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## COMMITTEE ON COMMODITY PROBLEMS

### INTERGOVERNMENTAL GROUP ON BANANAS AND TROPICAL FRUITS

#### Fifth Session

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### THE CHINESE MARKET POTENTIAL FOR BANANA AND TROPICAL FRUITS BASED ON HOUSEHOLD CONSUMPTION BEHAVIOUR ANALYSIS<sup>1</sup>

## I. INTRODUCTION

1. At its last session, the Intergovernmental group on Bananas and Tropical Fruits, in welcoming the quantitative study on factors affecting demand for bananas and tropical fruits in China, recognized the great potential for further expansion of the market for these fruits in China. In order for countries to be able to devise appropriate marketing strategies to take advantage of this potential, a more in-depth study was required, focusing on household consumption patterns, particularly consumer behaviour and preferences, as well as income and price responses between urban and rural consumers. Delegates noted that consumer survey data were needed to undertake such a study, and urged that resources be found to obtain the data.

2. Fruit consumption in China has increased in recent years, but levels are still relatively low compared with countries with similar per capita GDP levels. Based on field surveys made in the cities of Guangzhou, Shenzhen, Foshan and Meizhou in Guangdong Province, this document presents an analysis of the basic behaviour of consumers of tropical fruits in Guangdong Province; the differences between urban and rural inhabitants, economic and non-economic factors such as seasonality and fruit variety.

## II. METHODOLOGY

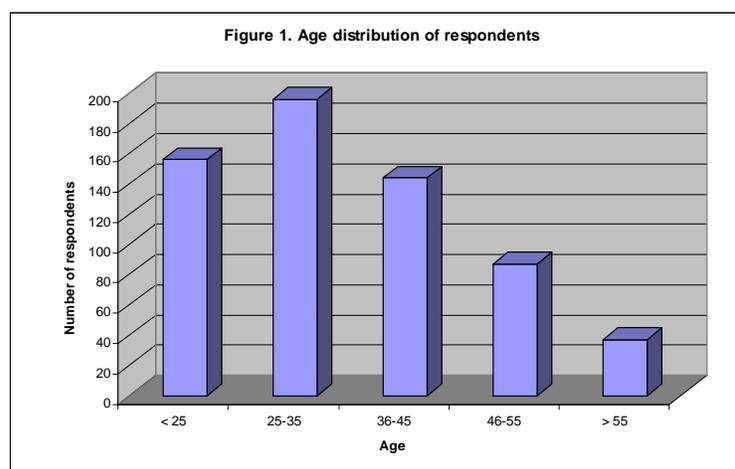
3. Random samples of residents of the four cities were selected for the survey in January, 2011. Each city was subdivided into urban districts and rural outskirts (towns and villages). In

<sup>1</sup> Based a paper prepared for the Secretariat by Wen Si-mei, Tan Yan-wen, Chen Shan-ni, Guan Jian-bo, College of Economics and Management, South China Agricultural University, Guangzhou, China. The full document will be tabled as CCP:BA/TF 11/CRS 10.

addition, residential areas were chosen to represent sectors of relatively high, moderate, and low income levels. 160 questionnaires were used in each city; the ratio of urban districts and rural villages was 5:3. Questionnaires were used by survey teams in supermarkets, vegetable markets and streets and collected responses gathered on the spot<sup>2</sup>. 640 questionnaires were used in total with a response rate of 100 percent, but the validity rate was 97 percent. Tropical fruits referred to in the questionnaire included: bananas, durians, coconuts, oranges, dragon fruit, mangosteens, longans, litchis, mangos, pineapples, jackfruit, rambutans, wax apples, papayas, star fruit, and guavas. Processed tropical fruit products included fruit juice, canned fruit, fruit pulp and dried fruit of the afore-mentioned tropical fruits. To find out the propensity to consume tropical fruit, the questionnaire focused mainly on income and expenditure, dietary structure and other social and economic factors.

4. Respondents constituted 290 males (47 percent) and 330 females (53 percent) and the age composition is illustrated in Figure 1. Young and middle-aged persons were considered to be the main decision-makers for consumption in households and therefore, accounted for over 50 percent of the respondents. Occupation of respondents included 81 civil servants, 95 labourers, 97 in commodity distribution, and 102 in other service industries.

