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THE CHINESE MARKET POTENTIAL FOR BANANA AND TROPICAL FRUITS BASED ON HOUSEHOLD CONSUMPTION BEHAVIOUR ANALYSIS¹

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Market Potential of Tropical Fruit in China

-----Empirical Evidence from Guangdong Province,China

by

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Abstract:

Fruit consumption in China has increased in recent years. But there is still a gap compared with the major developed countries. Based on field surveys made in Guangzhou, Shenzhen, Foshan and Meizhou city, Guangdong province, this report analyzed the basic characteristics of tropical fruit consumption behavior of consumers in Guangdong province and differences in region, season and variety, discussed economic factors influencing buying behavior and consumer preference, and studied consumer propensity to consume on tropical fruit and the sales prospects of domestic market. The results showed most residents have the habit of consumption of tropical fruits; residents' income and relative prices have a marked influence on residents' consumption behavior of tropical fruit; supermarket is the most important place to purchase; children, young and middle-aged people are the main target consumers; nutrition is the most important factor in consumer buying decision-making process; Chinese residents' consumption of tropical fruit is mainly fresh-fruit-based, while consumption of juice and other processed products is relatively low. With the continued growth of per capita income in China, and the formation of new consumption habits, China's consumption of tropical fruits and processed products will have capacious growth space and market potential.

Key words: tropical fruit; household consumption behavior; market potential in China

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1 Foreword

Fruit is an important component in the food structure. Rich in vitamins, minerals, organic acids and dietary fiber, fruit can accelerate the metabolism of certain toxic substances, and is helpful for food digestion, absorption and stimulate the appetite. Tropical fruits have the same nutrients as other common fruits, with unique flavors, rich nutrients, and varied shapes and colors, are well received by consumers. With the continued growth of income and the improvement of market facilities and transport conditions, Chinese residents are also increasing consumption of tropical fruits and processed products, greatly expanded the consumption scope. Prices for banana, pineapple and other tropical fruits are not high; they have already become national popular fruits, consumption on them shows steady trend of slight increase in the proportion of food expenditure. At the same time, as China's fruit yields increased year after year, and as residents' concepts on healthy food changed, fruit processing (mainly into fruit juice, fruit wine, dried fruits, and canned fruits), as an effective channel to digest fruit, showed a fast developing tendency. However, due to relatively low starting point, outdated technology, fresh fruit consumption is still the dominating way, the proportion of fruit processing was less than 10% of the total output. And, compared with the major developed countries, there is a big gap on the consumption level of tropical fruit and processed products, shown in the backward status characterized by outdated technology, a unitary variety of products, a low level of deep processing, and a lack of comprehensive utilization.

This report is based on questionnaires of household consumption willingness on tropical fruit made in urban and rural areas of 4 cities in Guangdong province. It centers on household consumption behavior on tropical fruit, concerning household consumption patterns, consumers' consumption habit of tropical fruits, mainly researches on household consumption differences of region, gender, season and variety, studies consumption habits, consumption attitudes, social factors, economic factors influencing consumption, etc. It also probes into main factors influencing residents' fruit consumption demands and analyzes the market potential of tropical fruits and processed products in China.

2 Macroeconomic Environment of Tropical Fruit Consumption in

China

In recent 20 years, China's economy developed rapidly; residents' income grew steadily, and living standards improved, which leads to a growth in the per capita consumption on fruit and an increase of fruit consumption in the proportion of expenditure on food.

According to the data released by National Bureau of Statistics of China, in 2010, gross domestic product (GDP) of the year was 39.7983 trillion yuan, calculated at comparable prices, up by 10.3% over the previous year, accelerating 1.1% faster than the previous year. Influenced by factors like consumer confidence bounced back, continuity of consumption stimulating policies, income policy reform and income increase on the absolute level, 2010 nominal growth rate of total retail sales of social consumer commodity exceeded over 2009; but due to inflation, real consumption increase slightly lower than 2009. In 2010, the total retail sales of consumer goods reached 15.4554 trillion yuan, a growth of 18.4 %, or a real growth of 14.8 % after deducting price factors. Grouped by location of establishments, the retail sales of consumer goods in cities stood at 13.3689 trillion yuan, up by 18.8%, and that in rural areas reached 2.0865 trillion yuan, up by 16.1%. Consumption enjoyed steady and fast growth and the popular commodities maintained high sales. At the same time, market prices went up on a year-on-year basis while the prices for food increased sharply. In 2010, the consumer prices went up by 3.3% year-on-year, of which, the price rose by 3.2% in cities and 3.6 % in rural areas.

With the rapid economic, social development, urban and rural residents' income increased steadily, with higher growth for rural residents than that for urban residents. In 2010, the per capita income of urban household was 21,033 yuan, an increase of 11.5% over that in the previous year. Of this total, the per capita disposable income of urban residents was 19,109 yuan, up by 11.3%, or a real increase of 7.8% after deducting price factors. The per capita net income of rural residents was 5,919 yuan, up by 14.9 % over that in the previous year, or 10.9% growth in real terms. China is currently in a rapid industrialization, urbanization period, and during the process of

rural urbanization, this will lead to changes in rural residents' consuming attitudes and consuming behaviors, and will promote consumption growth and change their consumption structure.

3 Household Consumption of Tropical Fruits in China

In order to fully understand and grasp the current status of household consumption of tropical fruit and market potential of tropical fruit in China, the survey team carried out random sampling questionnaire survey on urban and rural residents of Guangzhou, Shenzhen, Foshan and Meizhou city in Guangdong province in January, 2011. Guangdong province belongs to densely-populated open coastal developed region, with large number of nonnative population; consumer behavior is representative and purchasing power is strong. Of the four cities, the economy of Guangzhou and Shenzhen is more developed; nonnatives account for a high proportion in the total population, the population composition is relatively wide, representing highly developed regions in China. Foshan represents the moderately developed region while Meizhou represents the under-developed region. Each city was further subdivided into urban districts and rural towns and villages, numbers of different residential areas were chosen to represent sectors of relatively high, moderate, and low income. 160 questionnaires were sent out in each city, the ratio of urban districts and rural villages was 5:3. Questionnaires were randomly sent out by survey team in supermarkets, vegetable markets and streets and collected on the spot^①.

^① Specific survey locations in Shenzhen city include: the urban districts---Lianhuabei vegetable market, Futian; streets around Lianhuashan Park, streets around Reming Bridge, Luohu; streets around Tianhong supermarket, Nanshan; streets around Nantou subdistrict office; the rural towns and villages---Yantian; street around Longhua vegetable market, Baoan; streets around China World Shopping Hall, Longgang; streets around Fuyong vegetable market, etc.
Specific survey locations in Guangzhou city include: the urban districts--- Jinggui supermarket, Yuexiu District; Guangyang vegetable market, Liwan District; Wushan vegetable market, Changban vegetable market, Haodangjia Supermarket, Parkshop, Wushan Dormitory, South China Agricultural University, Tianhe district; Rural towns and villages---Xinghe Supermarket, Tianhui Department Store, Dashi St., Panyu District; Xinkelong Supermarket, Darunfa Supermarket, Xintang District; Luogang District, etc.
Specific survey locations in Foshan city include: the urban districts ---Walmart supermarket and surrounding streets, Chancheng District; Rural towns and villages---vegetable market in Selongbei village, Lishui town, Nanhai district; vegetable market in Luopu, Jiujiang town; vegetable market in Kenbian, Xiqiao town, etc.

