

INDEPENDENT MARKET RESEARCH CHINA'S VEGETABLE AND POTTED VEGETABLE PRODUCE MARKET STUDY

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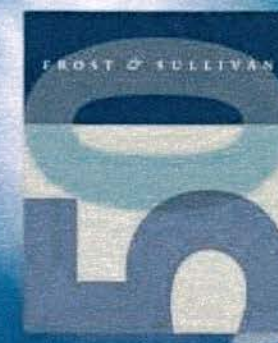
Fujing

Date: 20 MAR 2024



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For and on behalf of
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Frost & Sullivan
Mar 2024



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1 Macroeconomic Overview

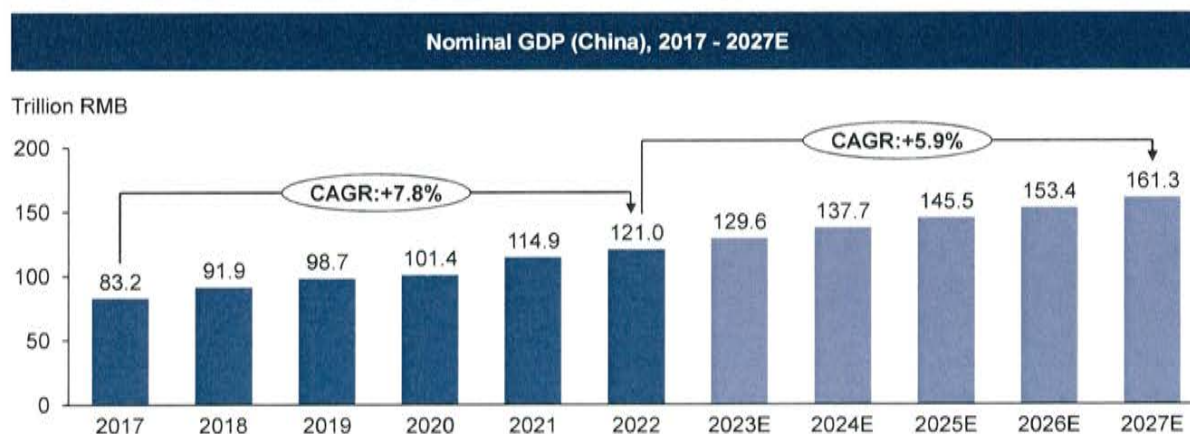
2 China's Vegetable and Potted Vegetable Produce Market

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Macroeconomic Overview

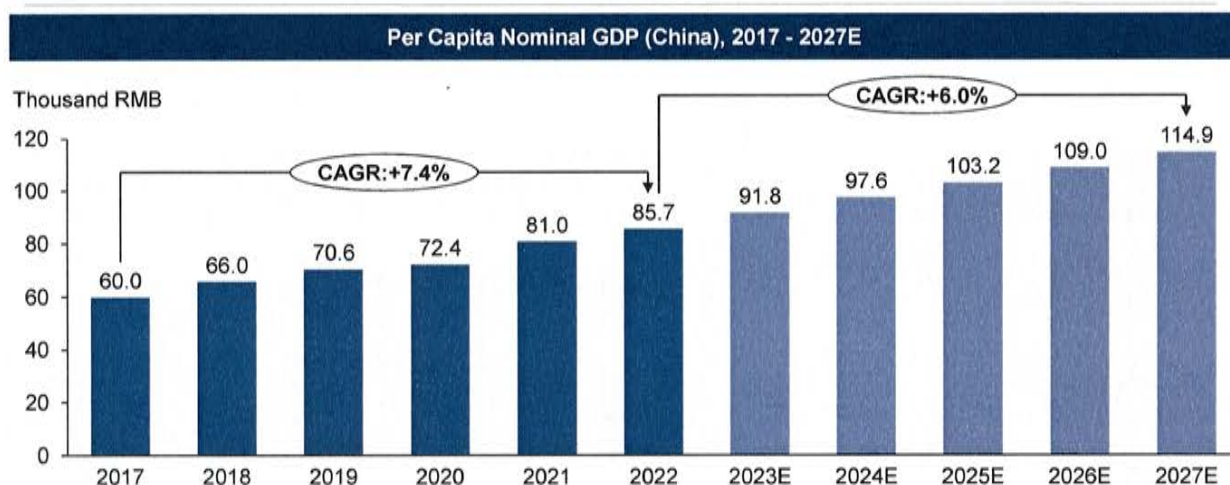
China's Nominal GDP Growth



- According to the National Bureau of Statistics of China, the Chinese economy grew at a CAGR of 7.8% from 2017 to 2022. Going forward, the Chinese authorities are likely to maintain the consistency and stability of macroeconomic policies so as to maintain macroeconomic stability. In the meantime, structural adjustment of the economy is predicted to be strongly pushed forward by the Chinese authorities to improve the quality and efficiency of economic development. The Chinese economy is likely to transfer from an investment-driven model to a consumption-driven model with the share of final consumption in GDP picking up. Under this trend, the Chinese economy is likely to maintain a sound and healthy development. According to the International Monetary Fund (IMF), the Chinese economy is forecasted to keep growing at a CAGR of 5.9% from 2022 to 2027.
- Looking forward, the nominal GDP is expected to keep growing and reach RMB161.3 trillion in 2027 at a CAGR of 5.9% with a forecasted stable economic environment.

Macroeconomic Overview

China's Per Capita Nominal GDP Growth



- As total population of China has remained and is expected to remain stable in the future, the growth of per capita GDP is in line with the growing Chinese economy. Per capita nominal GDP in China has kept growing at a fast pace over the past and is expected to maintain the solid growth. For 2022, the per capita nominal GDP in China has reached RMB85.7 thousand.
- In the future, with the sound growth of the Chinese macro economy, the per capita nominal GDP in China is also likely to maintain steady growth. According to the International Monetary Fund (IMF), the per capita nominal GDP in China is predicted to reach RMB114.9 thousand in 2027, growing at a CAGR of 6.0% from 2022.

Source: National Bureau of Statistics of China, IMF

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Macroeconomic Overview

China's Population and Urbanisation



- China has the world's largest population. In 2022, China's total population reached 1,411.8 million. With the PRC Government investing a tremendous effort into controlling the enormous population, the population growth rate has been stable over the past five years. However, with the release of the two-child policy in 2016 and the three-child policy in 2021, the total population of China is estimated to grow at a moderate level, reaching 1,404.4 million in 2027.
- Due to the rapid economic development of China and the influx of migrants from rural areas to developed areas, the Chinese urban population has been steadily increasing. China's rapid economic growth has fuelled the unprecedented urbanization of its population since the 1990s. From 2017 to 2022, China's urban population increased from 813.5 million to 920.7 million, with a CAGR of 2.5%. During the same period, the urbanization rate in China increased by 6.7%, from 58.5% to 65.2%.
- With the continuous growth of urbanization, the urban population is expected to maintain a CAGR of 1.9% from 2022 to 2027. Frost & Sullivan forecasts that by 2027, China's urban population is expected to reach 1,011.8 million. Under the 'National Plan for Promoting Healthy Urbanization (《全国促进城镇化健康发展规划》)' raised in 2013, new-style urbanization is expected to promote the urban-rural coordination and reasonable distribution. Accordingly, Frost & Sullivan forecasts China's urbanization rate is likely to increase gradually from 2022 to 2027, reaching 72.0% by 2027.

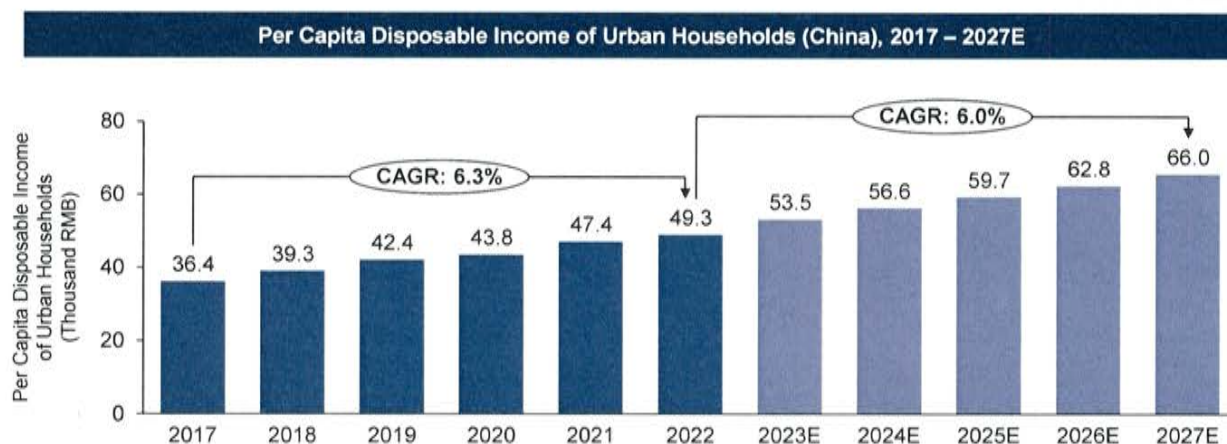
Source:
1. Historical Data: National Bureau of Statistics of China;
2. Forecast Data: Frost & Sullivan

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Macroeconomic Overview

China's Per Capita Disposable Income of Urban Households



- Together with the continuous growth in economy and urbanisation, the average income level of Chinese urban households has also increased continuously in recent years. The per capita annual disposable income of urban households has increased to RMB49.3 thousand in 2022 from RMB36.4 thousand in 2017, representing a CAGR of 6.3%.
- The growth of Chinese per capita annual disposable income has demonstrated positive effect on Chinese residents' purchasing power. Frost & Sullivan estimates that by 2027, the per capita annual disposable income of urban households is forecast to increase to RMB66.0 thousand with a CAGR of 6.0% from 2022.

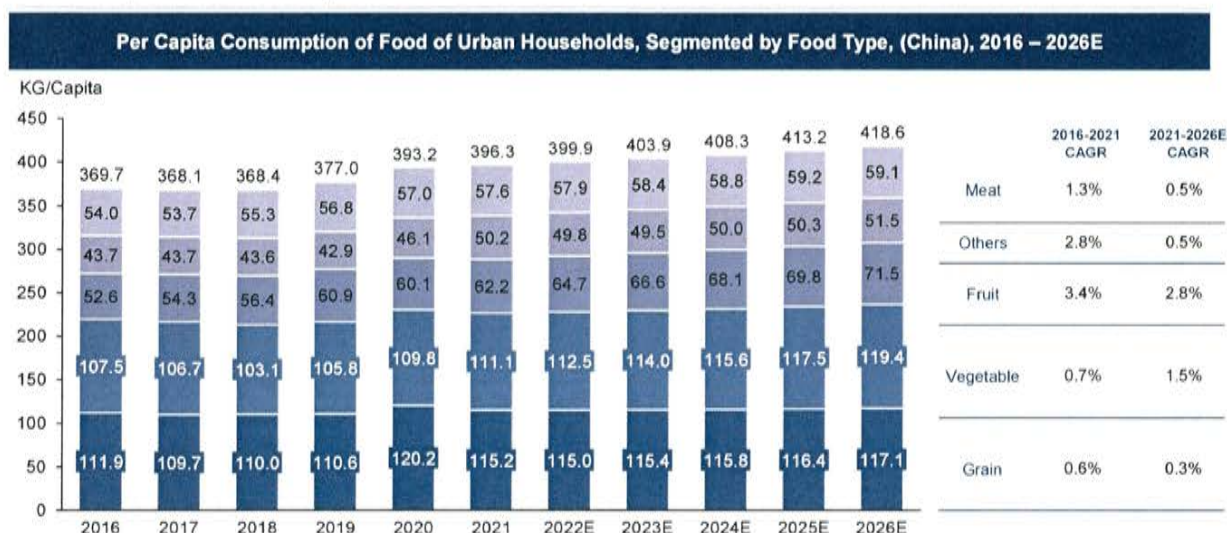
Source: National Bureau of Statistics of China; Frost & Sullivan

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Macroeconomic Overview

Per Capita Consumption of Food of Urban Households



- With increasing income level of urban households, the food consumption structure has upgraded from 2016 to 2021. China's residents have purchased more meat and fruits while reducing the consumption of grains and vegetables. Historically having a high proportion of vegetable consumption, China's urban households now have focused on the quality of vegetables rather than just quantity. Per capita vegetable consumption of urban households has decreased from 107.6 kg in 2016 to 111.1 kg in 2021, representing a CAGR of 0.7%.
- Due to rising awareness of personal wellness and easier access to fresh vegetables nationwide, there is expected to see an increasing demand for vegetables in Urban household's diet, especially for fresh and high-quality vegetables. Per capita vegetable consumption of urban households is forecast to reach 119.4 kg in 2026.

Note: (1) Per capita consumption of food refers to the consumption of major food types. (2) Vegetable includes fresh vegetable and mushroom; (3) Others include eggs, oil, milk, sugar and nut

Source: National Bureau of Statistics of China; Frost & Sullivan

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Macroeconomic Overview

China's Consumer Price Index of Food



- The FPI has been growing relatively steady from 2013 to 2021. Taking December 2012 as the base month and assume it as 100, it increased from 102.8 in January 2013 to 135.3 in December 2021. From January 2016 to December 2021, the FPI in China has increased by 20.7%. With further economic development, increase in disposable income and inflation, the FPI is likely to show a steady growth in the following years.
- Similar to the FPI, meat price index has been showing an upward trend from 2013 to December 2021. Looking forward, such price index is more likely to remain stable or rise because of the rising market demand, increase in net income, inflation and other factors.
- The price index of fresh vegetables has been fluctuating substantially during the period from 2013 to December 2021. Virtually, the prices of fresh vegetables are affected by a lot of factors such as seasonality, weather conditions, global trade, natural disasters, cost of fertilisers and domestic demand and supply. Take seasonality as an example, due to shortage of supply, the prices of vegetables are normally higher in winter. In the following years, the price index of vegetables is likely to show an upward trend.

Source: National Bureau of Statistics of China; Frost & Sullivan

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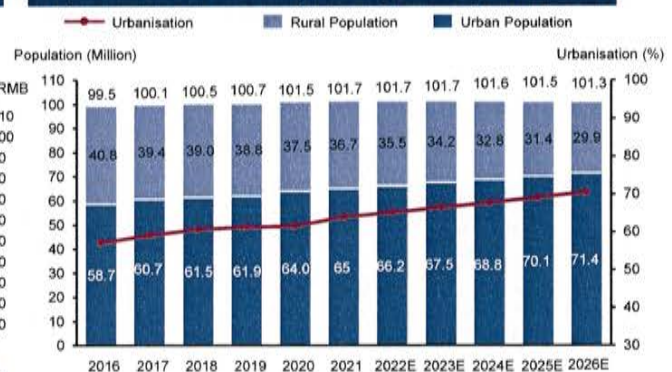
Macroeconomic Overview

Economic Overview of Shandong Province

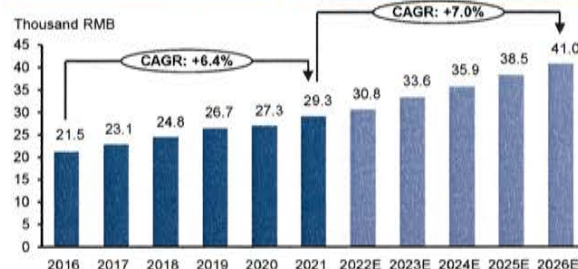
Nominal GDP and Per Capita Nominal GDP (Shandong Province), 2016 – 2026E



Population and Urbanisation (Shandong Province), 2016 – 2026E



Per Capita Annual Expenditure of Urban Households (Shandong Province), 2016 – 2026E



- Shandong province is a coastal province of the China and has the largest vegetable sown land area as well as the largest vegetable production volume in China. The macro economy of Shandong province has grown at a CAGR of 6.0% from 2016 to 2021, and reached RMB7.9 trillion in 2021. Along with the growth of the macro economy, per capita annual expenditure of urban households in Shandong province has also increased with a CAGR of 6.4% from 2016 to 2021. Meanwhile, the total population of Shandong province has increased from 99.5 million persons in 2016 to 101.7 million persons in 2021 with a CAGR of 0.4%. The urbanisation of Shandong province has reached 63.9% in 2021 from 59.0% in 2016.
- Looking forward, boost by strong agriculture development, the nominal GDP of Shandong province is expected to further increase to RMB10.3 trillion in 2026, representing a CAGR of 5.4%. The per capita nominal GDP and per capita annual expenditure of urban households are expected to reach RMB101.7 thousand and RMB41.0 thousand in 2026. Also, the population and urbanisation of Shandong province are forecast to reach 101.3 million persons and 70.5% by 2026.

Source: National Bureau of Statistics of China; Frost & Sullivan

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Macroeconomic Overview

Per Capita Consumption of Food of Urban Households in Shandong Province

Per Capita Consumption of Food of Urban Households, Segmented by Food Type, (Shandong Province), 2016-2026E



- Along with rising income level and the development of vegetable industry in Shandong province, vegetable and fruit has played an important role in residents' food consumption structure. Per capita vegetable consumption of urban households in Shandong province has increased from 106.5 kg in 2016 to 108.5 kg in 2021, representing a CAGR of 0.4%.
- With rising concern about food safety and quality, there is expected to see an increasing demand for vegetables, especially fresh vegetables in urban household's diet. Per capita vegetable consumption of urban households in Shandong province is expected to reach 115.5 kg in 2026 with a CAGR of 1.3%.

Note: (1) Per capita consumption of food refers to the consumption of major food types; (2) Vegetable includes fresh vegetable and mushroom; (3) Others include eggs, oil, milk, sugar and nut

Source: National Bureau of Statistics of China, Frost & Sullivan

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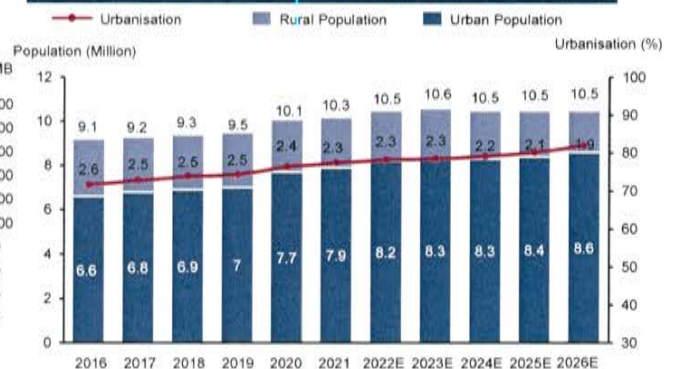
Macroeconomic Overview

Economic Overview of Qingdao

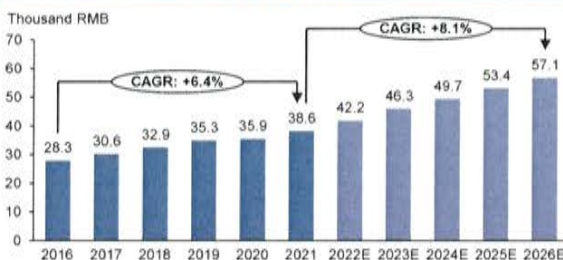
Nominal GDP and Per Capita Nominal GDP (Qingdao), 2016 – 2026E



Population and Urbanisation (Qingdao), 2016 – 2026E



Per Capita Annual Expenditure of Urban Households (Qingdao), 2016 – 2026E



- Qingdao is a major city in the east of Shandong Province and is also a major nodal city of the One Belt One Road (OBOR) Initiative. The nominal GDP of Qingdao ranked 1st in Shandong province and has grown at a CAGR of 7.7% from 2016 to 2021, reached RMB1,342.0 billion in 2021. Along with the growth of the macro economy, per capita annual expenditure of urban households in Qingdao has also increased with a CAGR of 6.4% from 2016 to 2021. Meanwhile, the total population of Qingdao has increased from 9.1 million persons in 2016 to 10.3 million persons in 2021 with a CAGR of 2.2%. The urbanisation of Qingdao has reached 77.2% in 2021 from 71.5% in 2016.
- Looking forward, along with the development of macro economy in Shandong province, the nominal GDP of Qingdao is expected to reach RMB1,888.5 billion in 2026, representing a CAGR of 7.1% from 2021. The per capita nominal GDP and per capita annual expenditure of urban households are expected to reach RMB179.9 thousand and RMB57.1 thousand in 2026. Also, the population and urbanisation of Qingdao is forecast to reach 10.5 million persons and 81.9% by 2026.