5. Empirical data were used to establish factors influencing consumption, such as income, regional development, gender, seasonality and variety, as well as habits and attitudes. Statistical correlation analysis was used to qualitatively describe the relationship between consumption patterns and influencing factors. A more detailed quantitative analysis is presented in the Appendix<sup>3</sup>.



<sup>2</sup> 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.

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.

<sup>3</sup> Please see document CCP:BA/TF 11/CRS 11.

### III. RESULTS OF THE SURVEY

6. The major economic factor determining the purchasing behaviour of consumers was income. Income levels varied significantly between regions (Table 1). Income distribution of the respondents in Guangzhou fell into two major income brackets and basically was evenly distributed between these; i.e. those earning less than 3 000 yuan and those earning between 3 001 and 5000 yuan. In Shenzhen over 50 percent earned between 3 001 and 8 000 yuan, in Foshan 41 percent of respondents had income between 3 001 to 5 000 yuan, while in Meizhou, 60 percent of respondents had income below 5 000 yuan.

**Table 1. Monthly household income of respondents (in yuan)**

Region	Monthly income				
	<3 000	3 001-5 000	5 001-8 000	8 001-10 000	>10 000
Guangzhou	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

7. Monthly expenditure for almost 86 percent of respondents was less than 2 000 yuan, with food accounting for over 30 percent of total expenditure. Consumption of fruit was relatively stable, but quantities were slightly less than vegetables, while consumption of processed products was less favoured than fresh fruit. The survey indicated a correlation between income and tropical fruit consumption; consumption increased as income increased, though at differing rates.

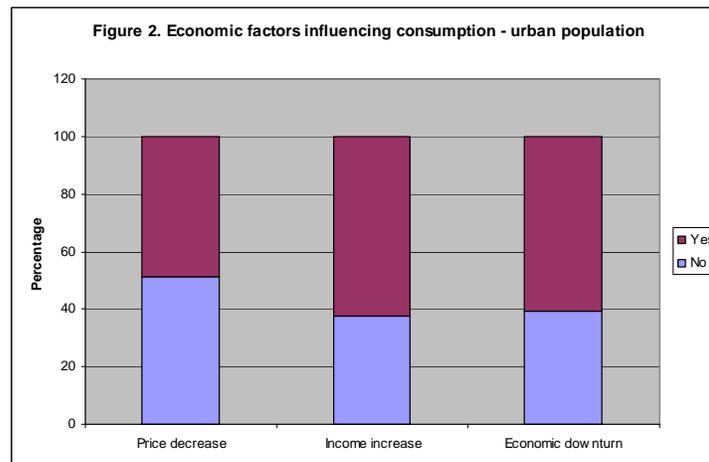
8. Almost 65 percent of all respondents stated that they would spend more on tropical fruit if their income increased. However, demand elasticity of tropical fruit was low for those in the higher income brackets, but high for the low income groups. Specifically, when broken down into income brackets it can be seen that of those responding positively to increased consumption with increased income, 70 percent had a monthly income of between 3 000 and 5 000 yuan, 40 percent belonged to the 8 000 yuan or more income bracket, and 50 percent to the more than 10 000 yuan a month bracket.

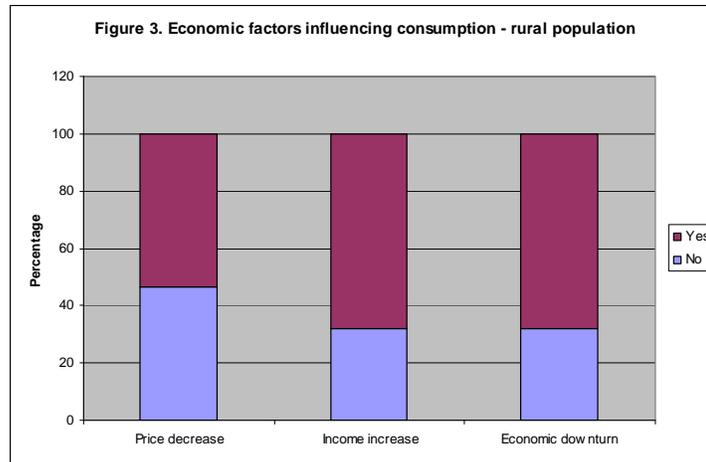
9. The economic downturn had the greatest impact on tropical fruit expenditure for respondents with average monthly income ranged between 3 001 to 5 000 yuan; almost 70 percent said they would reduce expenditure. In contrast, only 40 percent of respondents with monthly incomes higher than 10 000 yuan said they would reduce expenditure on tropical fruit due to the economic downturn. The downturn had similar negative effect 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.