640 questionnaires were distributed and 640 were returned, the response rate was 100%, of which, 620 valid, the validity rate was 96.88%. Tropical fruits referred in the questionnaire include: banana, durian, coconut, orange, dragon fruit, mangos teen, longan, litchi, mango, pineapple, jackfruit, rambutan, wax apple, papaya, star fruit, guava, etc. Processed tropical fruit products include fruit juice, canned fruit, fruit pulp and dried fruit of the above-mentioned tropical fruits, such as, coconut milk, litchi juice, pineapple tin, litchi can, longan can, dried banana, dried mango, etc. To find out propensity to consume on tropical fruit, the questionnaire focused mainly on income and expenditure, dietary structure and other social, economic factors and constraints on residents' tropical fruit consumption. On this basis, propensity to consume on tropical fruit and the prospects of domestic market were analyzed.

3.1 Description of the Survey

The survey respondents constituted a basic balance of gender, 290 male, accounting for 46.77% and 330 female, accounting for 53.23%. The age composition of respondents is shown in figure 1. Young and middle-aged people are main decision-makers in the household consumption, it's reasonable that they accounted for over 50% respondents. Occupation classification of respondents included 81 staff of public administration and institutions, 95 workers, 97 working in the field of commodity circulation, and 102 of other service industries; respondents of the 4 occupation accounted for 60.48% of the total. 48.23% respondents had junior college degree or above. 27.10% respondents had the family size of 3, 26.61% had the family size of 4; the family size of most respondents is small, which is in line with characteristics of China's current family structure.

Specific survey locations in Meizhou city include: the urban districts--- Meizhou Railway Station, Wuzhoucheng Bus Station, Pacific Department Store, Yanjiang St., Baihuazhou, Meixin Rd., Erheng St., Shanheng St, Jiangnan; Zhonghua St, Jiangbian Rd, Huaqiao City, Jiangbei; Rural towns and villages---Jiqun village, Xinnan village, Zhongxin Village, Shangji Village, Zhengjiang Village, etc., Pantian town, Fengshun county.

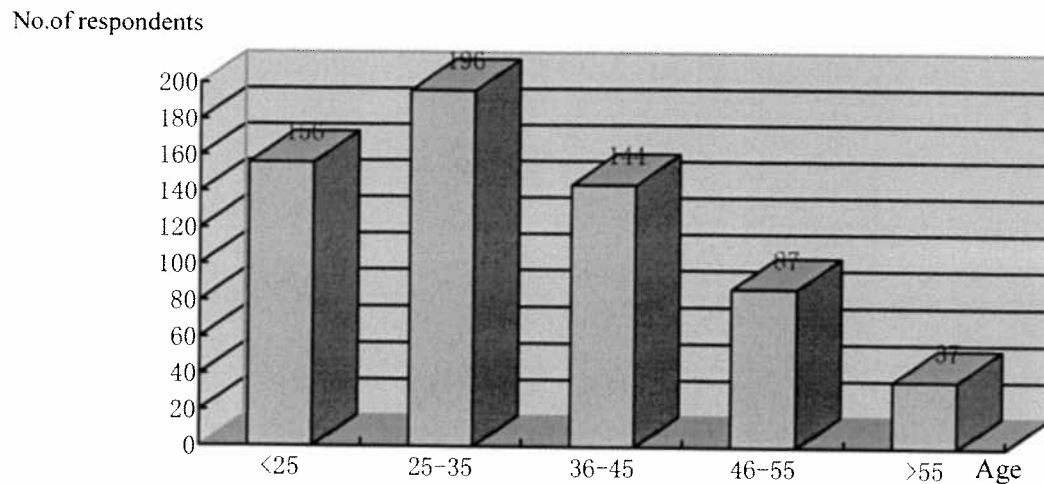


Figure 1 Distribution of Respondents' Age

3.2 Economic Factors Influencing Tropical Fruit Consumption

Consumer's income decides their purchasing behavior; it is the determinant of buying decision. Respondents' monthly household income is shown in Table 1; 136 respondents' household income was below 3000 yuan, accounting for 21.94%; 196 respondents' household income was between 3001-5000 yuan, accounting for 31.61%; 133 respondents' monthly household income ranged from 5001 to 8000 yuan, accounting for 21.45%; and there were 13.06% respondents whose monthly household income was above 10,000 yuan. Monthly household income varied from regions: monthly household income in Guangzhou showed even distribution in each income segment; over 50% respondents' monthly household income in Shenzhen was 3001-8000 yuan, and 17.76% respondents' monthly household income was over 10,000 yuan, the income level was high; most respondents' monthly household income in Foshan was between 3001 to 5000 yuan, accounting for 41.25%, less than 10% respondents' monthly household income was below 8000 yuan; 60% respondents' monthly household income in Meizhou was below 5000 yuan.

Table 1 Monthly Household Income of Respondents

Monthly income Region	<3000 ¥	3001-5000 ¥	5001-8000 ¥	8001-10000 ¥	>10000 ¥
Guangdong	43	43	24	22	27
Shenzhen	17	41	37	30	27
Foshan	32	66	48	6	8
Meizhou	44	46	24	16	19
Total	136	196	133	74	81
Percentage	21.94%	31.61%	21.45%	11.94%	13.06%

With regards to household expenditure, 238 people's monthly expenditure was between 2001 to 4000 yuan, accounting for 38.39%. Grouping of the household expenditures showed: 85.81% respondents' housing expenditure was below 2,000 yuan; food expenditure, as an important part of household spending, generally accounted for over 30% of total expenditure; clothing expenditure below 1,000 yuan accounted for 72.42% respondents; expenditure on communications was generally below 200 yuan. Expenditure on food showed: 13.71% respondents' monthly vegetable expenses were less than 50 yuan, 24.68% 51-100 yuan, 33.06% 101-200 yuan, 28.55% over 200 yuan, the distribution was even. Respondents' monthly purchases of fruit less than 50 yuan accounted for 22.42%, 51-100 yuan accounted for 35.97%, between 101 to 200 yuan accounted for 25.97%, more than 200 yuan accounted for 15.65%, indicating consumers generally had stable fruit consumption habit, and the amount of fresh fruit consumption was slightly lower than that of vegetable. However, the consumption amount of processed products was far below fresh fruit, 68.71% respondents' monthly consumption amount was below 50 yuan, 20.81% expensed 51-100 yuan, only 10.48% over 100 yuan. The survey results reflected to some extent the higher income, the higher per capita consumption of fruit. Fruit consumption per capita was affected by income level. With income increase of Chinese residents, as well as enhanced awareness on food nutrition and health, fruit consumption showed a gradual upward trend in the proportion share of expenditure on food.

