

# Analysis of Influencing Factors on Fruit Consumption of Urban and Rural Residents in Beijing

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**Abstract** In light of the rapid expansion of China's economy, there has been a notable shift in the consumption patterns of urban and rural residents. This is evident in the increased consumption of agricultural products, with fruit consumption representing a particularly pronounced trend. The 2023 Beijing Consumption Statistics indicate that demand for fruit is increasing, accompanied by heightened competition for quality and brands. The paper is based on research that examines the current situation of fruit consumption among urban and rural residents in Beijing. The results indicate that when urban and rural residents in Beijing purchase fruits, price is the most significant factor influencing fruit consumption. Taste, appearance, and variety are also considered to be important influencing factors, while the influence of factors such as fruit type, consumption pattern, and fruit brand is relatively minor.

**Key words** Urban and rural residents of Beijing, Fruit consumption, Influencing factor, Consumption behavior

## 1 Introduction

In recent years, there has been a notable shift in the consumption patterns and preferences of Chinese urban and rural residents. This is particularly evident in metropolitan cities such as Beijing, where consumer demand and quality expectations for agricultural products have become more diverse and nuanced. Fruit has been the subject of considerable research and analysis as a key component of agricultural product consumption.

With regard to the research on the factors influencing the consumption of agricultural products by urban and rural residents in Beijing, numerous scholars have conducted in-depth analysis from various perspectives in recent years. In a study employing Heckman's two-stage model for empirical analysis, Yang Yuying *et al.* [1] reached the conclusion that factors related to nutritional value, taste, flavor, and production process exerted a significant influence on residents' decisions regarding the consumption of pasteurized milk, as well as on the levels of consumption. In contrast, factors related to shelf life and price exerted a significant influence on the decisions regarding the consumption behavior. Zhao Xinxin [2] conducted an empirical analysis of the factors influencing the consumption of dairy products and found that the quality and safety of dairy products, the packaging of dairy products, the level of income, and the age of the population significantly influenced the consumption of dairy products. Zhao Jianxiong *et al.* [3] selected mulberry as a fruit species and employed a regression model to analyze the factors influencing the consumption of mulberries by

residents of Beijing. Their findings indicated that the price, taste, safety, nutrition, freshness of the fruit, as well as the consumers' age, income, demographic structure, the degree of knowledge of fruits and vegetables, and the degree of trust in the market were significant factors affecting consumers' fruit purchasing decisions. In particular, the consumers were found to prioritize price as the primary factor influencing their purchase. With regard to the factors that influence fruit consumption, numerous experts and scholars have selected diverse regions for research. Zhu Feng [4] conducted extensive research which revealed that residents of Guangzhou City primarily considered price, product variety, and convenience when purchasing fruits. Furthermore, the research indicated that consumers believed that habit was an important factor influencing their choices. Wang Taixiang *et al.* [5] conducted a questionnaire survey to investigate the purchasing habits of urban residents in Urumqi City with regard to fruit. The results indicated that the quality of the fruit, as perceived by the consumers, played a significant role in their purchasing decisions. The quality of the fruit was found to be influenced by a number of factors, including its visual appeal, taste, convenience, nutritional value and safety. Feng Beibei *et al.* [6] employed a chi-square test to analyze the consumption of fruits by residents of the Henan region. The results indicated that the taste of fruits, residents' income, quality of fruits, and types of fruits influenced residents' consumption of fruits. Furthermore, the selling price, supply time, and the seller's service attitude also exerted a certain influence on consumers.

In conclusion, the consumption patterns of residents in different regions and the factors influencing them are distinct. Moreover, the factors influencing the consumption of different types of agricultural products are also markedly disparate. This paper is based on a comprehensive review of the literature, and it guides

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the design of questionnaires and the conduct of field research to collect and organize data on the current situation of urban and rural residents' consumption of fruits in Beijing and the influencing factors. The objective is to provide a reference for the healthy development of the fruit industry in Beijing<sup>[7–15]</sup>.