10. In terms of substitution, slightly more than half of the respondents indicated that they would not increase expenditure on tropical fruit if prices of these fruits dropped relative to other fruits, while the substitution effect was even lower for processed tropical fruits; 70 percent of the respondents would not increase expenditure on processed products if their prices fell relative to other fruits.

#### IV. REGIONAL FACTORS AFFECTING TROPICAL FRUITS CONSUMPTION

11. Statistical analysis of the surveys made in Guangzhou, Shenzhen, Foshan and Meizhou showed that regional differences existed for expenditure on fruit depending on variety and consumer preferences. In terms of urban versus rural clear differences also existed.
12. Residents of Guangzhou and Shenzhen were used to consuming tropical fruits, with the most commonly consumed varieties being bananas, dragon fruit, oranges, longans and litchis. Banana was the most preferred variety. Survey data showed that residents of the two regions had stable fruit consumption habit, better developed consumer market for tropical fruit and there was greater demand quantitatively, as well as quality and variety of tropical fruit. In Foshan, and Meizhou, bananas, litchis, oranges, longans and mangos were the main varieties consumed, with banana being the most preferred variety.
13. In Guangzhou, Foshan and Meizhou, 50 percent of respondents indicated that they spent less than 5 yuan a week on processed tropical fruit, while in Shenzhen, expenditure was double at 10 yuan a week. Consumers of processed tropical fruit in Foshan and Shenzhen were mainly young and middle-aged, while in Meizhou and Guangzhou they were mainly children. When asked, “Are tropical fruits more nutritious than other fruits (such as apples, pears, grapes, etc.)?” Half the respondents in Guangzhou and Shenzhen said that tropical fruits were more nutritious, while 60 percent of the respondents in Foshan and 70 percent in Meizhou said that they were not more nutritious than other fruits.
14. Even in cities of similar income profiles like Beijing, Shanghai and Guangzhou, expenditure on tropical fruit differ significantly because of different consumption habits and preferences. Some differences also exist in the 4 regions (Guangzhou, Shenzhen, Foshan and Meizhou) of Guangdong. Expenditure differed in proportion, quantity, variety and in terms of fresh versus processed products, because of the different levels of economic and social developments between urban and rural areas. Rural residents were more affected by economic factors, and particularly sensitive to income and price changes (Figures 2 and 3).





## V. TROPICAL FRUITS CONSUMPTION PREFERENCE

### A. GENDER DIFFERENCES

15. Male consumers usually purchased bananas, oranges, mangos, longans and litchis, while female consumers purchased mangosteen and durian, which were more expensive and nutrient-rich varieties in addition to bananas, oranges and mangos. Compared to males, females were more concerned with a healthy diet and quality of the fruit.

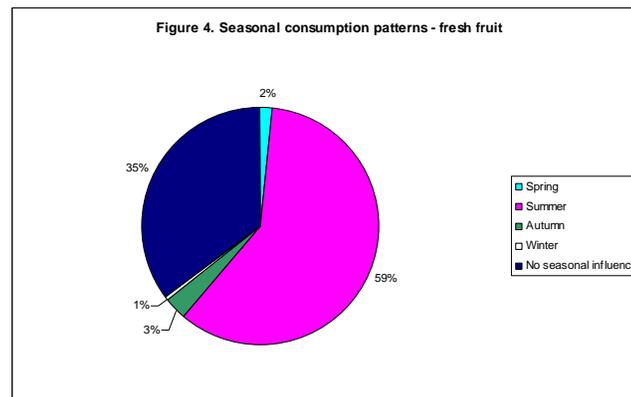
16. Female respondents were more sensitive to price changes and tended to purchase more tropical fruit when prices declined. The majority of both male and female would purchase more if their income increased.