In this survey, consumers' weekly purchasing amount of fresh fruits and their

processed products is shown in figure 2. Weekly expenditure on fresh tropical fruit below 10 yuan one week accounted for 25.48% of respondents; more respondents spent 10-25 yuan, this part accounted for 35.84%; 13.06% spent 25-50 yuan weekly; 6.13% expended over 100 yuan. On this scale, 3/4 respondents had consumption habit and consumption desire on tropical fresh fruit. Survey on the consumption of tropical fruit processed product showed: weekly expenditure of 363 respondents' were below 10 yuan, accounting for 58.55%; 160 spent 15- 25 yuan, accounting for 25.81%; only 5.97% respondents' weekly expenditure on tropical fruit was more than 50 yuan. In all, 327 respondents (52.74%) chose not to buy tropical fruit because the prices of tropical fruit were higher than other common fruit.

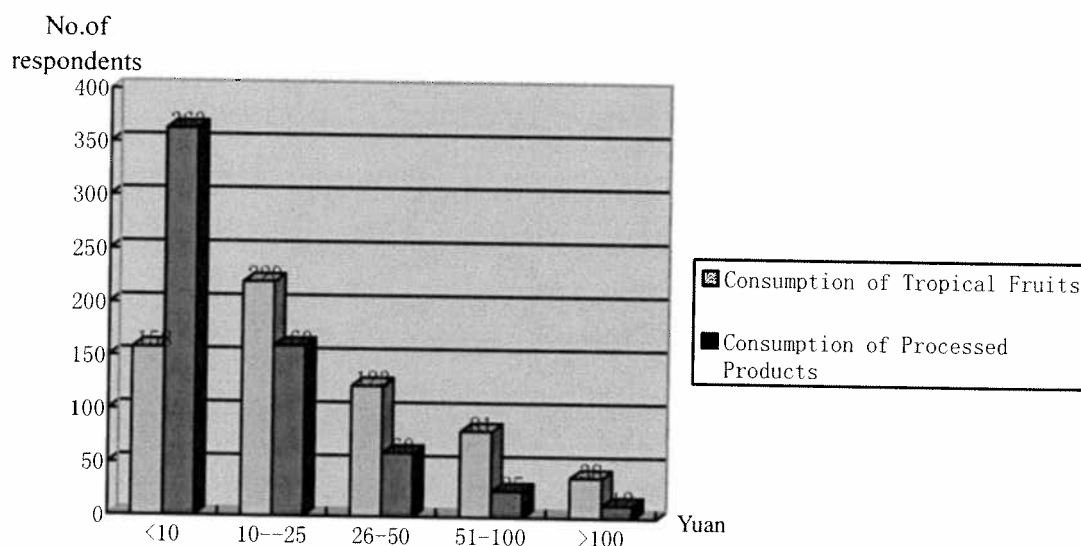


Figure 2: Weekly Household Consumption of Tropical Fruits and Processed Products

A total of 400 respondents (64.52%) expressed that they would spend more on tropical fruit when income increased, of which, 70% respondents with monthly income 3000-5000 yuan expressed that they would increase expenditure on tropical fruit when income increased, while 50% respondents with monthly household income over 10,000 yuan said that they would purchase more tropical fruit when income increased, this meant when income increased to a certain level, expenditure on tropical fruit would become stable. In all, 50% respondents said that they would increase expenditure on tropical fruit if income increased. 40% respondents with

monthly income 8000 yuan or more expressed that they would increase expenditure on tropical fruit when income increased. At different income levels, the income elasticity of residents was different. For the high income groups, the income demand elasticity on consumption of tropical fruit was small, but for the low income groups, the income demand elasticity was large.

A total of 393 (63.39%) respondents said that they would reduce expenditure on tropical fruit at the economic downturn. The economic downturn had the greatest impact on tropical fruit expenditure of respondents with average monthly income ranged from 3001 to 5000 yuan; almost 70% said they would reduce expenditure. On the other hand, only 40% respondents with monthly incomes higher than 10,000 yuan said they would reduce expenditure on tropical fruit at economic downturn. Economy downturn had similar negative effects on the consumption of processed products. Respondents with moderate to low income levels were the most vulnerable to external economic factors on the expenditure of tropical fruit and processed products, while respondents with high income levels were less affected by economic factors of relative prices, income fluctuations and external economic situation on expenditure of tropical fruit and processed products.

If price changes of one commodity results in prices change of relevant commodities, then shifts in demand is a combination of income and substitution effects, and demand will transit from higher priced commodities to lower priced ones (i.e. substitution effect). Likewise, substitution effect exists among fruits and fruit processed products. A total of 313 (50.48%) respondents said that they would not increase expenditure on tropical fruit when their prices dropped while prices of other common fruits remained unchanged. 70% respondents would not increase expenditure on processed products when the relative price was low, this is related to the fact that expenditure on processed products only occupied a tiny fraction of the daily expenditures. Within a longer period of time, income and price will be the most important factors affecting demand and expenditure on tropical fruit.

3.3 Regional Factors Influencing Tropical Fruit Consumption

Statistical analysis on surveys made in Guangzhou, Shenzhen, Foshan and Meizhou showed that degrees of regional differences existed in expenditure, variety, consumer attitudes, consumer habits, etc., on expenditure of tropical fruit and processed products, while there was different propensity to consume between urban and rural areas of these cities.

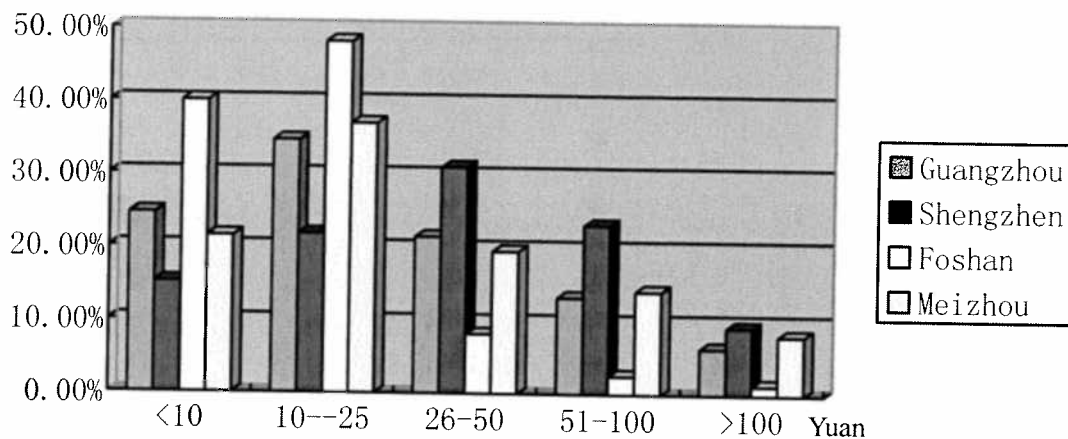


Figure 3 Regional Differences of Weekly Expenditure on Tropical Fruit

Respondents' average weekly household expenditure on tropical fruit and processed products is shown in Figure 3. The survey results showed, in Guangzhou, a total of 42.14% respondents' monthly household expenditure on fruit amounted to 51-100 yuan, 34.59% respondents' weekly expenditure on tropical fruit was 10-25 yuan; in Shenzhen, a total of 63.82% respondents' monthly households expenditure on fruit reached over 100 yuan, 30.92% respondents' weekly household expenditure on tropical fruit was 26-50 yuan. The habit of tropical fruit consumption in Guangzhou and Shenzhen was basically the same. Tropical fruit varieties usually consumed were banana, dragon fruit, orange, longan, litchi, of which, banana was the most preferred variety. Data showed that residents of the two regions had rather stable fruit consumption habit, consumer market for tropical fruit and processed products had better development; in the meantime, higher demands on quantity, quality and variety of tropical fruit were put forward.