Source: National Bureau of Statistics of China, Frost & Sullivan

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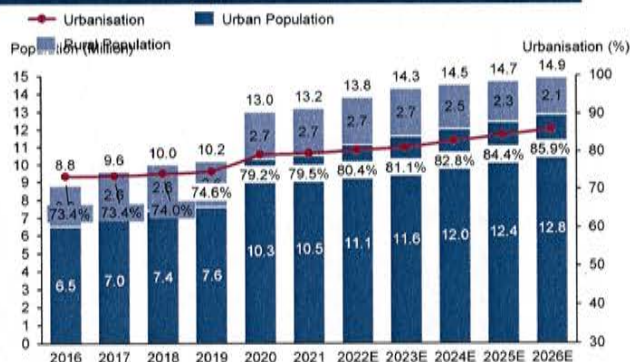
Macroeconomic Overview

Economic Overview of Xi'an

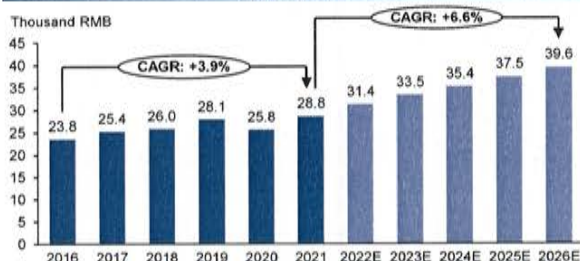
Nominal GDP and Per Capita Nominal GDP (Xi'an), 2016 – 2026E



Population and Urbanisation (Xi'an), 2016 – 2026E



Per Capita Annual Expenditure of Urban Households (Xi'an), 2016 – 2026E



- Xi'an is the capital of Shaanxi Province. Since the 1990s, as part of the economic revival of inland China especially for the central and northwest regions, Xi'an has been an important cultural, industrial and educational centre of the central-northwest region. The nominal GDP of Xi'an has grown fast at a CAGR of 10.8% reached RMB1,043.1 billion in 2021. Along with the growth of the macro from 2016 to 2021, economy, per capita annual expenditure of urban households in Xi'an has also increased with a CAGR of 2.1% from 2016 to 2021. Meanwhile, the total population of Xi'an has increased from 8.8 million persons in 2016 to 13.2 million persons in 2021 with a CAGR of 8.4%. The urbanisation of Xi'an has reached 79.5% in 2021 from 73.4% in 2016.
- Looking forward, along with the development of macro economy of the central-northwest region in China, the nominal GDP of Xi'an is expected to reach RMB1,620.1 billion in 2026, representing a CAGR of 9.2% from 2021. The per capita nominal GDP and per capita annual expenditure of urban households are expected to reach RMB108.7 thousand and RMB39.6 thousand in 2026. Also, the population and urbanisation of Xi'an are forecast to reach 14.9 million persons and 85.9% by 2026 respectively.

Source: National Bureau of Statistics of China; Frost & Sullivan

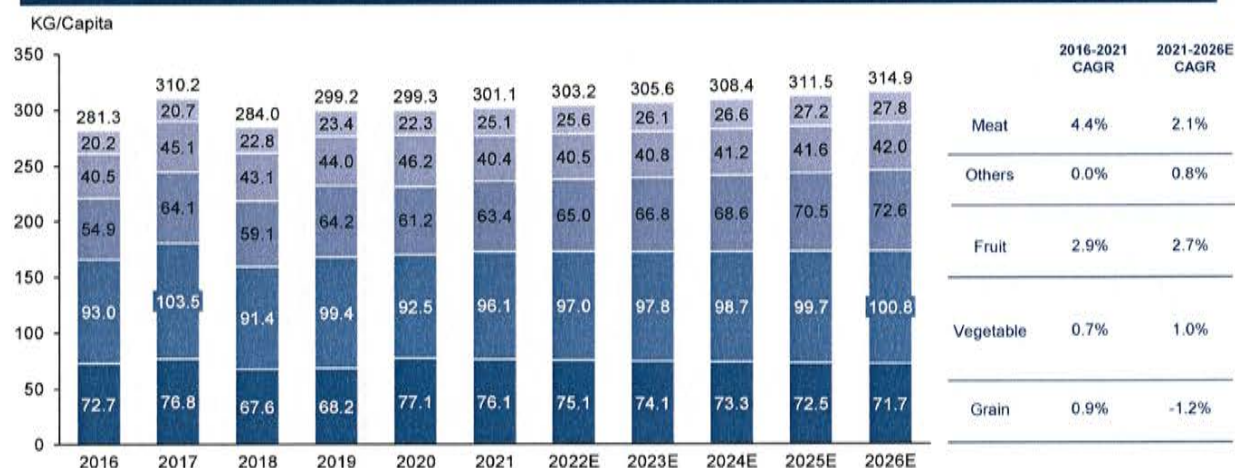
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Macroeconomic Overview

Per Capita Consumption of Food of Urban Households in Shaanxi Province

Per Capita Consumption of Food of Urban Households, Segmented by Food Type, (Shaanxi Province), 2016-2026E



- Vegetable and fruit has played a more and more important role in resident's diet in Shaanxi province. Per capita vegetable consumption of urban households in Shaanxi province has increased from 93.0 kg in 2016 to 96.1 kg in 2021, representing a CAGR of 0.7%.
- With rising concern about food safety and quality, there is expected to see an increasing demand for vegetables, especially fresh vegetables in urban household's diet. Per capita vegetable consumption of urban households in Shaanxi province is expected to reach 100.8 kg in 2026 with a CAGR of 1.0%.

Note: (1) Per capita consumption of food refers to the consumption of major food types; (2) Vegetable includes fresh vegetable and mushroom; (3) Others include eggs, oil, milk, sugar and nut

Source: National Bureau of Statistics of China; Frost & Sullivan

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China's Vegetable Market Overview (1/2)

Definitions and Characteristics

- Vegetable is necessary for human being's daily diet. The huge population of China and increasing overseas demand for Chinese vegetable produce support the growth of PRC vegetable industry.
- Vegetable production industry has developed quickly in recent years. It has grown into one of the pillar industries of agriculture and rural economy. The industry holds key importance in securing vegetable supply, increasing the income of rural residents, offering job opportunities, as well as expanding export trade.
- As the most important resource to vegetable production, the size of vegetable sown land has remained stable over the years, with a moderate growth from 19.6 million hectares in 2016 to 21.5 million hectares in 2021, representing a CAGR of 1.9%. In the future, the vegetable sown land area is forecast to stay flat. The supply of vegetable remains fragmented.
- Owing to the development of vegetable production companies in numbers and size, the improvement of vegetable production technology, the increasing adoption of greenhouse, the upgrade of agriculture infrastructure, and so on, the vegetable production volume has been increasing at a fast pace. In 2021, the vegetable production volume recorded 742.7 million tonnes, up from 674.3 million tonnes in 2016, realizing a CAGR of 2.0%. Among all the favourable factors to vegetable production, adoption of greenhouse is one of the most important factors. Greenhouse enables the vegetable producers to gain higher production yield, provide varieties of healthy and pollution free vegetables in all four seasons with fewer pests and utilize the energy more efficiently.
- Apart from greenhouse, with the technology of controlling insects being improving, the pesticide residue in vegetable has been reduced effectively. The market information of supply and demand is easier to be obtained than before, due to the advancing of information technology and internet infrastructure in China. This largely helps vegetable producers to make better production plans, in terms of what types of vegetable to produce and in what volume respectively.
- Yet the vegetable production industry still faces a number of challenges as individual farmers still play a critical role in vegetable producing. Such challenges include poor sown land planning, random planting, lower utilization rate of advanced agriculture facilities, and insufficient sales and marketing efforts. With the future development, these challenges are expected to be overcome gradually.
- Major vegetable cultivation methods are in-ground vegetable cultivation, hydroponic, in-pot cultivation, etc. In-ground vegetable cultivation refers to growing vegetable in soil and is the most common vegetable cultivation method in the PRC. Hydroponic is an alternative to in-ground vegetable cultivation which uses water-soluble nutrients to cultivate vegetables. On the other hand, in-pot cultivation refers to growing vegetables in pots filled with nutritious substrates. This method has become more popular in PRC for improving productivity and freshness of vegetable produce.



Source: Frost & Sullivan Analysis

China's Vegetable Market

Overview (2/2)

Definitions and Characteristics

- Hydroponic cultivation accounts for around 1.3% of the total vegetable produce in China. In 2021, the production volume of hydroponic cultivation is around 10 million tonnes in China.
- The characters of different types of vegetable produce and the differences among them are as follows:
- In-ground vegetable cultivation: the retail price of in-ground vegetable cultivation is relatively low. The average yield per mu of in-ground vegetable cultivation is around 2.5 thousand tonnes per year. Cultivating in ground, the quality of the vegetable produce is relatively hard to control. Farmers would use more fertilizers and pesticides in order to improve the production and appearance of the vegetable produce. Such usage of agricultural chemicals is likely to impact the land quality in a long term. Hence, the nutrition of in-ground vegetable produce is not as high as other cultivations in general.
- Hydroponic cultivation: the retail price of hydroponic cultivation is higher than in-ground vegetable produce. The average yield per mu of hydroponic cultivation is around 3.5 thousand tonnes per year. Hydroponic cultivated vegetable produces are generally cultivated in greenhouses and the production is relatively stable. However, hydroponic cultivation uses pure chemical fertilizer as nutrient solution, which may not contain all the nutrients cultivation is needed.
- In-pot cultivation: the retail price of in-pot cultivation is relatively high comparing with other methods. The average yield per mu is around 1.5 to 2.0 thousand tonnes per year. The quality of in-pot vegetable produce is high and the vegetable produce could keep its freshness as it is sold with pots.



Source: Frost & Sullivan Analysis

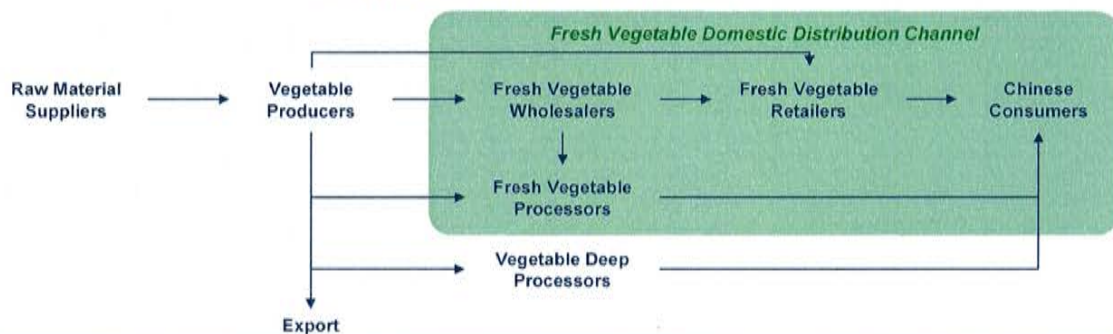
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China's Vegetable Market

Value Chain

China's Vegetable Market: Industry Value Chain



Critical Roles Analysis in the Value Chain – Raw Material Suppliers

- Essential raw material for producing vegetable includes arable land, seed, fertiliser, pesticide, greenhouse, farming tool, water, and so on.
- In China, individual vegetable farmers generally hold use right of arable land. For vegetable production companies, both individual vegetable farmers and provincial and county level governments could be arable land suppliers to vegetable production companies via leasing.
- For vegetable production companies, sufficient supply of arable land is important to the business, as arable land to a certain degree reflects the company's production capability. Large-scale vegetable production companies, which could leverage more capital than their small-scale peers as well as individual vegetable farmers, are usually able to reserve more arable land and hence easier to reach economies of scale. They also expand rapidly. As reserved arable land to a large degree stands for a company's production capacity, large-scale companies are generally in a stronger position in achieving economies of scale and supporting the company's future growth.
- Apart from arable land, in China there are professional suppliers engaged specifically in each of the above sectors. Seed, fertiliser, pesticide, greenhouse, farming tools are all important to vegetable producers. Responding to the increasing demand of healthier and diversified vegetable consumption, such as out-of-season vegetable and organic vegetable, the adoption rate of greenhouse has been climbing over the years in vegetable production.

Source: Frost & Sullivan Analysis

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China's Vegetable Market

Value Chain

Critical Roles Analysis in the Value Chain – Vegetable Producers

- Vegetable producers in China are consisted of vegetable production companies and individual vegetable farmers. Compare with individual farmers, vegetable production companies generally are more knowledgeable and powerful in terms of raw material sourcing. With a better designed business plan, they execute production according to the market demand. Due to economies of scale, better production management, agriculture expertise training to the employees and in some cases a well-known brand, vegetable production companies usually generate higher productivity than individual farmers.
- Compare with vegetable production companies, individual vegetable farmers could choose to lease their arable land to the companies, or cultivate the land by their own. If they choose to lease their land, they may also be employed by the companies they leased to and receive both the rent and the wage. For each individual vegetable farmer, due to the limitation of capital available, it is difficult of them to achieve economies of scale. Without clear execution plan, sufficient market information, up-to-date agriculture expertise, and economies of scale, individual vegetable farmers in most cases generate lower productivity and are highly subject to business risks such as unpredictable weather condition and changing market demand. Although the population of individual farmers was still large in 2018, vegetable production companies were quickly developing in terms of both number and size.

Critical Roles Analysis in the Value Chain – Fresh Vegetable Wholesalers and Retailers

- After harvesting, fresh vegetable reaches domestic consumers through two types of channels. One channel is through fresh vegetable wholesalers and the other is fresh vegetable processors.
- Fresh vegetable wholesale is the most important channel for distributing fresh vegetable in China. As most vegetable production bases are located in rural area, which are distant away from urban areas, wholesalers are critical in conducting storage and logistics of fresh vegetable. Generally, wholesalers distribute fresh vegetables to fresh vegetable retailers such as supermarkets, food stores, traders in open markets, and so on. Large-scale retailers such as large supermarkets may source fresh vegetable directly from vegetable producers. Fresh vegetable processors may also source fresh vegetable from wholesalers.

Critical Roles Analysis in the Value Chain – Fresh Vegetable Processors and Vegetable Deep Processors

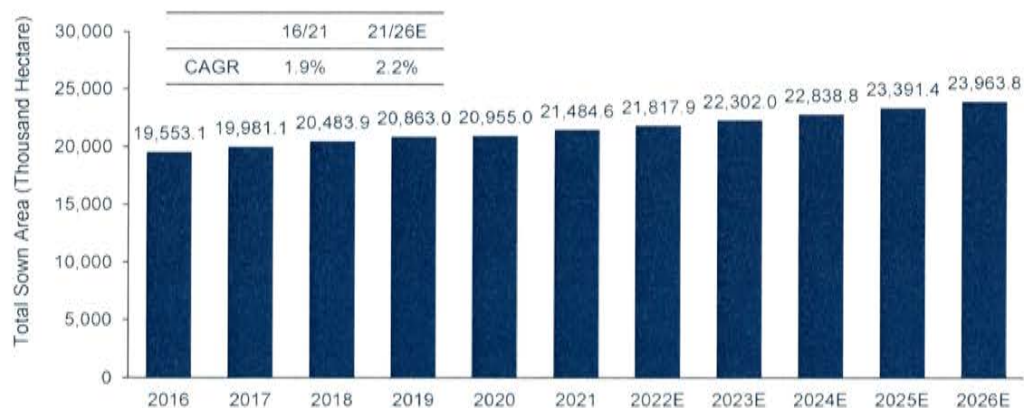
- Fresh vegetable processors** refers to organizations that use fresh vegetable as raw material in their business, such as restaurants, convenient stores, hotels, schools, etc. Most of them are large-scale institutional buyers who purchase and process large quantity of fresh vegetable on a daily basis. In most cases, they make fresh vegetable into meals, and deliver to consumers.
- Vegetable deep processors** refer to companies that produce vegetable juice, vegetable flavouring, vegetable nourishment, and so on. Fresh vegetable is essential raw material to these companies.

Source: Frost & Sullivan Analysis

China's Vegetable Market

Sown Area

Total Sown Area of Vegetables (China), 2016 – 2026E

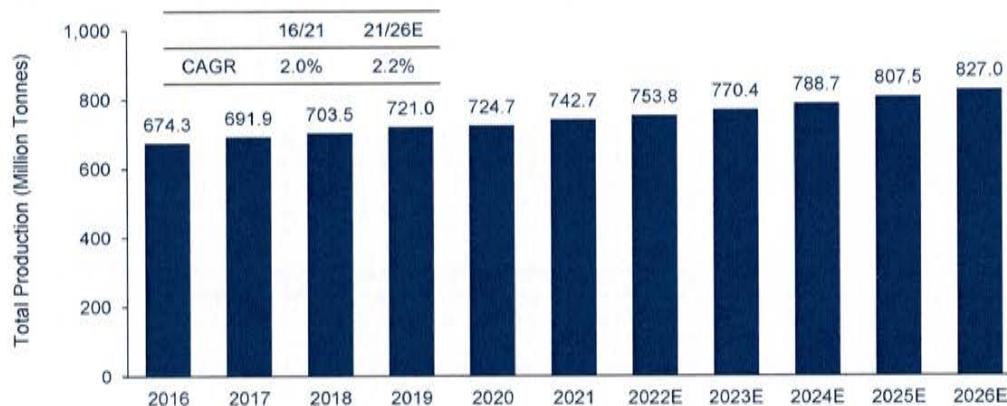


- The total sown area of vegetables increased from approximately 19,553.1 thousand hectares in 2016 to 21,484.6 thousand hectares in 2021.
- Going forward, the total sown area of vegetables is likely to keep growing in line with the increasing demand, which is mainly driven by the growing population and macroeconomy. The total sown area of vegetables is likely to grow to 23,963.8 thousand hectares in 2026.
- In 2021, the greenhouse area of vegetables in China was 1,821.3 thousand hectares.

Source: National Bureau of Statistics of China; Frost & Sullivan

China's Vegetable Market Production

Total Production of Vegetables (China), 2016 – 2026E



- The vegetable market in China experienced a moderate growth during the past years. The total production of vegetables in China increased from 674.3 million tonnes in 2016 to 742.7 million tonnes in 2021.
- In line with the growing economy and also the favorable policies, the production of vegetables is likely to keep growing at a CAGR of approximately 2.2%, reaching 827.0 million tonnes in 2026.

Source: National Bureau of Statistics of China; Frost & Sullivan

China's Vegetable Market Production of Pollution-free Vegetables

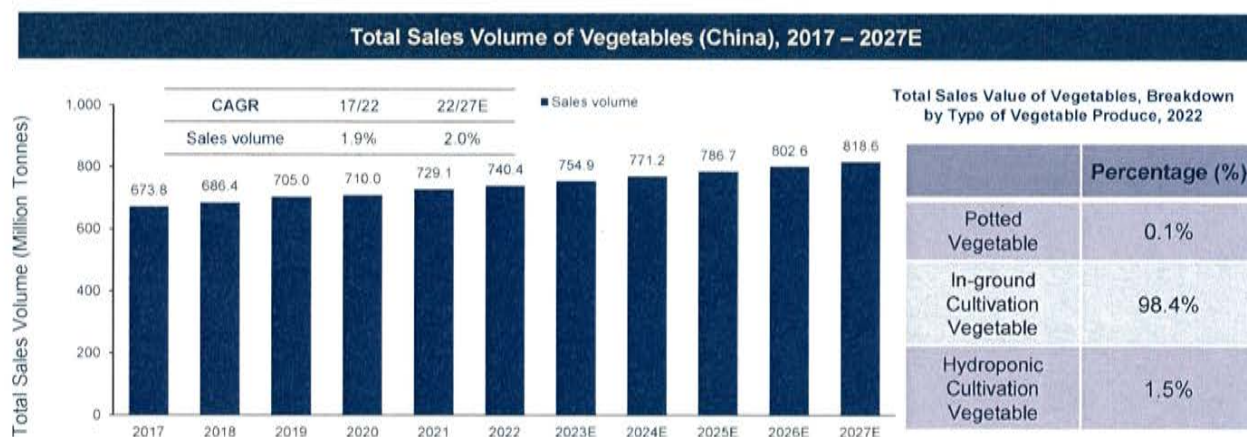
Total Production of Pollution-free Vegetables (China), 2016 – 2026E



- The production of pollution-free vegetables grew from 70.2 million tonnes in 2016 to 93.6 million tonnes in 2021, representing a CAGR of approximately 5.9%. In 2021, the total production of pollution-free vegetables accounted for approximately 12.6% of the total production of vegetables in China.
- Going forward, the production of pollution-free vegetables is likely to grow at a CAGR of approximately 5.8%, reaching 123.8 million tonnes in 2026.