## 2 Analysis of the current situation of fruit consumption of urban and rural residents in Beijing

In order to gain a comprehensive understanding of the current state of fruit consumption among urban and rural residents in Beijing, the author conducted a representative sample questionnaire survey across various districts in the city. A total of 160 questionnaires were distributed, and 155 were returned, representing a 96.8% response rate. The samples obtained in this research can be considered representative of the fruit consumption patterns of urban and rural residents in Beijing.

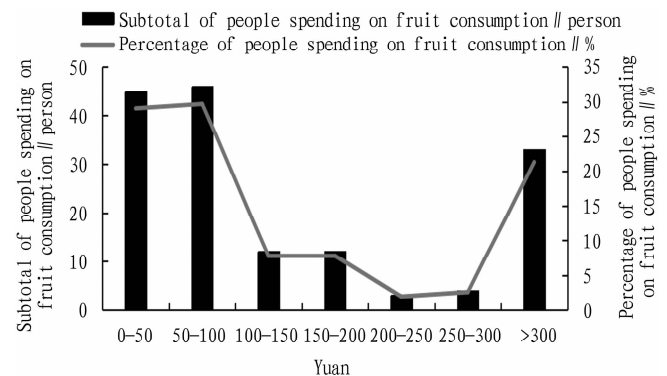
**2.1 Description of individual characteristics of survey subjects** The respondents in this questionnaire survey were grouped according to seven main characteristics: gender, age, education, occupation, marital status, and annual household income. These characteristics are presented in Table 1.

**Table 1 Basic information of survey respondents**

Respondent	Option	Number of people	Percentage %
Gender	Male	75	48.38
	Female	80	51.61
Age//years old	25 and below	26	16.77
	26–35	72	46.45
	36–45	36	23.23
	46–55	9	5.81
	56 and above	12	7.74
Marital status	Unmarried	74	47.74
	Married	81	52.26
Highest level of education	Primary and lower education	2	1.29
	Junior high school education	1	0.65
	High school education	12	7.74
	University (including junior college)	105	67.74
	Master's degree and above	35	22.58
Work occupation	Employees of institutions and government departments	24	15.48
	Enterprise employees	93	60.00
	Self-employed person	11	7.10
	Retired	10	6.45
	Unemployed or student	17	10.97
Annual household income yuan	50 000 and below	13	8.39
	50 000–120 000	37	23.87
	120 000–200 000	39	25.16
	200 000–300 000	24	15.48
	More than 300 000	42	27.10
Total		155	100.00

**2.2 Fruit consumption is low and moderately frequent** The consumer survey included individuals residing in urban and rural

areas, representing diverse age groups, regions, and income levels. The data from the 2023 *Beijing Statistical Yearbook* indicates that the per capita disposable income in Beijing in 2022 was 77 415 yuan, while the per capita consumption expenditure in Beijing was 42 683 yuan. This equates to a per capita consumption expenditure of 3 557 yuan per month. When the data from this research is combined with the aforementioned information, it becomes evident that approximately 60% of consumers purchase fruits at a cost of 0–100 yuan each time (Fig. 1). The proportion of individuals spending between 0–50 yuan and 50–100 yuan was comparable, with 29.03% and 29.68%, respectively. Twenty-one point two nine percent of consumers spent 300 yuan or more on fruit each month. The proportion of individuals spending 100 yuan or more was comparatively lower, with only 7.74% spending 150 yuan or more. The proportion of expenditure on fruit purchases relative to total consumption expenditure for the month was as follows: only 9.67% of total consumption expenditure of 40% or more was allocated to fruit purchases; 37.6% of consumers' fruit purchases accounted for 20%–40% of their total consumption expenditure; and the highest percentage of consumers whose total consumption expenditure was less than 20% was allocated to fruit purchases, at approximately 52.73%. When considered collectively, fruits represent a significant source of nutritional supplementation in the daily lives of many individuals. Although consumers will expend funds on a monthly basis, the expenditure will not represent a significant proportion of total consumer spending. The majority of consumers' fruit purchases fall within the range of 0–100 yuan, yet a notable proportion of consumers' monthly fruit consumption exceeds 300 yuan. This suggests that individual fruit consumption behavior is more dispersed and concentrated in the lower range.