In Foshan, 40.00% respondents' monthly household expenditure on fruit was below 50 yuan, however, 48.13% respondents' weekly household expenditure on tropical fruit amounted to 26-50 yuan. In Meizhou region, 38.26% respondents' monthly household expense on fruit ranged from 51 to 100 yuan, but 36.91% respondents' weekly household expenditure on tropical fruit was 26-50 yuan. Banana, litchi, orange, longan, mango were the main tropical fruit varieties consumed in Foshan and Meizhou regions, the most preferred variety was banana.

50% respondents' households spent below 5 yuan a week on tropical fruit processed products in Guangzhou, Foshan, Meizhou regions, while expenditure on processed products in Shenzhen was a little higher, still a total of 42.76% respondents spent less than 10 yuan a week. The consumption situation in the four regions was consistent. In Foshan and Shenzhen, major target consumers of processed tropical fruit were young and middle-aged people, while in Meizhou and Guangzhou, target consumers were children. When asked, "Are tropical fruits more nutritious than other fruits (such as apples, pears, grapes, etc.)?" Half respondents in Guangzhou and Shenzhen supported the idea that tropical fruits are more nutritious; 60% respondents in Foshan held that tropical fruits are not more nutritious than other fruits while in Meizhou, 70% respondents held an opposite view.

Due to different consumption habits and preferences, even in regions of closer income, like Beijing, Shanghai and Guangdong, expenditure on tropical fruit differed significantly; another example, some differences also existed in the 4 regions (Guangzhou, Shenzhen, Foshan and Meizhou) of Guangdong, which also showed distinct regional differences on the expenditure on tropical fruit. Meanwhile, due to unbalanced economic and social development between urban and rural areas, different consumption habits resulted in expenditure differences in proportion, quantity, variety and on the scope of tropical fruit and processed products. In addition, rural residents were more affected by economic factors, and they were more sensitive to price changes, income increase or decrease, and economic conditions. Specific consumer desire is shown in Figure 4. The data showed that, in both urban and rural areas, fruit occupied a more important position in daily diet, and expenditure on fruit increased in

the proportion of food expenditure.

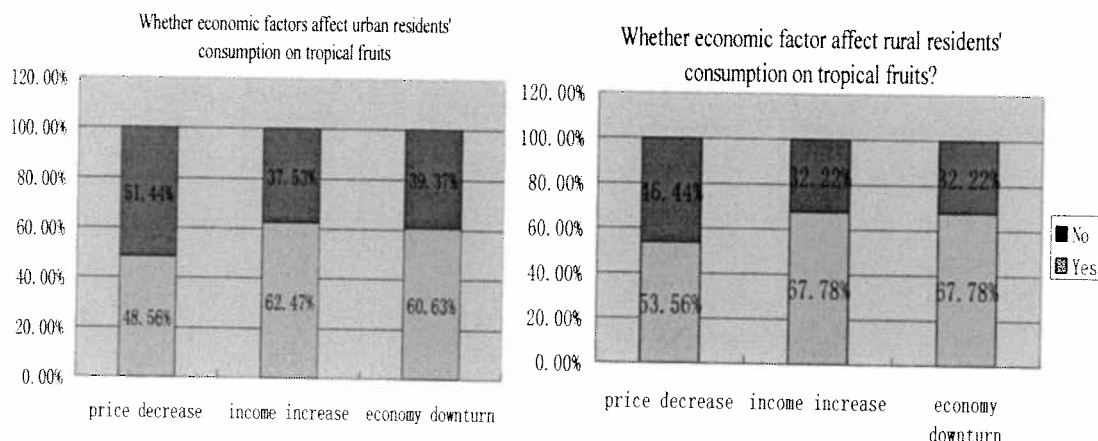


Figure 4 Regional Differences of Economic Factors on Tropical Fruits Consumption

3.4 Tropical Fruit Consumption Preferences

3.4.1 Gender Differences

Age structure and sex ratio affect demands on fruit; big differences on fruit consumption lie in consumers of different gender. When asked, “Are tropical fruits more nutritious than other common fruits” and “Whether you will not choose to buy tropical fruit because of higher relative prices?” Respondents showed almost no gender differences, nearly half of each gender held a positive view. On the origin aspect of tropical fruit and processed products, male and female consumers had similar preferences. However, significant gender differences lied in male and female consumers concerning consumption varieties. Male consumers usually purchase traditional tropical fruit varieties like banana, orange, longan, litchi, mango, etc., while female consumers usually purchase coconut, mangos teen, banana, mango, durian, etc., among which durian, mangos teen are more expensive and nutrient-rich varieties. Compared to male, female concerned more on a healthy diet and they demanded more on quality and varieties of tropical fruit.

When relative prices of tropical fruit decreased, compared to 45.52% male respondents, 54.85% female respondents would choose to purchase more. 60.69% male respondents, while 67.88% female respondents would choose to buy more, when income increased. At the economic downturn, 59.66% male respondents would

choose to purchase more, but the proportion in female was 66.67%. The three sets of data showed that, female consumers had a higher sensitivity to economic factors such as prices than male consumers in purchasing tropical fruit. Among female respondents, a total of 87.58% preferred fresh fruit to processed products, compared to 80.69% male respondents, showing a higher proportion. In addition, 27.93% male respondents believed that eating fresh fruit is not convenient, while only 22.12% female respondents held this view.

Gender differences may be caused by: different consumer psychology of male and female. Male may only view tropical fruit from the aspects of nutrition and health while female put more emphasis on beauty in addition to nutrition and health, thinking that eating more fruit, esp. nutrient-rich tropical fruit will benefit health and make skin smoother, and therefore, spend more on tropical fruit. Second, male and female have different food habit. Male generally view tropical fruit as non-essential food; while female generally regard fruit as daily necessities, even consider it main food. Third, females are usually responsible for household food and supplies purchase, while males' purchase of tropical fruits is sporadic; consequently, females are more price-sensitive than males.

3.4.2 Seasonal Differences

In this survey, 35.16% (218 respondents) said they would not be affected by season on the consumption of tropical fruit. In addition, 11 respondents tended to consume more tropical fruit in spring; 368 inclined to consume more in summer accounting for 59.35% of the total respondents; also, there were 18 and 5 respondents chose to consume more in autumn and winter respectively. Regionally, over half of respondents had a higher tropical fruit purchasing frequency in summer. However, compared with fresh fruit, there were only small seasonal differences in the purchasing of processed products. 324 people (52.26% respondents) said there was no seasonal influence. Among consumers with seasonal propensity, 240 respondents inclined to consume more in summer. Figure 5, Figure 6 show season differences in the consumption of tropical fruit.

