, artificial colours and flavours in organic food). Public debates, seminars, expert speakers and events such as organic food fairs and international trade fairs could be used to educate buyers and reduce their uncertainty about the difference between certified organic, green-labelled and conventional food.

## Limitations of study and conclusion

This study had a number of limitations and further research is recommended. The small sample size limits generalisation of the findings. The sample was mainly female, young and well educated and this may contribute to low variation in responses. This may explain the insignificance of demographic factors on certified organic food consumption and the willingness to pay a high price premium for green food. As data collection is ongoing, the aim is to recruit a more diverse and larger sample in order to overcome some of these limitations.

In conclusion, Chinese food consumption trends are critically important to regionally-based Australian food producers. This survey showed that there is demand for certified fruit and vegetables and it is strongly related to food safety concerns. Young households with a child are strongly motivated to purchase certified food due to personal and family health concerns. China is expected to become increasingly important to Australia in coming years. China's rapidly growing middle class will mean that it requires more of the horticultural commodities that Australia produces.

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