**Fig. 1 Monthly consumption expenditure on fruit purchase by urban and rural residents in Beijing**

As illustrated in Fig. 2, the frequency distribution of consumers in purchasing fruits in this survey was relatively balanced, with the majority of respondents reporting purchasing fruits between 1–9 times per month. The most prevalent frequency of purchase was 4–6 times per month, representing 28.39% of consumers. Another 27.74% of consumers purchased 1–3 times per month.

Among those who made purchases at a higher frequency (7 – 12 times per month), the distribution was also relatively even, with a share of between 19.35% and 21.29%. A mere 3.23% of respondents indicated that they never purchase fruit. The data indicates that the frequency of fruit purchases by urban and rural residents in Beijing is relatively stable, with the majority of respondents reporting purchasing fruit at least once a month. Additionally, the distribution of these purchases is relatively even.

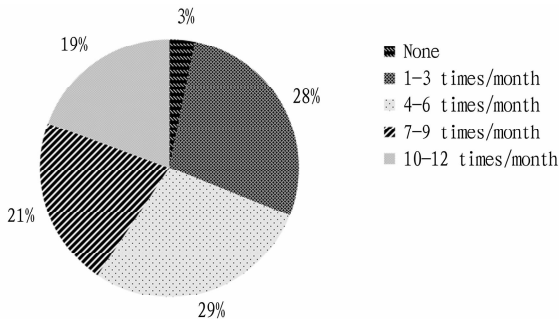


Fig.2 Frequency of fruit purchase by urban and rural residents in Beijing

**2.3 Fresh seasonal fruits are preferred by consumers** The results of the survey, as presented in Table 2, indicate that the majority of consumers (96.77%) expressed a preference for fresh seasonal fruits. Fresh seasonal fruits are typically perceived as both palatable and nutritious, which contributes to their popularity among consumers. Secondly, 27.74% of respondents indicated a preference for imported high-end fruits, indicating the existence of a market for high-end fruit consumption in Beijing. A smaller proportion of consumers (16.13% and 6.45%, respectively) would opt to purchase fruit that has been handled and is ready to eat, or that has undergone processing.

Table 2 Survey on types of fruits purchased by urban and rural residents in Beijing

Option	Subtotal	Percentage//%
Fresh seasonal fruits	150	96.77
Imported high-grade fruits	43	27.74
Processed and ready to eat (e.g. fruit salads)	25	16.13
Processed fruits (e.g. fruit juice, dried fruit, etc.)	10	6.45
Total	233	

**2.4 Fruits are purchased through various channels** As illustrated in Table 3, modern retail channels have emerged as the dominant sales channel for fruits, with 75.48% of consumers opting to purchase fruits through these channels. Secondly, the e-commerce purchasing channel accounted for 66.45%. A notable proportion of the population opted for the e-commerce channel, indicating a preference for online shopping and convenient delivery services. The combined market share of farmers’ markets and fruit franchise retailing was 41.94% of the total. To a certain extent, farmers’ markets and fruit retailing meet the needs of consumers for fruit products purchased on a daily basis.