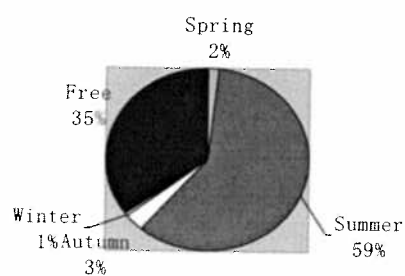


Figure 5 Season Differences of Fresh Fruits

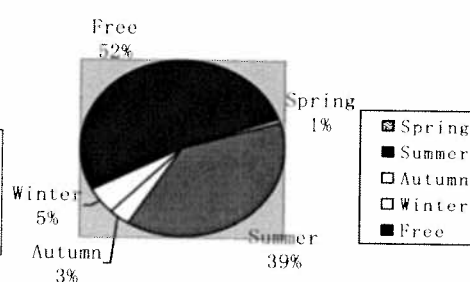


Figure 6 Season Differences of Processed Products

3.4.3 Variety Differences

Compared to processed products, a total of 523 respondents (84.35%) preferred fresh tropical fruit. Only 154 respondents (24.84%) believed that eating fresh fruit is not convenient. The following is an analysis on variety differences on tropical fruit and processed products.

Table 2 Seasonal Consumption Amount of Tropical Fruits

Banana Amount	< 2jin	2-5jin	6-10jin	>10jin
No. of people	188	252	131	49
Percentage	30.32%	40.65%	21.13%	7.90%
Litchi	< 2jin	2-5jin	6-10jin	>10jin
No. of people	286	203	87	44
Percentage	46.13%	32.74%	14.03%	7.10%
Longgan	< 2jin	2-5jin	6-10jin	>10jin
No. of people	289	198	87	46
Percentage	46.61%	31.94%	14.03%	7.42%
Mango	<2	2-5jin	6-10jin	>10jin
No. of people	391	148	60	21
Percentage	63.06%	23.87%	9.68%	3.39%
Papaya	<2jin	2-5jin	6-10jin	>10jin
No. of people	389	158	50	23
Percentage	62.74%	25.48%	8.06%	3.71%

A slight difference existed in the consumption varieties of tropical fruit in the four regions, but the main purchased varieties were banana, orange, litchi, longan; and mangos teen, durian, papaya, guava and other fruits were also very popular among

consumers, and were selected as daily purchased fruit by 30% respondents; while on the other hand, less than 10% respondents chose jackfruit, rambutan and wax apple as daily purchased ones. Banana ranked first, orange came after, as the most popular fruits; durian was also liked by consumers. About 7% respondents chose litchi and longan respectively as their favorite one. Seasonal consumption amount of tropical fruit are shown in Table 2.

In recent years, more tropical fruit varieties were on the consumer market, mangos teen, durian and other imported fruit, though expensive, still won the favor of high-income consumers. Among respondents with income over 8000 yuan (155 people), 57 chose durian, 64 selected mangos teen, as the daily consumed varieties. On the other hand, relatively less expensive and popular tropical fruit, like banana, orange, mango, papaya, dragon fruit, etc. are the main consumed varieties of tropical fruit and are consumed in large amount, esp. when in season. 40.65% respondents would buy 2-5 jin of banana; 20% would buy 5 jin or more dragon fruit and litchi; seasonal consumption of papaya and mango were similar, more than 60% consumers would buy less than 2 jin.

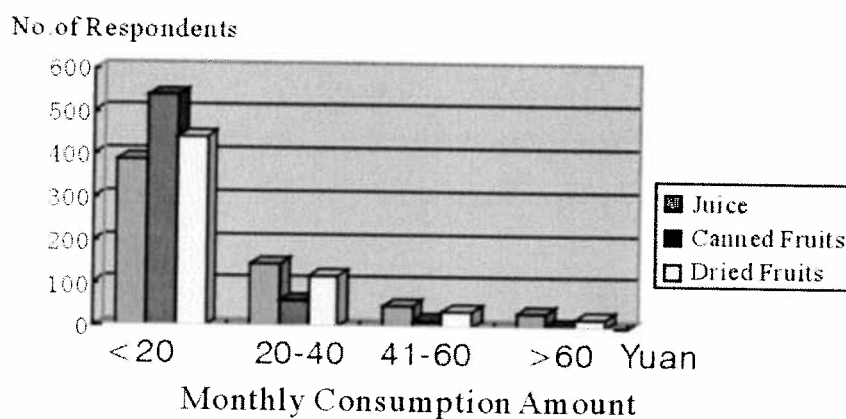


Figure 7 Monthly Expenditures on Processed Products

Monthly purchases on processed tropical fruit products are shown in Figure 7. Compared with fresh fruit, consumers comparatively spent less on varieties of processed products; respondents' monthly expenditure on processed products below 20 yuan accounted for over 60%, percentage of those with propensity to consume canned fruits was the lowest, 538 respondents (86.77%) monthly purchased less than

20 yuan, only 5 respondents, accounting for 0.81%, spent over 60 yuan. Consumption on tropical fruit juice was slightly higher than other processed products; tropical fruit juice was better accepted by consumers. A total of 418 respondents had propensity to consume on fruit juice, accounting for 67.42% of all respondents. 168 respondents (27.10%) preferred dried fruit; the least number of people chose canned fruit, only accounting for 3.87%. Among those had propensity to consume on fruit juice, 47.42% preferred coconut milk, 22.42% preferred mango juice, 13.71% oranges juice, and 15.16% apple juice.

3.5 Consumption Habits and Attitudes

3.5.1 Consumption Habits

Chinese residents weigh more on vegetable consumption in their diet, but their attitude toward fruit consumption is rather relaxed. This traditional concept on food and drink influences greatly on Chinese residents' fruit consumption. In addition, flavors of fruit are also important factors affecting consumers. On the other hand, Chinese residents hold a widespread notion that "fresh fruit is better than processed products", thinking that processed fruit is not as good as fresh fruit in nutrition, freshness and safety. As a result, Chinese residents' consumption amount of fruit juice, orange juice and other processed products is far below the amount of fresh fruit.

In the consumption of fresh tropical fruit, children accounted for 36.13%, the elderly 6.61%; young and middle aged people were the main target consumers. Whereas the consumption of processed tropical fruit, young and middle aged people accounted for 43.87%, 9.03% elderly, children were the main target consumers, accounting for 47.10%. The specific situation is shown in Figure 8. In recent years, consumption of processed fruit in China had a rapid growth. In both urban and rural regions, young people (mainly aged under 30) formed a new fashion on concentrated fruit juice, fresh fruit juice, juice drinks. Juice and juice drink won high favor of more consumers after drinking water, tea drink and functional beverage.



Figure 8 Target Consumer Situations of Tropical Fruits and Processed Products

Most respondents (60.65% of the total) selected to buy fresh tropical fruit in the supermarket; followed by the vegetable market, accounting for 29.35%; then followed by the individual stalls, accounting for 4.68%; 4.35% respondents held free opinion on the site of purchase, only 0.65% chose the online store; For processed tropical fruit products, a total of 79.19% of respondents chose to buy in the supermarket, 11.94% selected the vegetable market, with 2.90% in the roadside stall, 3.55% expressed that the purchase sites does not matter, only 0.97% in the online store. There is a gradual increase in consumer’s concern about the safety and quality assurance requirements on the consumption of tropical fruit, esp. in processed fruit products, for it is easy to get contaminated during processing, and consumers showed a high concern about food safety. Supermarkets were the major purchase sites to buy tropical fruit and processed products; supermarket quality assurance won the trust of consumers.