Source: National Bureau of Statistics of China; Frost & Sullivan

China's Vegetable Market Sales Volume



- The total sales volume of vegetables grew from 673.8 million tonnes in 2017 to 740.4 million tonnes in 2022, representing a CAGR of approximately 1.9% between 2017 and 2022. The market has experienced relatively moderate growth which is generally in line with the population growth in China. Total sales volume is expected to increase steadily to 818.6 million tonnes in 2027 with a CAGR of approximately 2.0% from 2022 to 2027. Meanwhile, Shandong is the largest vegetable producing province in China in 2022.
- In 2022, the sales volume of potted vegetable produce accounted for approximately 0.02% of total sales volume of vegetable in China. Potted vegetable produce can be seen as a replaceable product for traditional vegetable and has great market growth potential.
- Total sales volume grows at a faster pace than the production due to the lower wastage rate.

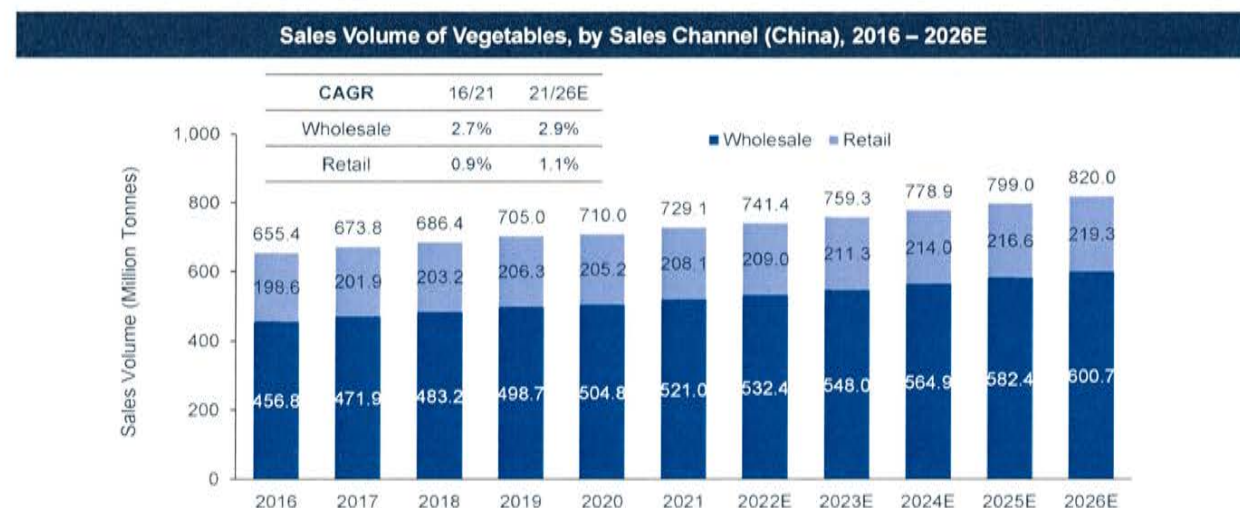
Note: the weight of potted vegetable produce is estimated to be 0.75 KG per pot

Source: Frost & Sullivan

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China's Vegetable Market Sales Volume Breakdown



- Wholesale is the major sales channel in the vegetable market in China due to the huge catering service industry. In 2021, total sales volume of vegetables through wholesale channel witnessed a total volume of 521.0 million tonnes, accounting for approximately 71.5% of the total sales volume.
- Retail sales increased at a stable growth rate and is likely to keep the stable trend, reaching 219.3 million tonnes in 2026.
- Online channel is still under developed in the vegetable market. However, along with the fast developing online platforms, the channel is likely to grow rapidly in the future.

Source: Frost & Sullivan

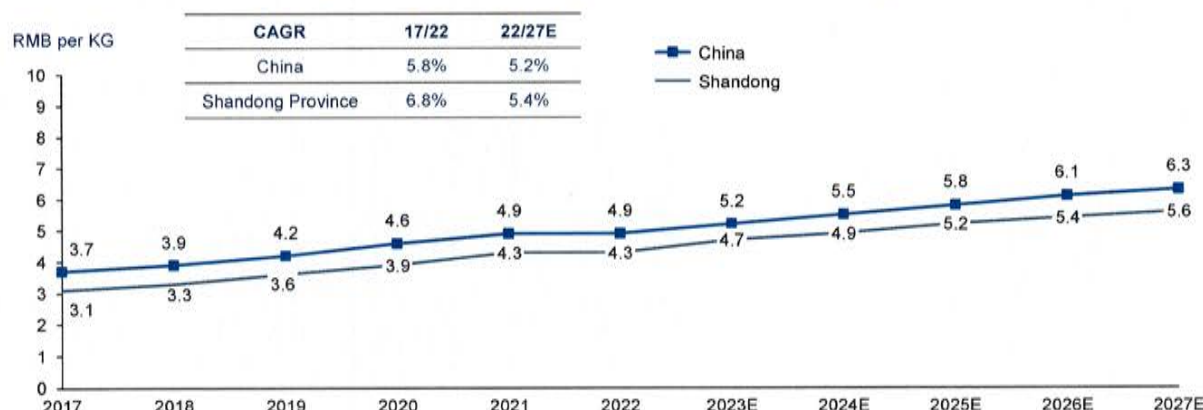
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F R O S T & S U L L I V A N

China's Vegetable Market

China's Vegetable Price

Average Wholesale Price of Vegetables, China and Shandong, 2017-2027E



- The average wholesale price of vegetables is the average wholesale price of 28 types of vegetables in China and in Shandong province. The average wholesale price of vegetables in China has increased from RMB3.7 per KG in 2017 to RMB4.9 per KG in 2022, while the average wholesale price of vegetables in Shandong province has increased from RMB3.1 per KG in 2017 to RMB4.3 per KG in 2022. The average wholesale price of vegetables is affected by a lot of factors such as seasonality, weather conditions, global trade, natural disasters, cost of fertilisers and domestic demand and supply.
- In the forecast period, the average wholesale price of vegetables in China and in Shandong province is estimated to keep growing with a CAGR of approximately 5.2% and 5.4% from 2022 to 2027.

Source: National Bureau of Statistics, MOA, Frost & Sullivan

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Shandong Province's Vegetable Market

Sown Area

Total Sown Area of Vegetables (Shandong Province), 2016 – 2026E



- Shandong province is one of the most important production bases of vegetables in China. The vegetable industry in Shandong province is relatively developed. The total sown area of vegetables stays at a stable level of approximately 1,450 thousand hectares in Shandong province in recent years.
- In 2021, the total area of greenhouse in Shandong province was around 347.6 thousand hectares.

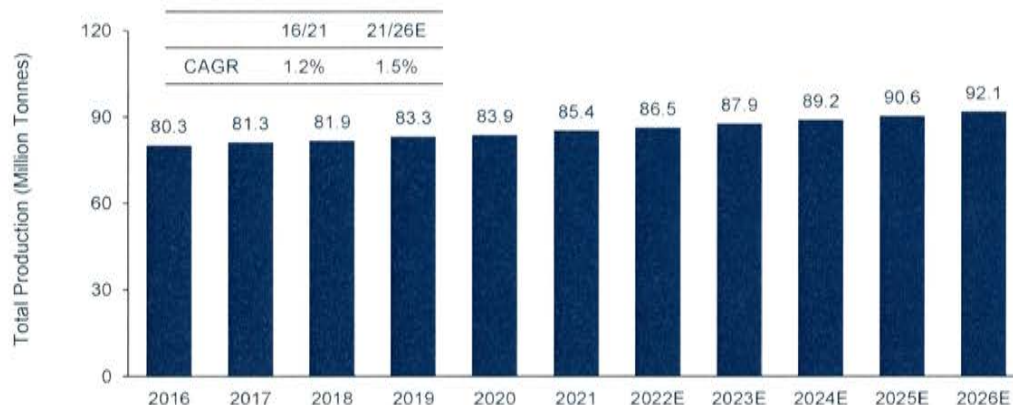
Source: National Bureau of Statistics of China; Frost & Sullivan

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Shandong Province's Vegetable Market Production

Total Production of Vegetables (Shandong Province), 2016 – 2026E

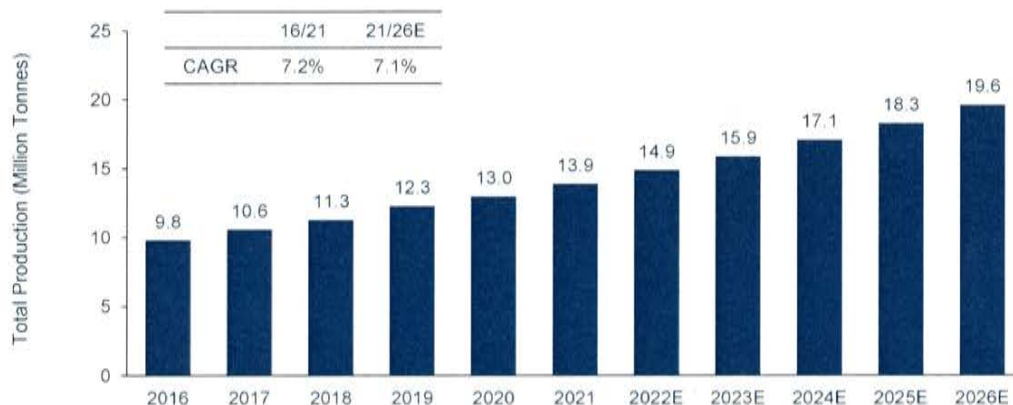


- Though the total sown area of vegetables stayed at a relatively stable level, the production increased in past several years due to the growing unit area yield. The production increased from 80.3 million tonnes in 2016 to 85.4 million tonnes in 2021 at a CAGR of approximately 1.2%.
- The total production in Shandong province is likely to increase at a CAGR of approximately 1.5% from 2021 to 2026 due to the developing technology.

Source: National Bureau of Statistics of China; Frost & Sullivan

Shandong Province's Vegetable Market Production of Pollution-free Vegetables

Total Production of Pollution-free Vegetables (Shandong Province), 2016 – 2026E



- As one of the major vegetable production bases in China, the development of pollution-free vegetables market in Shandong Province is relatively higher than the average of overall China. In 2021, the production of pollution-free vegetables accounted for approximately 16.3% of the total vegetable production.
- The production of pollution-free vegetables in Shandong is forecast to keep the growing trend from 13.9 million tonnes in 2021 to 19.6 million tonnes in 2026 with a CAGR of approximately 7.1% during the period.

Source: National Bureau of Statistics of China; Frost & Sullivan

Shandong Province's Vegetable Market

Sales Volume of Pollution-free Vegetables

Total Sales Volume of Pollution-free Vegetables (Shandong Province), 2016 – 2026E



Source: National Bureau of Statistics of China; Frost & Sullivan

Shandong Province's Vegetable Market

Sales Volume

Total Sales Volume of Vegetables (Shandong Province), 2017 – 2027E

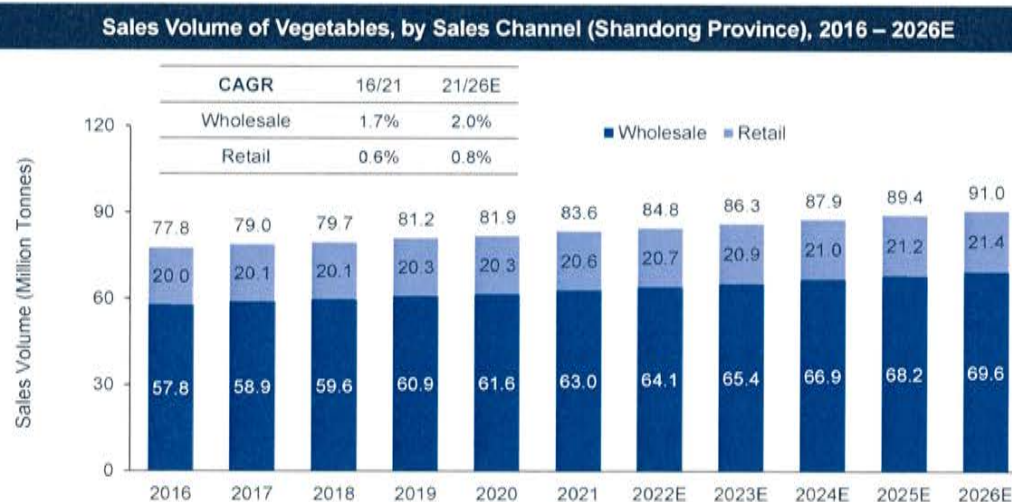


- The total sales volume of vegetables in Shandong province increased from 79.0 million tonnes in 2017 to 85.0 million tonnes in 2022, representing a CAGR of approximately 1.5%. The number is likely to grow at a CAGR of approximately 1.5% from 2022 to 2027, reaching 91.5 million tonnes in 2027.

Source: Frost & Sullivan

Shandong Province's Vegetable Market

Sales Volume Breakdown



- Since China's first wholesale market of vegetable established in Shouguang, Shandong province, the wholesale market in Shandong province started to develop. The wholesale volume of vegetables increased from 57.8 million tonnes in 2016 to 63.0 million tonnes in 2021, accounting for approximately 75.4% of the total market.

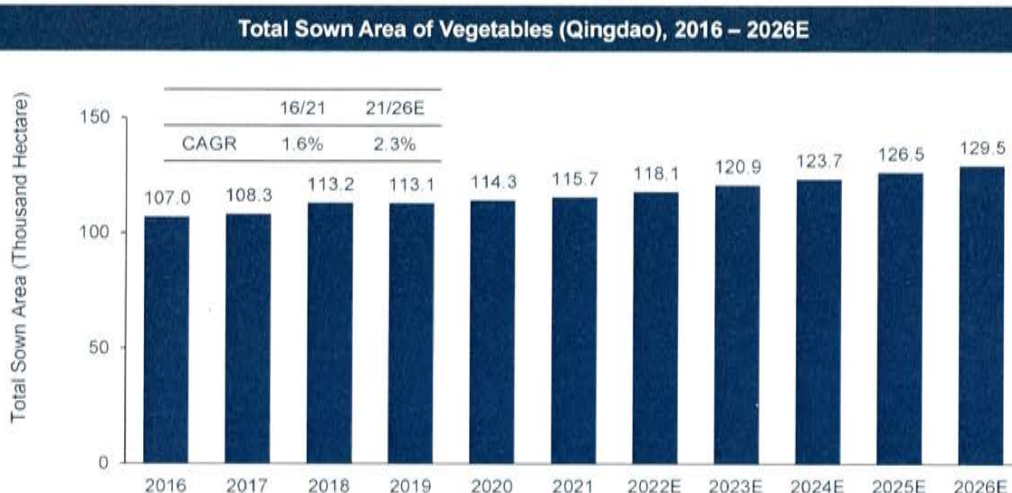
Source: Frost & Sullivan

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Qingdao's Vegetable Market

Sown Area



- The total sown area of vegetables increased from 107.0 thousand hectares in 2016 to 115.7 thousand hectares in 2021 in Qingdao. The sown area in Qingdao is likely to continue growing due to the support of the government. The total sown area in Qingdao is likely to grow at a CAGR of approximately 2.3% from 2021 to 2026, reaching 129.5 thousand hectares in 2026.

Source: National Bureau of Statistics of China, Frost & Sullivan

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Qingdao's Vegetable Market

Greenhouse Area

Total Greenhouse Area of Vegetables (Qingdao), 2016 – 2026E



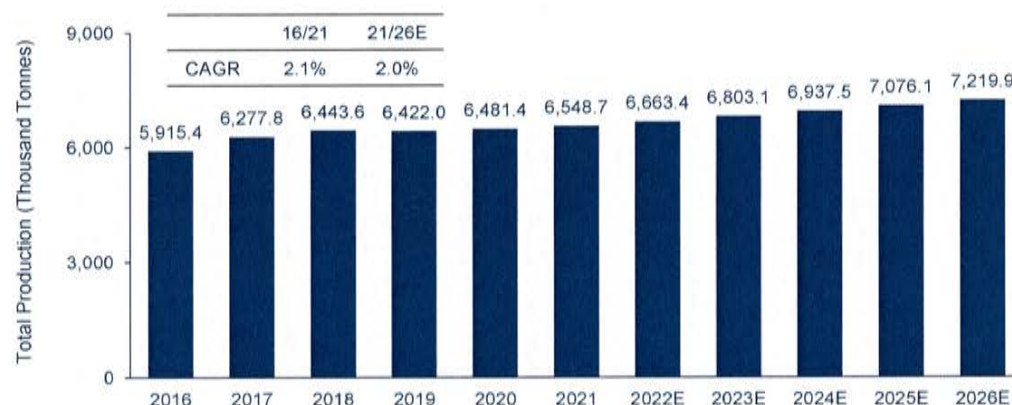
- Greenhouse has the advantages in vegetable production in terms of higher production yield, consistent product quality, production of out-of-season vegetable, flexible timing of sowing and harvesting, fewer pesticide residuals, higher energy utilization, and thus enhance profitability. The greenhouse area in Qingdao has increased from 25.3 thousand hectare in 2016 to 43.7 thousand hectare in 2021, representing a CAGR of 11.6%.
- Along with increasing adoption of greenhouse in Qingdao, the greenhouse area is expected to increase to 61.0 thousand hectare in 2026 with a CAGR of 6.9%.

Source: National Bureau of Statistics of China; Frost & Sullivan

Qingdao's Vegetable Market

Production

Total Production of Vegetables (Qingdao), 2016 – 2026E



- The production of vegetables in Qingdao grew from 5,915.4 thousand tonnes in 2016 to 6,548.7 thousand tonnes in 2021, representing a CAGR of approximately 2.1%. The production is likely to grow at a CAGR of approximately 2.0% from 2021 to 2026, reaching 7,219.9 thousand tonnes in 2026.

Source: National Bureau of Statistics of China; Frost & Sullivan

Qingdao's Vegetable Market

Production of Pollution-free Vegetables

Total Production of Pollution-free Vegetables (Qingdao), 2016 – 2026E



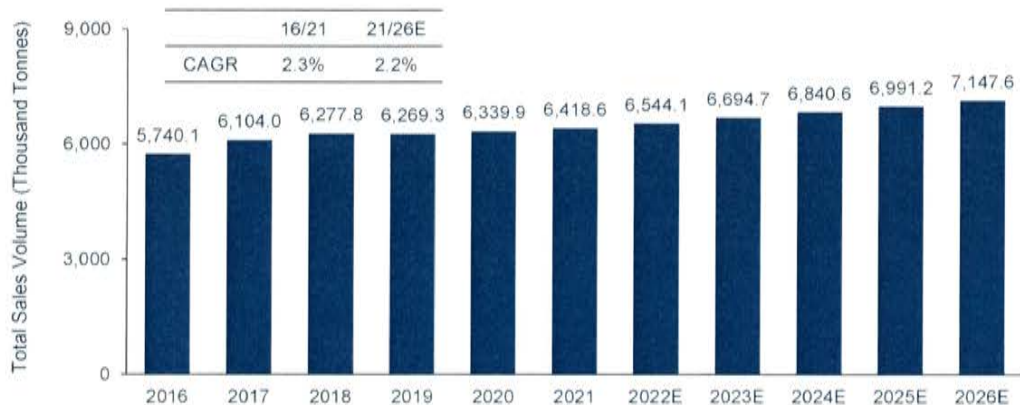
- The production of pollution-free vegetables increased from 627.6 thousand tonnes in 2016 to 990.1 thousand tonnes in 2021 with a CAGR of approximately 9.5%. The production is likely to grow at a CAGR of approximately 10.5% from 2021 to 2026, reaching 1,634.5 thousand tonnes in 2026.

Source: National Bureau of Statistics of China; Frost & Sullivan

Qingdao's Vegetable Market

Sales Volume

Total Sales Volume of Vegetables (Qingdao), 2016 – 2026E

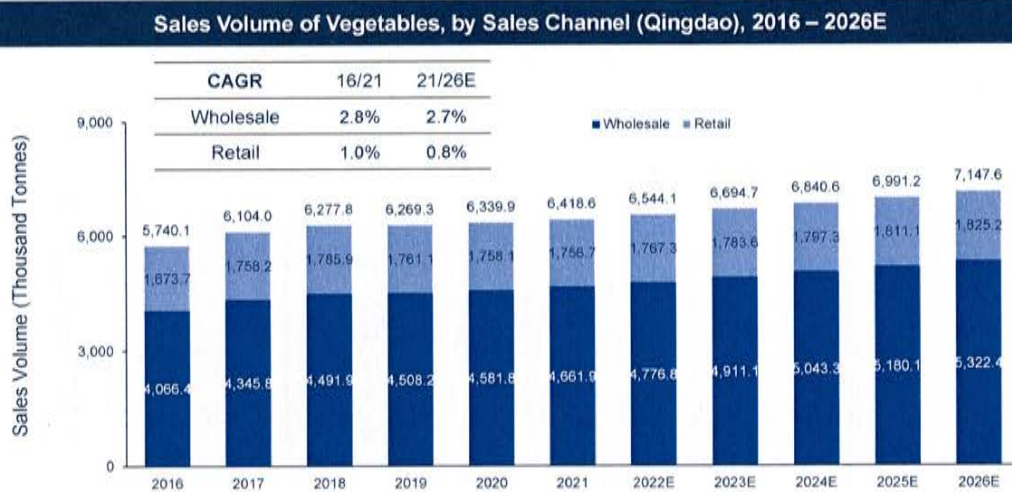


- The total sales volume of vegetables in Qingdao increased from 5,740.1 thousand tonnes in 2016 to 6,418.6 thousand tonnes in 2021, representing a CAGR of approximately 2.3%. The number is likely to grow at a CAGR of approximately 2.2% from 2021 to 2026, reaching 7,147.6 thousand tonnes in 2026.