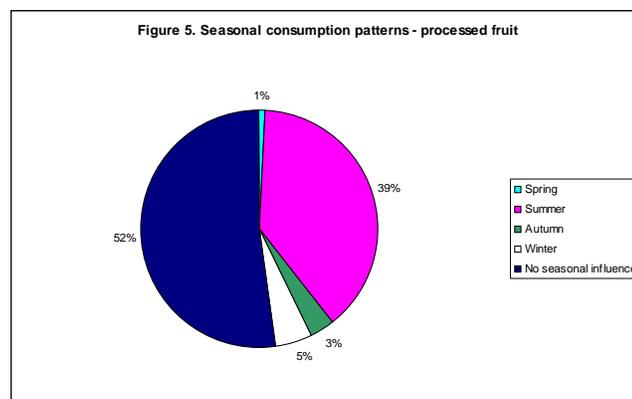
17. Other differences included:

- Females viewed that fruit, in addition to nutrition and health, contributed to their beauty, i.e. skin toning etc.;
- Males viewed tropical fruit as non-essential food, while females regarded fruit as a daily essential; and
- Females were usually responsible for household food and supplies purchase, while males purchase tropical fruits sporadically. Consequently, females were more sensitive to price changes more than males.

### B. SEASONAL DIFFERENCES

18. Most of the respondents consume more fresh tropical fruit in summer, while there was no distinct seasonal pattern for consumption of processed fruits (Figures 4 and 5).





### C. VARIETAL DIFFERENCES

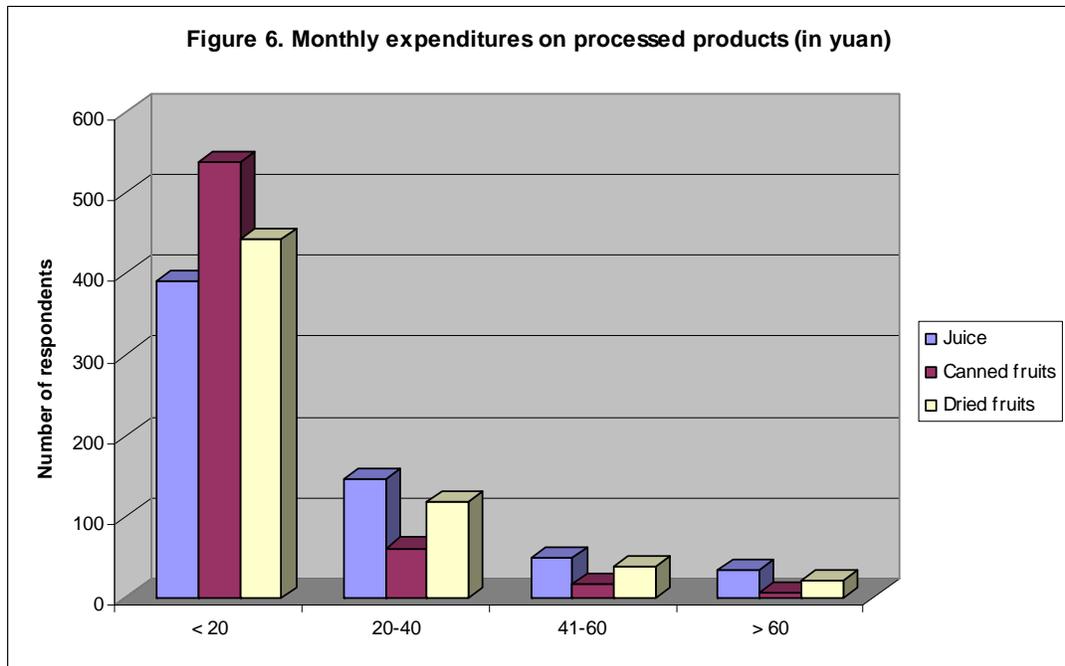
19. Slight differences existed in the consumption of tropical fruit varieties in the four regions, but basically, the main varieties purchased were bananas, oranges, litchis and longans. Mangosteen, durian, papaya and guava were also popular but less so than the form group of fruits, while less than 10 percent of the respondents chose jackfruit, rambutan and wax apple among their daily fruit purchases. Bananas were ranked first followed by oranges and durian (Table 2).