Table 3 Survey on types of purchasing channels for urban and rural residents in Beijing

Option	Subtotal	Percentage//%
E-commerce channel	103	66.45
Farmer’s market	65	41.94
Modern retail (superstores, fresh food super-markets, convenience stores)	117	75.48
Fruit specialized retail	65	41.94
Total	350	

3 Analysis of factors affecting fruit consumption of urban and rural residents in Beijing

In the current field of agricultural products consumption, fruit, as a healthy and tasty choice, is influenced by a variety of factors. A series of influencing factors and their interrelationships can be revealed by investigating and analyzing the fruit consumption behavior of different regions and groups. The author selected specific variables for investigation based on the findings of the research. These included the price of fruits, their appearance, type, freshness period, and the manner of consumption. The variables were evaluated through a survey of 155 urban and rural residents in Beijing.

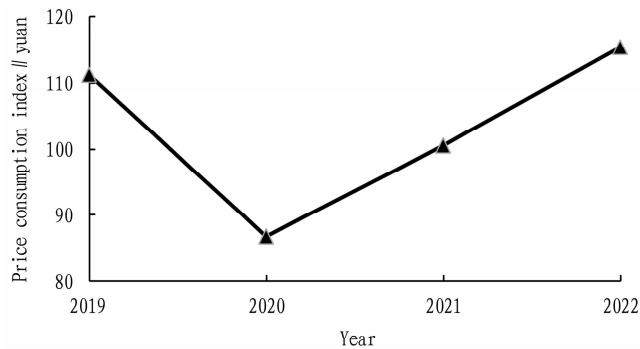
Table 4 Survey on the factors of fruit purchase by urban and rural residents in Beijing

Option	Subtotal	Percentage//%	Rank
Fruit price	113	72.90	1
Fruit appearance	91	58.71	4
Fruit brand	37	23.87	7
Fruit type	95	61.29	3
Shelf life	66	42.58	5
Fruit insurance period	48	30.97	6
Fruit consumption pattern	112	72.26	2
Others	3	1.94	8
Total	565		

**3.1 Price is the number one factor influencing purchasing decisions** As illustrated in Table 4, the majority of Beijing’s urban and rural residents in the surveyed sample (72.90%) demonstrated a greater preference for price when purchasing fruits. A review of the *Beijing Statistical Yearbook* for the past 3 years revealed that the price consumption index for fresh fruit was above 100 in 2019, 2021, and 2022, with a peak of 115.4 in 2022 (Fig.3). The preceding data demonstrate that the prices of fresh fruit products have been on an upward trajectory. As prices continue to rise, consumers will be more discerning in their fruit purchasing decisions, exercising greater price consciousness than they may have done in the past.

**3.2 Taste, appearance and variety are the main factors influencing purchasing decisions** The results of the survey indicated that 72.26% of consumers considered fruit taste to be more important than other factors. The quality of fruit taste can be attributed to a number of factors, including the eating experience, ripeness, freshness, and nutritional value. Combined with the actual consumption experience, fruits exhibiting moderate sweetness

and acidity, as well as superior texture, are perceived by consumers as indicative of greater freshness and nutritional value, thereby enhancing the overall eating experience. Consequently, the texture of the fruit has emerged as a significant determining factor in the purchasing decisions of the majority of consumers. The results of this survey indicated that 61.29% and 58.71% of consumers considered the appearance and variety of fruit (*i.e.*, the diversity of fruit purchases) to be more important. A review of the basic information gleaned from the sample indicates that the majority of the interviewed consumers are aged 26–45, accounting for nearly 70%. Those people born in the 1980s and 1990s are not only concerned with the practicality of the products they purchase, but also with their aesthetic appeal. This is evident in the purchase of fruits, which are often selected for their visual appeal. Furthermore, the nutritional composition of fruits varies considerably. It is therefore evident that a single variety of fruit can not provide all the nutrients that humans require. Consequently, the diversity of fruits available for purchase has become a more attractive option for consumers.