Source: Frost & Sullivan

Qingdao's Vegetable Market

Sales Volume Breakdown

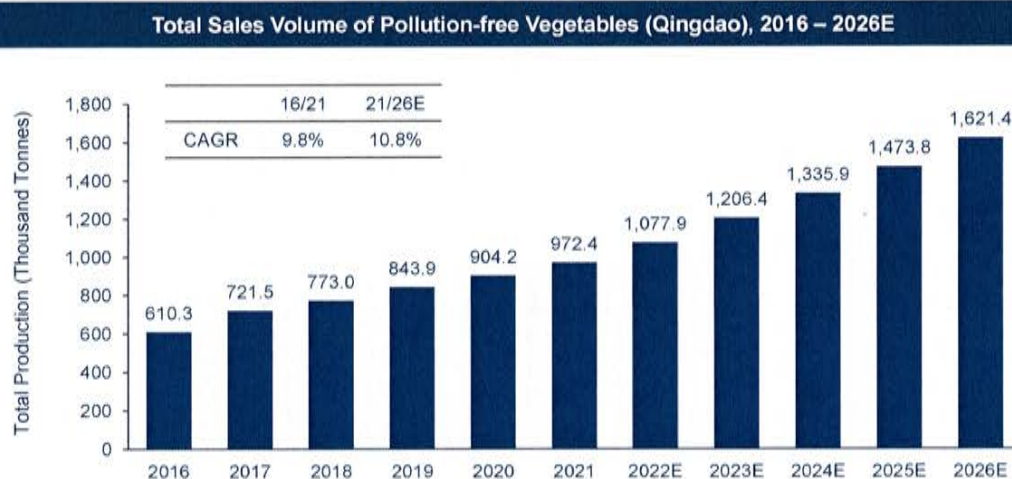


- The wholesale volume of vegetables increased from 4,066.4 thousand tonnes in 2016 to 4,661.9 thousand tonnes in 2021, accounting for approximately 72.6% of the total market. The retail volume of vegetables increased from 1,673.7 thousand tonnes in 2016 to 1,756.7 thousand tonnes in 2021 at a CAGR of approximately 1.0%.
- Wholesalers dominates the market of vegetables in Qingdao. The wholesalers are mainly individuals.

Source: Frost & Sullivan

Qingdao's Vegetable Market

Sales Volume of Pollution-free Vegetables

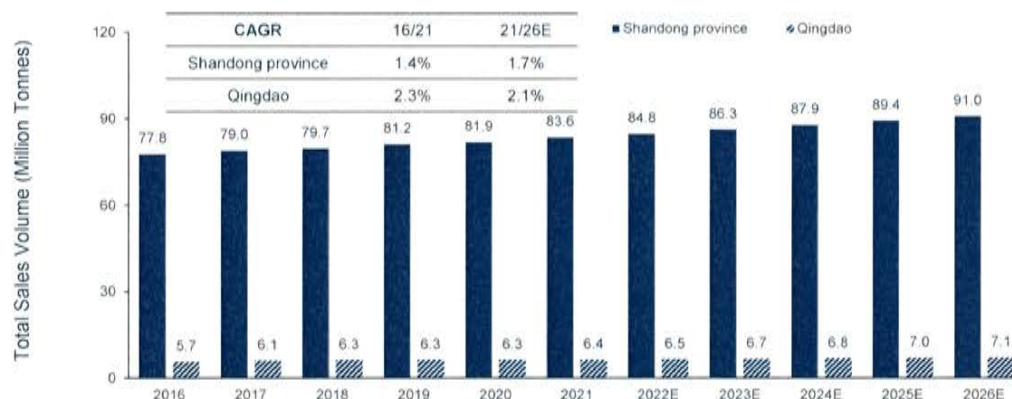


- Total sales volume of pollution-free vegetables increased from 610.3 thousand tonnes in 2016 to 972.4 thousand tonnes in 2021 with a CAGR of approximately 9.8%. The production is likely to grow at a CAGR of approximately 10.8% from 2021 to 2026, reaching 1,621.4 thousand tonnes in 2026.

Source: National Bureau of Statistics of China; Frost & Sullivan

Shandong Province and Qingdao's Vegetable Market Sales Volume

Total Sales Volume of Vegetables (Shandong Province & Qingdao), 2016 – 2026E



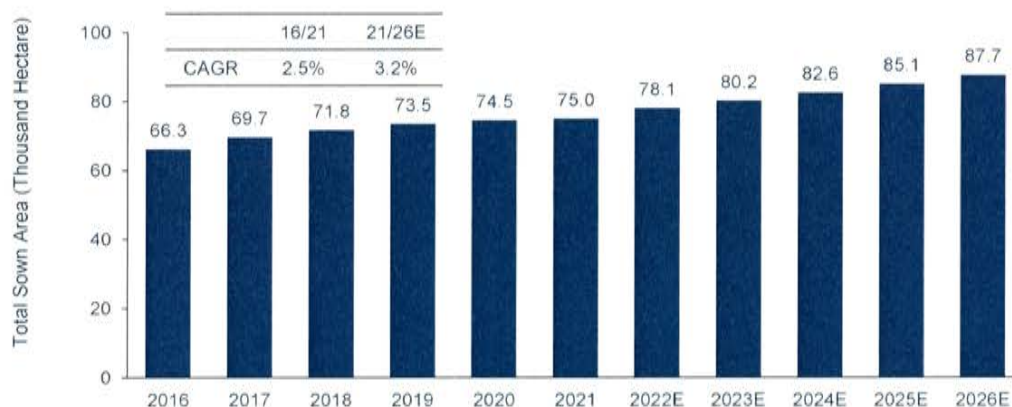
Source: Frost & Sullivan

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Xi'an's Vegetable Market Sown Area

Total Sown Area of Vegetables (Xi'an), 2016 – 2026E



- The total sown area of vegetables increased from 66.3 thousand hectares in 2016 to 75.0 thousand hectares in 2021 in Xi'an with a CAGR of approximately 2.5%. The total sown area in Xi'an is likely to grow at a CAGR of approximately 3.2% from 2021 to 2026, reaching 87.7 thousand hectares in 2026.
- In 2021, there were approximately 17.2 thousand hectares of greenhouse area in Xi'an.

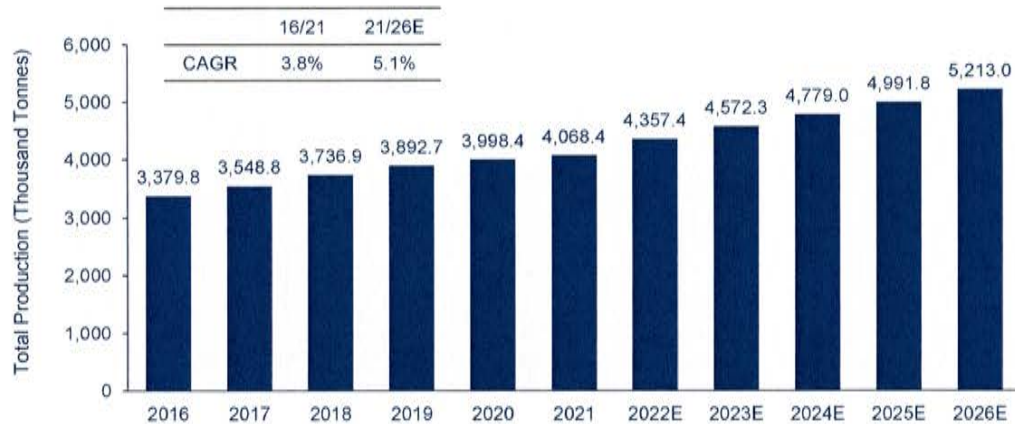
Source: National Bureau of Statistics of China; Frost & Sullivan

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Xi'an's Vegetable Market Production

Total Production of Vegetables (Xi'an), 2016 – 2026E



- The production of vegetables in Xi'an grew from 3,379.8 thousand tonnes in 2016 to 4,068.4 thousand tonnes in 2021, representing a CAGR of approximately 3.8%. The production is likely to keep the growing trend and reach 5,213.0 thousand tonnes in 2026.

Source: National Bureau of Statistics of China; Frost & Sullivan

Xi'an's Vegetable Market Production of Pollution-free Vegetables

Total Production of Pollution-free Vegetables (Xi'an), 2016 – 2026E



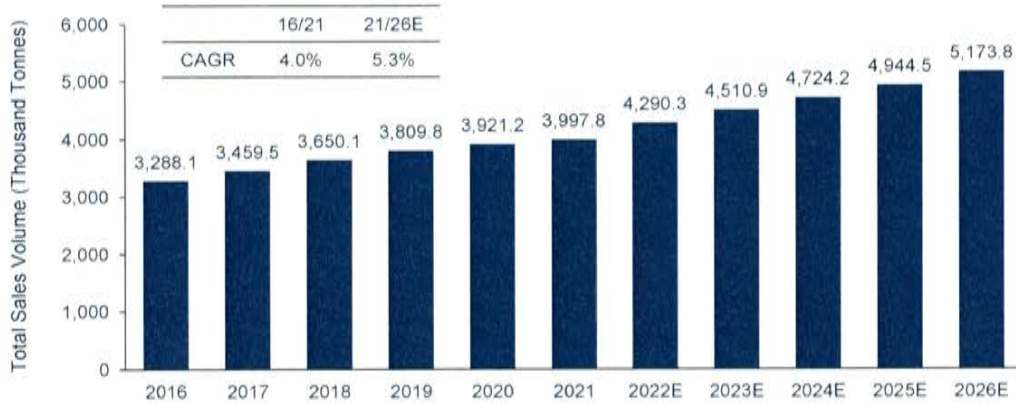
- The production of pollution-free vegetables in Xi'an increased at a CAGR of approximately 6.7% from 254.2 thousand tonnes in 2016 to 352.2 thousand tonnes in 2021. The production of pollution-free vegetables accounted for approximately 8.7% of the total vegetable production in 2021.

Source: National Bureau of Statistics of China; Frost & Sullivan

Xi'an's Vegetable Market

Sales Volume

Total Sales Volume of Vegetables (Xi'an), 2016 – 2026E



- The total sales volume of vegetables in Xi'an increased from 3,288.1 thousand tonnes in 2016 to 3,997.8 thousand tonnes in 2021, representing a CAGR of approximately 4.0%. The number is likely to grow at a CAGR of approximately 5.3% from 2021 to 2026, reaching 5,173.8 thousand tonnes in 2026.

Source: Frost & Sullivan

Xi'an's Vegetable Market

Sales Volume Breakdown

Sales Volume of Vegetables, by Sales Channel (Xi'an), 2016 – 2026E



- The wholesale volume of vegetables increased from 2,280.1 thousand tonnes in 2016 to 2,842.2 thousand tonnes in 2021, accounting for approximately 71.1% of the total market. The retail volume of vegetables increased from 1,008.0 thousand tonnes in 2016 to 1,155.6 thousand tonnes in 2021 at a CAGR of approximately 2.8%.

Source: Frost & Sullivan

Dalian's Vegetable Market

Sown Area

Total Sown Area of Vegetables (Dalian), 2016 – 2026E



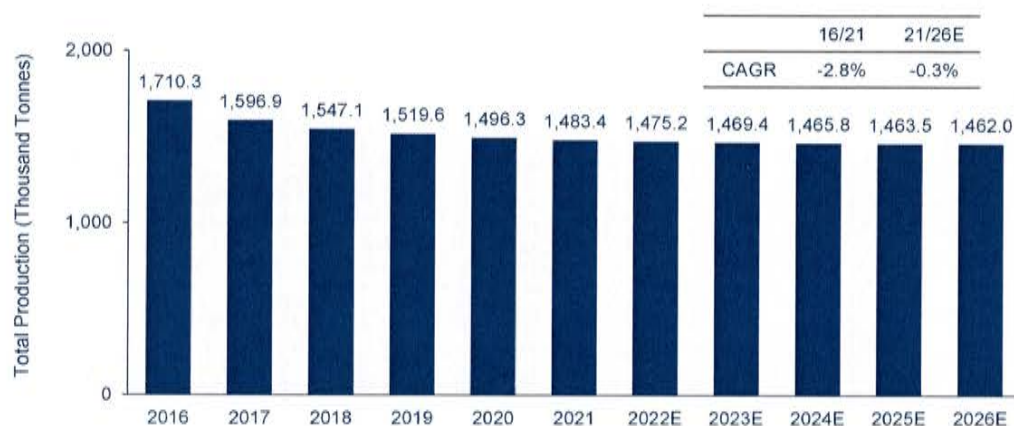
- The total sown area of vegetables decreased from 39.2 thousand hectares in 2016 to 29.4 thousand hectares in 2021 in Dalian with a CAGR of approximately -5.6%. The total sown area in Dalian is likely to slightly decrease at a CAGR of approximately -0.1% from 2021 to 2026 due to urbanisation.

Source: National Bureau of Statistics of China; Frost & Sullivan

Dalian's Vegetable Market

Production

Total Production of Vegetables (Dalian), 2016 – 2026E



- The production of vegetables in Dalian dropped from 1,710.3 thousand tonnes in 2016 to 1,483.4 thousand tonnes in 2021, representing a CAGR of approximately -2.8%. The production is likely to keep the decreasing trend and reach 1,462.0 thousand tonnes in 2026.

Source: National Bureau of Statistics of China; Frost & Sullivan

Dalian's Vegetable Market

Production of Pollution-free Vegetables

Total Production of Pollution-free Vegetables (Dalian), 2016 – 2026E



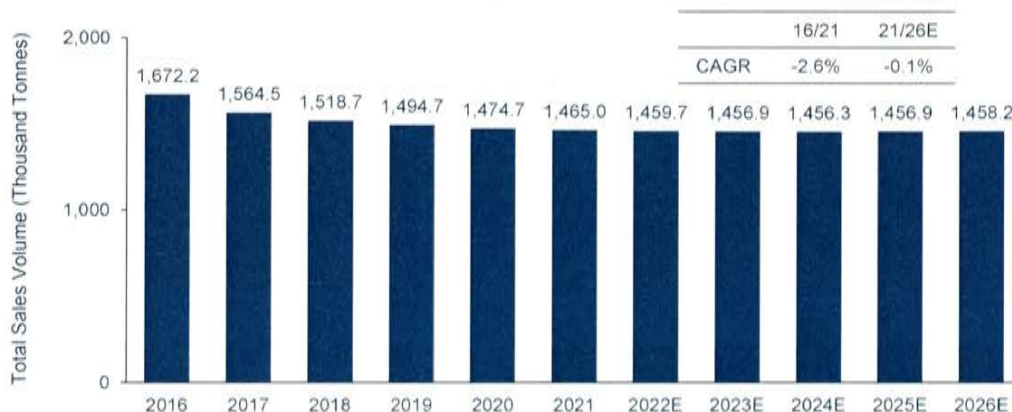
- Though the total production of vegetables keeps decreasing in Dalian, the production of pollution-free vegetables slightly increased from 308.7 thousand tonnes in 2016 to 346.3 thousand tonnes in 2021 at a CAGR of approximately 2.3%. The production of pollution-free vegetables is expected to mildly grow to 376.8 thousand tonnes in 2026.

Source: National Bureau of Statistics of China; Frost & Sullivan

Dalian's Vegetable Market

Sales Volume

Total Sales Volume of Vegetables (Dalian), 2016 – 2026E



- The total sales volume of vegetables in Dalian decreased from 1,672.2 thousand tonnes in 2016 to 1,465.0 thousand tonnes in 2021, representing a CAGR of approximately -2.6%. The number is likely to drop at a CAGR of approximately -0.1% from 2021 to 2026.

Source: Frost & Sullivan

Dalian's Vegetable Market

Sales Volume Breakdown

Sales Volume of Vegetables, by Sales Channel (Dalian), 2016 – 2026E



- The wholesale volume of vegetables decreased from 1,156.2 thousand tonnes in 2016 to 1,038.6 thousand tonnes in 2021, accounting for approximately 70.9% of the total market. The retail volume of vegetables decreased from 516.0 thousand tonnes in 2016 to 426.4 thousand tonnes in 2021 at a CAGR of approximately -2.7%.

Source: Frost & Sullivan

Vegetable Market

Production of Pollution-free Vegetables

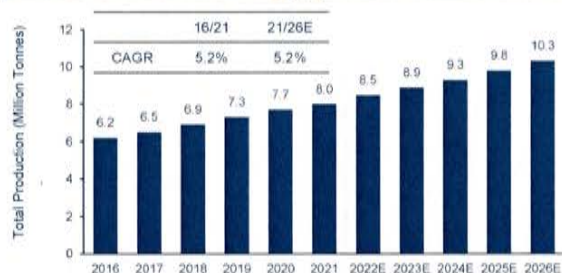
Total Production of Pollution-free Vegetables (Beijing), 2016 – 2026E



Total Production of Pollution-free Vegetables (Hebei), 2016 – 2026E



Total Production of Pollution-free Vegetables (Jiangsu), 2016 – 2026E



Source: National Bureau of Statistics of China; Frost & Sullivan

Vegetable Market

Sales of Pollution-free Vegetables

Total Sales of Pollution-free Vegetables (Xi'an), 2016 – 2026E



Total Sales of Pollution-free Vegetables (Dalian), 2016 – 2026E



Source: National Bureau of Statistics of China; Frost & Sullivan

Vegetable Market

Sales of Pollution-free Vegetables

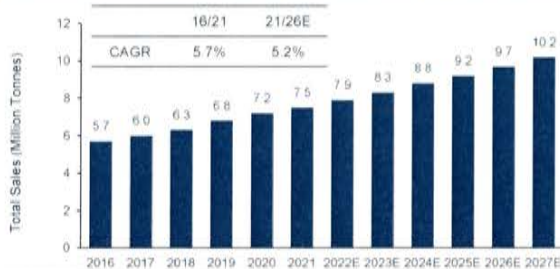
Total Sales of Pollution-free Vegetables (Beijing), 2016 – 2026E



Total Sales of Pollution-free Vegetables (Hebei), 2016 – 2026E



Total Sales of Pollution-free Vegetables (Jiangsu), 2016 – 2026E



Source: National Bureau of Statistics of China; Frost & Sullivan

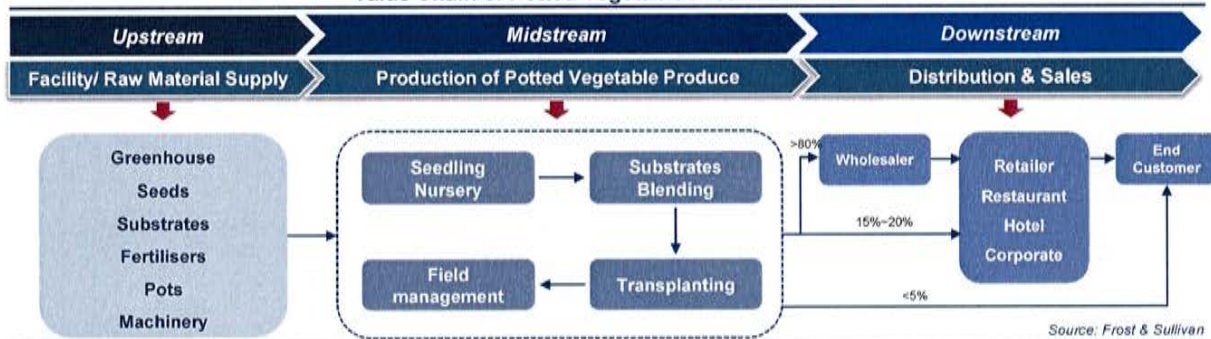
China's Potted Vegetable Produce Market

Definition and Value Chain



- Potted vegetable produce refer to vegetables that are cultivated in pots instead of being cultivated on the ground and it is a newly-developed produce method of vegetable in China. Major species of potted vegetable produce are leafy vegetables and solanaceous vegetables, including spinach, lettuce, water spinach, Chinese chives and tomatoes. More and more restaurants display the fresh potted vegetable to arouse consumers' interest and for consumers to choose and order from around 2010s. Along with a rising awareness in personal wellness and concerns about food safety, potted vegetable produce is becoming increasingly popular among urban residents and restaurants as a direct access to quality and fresh vegetables.
- Essential facilities and raw materials for producing potted vegetable produce include, among others, greenhouses, seeds, substrates, fertilisers, pots and machinery. Cultivating potted vegetable produce in a greenhouse allows for growth in optimal climatic conditions as if ideal cultivation seasons were extended, allowing a year-round fresh supply of potted vegetable produce. Seedling nursery, substrates blending, transplanting and field management are four key steps of production of potted vegetable produce. Potted vegetable producers with long operating history, scientific expertise and knowledgeable employees are more likely to achieve higher production rates. After maturation, fresh potted vegetable produce reach domestic consumers through wholesalers and retailers or through direct sales. With the development of communication technology, customers are able to place orders for potted vegetable produce online via personal computers, tablets, or mobile phones.
- Compared with regular vegetables, potted vegetable produce have gradually been popular in China for the following reasons: (i) Generally planted in greenhouse, potted vegetable produce have relatively short production cycle and can year-round supplies, bringing producers high productivity; (ii) Vegetables may lose moisture and nutrients after been harvested and delivered to the market. But customers can easily enjoy fresh-picked vegetables with potted vegetable produce; (iii) As potted vegetable produce are produced with natural and organic substrates and fertilisers, eating potted vegetable produce can reduce the risk of eating vegetables that contain harmful chemicals.