3.5.2 Consumption Attitudes

On the whole, more than half of consumers believed that tropical fruit is more nutritious than other common fruit. 131 respondents believed that wide varieties of tropical fruit hold a strong appeal to them; 196 were attracted by the unique tropical fruit flavor, 290 respondents (including 46.06% female and 47.59% female) chose tropical fruit for the rich nutrients. Most consumers said that the consumption of tropical fruit began a decade ago; consumption of tropical fruit had a long history.

When asked about “worst fears of buying tropical fruits?”, 249 respondents

worried most about freshness; 323 respondents felt pesticide residues are the most serious problems; 12 respondents concerned most about packing failure; 34 respondents concerned most about contamination in transportation and sales process. With the improvement of living standards and people's enhanced awareness on health and food safety, people put forward higher requirements on the nutrient, variety, quality, convenience and safety of fruit; new trends of consuming are formed, higher consumer demands on quality, safe and nutritious fruit and processed fruit products are raised.

Over half respondents valued the origin of tropical fruit and processed products. In the survey, 301 respondents, accounting for almost half of the total, believed that quality of imported tropical fruit is better than the domestic, also, about 40% respondents expressed a willingness to buy foreign imported fresh tropical fruit and processed products. Consumption attitude also depends on the national (or regional) level of production, after all, tropical fruit consumption should be domestic supply-based. If the domestic supply maintain a sustainable development and ultimately cause changes in consumer habits, then consumption of tropical fruit may rise to a higher level. In brief, consumers in China mainland held a more optimistic attitude towards domestic tropical fruit.

3.6 Summary

In summary, presently consumers in Guangzhou, Shenzhen, Foshan and Meizhou generally have stable fruit consumption habit, but processed fruit consumption is far below consumption of fresh fruit, 3/4 respondents had the desire and habit of fresh fruits consumption. Main economic factors influencing consumption of tropical fruit are: income, relative price changes, and the macroeconomic environment. Income differences do not obviously affect consumption amount when relative prices of tropical fresh fruit change. 70% respondents said they would not increase expenditure on processed products when relative prices were low; 60% respondents expressed they would not purchase more fresh fruit in the case of income increase while they would buy less during the economic downturn.

Survey results indicated variety differences on consumption of tropical fruit and processed products. Compared to processed tropical fruit products, most respondents prefer more to fresh tropical fruit. Only 2% or so think that the consumption of fresh fruit is not convenient. The most purchased varieties are: banana, orange, litchi, longan, etc., of which the most popular is banana. Consumers spend less on processed tropical fruit compared with fresh fruit, of which consumption of tropical fruit juice is slightly higher than other processed products; fruit juice is accepted more by consumers.

Respondents emphasize nutritional value and food safety of tropical fruit, whereas over half respondents believed tropical fruit is more nutritious than other common fruit. On the other hand, there are seasonal differences and regional differences. Most respondents choose to buy fresh tropical fruit and processed products in the supermarket; over half of respondents purchase at a higher frequency of tropical fruit in summer. There are smaller seasonal differences in tropical processed product consumption, compared with fresh fruit consumption. Young and middle-aged people are the main target consumers of fresh tropical fruit consumption; children the main target consumers of the processed tropical fruit consumption. Most consumers said the consumption of tropical fruit began a decade ago.

4 Market Potential of Tropical Fruit and Processed Products

More than 1/3 respondents spent monthly 51-100 yuan to buy fruit, 40% respondents spent over 101 yuan, showing that the people surveyed generally had stable fruit consumption habit. However, consumption on processed fruit was significantly lower than fresh fruit; about 70% respondents' monthly expenditure on processed fruit products was below 51 yuan. The prevailing notion among Chinese residents that "fresh fruit is better than processed products" also resulted in the consumption on fruit juice, dried fruit and other processed products far lower than consumption on fresh fruit.

Tropical fruit and their processed products have great market potential in China. Through the in-depth analysis of the market and the right guidance on consumers,

continuous rapid growth in fruit consumption can be achieved. First, the current fruit consumption level of Chinese residents is still quite low, continuous rapid increase in fruit consumption is an inevitable need to improve the diet and raise the nutrition level of Chinese people. Second, the per capita income of Chinese residents will maintain a rapid growth rate; consuming power on tropical fruit, especially quality tropical fruit will be gradually enhanced. Third, there is great potential for higher fruit yields in China, and the continual growth on producing and increased processing technology will meet consumers' demands at different levels.

4.1 Market Potential of Tropical Fresh Fruit

With China's rapid economic growth and the rising income level, after they have solved the basic problems on food and clothing, Chinese residents are pursuing healthy food consumption, and fruit consumption is growing fast. Recent years, there was a significant increase in varieties of tropical fruit on China's consumer market. Though prices of imported fruit like mangos teen, wax apple, durian etc., are expensive, still they won the favor of consumers, becoming upstarts on fruit market. While on the other hand, relatively cheap-priced and popular tropical fruit such as banana, orange, mango, papaya, dragon fruit etc., sales rose steadily, are the main varieties of tropical fruit consumption. As a whole, tropical fruit reached a penetration rate of 80%. In the survey, we found more than half of respondents believed that tropical fruit are more nutritious than other common fruit, and nutrient-rich is the most attractive factor of tropical fruit. Tropical fruit are rich in nutrients, unique in flavor, and wide in variety. Consumers now have an increasing strong demand on nutritious fruit and vegetables, market potentials for tropical fruit in China are very optimistic. At the same time as Chinese residents' health and food safety consciousness is further enhanced, the demand on quality, free-pollutant fruit, and green fruit will grow further.

In the survey we also found that in the eating habit of the general population, fruit is often seen as non-essential, though consumers come to realize that fruit should be an important part in daily diet, popularization of this concept needs a longer time

period. Secondly, domestic tropical fruit while increased in output, its overall quality have not kept pace; the quality is low especially compared with imported fruit, which inhibits residents' consumption desire. Thirdly, the unreasonable structure of fruit varieties and poor links on circulation caused the coexistence of fruit shortage and excess. There are some constraints on the increase in fruit consumption; but relatively speaking, these factors are easy to change.

4.2 Market Potential of Processed Products

For a long time under the impact of consumer habits, fruit consumption of Chinese residents is fresh-fruit-based; consumption of juice and other processed products has been low. Compared to processed tropical fruit, over 80% respondents preferred fresh tropical fruit. Only 24.84% respondents believed that eating fresh fruit is not convenient. 58.55% respondents' weekly expenditure on processed tropical fruit products was below 10 yuan, and children were the main target consumers. Among people who have the habit of consuming processed products, 67.42% tended to choose fruit juice, 27.10% preferred dried fruit, the least number of people liked canned fruit, accounting for 3.87% only. Over half of the respondents said the consumption of processed fruit products would not subject to seasonal effects.

Chinese residents consume rather low amount of processed products. In the West, fruit juice and other processed products are common food. Now, Chinese residents' consumption habit of processed fruit product is changing gradually towards the Western style. However, for a number of reasons, such as the distinction between social structures (a small number of middle class), a relatively low level of per capita income, taste preferences, Chinese consumers have not yet fully accustomed to the Western style, recognition on juice, dried fruit, and canned fruit is not high. For a time in the future, with growing income level, continual growth on the production and consumption of processed tropical fruit has become possible, and there is still more room for development. Although China's current consumption level of processed fruit products vary widely with the consumption level of similar foreign products, however, with the younger generation, the formation of new consumption habits, fruit juice,

dried fruit and other processed products have huge growth space; this is a new growing point to stimulate fruit consumption in China.