**Fig. 3** Changes in Beijing resident fresh fruit price consumption index (2019–2022)

**3.3 Shelf life and consumption pattern are secondary factors influencing purchasing decisions** Among the samples surveyed, only 42.58% and 30.97% of the population demonstrated an awareness of the optimal freshness period for fruits and the recommended patterns of consumption. This indicates that a significant proportion of consumers have long-term preservation needs or different fruit consumption habits. In Beijing, well-established basic logistics facilities and bulk fruit wholesale markets ensure the freshness and quality of the fruit supply, thereby alleviating concerns among urban and rural residents in Beijing regarding the freshness of the products they purchase. For those respondents who expressed concern about the manner in which fruit is consumed during the shopping process, it is possible that this is due to specific dietary or other considerations. It is notable that a larger proportion of respondents did not identify this as a factor influencing their fruit purchasing decisions.

**3.4 Fruit brand is a non-significant factor influencing purchase decisions** A survey of consumers revealed that 23.87% of respondents considered the brand of the fruit to be one of the factors influencing their purchasing decisions for fruits. In comparison to the aforementioned factors, brand is the least significant concern among consumers. Fruits are consumer goods that possess

attributes similar to those of other daily products. There is no clear advantage in the quality or taste of similar products. It is more probable that consumers will select fruits based on their actual needs and the shopping environment at the time, rather than being overly constrained by a specific brand. Other factors accounted for 1.94% and are not expressed in this paper due to the very small sample size.

## 4 Countermeasures and suggestions

**4.1 Improvement of promotional mechanisms** The results of this questionnaire survey indicate that the proportion of fruit consumption among urban and rural residents in Beijing is relatively low, with a correspondingly low frequency of consumption. In light of the aforementioned circumstances, it is imperative that each fruit industry business entity implement a multifaceted promotional strategy, encompassing a diverse array of promotional mechanisms, differentiated promotional strategies, and an array of suitable promotional methods, such as discounts, giveaways, and lucky draws. This approach is essential to effectively engage consumers and drive interest in the products.

**4.2 Increase in combination sales** As lifestyles evolve and individuals prioritize their health and recognize the significance of diet in maintaining their well-being, the primary drivers influencing individuals' consumption of fruit are undergoing a transformation. The questionnaire indicates a robust demand among urban and rural residents in Beijing for a diverse range of fruits. Furthermore, it suggests that an increasing number of consumers will prioritize nutritional matching in their product purchases. Consequently, fruit sellers may introduce customized fruit products, such as "Daily Vitamin C" and "Daily Energy Supplement", to assist consumers in selecting fruit products that are more aligned with their nutritional needs and meet the diverse needs of urban and rural residents.

**4.3 Enhancement of product design** As living standards have risen, so too has the demand for a higher quality of life, which has in turn led to an improvement in the aesthetic level. The consumption of fruit by residents of Beijing, whether urban or rural, has led to an increased focus on the appearance and packaging design of fruit products. Consequently, fruit sellers must prioritize aspects of color matching, packaging materials, and innovative design to align with the evolving aesthetic preferences of consumers and enhance the overall appeal and competitiveness of fruit products.

## References

- [1] YANG YY, WANG ML. Analysis on consumption of low-temperature milk products by residents in big cities and its influencing factors: Taking Beijing as an example[J]. Chinese Journal of Agricultural Resources and Regional Planning, 2021,42(12): 263–272. (in Chinese).
- [2] ZHAO XX. Research on the influencing factors of Beijing residents' dairy products consumption[D]. Beijing: Chinese Academy of Agricultural Sciences, 2021. (in Chinese).
- [3] ZHAO JX, HU BG. Analysis of mulberry consumption behavior and influencing factors of residents in Beijing[J]. Agricultural Outlook, 2021, 17(7):122–128. (in Chinese).