Value Chain of Potted Vegetable Produce Market



Source: Frost & Sullivan

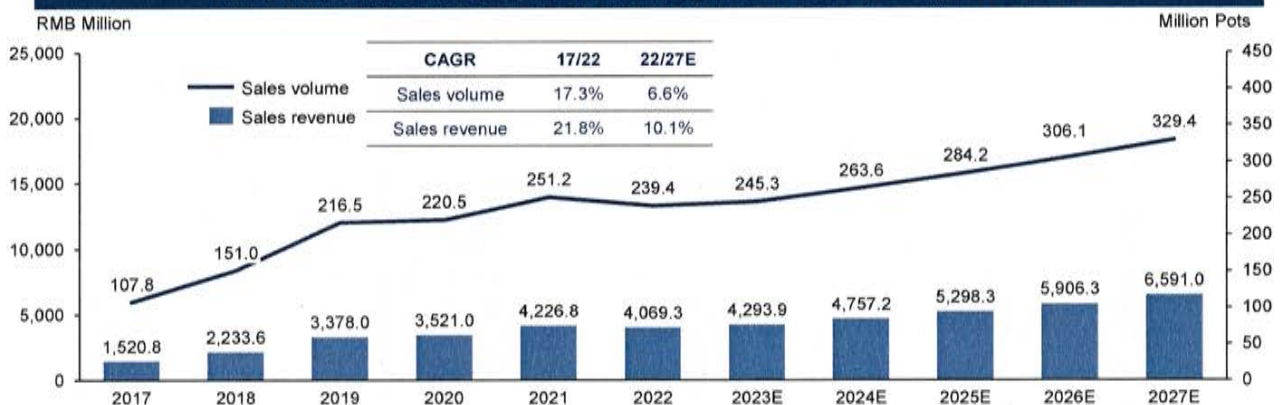
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China's Potted Vegetable Produce Market

Market Size (1/5)

Sales Volume and Sales Revenue of Potted Vegetable Produce (China), 2017 – 2027E



- In line with the increasing rate of vegetable consumption of residents in China due to the increasing per capita income, total sales volume of potted vegetable produce increased from 107.8 million pots in 2017 to 239.4 million pots in 2022, representing a CAGR of approximately 17.3%. Meanwhile, the sales revenue of potted vegetable produce increased from RMB1,520.8 million in 2017 to RMB4,069.3 million in 2022 with a CAGR of approximately 21.8%. In 2022, affected by the resurgence of COVID-19 epidemic in many cities like Shanghai, Shenzhen, Chengdu, and Qingdao, the supply and sales of potted vegetable were interrupted more heavily compared to that in 2021. As a result, total sales volume and sales revenue of potted vegetable produce in 2022 is lower than in 2021.
- It is widely recognised across the potted vegetable produce industry that each pot of vegetable produce shall contain approximately net weight of 0.7 KG to 1.0 KG of vegetable. In 2022, in terms of sales volume measured by net weight of vegetable, total sales volume of potted vegetable produce accounted for less than 0.1% of total sales volume of vegetable produce in China.
- Going forward, as potted vegetable produce is increasingly popular in China, the market is expected to keep an upward trend. In addition, assuming that the operation of restaurants are to be back to normal since 2023 if the restriction measures of COVID-19 are gradually alleviated, the demand for potted vegetables is expected to be back to the rising channel. Total sales volume of potted vegetable produce is likely to reach 329.4 million pots in 2027 with a CAGR of approximately 6.6%. The sales revenue is also expected to grow to RMB6,591.0 million in 2027, representing a CAGR of approximately 10.1%.
- The outbreak of COVID-19 in late 2019 has impacted the catering market in the first four months in 2020. However, as the spread of COVID-19 alleviated in China, restaurants resumed and the economy resumed gradually. By mid-April 2020, the lockdown in most parts of China came to an end. By 15 May 2020, over 20 provinces in China had adjusted the Public Health Emergency Response to the first level. The decline of catering market in China had slowed down since March 2020. In October, the total revenue of catering market in China witnessed a slight increase compared to last year. Due to the outbreak of COVID-19, people are increasingly concerned about the safety and quality of food, which may drive the demand for vegetable produce and potted vegetable produce among the residents of China. On December 7, 2022, the WHO announced the "Ten New Guidelines", which followed "The 20 Measures" released on November 11, 2022 to accelerate the economic recovery and resume normal operations of the society. The relaxation of rules, which include allowing infected people with mild or no symptoms to quarantine at home and stopping testing for people traveling within the country, is a strong sign on promoting economic recovery since the outbreak of COVID-19 in 2020. According to the "Ten New Guidelines", low-risk areas are not allowed to control movement or suspend any services, work, or production. Local economy has gradually returned to normal operation. Hence, the negative impact on potted vegetable produce market in China has been gradually diminishing.
- It is an industry practice for vegetable and potted vegetable producers to sell their products through wholesalers and distributors in China. By taking advantage of distributors' local market knowledge, resources and established distribution and sales channels, vegetable and potted vegetable producers are able to avoid the significant capital investment that would otherwise be required to establish a sizeable distribution and sales network. For instance, in February, Qingdao Administration for Market Regulation issued COVID-19 Prevention and Control Measures on Food Safety of Catering Services (青市监字〔2022〕1118号), which suggested residents to reduce the on-site dining in restaurants. In February, Dalian Command Center for COVID-19 Control and Prevention issued Notice of Shanghaiing the Control on Citywide Catering Services during the Period of Prevention and Control of the COVID-19 Outbreak (大新市疫防办字〔2022〕第001号), which required restaurants stop providing on-site dining services. Due to the subsequent outbreak of COVID-19 epidemic in Dalian between December 2020 and January 2021, the Dalian government had implemented some lockdown measures between the middle of December 2020 and the middle of January 2021. In 2022, there were several resurgence of COVID-19 epidemic in many cities like Shanghai, Shenzhen, Chengdu, Qingdao, where lockdown measures are taken to prevent the spread of the epidemic. In 2022, there were several resurgence of COVID-19 epidemic in many cities like Shanghai, Shenzhen, Chengdu, Qingdao, where lockdown measures are taken to prevent the spread of the epidemic.

Note: Total sales volume and sales revenue refer to total sales volume and sales revenue that are generated from the sales of potted vegetable produce

Source: Frost & Sullivan

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China's Potted Vegetable Produce Market

Market Size (4/4)

Wholesale and Retail Prices of Potted Vegetable Produce (China), 2017 – 2027E



- Due to the increasing consumption of potted vegetable produce in China, the wholesale price of potted vegetable produce in China increased from RMB14.1 per pot in 2017 to RMB17.0 per pot in 2022 with a CAGR of 3.8%. The wholesale price of potted vegetable produce is expected to increase to RMB20.0 per pot by 2027, representing a CAGR of 3.3% from 2022 to 2027. In 2022, the market price that distributors sold to hotel and restaurants was around RMB20 per pot.
- Similarly, the retail price of potted vegetable produce in China increased from RMB20.7 per pot in 2017 to RMB24.5 per pot in 2022 with a CAGR of 3.4%. In the foreseeable future, the retail price of potted vegetable produce is expected to increase to RMB28.4 per pot in 2027, representing a CAGR of 3.0% from 2022 to 2027.

Source: Frost & Sullivan

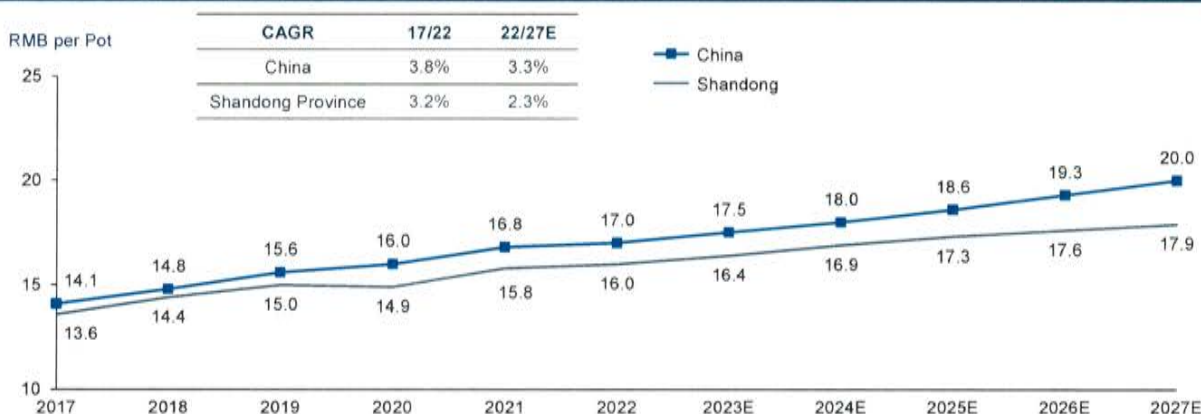
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China's Potted Vegetable Produce Market

Market Size (4/4)

Wholesale Prices of Potted Vegetable Produce, China and Shandong Province, 2017 – 2027E



- Due to the increasing consumption of potted vegetable produce in China, the wholesale price of potted vegetable produce in China increased from RMB14.1 per pot in 2017 to RMB 17.0 per pot in 2022 with a CAGR of 3.8%. The wholesale price of potted vegetable produce is expected to increase to RMB20.0 per pot by 2027, representing a CAGR of 3.3% from 2022 to 2027. In 2022, the market price that distributors sold to hotel and restaurants was around RMB20 per pot.
- Meanwhile, the wholesale price of potted vegetable produce in Shandong increased from RMB13.6 per pot in 2017 to RMB 16.0 per pot in 2022 with a CAGR of 3.2%. The wholesale price of potted vegetable produce is expected to increase to RMB17.9 per pot by 2027, representing a CAGR of 2.3% from 2022 to 2027. In 2022, the market price that distributors sold to hotel and restaurants was around RMB20 per pot in Shandong.

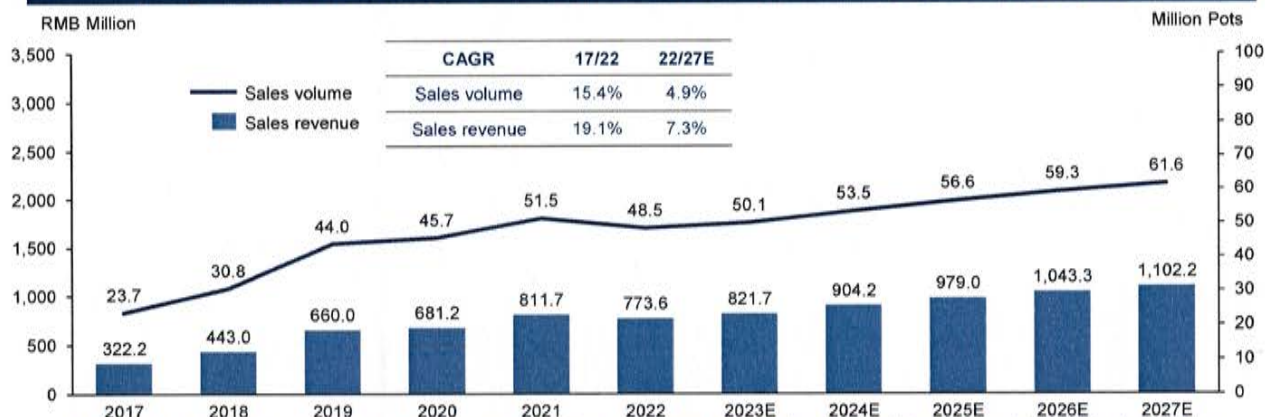
Source: Frost & Sullivan

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F R O S T & S U L L I V A N

Shandong Province's Potted Vegetable Produce Market Market Size (1/5)

Sales Volume and Sales Revenue of Potted Vegetable Produce (Shandong Province), 2017 – 2027E



- As one of the major vegetable producing provinces in China, Shandong province has a long history of vegetable cultivation and has large greenhouse areas, providing a development basis for potted vegetable produce. With increasing disposable income and rising population in Shandong province, the total sales volume of potted vegetable produce in Shandong province increased from 23.7 million pots in 2017 to 48.5 million pots in 2022, representing a CAGR of approximately 15.4%. Meanwhile, the sales revenue of potted vegetable produce increased from RMB322.2 million to RMB773.6 million during the same period with a CAGR of approximately 19.1%. In 2022, the Shandong province contributed approximately 20.3% and 19.0% in terms of total sales volume and the total sales revenue of potted vegetable produce of the PRC, respectively.
- Looking forward, the market size is likely to maintain a growing trend with a CAGR of approximately 7.3%, reaching RMB1,102.2 million in 2027. Meanwhile, the total sales volume of potted vegetable produce is expected to reach 61.6 million pots in 2027, representing a CAGR of approximately 4.9% from 2022 to 2027.

Note: The total sales volume and sales revenue refer to the total sales volume and sales revenue that are generated from the purchase of potted vegetable produce. Source: Frost & Sullivan

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Shandong Province's Potted Vegetable Produce Market Market Size (4/5)

Wholesale Price and Retail Price of Potted Vegetable Produce (Shandong Province), 2017 – 2027E



- The wholesale price of potted vegetable produce in Shandong has increased from RMB13.6 per pot in 2017 to RMB16.0 per pot in 2022 with a CAGR of 3.2%. Meanwhile, the retail price of potted vegetable produce in Shandong has increased from RMB22.4 per pot in 2017 to RMB24.5 per pot in 2022 with a CAGR of 1.8%.
- In the foreseeable future, the wholesale price of potted vegetable produce is expected to increase to RMB17.9 per pot in 2027, representing a CAGR of 2.0% from 2022 to 2027, while the retail price of potted vegetable produce in Shandong is expected to reach RMB27.1 per pot in 2027 with a CAGR of 2.3%.

Source: Frost & Sullivan

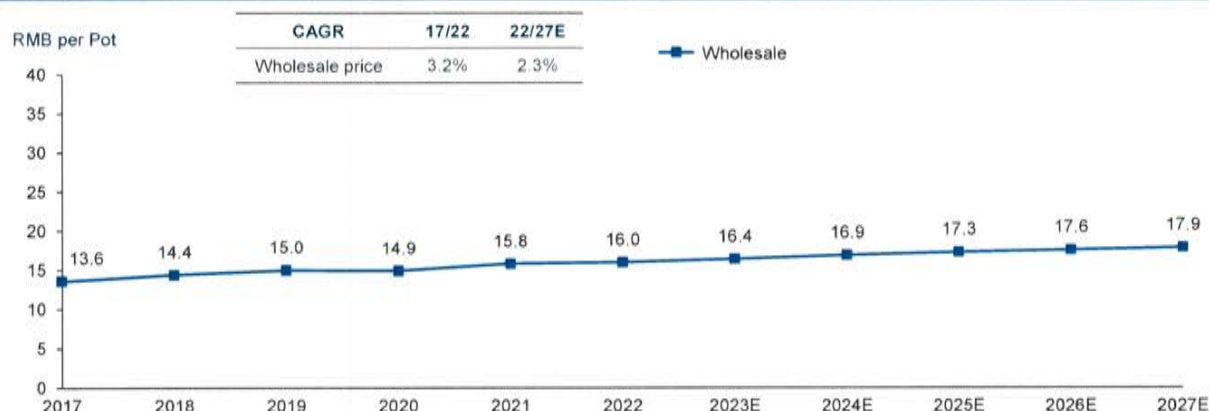
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Shandong Province's Potted Vegetable Produce Market

Market Size (5/5)

Wholesale Prices of Potted Vegetable Produce (Shandong), 2017 – 2027E



- Due to the increasing consumption of potted vegetable produce in Shandong, the wholesale price of potted vegetable produce in Shandong increased from RMB13.6 per pot in 2017 to RMB 16.0 per pot in 2022 with a CAGR of 3.2%. The wholesale price of potted vegetable produce is expected to increase to RMB17.9 per pot by 2027, representing a CAGR of 2.3% from 2022 to 2027. In 2022, the market price that distributors sold to hotel and restaurants was around RMB20 per pot in Shandong.

Source: Frost & Sullivan

China's Potted Vegetable Produce Market

Market Sizes

Sales Revenue of Potted Vegetable Produce (Qingdao, Yantai, Weifang, Xi'an, Dalian and Langfang), 2017 – 2027E, in RMB Millions

City	Province	2017	2018	2019	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	CAGR(%) 17/22	CAGR(%) 22/27E
Qingdao	Shandong	54.2	76	115.5	121	146.3	144.5	152.0	166.8	182.0	197.2	212.4	21.7%	8.0%
Yantai	Shandong	19.1	26	37	37.5	43.9	40.9	42.8	46.6	49.9	52.7	55.1	16.4%	6.1%
Weifang	Shandong	34.7	51.1	79.4	82.5	98.5	89.7	94.7	103.7	111.6	118.0	123.4	20.9%	6.6%
Xi'an	Shaanxi	19.7	27	42	43.4	54.5	53.7	58.1	64.5	70.5	75.8	80.7	22.2%	8.5%
Dalian	Liaoning	47.1	59.2	87.4	91.1	113.1	112.5	119.0	130.9	141.4	149.3	155.0	19.0%	6.6%
Beijing	Beijing	33.7	41.6	54.1	56.3	72.8	73.8	77.2	84.6	92.6	102.2	111.8	17.0%	8.7%
Hebei	Hebei	164.3	226.9	329.8	343.9	440.2	452	470.5	514.6	561.8	620.1	685.1	22.4%	8.7%
Jiangsu	Jiangsu	230.1	320	475.2	500	635.5	636.8	689.4	782.4	885.9	997.5	1,124.3	22.6%	12.0%
Jinan	Shandong	56.9	74.8	99.5	102	116	116.8	120.4	130.6	141.0	150.9	159.7	15.5%	6.5%
Tianjin	Tianjin	12.7	17.5	26.1	26.4	34.7	35.4	37.9	42.8	48.7	54.2	60.5	22.8%	11.3%
Langfang	Hebei	24.5	33.3	48.7	50.1	64.5	66.2	70.5	77.3	86.2	96.0	106.1	22.0%	9.9%

The sales revenue of potted vegetable produce in Beijing has increased from RMB33.7 million in 2017 to RMB73.8 million in 2022. There were approximately 50 potted vegetable producers in Beijing in 2022. In 2022, there were approximately 6 thousand chained restaurants in Beijing. With potential demand from restaurants on potted vegetable produce, the sales revenue of potted vegetable produce in Beijing is expected to increase to RMB111.8 million with a CAGR of 8.7% from 2022 to 2027. Langfang locates near Beijing and Tianjing, and is one of the fastest growing economies in Hebei province, the sales revenue of potted vegetable produce in Langfang increased from RMB24.5 million in 2017 to RMB66.2 million in 2022. There were approximately 30-50 potted vegetable producers in Langfang in 2022. In 2022, there were approximately 500 to 800 chained restaurants in Langfang. With potential demand from restaurants on potted vegetable produce, the sales revenue of potted vegetable produce in Langfang is expected to increase to RMB106.1 million with a CAGR of 9.9% from 2022 to 2027.