5 Conclusions

Many factors can affect food consumption demand, for example, economic and cultural factors, environmental factors, geographical conditions; there are also social factors like population size and population structure and so on. Economic factors are main factors affecting fruit consumption, for it determines people's consumption capacity and consumption levels. Economic factors include residents' income levels, the relative price of consumer goods etc. In addition, people's propensity to consume, such as consumption habits, consumer psychology and other factors also influence consumer demands.

With the improvement of living standards, residents' demands on tropical fruit grow at a fast speed. There are four characteristics of tropical fruit consumption: First, the demands on tropical fruit are diverse, and rich in variety; second, it is fashionable to taste seasonal tropical fruit, consumers have propensity to consume for tropical fruit in season; third, imported tropical fruit become popular, but the domestic tropical fruit still have capacious market future. To improve the dietary nutrition of Chinese residents, tropical fruit consumption level should have a more substantial increase; however, some constraints limit objectively the increase in fruit consumption, there appropriate measures should be taken to promote the sustained and rapid growth in the consumption of tropical fruit.

The survey indicated that: Chinese residents have a wide range on tropical fruit consumption, and have high demands on fruit varieties. It is very important to adjust the variety structure to meet residents' demands on tropical fruit consumption. To adjust the structure of variety: first, for main fruit trees like banana and orange, proportion of early-maturing varieties and late-maturing varieties should be increased. The second is the development of famous high quality small fruits like longan, litchi and other, to make up for the supply gap of high quantity tropical fruit and enrich market varieties as well. Third, presently, there's no proper position for tropical fruit

in the daily diet of ordinary Chinese residents. Consumption of tropical fruit showed considerable arbitrariness; sometimes tropical fruit is consumed in great quantity (esp. around festivals), sometimes no tropical fruit consumption for a long time. The concept on consumption is not scientific; proper guidance on the consumption of tropical fruit should be strengthened. Not only should we expand the cultivation of domestic consumers, but also enhance their levels of consumption. Fourthly, with the cultivation of consumption habit, processed tropical fruit products will have great market prospects. Developing fruit processing industry not only extends the supply period, promotes fruit consumption, but also inhibits the development of domestic beverage market which is currently flooded with inferior beverage containing various chemicals.

Guangdong, an economically and socially developed province in China, its tropical fruit market is mature. However, processed tropical fruit have not yet popular among consumers; consumption habits on processed products have not yet been formed; therefore, there is a large market space. Seize market opportunities, and actively develop various kinds of tropical fruit processed products and meet consumer demand, will contribute to the growth of tropical fruit consumption in China.

References

- [1]CHEN xin-jian, CHEN dao-ming. Present Production and Trade Situation and Developing Strategies of Tropical Fruits in China [J]. *China Tropical Agriculture*, 2010 (3):14-17.
- [2]LI bing-ru. The Development of Fruit Industry in China Should Take the Road of Industrialization [J]. *Economy and Management*, 2003 (12):42-43.
- [3]LIU feng-zhi, WANG jing-yan. Fruit Production and Fruit Development Status [J]. *China Fruit*, 2005 (1):51-53.

- [4]YUAN yan-chang. Fruit Processing Trends [J]. *Hunan Agriculture*, 2005 (2): 22.
- [5]ZHAO xiu-Juan, OU sheng-xiang. Reflections on Fruit Industrialization Management in Guangdong [J]. *South China Rural*, 2004 (1):35-38.
- [6]ZHANG yi. On the International Competitiveness of China's Fruit Industry [J]. *Rural Economy*, 2003 (2):9-11.
- [7] National Economic Situation Showed Good Momentum of Development in 2010.
http://www.stats.gov.cn/english/newsandcomingevents/t20110120_402699463.htm

Appendix:Questionnaire on Tropical Fruit Consumption Willingness

Survey Site:

No. of Questionnaire:

Dear Sir/ Madam:

We hope to get some information about your consumption of tropical fruit through this survey, and on this basis, analyze consumers' propensity to consume on tropical fruit and domestic sales prospects of tropical fruit as well. Your answers are very important to us. We hope to get your support and cooperation.

Thank you very much for your cooperation!

(Tropical fruits include: banana, durian, coconut, orange, dragon fruit, mangos teen, longan, litchi, mango, pineapple, jack fruit, rambutan, wax apple, papaya, star fruit and guava etc; Tropical fruit processed products include: fruit juice, canned fruits, fruit pulp and dried fruit, for instance, coconut milk, litchi juice, tinned pineapples, canned litchi, canned longan, dried banana, dried mango ,etc.)

A. Basic Situation

A1 Your gender:

1. Male
2. Female

A2 Your age:

1. Under 25
2. 25-35
3. 36-45
4. 46-55
5. Over 55

A3 Your occupation:

1. Staff of public administrations and institutions
2. State-owned enterprise management and technical personnel
3. White-collar worker of foreign enterprise
4. Worker
5. Staff in the field of commodity circulation
6. Taxi driver
7. Personnel of other service industries
8. Military personnel
9. Student
10. Retiree
11. Other (please specify)

A4 Your education level is:

1. Junior high school or below
2. High school, technical or vocational technical school
3. Junior college
4. Undergraduate
5. Master or above

A5 Your family size:

1. Single
2. Two
3. Three
4. Four
5. Five
6. Six
7. Seven or more

A6 Your Monthly household income:

1. 3000 yuan or below
2. 3001-5000 yuan
3. 5001-8000 yuan
4. 8001-10,000 yuan
5. Over 10,000 yuan

A7 Your monthly household expenditures:

- A7.1 Total:** 1. Below 2000 yuan 2. 2000-4000 yuan
 3. 4001-6000 yuan 4. 6001-8000 yuan
 5. 8001-10,000 yuan 6. Over 10,000 yuan
- A7.2 Housing:** 1. Below 2000 yuan 2. 2000-4000 yuan
 3. 4001-6000 yuan 4. Over 6000 yuan
- A7.3 Food:** 1. Below 1,000 yuan 2. 1000-2000 yuan
 3. 2001-3000 yuan 4. 3000-4000 yuan
 5. Over 4000 yuan
- A7.4 Clothing:** 1. Below 1000 yuan 2. 1000-2000 yuan
 3. 2001-3000 yuan 4. Over 3000 yuan
- A7.5 Communication:** 1. Below 200 yuan 2. 201-500 yuan
 3. 501-1000 yuan 4. Over 1000 yuan
- A7.6 Other** (such as transportation, business entertainment, etc.):
 1. Below 2000 yuan 2. 2000-4000 yuan
 3.4001-6000 yuan 4. Over 6000 yuan

A8 Usually, in your monthly household food expenditure, expenditure on vegetable, fruit and processed fruit product is:

- Vegetable:** 1. Below 50 yuan 2. 50-100 yuan
 3. 101-200 yuan 4. Over 200 yuan
- Fruit:** 1. Below 50 yuan 2. 50-100 yuan
 3. 101-200 yuan 4. Over 200 yuan
- Processed Fruit products:** 1. Below 50 yuan 2. 50-100 yuan
 3. 101-200 yuan 4. Over 200 yuan

B Consumption on Tropical Fruit

B1. Do you think tropical fruits are more nutritious than other fruits (such as apples, pears, grapes, etc.)?