- [3] CHEN KQ, LONG HL, MA L, *et al.* Rural land system reform and rural revitalization[J]. *Progress in Geographic Science*, 2019, 38(9): 1424 – 1434. (in Chinese).
- [4] YUE YB. Reform and improvement of rural land system under the background of rural revitalization[J]. *China's Land and Resources Economy*, 2021, 34(9): 16 – 24 39. (in Chinese).
- [5] XU FF. Analysis of rural land system reform under the background of rural revitalization strategy[J]. *New Agriculture*, 2021, 2(3): 65. (in Chinese).
- [6] VELANDER S. Securing land for sustainable livelihoods: perspectives on land reform & contract farming in Kenya[D]. *Center for Development Research*, 2020.
- [7] FAN H. Willingness of rural residential land without drawing based on reciprocal determination; Case of Henan Province[J]. *Journal of Arid Land Resources and Environment*, 2020.
- [8] QIAN ZH, MOU Y. Rural revitalization and rural land system reform[J]. *Agricultural Economic Issues*, 2020(4): 28 – 36. (in Chinese).
- [9] QIAO LY, LIU YS. The strategy of rural revitalization in the new era and the reform of rural homestead system[J]. *Geography Research*, 2019, 38(3): 655 – 666. (in Chinese).
- [10] YE HL, YIN JJ, XIE D. Coordinated reform to promote rural revitalization-exploring the pilot rural land system reform in Wenchang City, Hainan Province[J]. *China Land*, 2019(3): 4 – 8. (in Chinese).
- [11] YE HL. Writing a new chapter in rural revitalization-observations on the pilot rural land system reform in Jinjiang, Fujian[J]. *China Land*, 2018(6): 4 – 9. (in Chinese).
- [12] LIAN HP, WEI WJ. Theoretical logic and dynamic system of rural land system reform driving rural revitalization[J]. *Chongqing Social Sciences*, 2023(7): 52 – 66. (in Chinese).
- [13] LI YX. Research on the realization mechanism of rural land system reform in Xunlonghe Village, Changsha County to boost rural revitalization [D]. *Central South University of Forestry and Technology*, 2023. (in Chinese).
- [14] GAN WX. Exploration and reflection on rural land system reform under the background of rural revitalization strategy[J]. *Western Journal*, 2024(2): 18 – 21. (in Chinese).
- [15] DU W, HUANG M. Thoughts on the rural land system reform under the background of rural revitalization strategy[J]. *Journal of Sichuan Normal University (Social Science Edition)*, 2018, 45(1): 12 – 16. (in Chinese).
- [16] LI ZZ. Practical exploration and path optimization of rural land system reform under the rural revitalization strategy[J]. *Journal of Shaoyang University (Social Sciences Edition)*, 2023, 22(5): 53 – 59. (in Chinese).
- [17] LIU ZQ, CHEN HJ, CHEN YD. How does the reform of rural collective property rights system affect the happiness of farmers: Empirical analysis based on on survey data on rural revitalization in China[J]. *Journal of Huazhong Agricultural University (Social Sciences Edition)*, 2024(1): 86 – 99. (in Chinese).
- [18] LIU XX, DONG WX, ZHAO XJ. Research on rural land system reform in Hebei Province under the background of rural revitalization[J]. *Journal of Hebei Open University*, 2023, 28(6): 47 – 52. (in Chinese).
- [19] TANG Y. The fundamental approach to rural revitalization is to accelerate the reform of the land system to promote the urbanization of farmers, modernization of agriculture, and rural urbanization[J]. *New Urbanization*, 2023(12): 27 – 30. (in Chinese).
- [20] LONG HL, ZHANG YN, TU SS. On land improvement and rural revitalization[J]. *Journal of Geography*, 2018, 73(10): 1837 – 1849. (in Chinese).
- [21] LIU ZW. Rural land system reform in rural revitalization[J]. *Agricultural Economic Issues*, 2018(9): 4 – 9. (in Chinese).
- [22] LONG HL, TU SS. Land use transformation and rural revitalization[J]. *China Land Science*, 2018, 32(7): 1 – 6. (in Chinese).
- [23] DU W, HUANG MDU W, HUANG M. Reflection on the rural land system reform under the background of rural revitalization strategy[J]. *Journal of Sichuan Normal University (Social Sciences Edition)*, 2018, 45(1): 12 – 16. (in Chinese).
- [24] QIAO LY, LIU YS. The strategy of rural revitalization in the new era and the reform of rural homestead system[J]. *Geography Research*, 2019, 38(3): 655 – 666. (in Chinese).
- [25] LIU ZW. Rural land system reform in rural revitalization[J]. *Agricultural Economic Issues*, 2018(9): 4 – 9. (in Chinese).
- [26] YE HL. Writing a new chapter in rural revitalization-observations on the pilot rural land system reform in Jinjiang, Fujian[J]. *China Land*, 2018(6): 4 – 9. (in Chinese).
- [27] LONG HL, LIU YS, LI XB, *et al.* Building new countryside in China: A geographical perspective[J]. *Land Use Policy*, 2010, 27(2): 457 – 470.
- [28] LONG HL, QU Y. Land use transitions and land management: A mutual feedback perspective[J]. *Land Use Policy*, 2018(74): 111 – 120.
- [29] LONG HL, TU SS, GE DZ, *et al.* The allocation and management of critical resources in rural China under restructuring: Problems and prospects[J]. *Journal of Rural Studies*, 2016(47): 392 – 412.
- [30] LIU YS, LI YY. Revitalize the world's countryside[J]. *Nature*, 2017, 548: 275 – 277.