Source: National Bureau of Statistics of China; Frost & Sullivan

China's Potted Vegetable Produce Market

Wholesale Price of Beijing and Langfang

Wholesale Price of Potted Vegetable Produce (Beijing and Langfang), 2017 – 2027E



- The wholesale price of potted vegetable produce in Beijing has increased from RMB15.9 per pot in 2017 to RMB20.1 per pot in 2022 with a CAGR of 4.9%. Meanwhile, the wholesale price of potted vegetable produce in Langfang has increased from RMB13.6 per pot in 2017 to RMB15.0 per pot in 2022 with a CAGR of 2.1%.
- In the foreseeable future, the wholesale price of potted vegetable produce in Beijing is expected to increase to RMB23.6 per pot in 2027, representing a CAGR of 3.3% from 2022 to 2027, while the wholesale price of potted vegetable produce in Langfang is expected to reach RMB17.8 per pot in 2027 with a CAGR of 3.5%.

Source: Frost & Sullivan

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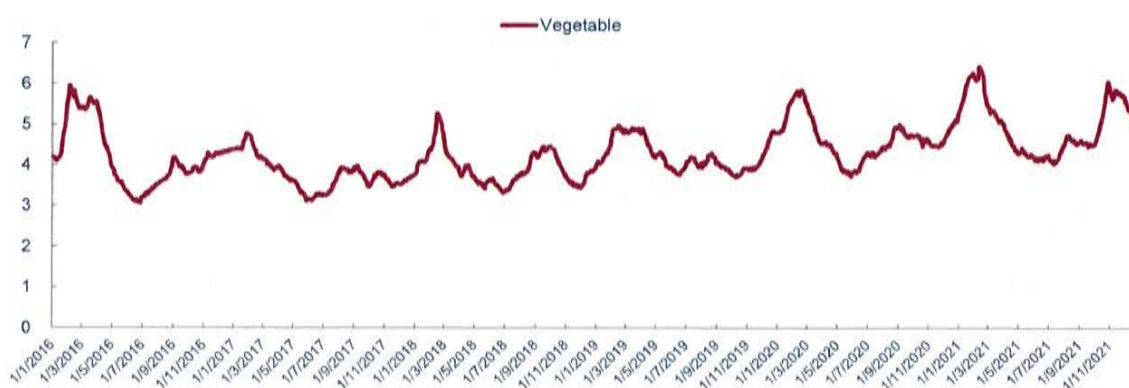
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China's Vegetable and Potted Vegetable Produce Market

China's Consumer Price Index of Vegetable

RMB/KG

Average Wholesale Price of Vegetables (China), January 2016- December 2021



- The average wholesale price of vegetables is the average wholesale price of 28 types of vegetables in China. It has been fluctuating substantially during the period from Jan 2016 to December 2021. The average wholesale price of vegetables is affected by a lot of factors such as seasonality, weather conditions, global trade, natural disasters, cost of fertilisers and domestic demand and supply. Take seasonality as an example, due to shortage of supply, the prices of vegetables are normally higher in winter. In the forecast period, the average wholesale price of vegetables is estimated to keep growing.

Source: National Bureau of Statistics, MOA, Frost & Sullivan

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China's Vegetable and Potted Vegetable Produce Market

Market Drivers (1/2)

Major Drivers

- 1 Rising Urbanisation and Income Level
- 2 Increasing Frequency of Dining Out
- 3 Concerns about Food Safety



MARKET DRIVERS

Major Driver	Description
Rising Urbanisation and Income Level	<ul style="list-style-type: none"> In line with the steady growth of macro-economy, the income level of Chinese residents has significantly improved in recent years. The per capita annual nominal GDP in Shandong province has increased from RMB63.9 thousand in 2017 to RMB 86.0 thousand in 2022, with a CAGR of 6.1%. Meanwhile, the urbanization rate in Shandong province has increased from 60.6% in 2017 to 64.5% in 2022. Along with rising urbanisation and income level, an increasing number of people have begun to emphasise on personal wellness and are looking for measures to stay healthy. Cultivating potted vegetable produce in pots filled with organic substrate allows potted vegetable produce reduces the likelihood of contamination from pollutants and harmful chemicals compared to vegetable produce grown in open fields. Thus, potted vegetable produce generally has advantages in safety, freshness and nutritional value. As people are more able to afford high-quality food and given that a daily intake of a variety of vegetables is linked to a decreased risk of chronic diseases including diabetes, heart disease, and cancer, Chinese residents have increased their consumption of potted vegetable produce as a cost-effective product for access to quality and fresh vegetables in the city, thus leading to a growth in demand for potted vegetable produce in China.
Increasing Frequency of Dining Out	<ul style="list-style-type: none"> The per capita disposable income in China has been rocketing up along with the rapid growth of China's economy, which has promoted consumption upgrading. With an upward trend of consumption upgrading in China and in Shandong province, consumers are more willing to dine out and spend more when dining at restaurants for better food quality. In order to meet consumers' higher standards and more diversified tastes for food, a higher quality and wider variety of vegetables are needed in restaurants for cooked dishes, salads and decorations, etc. Hence, potted vegetable produce is highly preferred by restaurants for their freshness, quality and safety. Therefore, the increasing frequency of dining out in China rockets the demand for potted vegetable produce from restaurants.
Growing Ageing Population	<ul style="list-style-type: none"> The ageing population in China has become a concerning social problem. China has already entered an ageing society as the percentage of population aged over 65-years-old has maintained an increasing trend. In Shandong province, the percentage of population aged over 65-years-old has increased from 14.0% in 2017 to 16.1% in 2022. Since the elderly populations have higher preference for fresh and healthy food like vegetables, they are expected to be the main consumption group of vegetables and potted vegetable produce in China. The growing aging population is estimated to drive the future growth of China's vegetable and potted vegetable produce markets.

Source: Frost & Sullivan

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China's Vegetable and Potted Vegetable Produce Market

Market Drivers (2/2)

Major Drivers

- 4 Growing Ageing Population
- 5 Expanding Online Distribution Channels



MARKET DRIVERS

Major Driver	Description
Expanding Online Distribution Channels	<ul style="list-style-type: none"> In recent years, online distribution channels have become more popular with customers due to lower prices and the variety of choices. Leading vegetable and potted vegetable producers have already expanded their distribution channels from traditional wholesalers and retailers to online platforms, such as Taobao and WeChat, etc. As growing numbers of households, especially those youngsters, are ordering products through online distribution channels, this trend is likely to boost the growth of China's vegetable produce and potted vegetable produce markets.
Concerns about Food Safety	<ul style="list-style-type: none"> In view of the rapid growth of China's economy, Chinese residents are pursuing higher living standards, thus paying more attention to food quality. Meanwhile, factors such as environmental and food safety issues have detrimentally influenced the Chinese population's wellbeing, resulting in the sub-optimal health status of many residents. With the desire for higher living standards and improvements of the suboptimal health status, people in China and in Shandong province have begun paying more attention to personal health problems and consuming healthier food. In the meantime, the government also shows a growing concern about the personal health problems of residents. For instance, Health China Operation (2019-2030) ("健康中国行动 (2019-2030年)") has been announced in 2019. According to the Operation, China's residents are encouraged to take in vegetables and fruits per day no less than 500g and are recommended to have vegetables at every meal. Therefore, potted vegetable produce has gradually become more welcomed by people in China and China's potted vegetable produce industry is expected to benefit from this trend.

Source: Frost & Sullivan

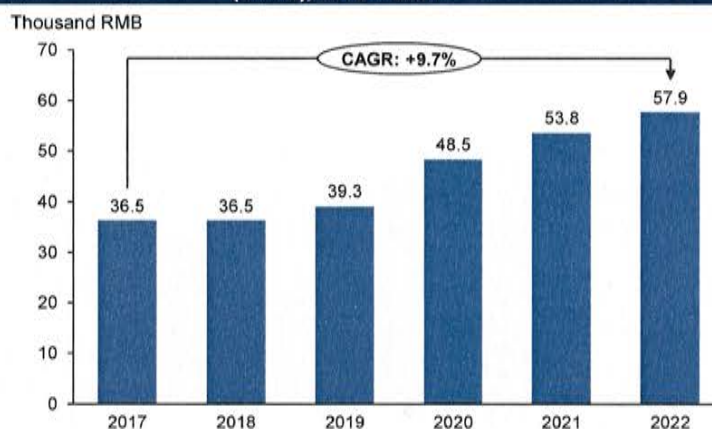
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China's Vegetable and Potted Vegetable Produce Market

Cost Analysis (1/3)

Average Annual Salary of Employees in Agriculture, Forestry, Animal Husbandry and Fishery (China), 2016 – 2021



- Human resource cost usually accounts for the largest part of total cost of vegetable producers and potted vegetable producers in China. The average annual salary of employees in agriculture, forestry, animal husbandry and fishery in China has increased from RMB36.5 thousand in 2017 to RMB57.9 thousand in 2022, representing a CAGR of 9.7%.
- Going forward, in line with the development of macro economy and vegetable industry, the average annual salary of employees is likely to keep growing in the future and reach approximately RMB72.7 thousand in 2027.

Source: National Bureau of Statistics of China; Frost & Sullivan

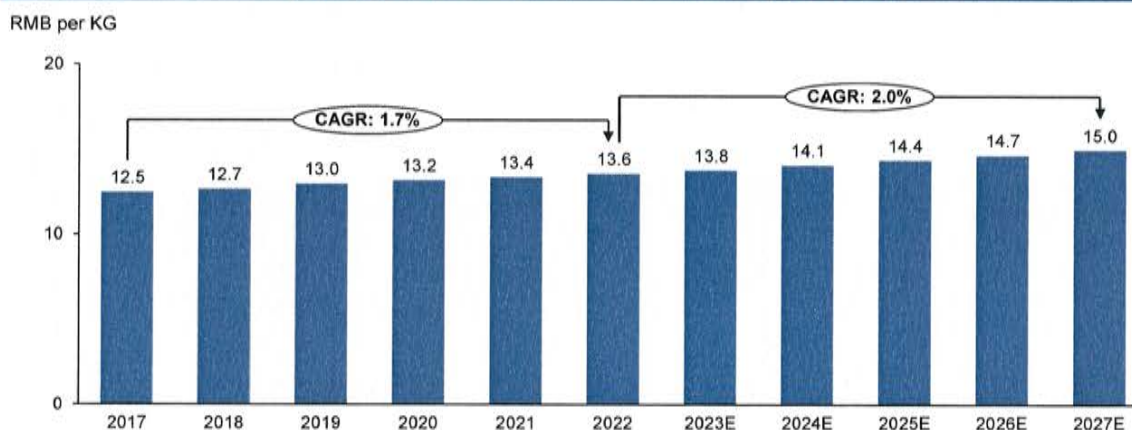
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China's Vegetable and Potted Vegetable Produce Market

Cost Analysis (2/3)

Average Price of Foliar Fertilisers (Shandong), 2017 – 2027E



- Major raw materials of potted vegetable produce include, among others, substrates, seeds, fertilisers and pots. The cost of foliar fertilisers is an important part of total cost of vegetable and potted vegetable producers. The average price of foliar fertilisers in Shandong increased from RMB12.5 per kilogram in 2017 to RMB13.6 per kilogram in 2022, representing a CAGR of 1.7%.
- The price of foliar fertilisers is expected to further increase to RMB15.0 per kilogram in 2027 with a CAGR of 2.0%.

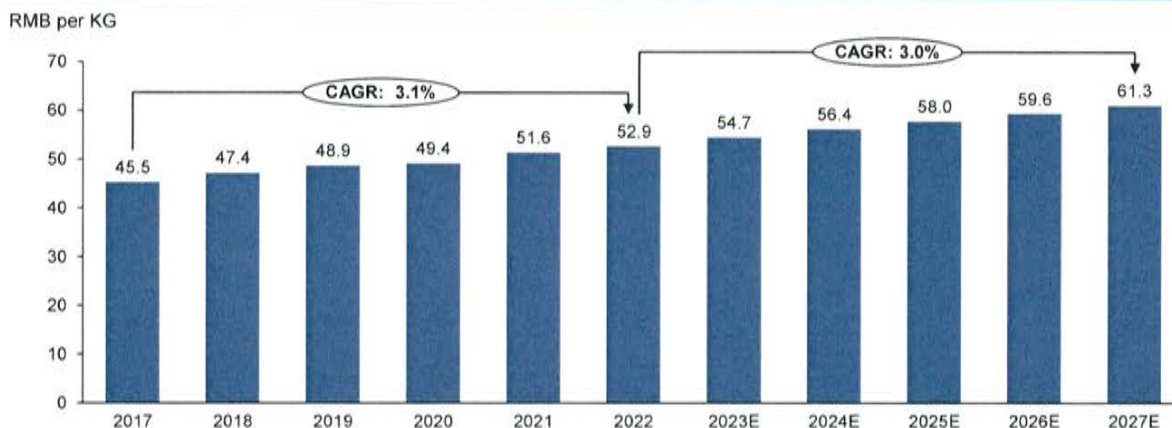
Source: National Bureau of Statistics of China; Frost & Sullivan

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China's Vegetable and Potted Vegetable Produce Market Cost Analysis (2/3)

Average Price of Water Spinach Seeds (Shandong), 2017 – 2027E



- Water spinach is a common type of vegetable produce that is widely cultivated by potted vegetable producers.
- RMB45.5 per kilogram in 2017 to RMB52.9 per kilogram in 2022, representing a CAGR of 3.1%.
- The price of water spinach seed is expected to further increase to RMB61.3 per kilogram in 2027 with a CAGR of 3.0%.

Source: National Bureau of Statistics of China; Frost & Sullivan

China's Vegetable and Potted Vegetable Produce Market Policy Analysis

Law/Measures	Enacted/Implemented by	Effective Date
No. 1 central document (《2020年中央一号文件》)	The State Council	Feb. 2020
<ul style="list-style-type: none"> This document underscores the importance of rural reform, developing modern agriculture and maintaining agriculture as the foundation of its economy. According to this document, agricultural structures should be optimized to feature more high-quality agricultural products and better certification of healthy food, organic produce and source of production. 		
The Agricultural Modernization Plan for Shandong Province (2016-2020) (《山东省农业现代化规划(2016-2020年)》)	People's Government of Shandong Province	Mar. 2017
<ul style="list-style-type: none"> This document is set to improve the agricultural modernization in Shandong province, requiring the advantage consolidation of vegetable industry, actively promoting the selection, purification and rejuvenation of vegetable varieties; vigorously developing facility vegetables, and promoting new greenhouses, soilless cultivation, substrate cultivation and intensive seedling technology. 		
The Transformation and Upgrading Implementation Plan for The Improvement of Quality and Efficiency of Vegetable Industry in Shandong Province (2016-2020) (《山东省蔬菜产业提质增效转型升级实施方案(2016-2020年)》)	People's Government of Shandong Province	Aug. 2016
<ul style="list-style-type: none"> This document was to strengthen the development advantages of vegetable industry in Shandong province, to accelerate the transformation, upgrading and improvement of quality and efficiency, and implement this program: through the development of three main products, including facility vegetables, exporting vegetables and local vegetables. The vegetable industry is expected to be upgraded and improved. 		
The Development Plan for Facility Vegetable in Key Regions (2015 – 2020) (《全国设施蔬菜重点区域发展规划 (2015—2020年)》)	MOA	Jan. 2015
<ul style="list-style-type: none"> The overall goal of this document is to follow the development path of energy-saving, low-cost, high-yield, high-quality, high-efficiency, ecological and safe facilities vegetables, to set the aim of reasonable production facilities, diverse vegetable types, advanced production methods, standardized production processes and balanced product supply, upgrading the level of industrialization. 		
The Development Plan for National Vegetable Industry (2011-2020) (《全国蔬菜产业发展规划(2011-2020)》)	NDRC, MOA	Jan. 2012
<ul style="list-style-type: none"> The document reviewed the past development of vegetable production industry, set future development tasks and goals, and specified a number of actions to support the growth of the industry. These actions include the improvement of rural area infrastructure and mechanization level, encouragement of technology innovation and application, training of professional vegetable experts, adoption of standard production management to ensure vegetable quality and safety, emphasizing vegetable processing and packaging to increase product value added, improving market information and service system for a transparent and high efficient vegetable market operation. 		
The 12th Five-Year Plan for National Agriculture and Rural Economy Development (《全国农业和农村经济发展第十二个五年规划》)	MOA	May 2011
<ul style="list-style-type: none"> The provisions of this document is aim at improving the suburban vegetable gardens of large and medium-sized cities and focusing on building five major regional vegetable bases in upper and middle reaches of the Yangtze River, the Loess Plateau, Yunnan-Guizhou Plateau, the Yellow Sea, Hwai Sea and the Bo Sea; strengthening the construction of the South-to-North Vegetable Diversion Project bases in Hainan and Guangxi; promoting the standardization, facility production, and ensuring vegetable supply. 		

Source: MOF, Standing Committee of the National People's Congress, Frost & Sullivan Analysis

China's Vegetable and Potted Vegetable Produce Market

Future Trends

Future Trends

Application of Advanced Cultivation Technology

Compared with traditional in-ground cultivation, cultivating potted vegetable produce has various advantages, such as lower cost, land-saving, higher productivity, quality and consistency. However, there are also higher requirements in cultivation and management. Potted vegetable produce need to be planted in greenhouses or other protected areas, which should be equipped with micro-sprays or watering facilities. Along with the development of more advanced cultivation technology, potted vegetable producers expected to conduct more stringent management on temperature, humidity, light, pest control, and also refined treatment such as thinning branches, in order to meet quality requirements.

Expanding Varieties of Potted Vegetable Produce

Existing species of potted vegetable produce consist mainly of ordinary leafy vegetables, supplemented by solanaceous vegetables species. In line with the growing consumption of potted vegetable produce from restaurants and households, as well as customers' changing demands for more varied vegetable species, varieties of potted vegetable produce are likely to be more diversified in the future. Potted vegetable producers have been taking the healthiness of potted vegetable produce more into consideration, rather than just taste, to satisfy customers' needs. It is expected that the expanding variety of potted vegetable produce is likely to drive further development of the market.

Improving Logistics Capabilities

Logistics capabilities are key to the distribution of fresh vegetable produce and potted vegetable produce. Most of the vegetable produce needs to be circulated through a cold-chain system to keep fresh. Along with the development of the logistics industry in China, the improving logistics network, in particular cold-chain logistics network, is expected to assist in the expansion of the delivery scope of potted vegetable produce and is likely to create more opportunities for the potted vegetable produce market.

Source: Frost & Sullivan

China's Vegetable and Potted Vegetable Produce Market

Threats and Challenges

Threats and Challenges

Increasing Labour Cost, Land Cost and Shortage of Labour

Labour cost is one of the major costs for the vegetable and potted vegetable produce markets as both planting and field management require experienced and skilled manpower to ensure successful production. However, in line with the growing economy and increasing living standards, the average annual salary of employees in agriculture, forestry, animal husbandry and fishery in China increased from RMB33.6 thousand in 2016 to RMB51.6 thousand in 2021. Meanwhile, the average land cost per mu increased from RMB377 per mu in 2016 to RMB395 per mu in 2021 with a CAGR of 0.9%. In addition, there is a trend of shortage of labour in the vegetable and potted vegetable produce markets. From 2016 to 2021, total number of workforce in agriculture, forestry, animal husbandry and fishery in China decreased with a CAGR of approximately -23.2%. Hence, the increasing labour cost and shortage of labour are likely to be a challenge for China's vegetable and potted vegetable produce markets.

Lack of Relevant Government Policies

Central government in China has played an important role in setting policies for the vegetable and agricultural industry. Policies are important for the development of an industry through encouraging technology innovation, standardizing production processes, and etc. However, currently there are no relevant government policies for potted vegetable produce industry in China. The lack of proper regulatory policies may be an obstacle of China's potted vegetable produce market.