**Table 2 Consumption of Tropical Fruits by main varieties**

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

**Note:** 1 jin = 500 grammes.

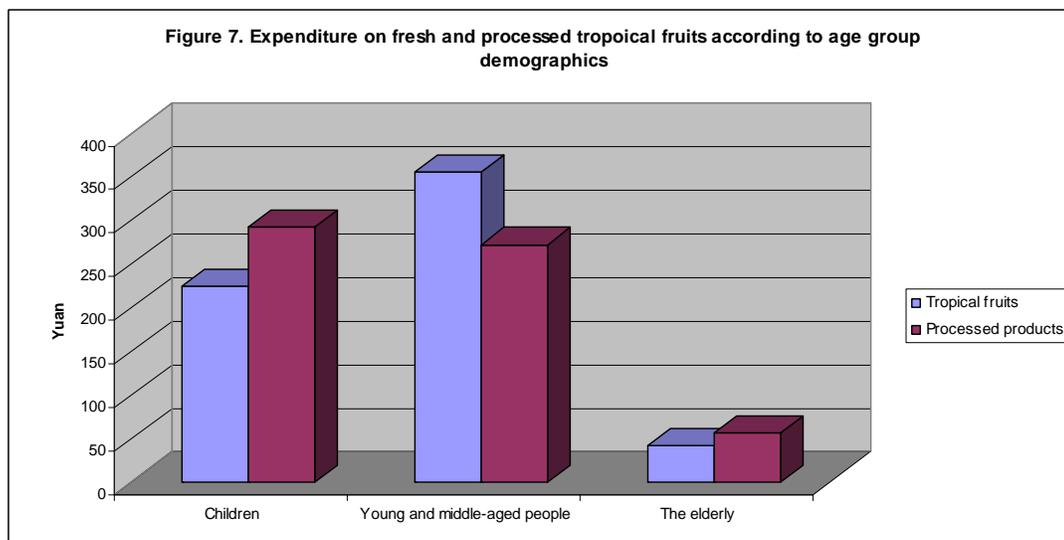
20. Consumers spent less on processed compared to fresh tropical fruits, averaging up to 20 yuan monthly. Consumption of tropical fruit juice was slightly higher than other processed products followed by dried fruit and canned (Figure 6). The most popular fruit juice was coconut, followed by mango, then followed by apple and orange juice.



## VI. CONSUMPTION HABITS AND ATTIDUES

21. Respondents were more selective about vegetables they consumed than they were of the tropical fruits they consumed. Flavours were considered important, and fresh were preferred over processed fruits. Hence, consumption of juices and other processed products was far less than fresh fruit consumption.

22. The young and middle-aged were the main consumers of fresh fruit (Figure 7), while children and the elderly were the main consumers of processed fruits. However, consumption of concentrated fruit juices and fresh fruit juices is becoming popular with both rural and urban consumers in their 20s.



23. More than half of the respondents believed that tropical fruits were more nutritious than other fruit and the wider selection of varieties and flavours appealed to some. When asked about “worst fears of buying tropical fruits?” Most were concerned about freshness, and many felt that

pesticide residues could pose serious problems. With improvement of living standards and enhanced awareness of health and food safety, consumers had higher expectations regarding nutrient content, variety, quality, convenience and the safety of the fruit.

24. Half the respondents believed that the quality of imported tropical fruit was better than domestically produced fruits, and about 40 percent were willing to buy imported fresh tropical fruit and processed products.

## VII. CONCLUSION

25. Tropical Fruit consumption in Guangzhou, Shenzhen, Foshan and Meizhou was stable, and most consumers preferred fresh as opposed to processed tropical fruits. The main economic factor influencing consumption of tropical fruit was income, followed to a lesser extent by relative price changes, and the macroeconomic environment (during the survey – the impact of the economic downturn). Quantity of tropical fruits consumed increased when prices fell, but only among the lower income brackets. Among the higher income brackets (i.e. those earning more than 8 000 yuan), there was very little change in consumption when relative prices of fresh tropical fruit changed. As for processed products, a reduction in prices did not lead to an increase in expenditure of these products, according to 70 percent of the respondents, while 60 percent (in the higher income brackets) indicated that they would not purchase more fresh fruit if their income increased. As for the impact of the economic downturn, the groups most affected were those in the lower income brackets with earnings of up to 5 000 yuan per month.

26. Most respondents preferred fresh tropical fruit. The most purchased varieties were: bananas, oranges, litchis, mangos and longans, of which the most popular were bananas. Among the processed products, juice was more popular than other forms of processed tropical fruits.

27. Respondents emphasized that nutritional value and food safety of tropical fruit were important to them. Over half of the respondents believed tropical fruits were more nutritious than temperate fruits. Most respondents preferred buying fresh tropical fruit and processed products from supermarkets. As for seasonality, over half of the respondents purchased more tropical fruits during summer, but seasonal differences in tropical processed product consumption were small. The young and middle-aged population were the main consumers of fresh tropical fruit, while children and the elderly were the main consumers of processed tropical fruits. Most consumers said the consumption of tropical fruit became significant a decade ago.