(From page 4)

- [4] ZHU F. Study on residents' fruit consumption and its influencing factors: A case study of Guangzhou[J]. *China Fruit News*, 2016, 33(3): 22 – 25. (in Chinese).
- [5] WANG TX, WANG T. Study on market segmentation of fruits consumer in Urumqi City[J]. *Northern Horticulture*, 2017(9): 169 – 173. (in Chinese).
- [6] FENG BB, GUO X, JIANG YB, *et al.* Analysis of fruit consumption market in Henan area[J]. *Fruit Growers' Friend*, 2021(2): 38 – 41. (in Chinese).
- [7] QIAO XS. Current situation, characteristics and trends of fruit production in the world[J]. *World Agriculture*, 2010(5): 37 – 41. (in Chinese).
- [8] LU N. The present situation and trend analysis of agricultural products consumption in China[J]. *Business & Economy*, 2017(12): 82 – 84. (in Chinese).
- [9] QIAN TT, FAN HW, YANG J, *et al.* Investigation and forecast of fruit consumption characteristics of Shanghai's residents[J]. *Agricultural Outlook*, 2018, 14(11): 122 – 126. (in Chinese).
- [10] BAI X. Study on non-local fruit consumption behavior of residents in Urumqi[J]. *Journal of Jiangsu University of Technology*, 2019, 25(2): 88 – 94. (in Chinese).
- [11] WANG LL, DUAN LR, LIANG YN, *et al.* Research on the factors affecting dairy consumption in Beijing: A case study of liquid milk[J]. *Business News*, 2019(22): 1 – 5. (in Chinese).
- [12] HOU YL, ZHAO JY. China's fruits market situation in 2022 and its future prospects[J]. *Agricultural Outlook*, 2023, 19(6): 7 – 12. (in Chinese).
- [13] WU ZY, LI YR, DONG ZD. Research on the current situation and countermeasures of fruit industry in China[J]. *China Fruit & Vegetable*, 2023, 43(11): 79 – 83, 87. (in Chinese).
- [14] QIN M. Consumer behavior towards continued use of online shopping: An extend expectation disconfirmation model[M]. *New York: Integration and Innovation Orient to E-Society*, 2007: 400 – 407.
- [15] LUO C, WANG LP. A study on consumer willingness and influencing factors of unique and niche fruit: Survey based on characteristic fruit yellow peel[J]. *South China Rural Area*, 2024, 40(1): 28 – 34. (in Chinese).