Source: Frost & Sullivan

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- 3 **Competitive Landscape**
- 4 Appendix

Competitive Landscape

Ranking of Top 5 Potted Vegetable Producers in China

Ranking of Top 5 Potted Vegetable Producers by Sales Revenue (China), 2022

Rank	Company	Total Sales Revenue (RMB Million)	Market Share (%)
1	The Group	126.7	3.1%
2	Qian Meng	12.2	0.3%
3	CSV	8.3	0.2%
4	Lvfeng	6.1	0.1%
5	QiDi	3.9	0.1%
Top 5 Subtotal		157.2	3.8%
Others		3,912.1	96.2%
Total		4,069.3	100.0%

- China's vegetable produce market was highly fragmented with around 1 million to 2 million vegetable producers in the market in 2022. There was no single vegetable producer that accounted for over 1% of the total market share in China's vegetable produce market in terms of production volume. In 2022, the Group, with a sales revenue of RMB126.7 million, accounted for less than 0.01% of total sales revenue of vegetable producers in China. In 2022, the Shandong province contributed approximately 19% of the total sales revenue of potted vegetable produce of the PRC.
- In Shandong province, there were over 500 players in potted vegetable produce market in 2022. In terms of Qingdao's potted vegetable produce market, there were less than 50 players in 2022.
- China's potted vegetable produce market was highly fragmented in 2022 with top five players accounting for 3.8% of the total market share in China's potted vegetable produce market in terms of sales revenue. In 2022, with a sales revenue of RMB126.7 million, the Group accounted for approximately 3.1% of total sales revenue of potted vegetable producer of China. There is a consolidation trend in this fragmented market. Leading companies with reputation, advanced cultivation techniques, and professional management teams are expected to enjoy further development in the consolidation trend.

Source: The data of the Group comes from the Group. Frost & Sullivan Analysis

Competitive Landscape

Ranking of Top 5 Potted Vegetable Producers in Shandong Province

Ranking of Top 5 Potted Vegetable Producers by Sales Revenue, (Shandong Province), 2022

Rank	Company	Total Sales Revenue (RMB Million)	Market Share (%)	Number of Vegetable Species	Average Selling Price of Potted Vegetable (RMB per Pot)
1	The Group	114.5	14.8%	29	15.1
2	Shouguang Seed	7.9	1.0%	15 to 20	~20
3	QiDi	3.7	0.5%	~5	~20
4	Liaoyuan	2.2	0.3%	~10	~15
5	Huikangyuan	1.4	0.2%	~10	15 to 20
Top 5 Subtotal		129.7	16.8%		
Others		643.9	83.2%		
Total		773.6	100.0%		

- The total sales revenue of Shandong province's potted vegetable produce market was RMB773.6 million in 2022. The majority of market participants in Shandong province's potted vegetable produce market are agricultural cooperatives. There are over 500 potted vegetable producers in Shandong province in 2022.
- Shandong province's potted vegetable produce market was relatively fragmented in 2022 with thousands of potted vegetable producer with top five players accounted for 16.8% of the total market share in Shandong province's potted vegetable produce market in terms of sales revenue. In 2022, the Group, with a sales revenue of RMB114.5 million, accounted for 14.8% of total sales revenue of potted vegetable producers in Shandong province. There is a consolidation trend in this fragmented market. Leading companies with good brand reputation, advanced cultivation technique, and professional management team are expected to see further development in the consolidation trend.

Source: The data of the Group comes from the Group. Frost & Sullivan Analysis

Competitive Landscape

Company Profile of Leading Company

Logo	Company Name	Headquarter Location	Established Year	Description
	Qian Meng	Hohhot, Inner Mongolia	2011	Established in 2011, this company is a non-listed company headquartered in Hohhot, Inner Mongolia, China, primarily focusing on the cultivation and distribution of potted vegetable produce.
	Shouguang Seed	Shouguang, Shandong Province	2011	Established in 2011, this company is a non-listed company headquartered in Shouguang, Shandong province, China, primarily focusing on the cultivation and distribution of potted vegetable produce and vegetable seeds.
	Lvfeng	Suzhou, Jiangsu Province	2000	Established in 2000, this company is a non-listed company headquartered in Suzhou, Jiangsu province, China, primarily focusing on the production and sales of potted vegetable produce and organic fertilisers.
	QiDi	Shouguang, Shandong Province	2017	Established in 2017, this company is a non-listed company headquartered in Shouguang, Shandong province, China, primarily focusing on the production and sales of, among others, potted vegetable produce and seeds.
	Liaoyuan	Shouguang, Shandong Province	2002	Established in 2002, this company is a non-listed company headquartered in Shouguang, Shandong province, China, primarily focusing on the production and sales of vegetable and potted vegetable produce.
	Huikangyuan	Qingzhou, Shandong Province	2016	Established in 2016, this company is a non-listed company headquartered in Qingzhou, Shandong province, China, primarily focusing on the production and sales of potted vegetable produce and substrates.

Source: Frost & Sullivan Analysis

Competitive Landscape

Entry Barriers

Entry Barriers	
Brand Recognition	Reputation of vegetable producers is often established by word of mouth, and customers are more inclined to choose reputable brands for guaranteed quality. So far, there are already some well-known brands in China's vegetable and potted vegetable produce markets with large customer bases. Those companies can gain trust easier from customers and can reduce their cost of reaching new customers significantly. It is difficult for new entrants to compete with existing participants for customers. A huge amount of marketing expense will be necessary for a new player to enter into the market.
Potted Vegetable Produce Cultivation Know-how	Cultivation of potted vegetable produce requires potted vegetable producers to have the right know-how to ensure the supply of quality vegetables. Cultivation know-how mainly includes construction of greenhouses, seeds selection, sowing, vegetable growth management, formula of cultivation materials, as well as use of automated machineries and equipment. Existing players are likely to have accumulated sufficient know-how and abundant professionals. New entrants are likely to encounter difficulties in mastering such know-how in a short run.
Capital Requirements	For potted vegetable producers, abundant capital is essential for expanding sown areas, developing techniques for cultivating new vegetable species, hiring experienced professionals and maintaining the greenhouses. Moreover, to achieve economies of scale in production, huge capital investment is required. It is not easy for the new players to enter into China's potted vegetable produce market without abundant capital.
Logistics Capabilities	Logistics capabilities are key to the distribution of vegetable, and substantial investment is required to build and maintain a reliable logistics network. Most vegetable products are planted in suburban areas and need to be transported to end-customers. Therefore, the efficiency of potted vegetable produce distribution depends heavily on a company's logistics capacity. Currently only few players have reliable self-built logistics capabilities. It is difficult for a new market entrant to build its own logistics system in a short period of time.

Source: Frost & Sullivan

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Competitive Landscape

Competitive Edge of The Group (1/2)

Competitive Edge of The Group	
1 Market Leader in China's Potted Vegetable Produce Market	<ul style="list-style-type: none"> The Group is the largest and established potted vegetable producer in Shandong province of China in terms of sales revenue focusing on the cultivation, supply and distribution of potted vegetable produce in Qingdao. Also, as most companies has produced potted vegetable in around 2015, the Group is one of the first few pioneer potted vegetable producers in Shandong province which started large scale production of potted vegetable produce with an annual production capacity of more than one million pots in 2016, building the Group's reputation and a leading market position. The brand image of the Group is highly recognised among consumers. In 2022, the Group was the largest potted vegetable producer in China in terms of sales revenue.
2 Extensive Distribution Network	<ul style="list-style-type: none"> The Group has built an extensive distribution network across Shandong, Shaanxi and Liaoning provinces. Such extensive distribution network helps the Group to save logistic cost, reach more geographical regions in China and penetrate its products into the market more quickly, efficiently and effectively. Also, the Group has worked on promoting online sales of its products to allow customers to place orders via mobile phones, as well as to trace their orders and pay their bills online. With an extensive distribution network, the Group has accumulated and established a solid customer base after over a decade of the operation in potted vegetable produce business.
3 Advanced Technique in the Potted Vegetable Produce Cultivation	<ul style="list-style-type: none"> Possessing knowledge on advanced technique in the potted vegetable produce cultivation can be regarded as a main advantage of the Group. The Group applies an industrial cultivation method to produce potted vegetable produce. This cultivation method requires use of enclosed greenhouses together with advanced horticultural know-how and automated machineries and equipment in connection with pest control, heating and ventilation or shading of sunlight to control or monitor parameters such as pH value of organic substrates, temperature, humidity, carbon dioxide density and illumination. The ability to utilise such advanced technique increases the productivity of the Group.
4 Rich Product Portfolio	<ul style="list-style-type: none"> Comparing with other major potted vegetable producers in Shandong, the Group has the largest number of species. The Group currently cultivates and sell 31 species of potted vegetable produces, while other competitors generally have only 5 to 10 species. The Group invests a lot in the innovation of new species, and the rich product portfolio and innovation is likely to help the Group to gain larger market share.

Source: Frost & Sullivan

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F R O S T & S U L L I V A N

Competitive Landscape

Competitive Edge of The Group (2/2)

Competitive Edge of The Group

5 Potted Vegetable Produce Advantage

- ◆ It is submitted that the advantage of potted vegetable produce of the Group have the following advantages as compared to those cultivated under different cultivation methods are listed as below: including (i) The cultivation substrates of the Group are organic substrates with soil fertility and nutrition, thereby avoiding the issue of reduction of soil fertility and productivity due to continuous cultivation; (ii) In-pot cultivation method adopted by the Group avoids water and soil pollution and eutrophication; (iii) The growth of vegetable produce in individual pots provides physical segregation between each of the vegetable produce, which could prevent the spread of crop diseases or pest infestations by lowering the risk of cross contamination; (iv) Different from vegetable produce grown by traditional cultivation methods, potted vegetable produce ensure the freshness of vegetable produce and avoid the loss of weight that occurred during the transportation and sales process. Hence, the potted vegetable produce of the Group can satisfy the demand of the high-class food and beverage market and can be sold at a higher price with greater profit margins

Source: Frost & Sullivan

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Abbreviations and Terms (1/2)

Abbreviations and Terms

- **Bn**: Billion
- **Mn**: Million
- **CAGR**: compound annual growth rate
- **China**: if not specified refers to mainland China, excluding Hong Kong, Taiwan and Macau
- **PRC**: People's Republic of China
- **GDP**: gross domestic product

Limitations in Source of Information

- Interviews with industry experts and market participants are conducted to collect information for this report, based on a best-efforts basis.
- Frost & Sullivan will not be responsible for any information gaps where interviewees have refused to divulge confidential data or figures.
- In instances where information is not available, figures based on similar indicators combined with Frost & Sullivan in-house analysis will be deployed to arrive at an estimate.
- Frost & Sullivan will state the information sources at the bottom right-hand corner of each slide for easy reference.

Note to Numeric Calculations

- Value and figures in this report are all rounded. Figures may not add up to the respective totals owing to rounding. CAGRs may not be reproducible from the rounded figures exhibited in the charts.
- The base year is 2022. The historic period is from 2017 to 2021. The forecast period is from 2023 to 2027.

Source: Frost & Sullivan

Key Industry Norms

- It is an industry practice for vegetable and potted vegetable producers to sell their products through wholesalers and distributors in China. By taking advantage of distributors' local market knowledge, resources and established distribution and sales channels, vegetable and potted vegetable producers are able to avoid the significant capital investment that would otherwise be required to establish a sizeable distribution and sales network. The percentage of wholesalers in terms of sales revenue of selected listed vegetable companies are listed as follows:

Company Name	Stock Code	% of Wholesaler in terms of sales revenue
Jiangsu Xiangru Biological Technologies Co.,Ltd.	839241	~24%
Yueyang Fengling essence Fruit-Processing Industry Co.,Ltd.	872707	~10%
Shandong Anxixense Seedling Co.,Ltd.	831492	~12%
Hubei Yuruyi Beans Technology Co.,Ltd.	831760	~22%

- It is an industry practice for potted vegetable producers to engage subcontractors to assist in cultivation of potted vegetable produce.
- Generally, because most potted vegetable produce spoil easily, distributors of potted vegetable producers usually distribute products to their sub-distributors and other end users in a timely manner. Thus, distributors do not maintain a high level of inventory of potted vegetable produce.
- Generally, prices of pollution-free (无公害) vegetable produce is more expensive than vegetable produce without pollution-free certifications. With relevant certificates like Certificate of Pollution-free Agricultural Products (无公害农产品证书) and Certificate of Origin of Pollution-free Agricultural Products (无公害农产品产地认定证书), the Group is able to sell potted vegetable produce at higher prices compared to products sold by vendors without such certificates. During the Track Record Period, products of the Group were sold to the Group's distributors at a selling price of approximately RMB13 to RMB16 per pot and to the Group's end-user customers at a selling price of approximately RMB18 to RMB20 per pot, with the exception of garlic chives being sold at an average selling price of RMB40 per pot to the Group's distributors and at an average selling price of RMB60 to the Group's end-user customers due to the species' longer time and higher technical requirements for growth and maturation.
- It is an industry norm to hire subcontractors for assisting in cultivation of potted vegetable produce in China.
- Coronavirus disease 2019 (COVID-19) is an infectious disease that was first identified in December 2019 in Wuhan, the capital of China's Hubei province, and has since spread globally, resulting in the ongoing 2019–20 coronavirus pandemic.
- Generally speaking, the level and pattern of spending by the PRC consumers depends on various factors which include the consumer tastes, perceptions and preferences, consumer income, consumer confidence of the safety and quality of the potted vegetable produce.
- Consumers in the PRC are increasingly conscious of agricultural product safety and quality and how their daily consumption of foods would affect their health.
- Adverse publicity and news about the safety and quality of domestically produced food products, and counterfeiting and imitation of food products are widespread practices in the PRC.
- There are many subcontracting companies of comparable size and quality available in the market.
- For specific regional markets, the potted vegetable produce market may show seasonality fluctuations in line with the catering market. For example, in Qingdao, catering market generally gains larger revenue in summer and autumn due to the growing number of visitors attracted by various festivals including Qingdao Beer Festival in August. Hence, the demand for potted vegetable in Qingdao grows in line with the growing of catering market in summer and autumn.
- In line with the seasonality fluctuation of catering services, and also due to the seven-day spring festival holiday when most restaurants are temporarily closed, sales of potted vegetable produce to hotels and restaurants may record a lower revenue in the first quarter of a year.
- It is a general industry practice that potted vegetable producer generally grants a trade receivable recovery period ranging from one to six months. The trade receivable recovery period varies significantly depending on various factors, such as the industry practice of a specific regional market, the unique background of the distributors and the trade receivable recovery period that the distributors granted to their end-user customers, etc.
- Potted vegetable produce is still a relatively new product to the market.

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- Sown area generally accounts for 10% to 50% of the total area in vegetable production bases. The average share of sown area is around a quarter. For example, for Shandong Shouguang Vegetable Industry Group, the share is around 20%, and for Shouguang Leyi Vegetable Technology Development Co., Ltd., the share is around 30%.
- Similar to other vegetable produce, potted vegetable produce are consumable that target the general public for their daily consumption. As a general market practice, they are disseminated to a large number of different premises, such as hotels and restaurants for the consumption by the consumers. Particularly for potted vegetable producers with a small numbers of sales and marketing personnel, it is beneficial and cost effective for them to engage distributors for distribution, as they can benefit from (i) the use of clientele and sales and marketing experience of the distributors, (ii) efficient distribution and rapid penetration to the geographical region for distribution assigned to the distributors which covers a large numbers of customers such as hotels and restaurants.
- Since potted vegetable produce is a fresh daily consumable, catering service providers such as hotels and restaurants would generally expect a stable supply from the producers or distributors so that the potted vegetable produce would be replenished rapidly after consumption from time to time.
- It is acknowledged by F&S that (i) Potted vegetable produce will not be harvested at the time of sale, (ii) due to the difference in species; and (iii) depending on the maturity of the vegetable produce, there will be variation in weight of each potted vegetable produce upon sale, the measurement of potted vegetable produce by pots is commonly acknowledged in the industry and is applied to each market player in the industry.
- of 0.7 kg to 1.0 kg of vegetable produce. Shandong province is an agricultural province which has an ample supply with numerous suppliers of the raw materials used in the production of potted vegetable produce (i.e. components of organic substrates, seeds, fertilisers and biopesticides) and thus the agricultural raw material supply market of Shandong province is buyer-led, competitive and fragmented. For instance, there were approximately 6,000, 5,000 and 3,000 suppliers of seeds, fertilisers and component of organic substrates in Shandong province in 2021. Hence, potted vegetable producers can procure the same or substitutable raw materials from different suppliers and thus have the flexibility to switch to procure from different suppliers with no material impact on their operations. Therefore, the industry practice is that potted vegetable producers do not need to enter into any long term agreement with their suppliers of raw materials.
- The Group's potted vegetable produce is sold at a higher price compared to other vegetable produce from traditional cultivation methods, and therefore they target different customers.
- There were less than 10 potted vegetable producers in Shandong province which cultivate potted vegetable produces only and, at the same time, possess an

	(Traditional) In-ground cultivation	In-pot cultivation
Number of yields per year and production volume per yield*	Due to the negative effects of continuous cropping, the output rate will gradually deteriorate. It is common to adopt a rest period or cultivate other crops for soil recovery between each cultivation, which limits the maximum output per year. The productivity and overall output level will be lower for those without effective heat insulation facility as many species do not grow in summer or winter. It is expected that with such cultivation method, vegetable producers can only complete two yields to six yields of cultivation per year	With the use of greenhouses, single-use substrates and not being affected by the negative effects of continuous cropping, vegetable producers using the in-pot cultivation method will achieve high productivity. In general, they are able to cultivate a maximum of ten yields to 14 yields per year, subject to the conditions of greenhouses and the optimal use of cultivation time
Technical requirements	Minimal; the cultivation process can be completed with basic equipment and facilities	High; horticultural techniques is required in the preparation of the best suit organic substrates.
Initial investment costs	Relatively low, while the land cost being major cost item	Relatively high, as construction of greenhouse, research and development in the composition of substrates and the acquisition of raw materials are required

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	(Traditional) In-ground cultivation vegetable	Hydroponic cultivation vegetable	In-pot cultivation vegetable
Major steps of cultivation process	1. Tilling or loosening soil on cultivation bed to prepare it for planting; 2. Sowing; 3. Growth management which mainly includes watering, adding chemical fertilisers and pesticides and weeding; and 4. Harvesting upon maturity	1. Formulating nutrient-rich water; 2. Seedling; 3. Transplanting to hydroponic farming system; 4. Growth management which mainly includes control over temperature and humidity, regular replacement of nutrient solution and pumping equipment maintenance; and 5. Harvesting upon maturity	1. Premix organic substrates; 2. Sowing; 3. Growth management which mainly includes watering, control over temperature, humidity and carbon dioxide density and pest control; and 4. Sale in pot (without harvesting) once reach maturity
Major limitations	<ul style="list-style-type: none"> Require large and flat growing area Time and cost requirements for soil preparation Expose to harmful external factors 	<ul style="list-style-type: none"> Vulnerable to water and power supply shortage High setup and maintenance cost Risk of dissemination of water-borne disease as vegetable produces share the same nutrient solution 	<ul style="list-style-type: none"> Relatively high initial investment cost High delivery cost for matured vegetable produce as it is transported in pot
Initial investment cost	Relatively low, while the land cost being major cost item	Relatively high, as construction of greenhouse, the set-up of hydroponic system and research and development in the composition of nutrient solutions are required	Relatively high, as construction of greenhouse, research and development in the composition of substrates and the acquisition of raw materials are required
Suitable species	Basically all species	Currently there are not many species that are cultivated under hydroponic cultivation. Hydroponic cultivation is not suitable for some of the leafy-vegetable species	Almost all kinds of short-lived leafy vegetables species
Nutrition Value	Highly dependent on the fertility of the cultivation bed which is affected by continuous cropping and the application of chemical fertilisers and pesticide. The quality, nutrition value and level of food safety of the vegetable produce relatively unstable between each crop of cultivation. As compared with the hydroponic cultivation and In-pot cultivation, fertilisers have to be applied frequently in maintaining the fertility of the cultivation bed. And unless the cultivation facility is equipped with greenhouses, pesticides and insecticide have to be used extensively and frequently to cope with the pests, reducing the quality of their products and further lowering their gross profit and net profits	As the vegetable produce uptakes all nutrients it needed for growth from nutrient solution alone, which is a mixture of different chemicals, the quality of nutrient formulas dictates the degree of nutrition value of the vegetable produce. Any over/under-supply of chemicals will directly affect the quality and level of food safety	The preparation of substrates from organic materials can create the right balance of microorganism in the soil, together with the use of new organic substrates for each cropping, the nutrition value of vegetable produce has a greater chance of being preserved. Besides, with the use of greenhouses for better pest control, the use of pesticides and insecticide is kept to minimal. The minimal use of chemical fertilisers, pesticides and insecticide also ensures the quality and level of food safety of vegetable produce.