1. Yes 2.No

B2. Your average weekly household expenditure on tropical fruit and processed fruit products is:

B2.1 Tropical fruit:

1. Below 10 yuan 2. 10-25yuan 3. 26-50 yuan
 4. 51-100 yuan 5. Over 100 yuan

B2.2 Processed fruit products:

1. Below 10 yuan 2. 10-25yuan 3. 26-50 yuan
4. 51-100 yuan 5. Over 100 yuan

B3. You will choose not to buy tropical fruit because of the high prices.

1. Yes 2. No

B4. Your household usually buy which of the following fruit(s)? (multiple choices possible)

1. Banana 2. Durian 3. Coconut 4. Orange 5. Dragon fruit 6. Mangos teen
7. Longan 8. Litchi 9. Mango 10. Pineapple 11. Jack fruit 12. Rambutan
13. Wax apple 14. Papaya 15. Star fruit 16. Guava
17. Other (please indicate) _____

B5. You household prefers mostly to buy which of the following fruit?

1. Banana 2. Durian 3. Coconut 4. Orange 5. Dragon fruit 6. Mangos teen
7. Longan 8. Litchi 9. Mango 10. Pineapple 11. Jackfruit 12. Rambutan
13. Wax apple 14. Papaya 15. Star fruit 16. Guava
17. Other (please indicate) _____

B6. The average monthly purchasing amount and expense of your household on seasonal tropical fruit is:

- B6.1 Banana:** 1. Below 2jin 2. 2-5 jin 3. 6-10 jin 4. Over 10 jin
expenditure: 1. Below 1.5yuan 2. 1.5-5yuan 3. 5-15yuan 4. Over 15yuan
- B6.2 Litchi:** 1. Below 1.2 jin 2. 1.2-2 jin 3. 2-5 jin 4. Over 5jin
expenditure: 1. Below 10 yuan 2. 10-20 yuan 3. 21-30 yuan 4. Over 30 yuan
- B6.3 Longan:** 1. Below 2 jin 2. 2-5 jin 3. 6-10 jin 4. Over 10 jin
expenditure: 1. Below 5yuan 2. 5-15yuan 3. 16-25yuan 4. Over 25yuan
- B6.4 Durian:** 1. Below 2 jin 2. 2-5 jin 3. 6-10 jin 4. Over 10 jin
expenditure: 1. Below 30 yuan 2. 30-50 yuan 3. 50-100 yuan 4. Over 100 yuan
- B6.5 Coconut:** 1. Below 2 jin 2. 2-5 jin 3. 6-10 jin 4. Over 10 jin
expenditure: 1. Below 5yuan 2. 5-15yuan 3. 16-25yuan 4. Over 25yuan
- B6.6 Pineapple:** 1. Below 2 jin 2. 2-5 jin 3. 6-10 jin 4. Over 10 jin
expenditure: 1. Below 10 yuan 2. 10-20 yuan 3. 21-30 yuan 4. Over 30 yuan
- B6.7 Mango:** 1. Below 2Jin 2. 2-5 jin 3. 6-10 jin 4. Over 10 jin
expenditure: 1. Below 20 yuan 2. 20-40 yuan 3. 41-60 yuan 4. Over 60 yuan
- B6.8 Papaya:** 1. Below 2Jin 2. 2-5 jin 3. 6-10 jin 4. Over 10 jin
expenditure: 1. Below 20 yuan 2. 20-40 yuan 3. 41-60 yuan 4. Over 60 yuan

B7. Your average monthly household expenditure on processed tropical fruit product is:

- B7.1 Juice:** 1. 20 yuan or blow 2. 21-40 yuan 3. 41-60 yuan 4. Over 60 yuan
B7.2 Canned: 1. 20 yuan or blow 2. 21-40 yuan 3. 41-60 yuan 4. Over 60 yuan
B7.3 Pulp and dried fruit: 1. 20 yuan or blow 2. 21-40 yuan 3. 41-60 yuan 4. Over 60 yuan

B8. Your household prefers which of the following processed tropical fruit products?

1. Juice 2. Canned fruit 3. Pulp or dried fruit 4. Other (please specify)

B9. The main target consumer of processed fruit product of your household is:

- B9.1 Tropical fruits:** 1. Children 2. Young and middle-aged people 3. Elderly
B9.2 Processed fruit products: 1. Children 2. Young and middle-aged people 3. Elderly

B10. If the prices of tropical fruit and processed products declined while prices of other fruit (like apples, grapes, etc.) and their processed products remain the same, you will:

B10.1 Tropical fruits: 1. Buy more 2. Maintain old consuming habits

B10.2 Processed tropical fruit: 1. Buy more 2. Maintain old consuming habits

B11. If your income increased, will you buy more of tropical fruit and processed products?

B11.1 Tropical fruits: 1. Yes 2. No

B11.2 Processed fruit product: 1. Yes 2. No

B12 When at economic downturn, will you purchase less of tropical fruit and processed fruit products?

B12.1 Tropical fruit: 1. Yes 2. No

B12.2 Processed fruit product: 1. Yes 2. No

B13 When purchasing tropical fruit and processed products will you emphasize place of origin?

B13.1 Tropical fruit: 1. Yes 2. No

B13.2 Processed fruit products: 1. Yes 2. No

B14 You prefer to buy tropical fruit and processed products at:

B14.1 Tropical fruit:

1. Supermarket 2. Vegetable Markets 3. Roadside stalls 4. Online store
5. Free 6. Other places (please specify)

B14.2 Processed products:

1. Supermarket 2. Vegetable Markets 3. Roadside stalls 4. Online store
5. Free 6. Other places (please specify)

B15 In which season you buy tropical fruit and processed fruit products more frequently?

B15.1 Tropical fruit: 1. Spring 2. Summer 3. Autumn
4. Winter 5. Not subject to seasonal effects

B15.2 Processed products: 1. Spring 2. Summer 3. Autumn
4. Winter 5. Not subject to seasonal effects

B16 Compared with domestic tropical fruit and processed products, do you prefer more to the imported?

B16.1 Tropical fruit: 1. Yes 2. No

B16.2 Processed products: 1. Yes 2. No

B17 Do you think the quality of imported tropical fruit is higher than that of the domestic?

1. Yes 2. No

B18 Compared with canned and dried fruit, do you prefer more to fresh fruit?

1. Yes 2. No

B19 Do you think eating fresh tropical fruit is inconvenient?

1. Yes 2. No

B20 Which of the following fruit juice do you prefer?

1. Coconut Milk 2. Mango juice 3. Orange juice 4. Apple juice
5. Other (please specify)

B21 For you the attraction of tropical fruit lies in:

1. Variety
2. Nutrient-rich
3. Unique taste
4. Other (please specify)

B22 What's your worst fear when buying tropical fruit?

1. Not fresh
2. Pesticide residues
3. Package failure
4. Contamination during transportation, sales process
5. Other (please specify)

B23 You began to buy tropical fruit at _____ year.

Thank you for your support and cooperation! If you have any view on questions in this survey, please feel free to comment. Thanks again! Hope everything goes on well with you!