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	(Traditional) In-ground cultivation vegetable	Hydroponic cultivation vegetable	In-pot cultivation vegetable
Technical requirements	Minimal; the cultivation process can be completed with basic equipment and facilities	High; the composition of nutrient solution varies during different growing stages of vegetable produce	High; horticultural techniques are required in the preparation of the best suitable organic substrates
Sales method	The matured vegetable produce will undergo harvesting, packaging and transporting before sale. In general, such vegetable produce shall stay fresh for 3-5 days	The matured vegetable produce will undergo harvesting, packaging and transporting before sale. In general, such vegetable produce shall stay fresh for 3-5 days with better packaging	The matured vegetable produce will not be harvested before sale. In general, such vegetable produce shall stay fresh and alive for 10-14 days after delivery
Target customer groups	Households and catering industry	Households and catering industry	Food and beverage industry, in particular hotels and restaurants
Retail Price	The retail price generally remains in the low end of the range of the consumer's acceptable prices, mainly attributable to the simpleness and relatively lower value addition to the final product. Nonetheless, the retail price of certain vegetable produces may fluctuate in different seasons, in particular those which are temperature-sensitive, due to the limited supply	The retail price is expected to be in the middle to high-end of the customer's acceptable price range, which can be one times to four times of those from traditional cultivation method. The retail price is similar to those vegetable grown under in-ground cultivation method	The retail price is expected to be in the high-end of the customer's acceptable price range, which can be four times to five times of those from traditional cultivation method. Such premium in pricing is supported by vegetable produce being sold in fresh and living status, the use of new substrates for every pot, organic cultivation process and higher initial investment cost. As potted vegetable produce is cultivated in greenhouses and targeted to the commercial sector of the catering industry, the supply shall remain stable, whilst demand is relatively inelastic. Therefore, the retail price will remain relatively stable throughout the year
Number of yields per year	Due to the negative effects of continuous cropping, the output rate will gradually deteriorate. It is common to adopt a rest period or cultivate other crops for soil recovery between each cultivation, which limits the maximum output per year. The productivity and overall output level will be lower for those without effective heat insulation facility as many species do not grow in summer or winter. It is expected that with such cultivation method, vegetable producers can only complete two yields to six yields of cultivation per year	Hydroponic cultivation is favourable to the growth of certain water-hungry vegetable, such as lettuce, purple lettuce and romaine lettuce. On average, six yields to ten yields per year can be achieved	With the use of greenhouses, single-use substrates and not being affected by the negative effects of continuous cropping, vegetable producers using the in-pot cultivation method will achieve high productivity. In general, they are able to cultivate a maximum of ten yields to 14 yields per year, subject to the conditions of greenhouses and the optimal use of cultivation time
Sustainability	The use of chemical fertilisers and pesticide affects the soil fertility and underground water quality, thus lowering the productivity of land in long term	The nutrient-rich water of hydroponic cultivation vegetable has low potential risk of soil and underground water pollutions	Minimal chemical fertiliser may be applied in in-pot cultivation. Growth of vegetable produce in individual pots provides physical segregation between each of the vegetable produce, which prevents the spread of crop diseases or pest infestation by lowering the risk of cross contamination. In-pot cultivation has low potential risk of soil and underground water pollutions

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	Full Name of Peer Groups	Approximate registered Capital (RMB)	Market Coverage	% of Revenue from Potted Vegetable
Company A	Shandong Shouguang Vegetable Seed Industry Group Co., Ltd.	150 million	Mainly in Shandong province	~10%
Company B	Shandong Qidi Agricultural Science and Technology Co., Ltd.	10 million	Mainly in Shandong province	~30%
Company C	Shandong Liaoyuan Agricultural Science and Technology Co., Ltd.	25 million	Mainly in Shandong province	~20%
Company D	Qingzhou Huikangyuan Vegetables Co., Ltd.	1 million	Mainly in Shandong province	~50%

- It is respectfully submitted that the Group has not yet applied for the agricultural produce authentication and tracking system since the Xi'an Facility and the Dalian Facility are relatively new cultivation facilities and have a smaller scale of production. Only a small proportion of agricultural producers have applied for the said authentication and tracking system in Shaanxi province and Liaoning province. Frost & Sullivan confirm that the Group can differentiate its vegetable produce from that of the other in-ground cultivation producers given that the vegetable produce of the Group is sold in pots while still fresh and living.
- Beijing, together with Langfang, has a combined permanent residents of 27.3 million as at 31 December 2022, more than the aggregate permanent residents of 26.8 million of Qingdao, Yantai and Weifang in Shandong as at 31 December 2022. Furthermore, Beijing and Langfang are close to Shandong province and Dalian, which are all situated in the Northern China, consumers in Beijing and Langfang share similar dietary habit. In addition to its close proximity to Beijing, Langfang itself is also one of the fastest growing economies in Hebei province. The aggregated sales revenue of potted vegetable produce in Beijing and Langfang increased from RMB58.2 million in 2017 to RMB140.0 million in 2022. The sales revenue is expected to further increase from RMB140.0 million in 2022 to **RMB320.4 million in 2027, representing a CAGR of 18.0%**. Furthermore, there are only approximately 80 to 100 potted vegetable producers and around 6,500 chain restaurants in Beijing and Langfang in 2022.
- On one hand, the end-user customers usually need to prepare a variety of different food ingredients to satisfy the public's needs, on the other hand, the end-user customers are only able to keep limited stock on food ingredients in order to preserve the freshness. It is typical for them to order from a wide range of suppliers in small quantity per order and require frequent replenishment.
- Furthermore, the mass market of the catering industry is notably diverse and scattered, ranging from different style of cuisines and scale of catering service operation. It is also a constantly changing market, where the consumers' taste and preference changes rapidly and the demand from each individual hotel and restaurant tightly follows consumers' preference.
- Unlike the supply of other commodities which may deliver in bulk and at a relatively longer time span, potted vegetable produce needs to reach the end-customers as soon as possible once reaching maturity and the end-user customers usually request replenishment on a day-to-day basis, given the nature of potted vegetable produce.
- The core competitive strengths of the Group is founded on the experience in the cultivation and the quality of potted vegetable produce of the Group.
- Potted vegetable produce is a consumable product that is for the daily consumption by the general public and it is quite common that the potted vegetable produce needs to be delivered to customers, such as hotels and restaurants, located in numerous different premises for the consumption by the consumers.
- Each pot of vegetable produce usually contains approximately net weight of 0.7 kilograms to 1.0 kilograms of vegetable which primarily depends on the vegetable species, the edible portion of the vegetable and the maturity of the vegetable produce.

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- In 2022, more than 80% of the vegetable produce distributors in the Shandong province are sole proprietors and registered individual businesses, primarily attributable to the fact that the whole supply chain of vegetable produce, from cultivation to sales, is highly scattered and many of the industry players are in fact villagers living in rural areas who are conducting their business in the form of small family business.
- It is submitted that the Group's credit term offered its distributors is in line with the industry practice which is 30 days to 180 days and thus is considered reasonable in the eyes of the Directors. Length of credit term offered by vegetable distributors to their end-user customers is subject to various factors, such as background of the end-user customers (e.g. scale and credit history), relationship between the distributors and the end-user customer, and industry practice of a specific market / region.
- Frost & Sullivan further advised that during the Track Record Period, distributors of potted vegetable produce in Shandong province / China, which are not engaged by the Group, generally offered a credit term ranging from 30 days to 180 days to their customers.
- It is respectfully submitted that the Group is open to cooperation with sizeable distributors at all time. However, the management of the Group realise from real practice that there are only a few sizeable distributors. This is supported by a market research and analysis conducted by Frost & Sullivan, which suggests that more than 80% of the vegetable produce distributors in the Shandong province are distributed by sole proprietors and registered individual businesses in Shandong province and in mainland China, respectively, primarily attributable to the fact that the whole supply chain of vegetable produce, from cultivation to sales, is highly scattered and many of the industry players are in fact villagers living in rural areas who are conducting their business in the form of small family business.
- It is also worth noting that most of those sizeable incorporated distributors principally engage in distribution of the relatively non-perishable agricultural produce, such as rice, wheat, cereal or canned and preserved foods, and therefore, these distributors have their own limitation and are unlikely to enter into business relationship with the Group. Furthermore, due to the said mismatch of characteristics and the Group's business strategies which emphasis on the depth of penetration in regional market rather than a broad but shallow coverage, the Directors of the Group considered that engaging sizeable distributors have no material benefit for the development of the Group.
- It is submitted that the Group's credit term offered its distributors is in line with the industry practice which is 30 days to 180 days and thus is considered reasonable in the eyes of the Directors.
- On the other hand, as advised by Frost & Sullivan and the Directors concur, length of credit term offered by vegetable distributors to their end-user customers is subject to various factors, such as background of the end-user customers (e.g. scale and credit history), relationship between the distributors and the end-user customer, and industry practice of a specific market / region.
- Frost & Sullivan further advised that during the Track Record Period, distributors of potted vegetable produce in Shandong province / China, which are not engaged by the Group, generally offered a credit term ranging from 30 days to 180 days to their customers. Further, distributors of vegetables grown from other cultivation methods generally offered a credit term ranging from 30 days to 180 days to their customers.
- In addition, as confirmed by Frost & Sullivan, since the cultivation facilities of agricultural producers are usually located in suburban area, save for a handful of customers which are located closely proximate to the cultivation facility, it is extremely rare that the operators of hotels and restaurants in the city would attend to the cultivation facility to pick up the products they ordered as it is not cost-effective to do so given the small quantity per order and the frequency of delivery required to maintain freshness of the agricultural produce. As a result, distributorship model is widely adopted in the agricultural industry as it effectively and cost-efficiently connects the agricultural producers and the end-user customers.
- As advised by Frost & Sullivan, in China, it is an entrenched tradition that agricultural related activities, such as cultivation, distribution, and sale of vegetable produce, are conducted by villagers in rural areas in the capacity of sole proprietor or in the form of small family business. According to Frost & Sullivan, among the wholesalers of agricultural produce, more than ~80% of them are trading as a sole proprietor or registered individual businesses in 2021 in the Shandong province. Hence, due to the prevalence of sole proprietorship in the agricultural industry, it is common, and practically speaking inevitable, for agricultural producers to engage various sole proprietors for the distribution of their products in the regional market.
- In FY2020, FY2021, FY2022 and 5M2023, the spread between the wholesale price (i.e. the average price at which the Group sells to the distributors) and the retail price (i.e. the average price at which the distributors sell to hotel and restaurants) were approximately RMB3.3 per pot, RMB3.4 per pot, RMB3.4 per pot and RMB3.4 per pot on average, respectively. Frost & Sullivan opines, and the Directors concur, that the said price spread was in line with the market range in each year of the Track Record Period.

Key Industry Norms

- As advised by Frost & Sullivan, sizeable distributors are very rare in Shandong province. Among those sizeable distributors, most of them are general distributors that distribute all kinds of groceries and daily supply, and none of them is specialised in the distribution of fresh agricultural produce.
- As advised by Frost & Sullivan, distributorship model is the predominant business model for the sale of agricultural produce (including vegetable produce) in the PRC. Basically, more than 80% of the sale of vegetable produce in the PRC is conducted through distributors, and the rationale behind is illustrated as follows:
 - (i) the typical industry supply chain (i.e. from upper stream to downstream stakeholders) includes the vegetable producers, vegetable wholesalers, vegetable retailers and end-user customers, and the formation of such typical industry supply chain is primarily attributable to traditional and historical reasons. Currently, there are more than 1,000 agricultural produce wholesale markets (農產品批發市場) in the PRC, and each of them consists of many small to medium size distributors. Among these distributors, majority of which are trading as sole proprietor, primarily due to the fact that farmlands are widely spread over different villages, and the business of the whole agricultural industry (from the cultivation to sales and distribution) is mainly conducted in tiny scale. In fact, only those sizeable retailers which are equipped with large storage facility, such as chains supermarket, would have the resources to directly purchase agricultural produce from the agricultural producers at the upper stream. However, since the target end-user customers of the Group are hotels and restaurants, they generally do not purchase directly from the Group; and
 - (ii) the agricultural producers and sales and distribution channel of vegetable produce are highly scattered. The number of vegetable producers and downstream customers (i.e. retailers, supermarkets and catering service providers of various size) are extremely huge and they are widely spread over the region. Agricultural producers are generally unfamiliar with the end-user customers, and they have been relying on the intermediate distributors for distribution of their produce for a long time. For example, in Shandong province, there are over 200,000 vegetable producers and one million end-user customers. If there is no such distributorship network in the market, agricultural producers would not be able to effectively connect their targeted customers as well as to swiftly response to their needs. Conversely, end-user customers are also equally relying on purchasing from the intermediate distributors in order to secure a stable source of supply.
- Accordingly, Frost & Sullivan advised that distributorship is the dominant model of distribution in the vegetable market in the PRC and that it is practically speaking very common for the Group to adopt distributorship model.
- Frost & Sullivan further advised, and the Directors concur, that there is no clear and direct correlation between the length of credit term and the cultivation methods (i.e. traditional in-ground cultivation, hydroponic cultivation or in-pot cultivation). The length of credit term is subject to various market parameters, such as the price, bargaining power of the end-user customers, level of acceptance and market supply of and demand for the produce. In particular, the length of credit term offered by vegetable distributors to their end-user customers is further subject to factors such as the background of the end-user customers (e.g. scale and credit history), relationship between the distributors and the end-user customer, and industry practice of a specific market / region. Therefore, cultivation method per se does not affect the length of credit term. Rather, it depends on the type of product (e.g. whether it is a new or traditional product) produced by the cultivation method and the request of the downstream stakeholders in the vegetable distribution industry.
- On the other hand, the Group further learnt from its previous direct dealings with hotels (end-user customers during the Track Record Period where the latter generally requested the Group to provide a credit period of [180] days, which is in line with the industry practice. Further, as advised by Frost & Sullivan, the catering operators in Shandong province recorded a net profit margin of merely around 5% to 10% recently and see liquidity a crucial issue.
- The industry supply chain typically includes the vegetable producers, vegetable wholesalers, vegetable retailers and end-user customers. Currently, there are more than 1,000 agricultural produce wholesale markets (農產品批發市場) in the PRC, and each of them consists of many small to medium size distributors. More than 80% of the agricultural produce distributors in the PRC are sole proprietors, primarily due to the fact that farmlands are widely spread over different villages, and the business of the whole agricultural industry (from the cultivation to sales and distribution) is mainly conducted in tiny scale. In fact, only those sizeable retailers which are equipped with large storage facility, such as chains supermarket, would have the resources to directly purchase agricultural produce from the agricultural producers at the upper stream. However, since the target end-user customers of the Group are hotels and restaurants, they generally do not purchase directly from the Group.
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- Accordingly, Frost & Sullivan advised that distributorship is the dominant model of distribution in the vegetable market in the PRC and that it is normally impracticable for vegetable producers (including potted vegetable producers) in the PRC to avoid using distributors.
- In FY2018, FY2019, FY2020 and 4M2021, the spread between the wholesale price (i.e. the average price at which our Group sells to our distributors) and the retail price (i.e. the average price at which our distributors sell to hotel and restaurants) were approximately RMB~3.2~ per pot, RMB2.5 per pot, RMB3.3 per pot and RMB~3.4 per pot on average, respectively. Frost & Sullivan opines, and our Directors concur, that the said price spread was in line with the market range, which was generally between RMB2 to RMB5 per pot, in each year of the Track Record Period.

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	Local distributors	Sizeable distributors with provincial coverage
Industry and product knowledge	Their staff members are generally more knowledgeable and experienced on specific product. As local distributors usually focus on a single product type or a few core products of an agricultural producer for distribution, more specific training will be provided to their staff members to equip them with better technical knowledge for a particular type of product.	Their staff members are generally less knowledgeable and experienced on specific product as sizeable distributors may sell a wide range of different products and may therefore lose focus.
Familiarity of market practice	They are usually operated by local people who have strong personal connection with the local hotels and restaurants, and are fully aware of the customary practice in the specific region.	They may not have strong personal connection in the regional market and may rely on a formulaic way of distribution.
Devotion of resources	They focus and concentrate on distributing the products from one or a few suppliers only. They are more willing to devote resources to developing and securing sales network and strive for sustainable growth of the agricultural produce in the specific region. For instance, the sale of the Group's potted vegetable produce accounted for more than 95% of the total revenue of Group's distributors, therefore, we may consider that local distributors are more willing to allocate a substantial proportion (if not all) of their resources to the sale of the Group's potted vegetable produce.	They are market driven. As they sell various products from different suppliers, they may selectively devote more resources to promoting and selling the products that are more profitable to themselves.
Length of relationship and exclusivity	They are more willing to develop long term business relationship with the agricultural producers. They are more willing to accept exclusivity arrangement and voluntarily refrain themselves from selling similar products offered by other agricultural producers.	They are generally unwilling to accept exclusivity arrangement and have a greater tendency to switch to supplying similar products offered by other agricultural producers if the latter offer the produce on more favourable terms, e.g. a more competitive price, in order to lower their operational cost and increase their own profit margin.
Operational flexibility	They are more flexible and cooperative and are more willing to follow the instructions of the agricultural producer, which is essential in the distribution of vegetable produce given the rapid market change as set out below.	They are more rigid and prone to be bound by their own internal policy.
Negotiation of commercial contract terms	They have less bargaining power in contract terms negotiation and are more willing to accept terms that are favourable to the agricultural producers.	They have stronger bargaining power and are less willing to compromise. On the other hand, it is common that sizeable distributors would ask for discount of the selling price of the goods if there are alternative source of supply. Hence, lengthy negotiation may take place.
Response to rapid market change	They are more adaptable to rapid market change. Similar to other agricultural produce, the market price of vegetable produce may experience daily fluctuation. Local distributors may experience their market intelligence by flexibly adjust the selling price to capture market demand especially from those price-sensitive customers.	Since they are bound by their own internal policy, they are less flexible to adjust the selling strategies and price in response to the rapid changing market and, therefore may not be able to capture the market demand especially from those price-sensitive customers.

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- To our best knowledge, sizeable distributions in practice generally adopt centralized distribution model under which produce would be gathered to a central point and undergo a multi-level distribution before it reaches the end-user customers. Such distribution model, which involves multiple uploading and unloading of goods, severely delays the delivery lead time and affects the freshness and look of the potted vegetable produce and fails to address the needs of the end-user customers of the Group.
- We identified some sizeable distributors that provide distribution service of agricultural produce and all kinds of groceries, namely Kuaili Jinhua* (快递进货), Meicai* (买菜网) and Shuhai Supply Chain Solutions* (蜀海供应链).
- Since there is no dominant player in the agricultural market, industry players usually need to follow the market practice in determining the credit term. The change of credit over time is attributable to the natural market dynamic and is subject to the bargaining power of the parties at the material time. So long as the credit term is within a reasonable range and is acceptable to the parties, it is entirely a commercial decision for the parties to agree.
- It is submitted that since vegetable produce is not an industrial product that produced from standardised raw material under an identical manufacturing process, the "end-product" could be affected by a large variety of factors including temperature, humidity, sunlight intensity, ventilation, water supply during the entire cultivation process, and the composition of the soil or substrate. Therefore, no two vegetables are identical even if they were cultivated under exactly the same conditions. Thus, the organic substrate is only one of the various factors that allow the Group to produce vegetable produce with better quality than its industry peers. Therefore it is not meaningful to compare the soil or organic substrates used by the Group and its peers, as the Group is a producer of potted vegetable produce, not a producer of organic substrates.
- The industry peers which sale potted vegetable produce at the upper end of the price range mainly refer to those industry peers who cultivate in small scale. Due to the fact that these potted vegetable producers may only operate in the peak season and do not offer potted vegetable produce all-year-round, their market is unstable; further, their employees and workforce may only be recruited temporarily, and they may also need to bear higher average costs on the lands, back-office, plants and equipment which is more a "fixed cost" in nature. Therefore, these industry peers generally produce potted vegetable produce at a higher cost and have to sell their produce at a higher price.
- It is also submitted that, as most of the Group's industry peers' cultivation scale is much smaller than that of the Group (i.e. the other top 5 industry peers (excluding the Group) only have a market shares ranging from approximately 0.2% to 1.0% and have a revenue ranging from approximately RMB1.7 million to RMB8.5 million in 2021 as disclosed on page 75 of the PAP6), their market size is small, and therefore, their selling price is volatile and less representative, and thus may deviate from the prevailing market price.
- It is also submitted that as vegetable produce is for day-to-day consumption and most of the distributors in the industry purchase vegetable produce from the agricultural producers on a daily basis it is an industry practice that they will not provide confirmed orders for an extended period of time.
- It is the industry norm that vegetable distributors (both potted and traditional vegetable) do not give confirmed orders for a long period of time to vegetable producer.

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F R O S T & S U L L I V A N

Key Industry Norms

Company	Full Name	Revenue (RMB Million)	Average Selling Price of Potted Vegetable (RMB)	Number of Vegetable Species	Customer Profile
The Group	Fujing Holdings Co., Limited	114.5	15.1	29	Hotels and restaurants in the PRC
Company A	Shandong Shouguang Vegetable Seed Industry Group Co., Ltd.	7.9	20 to 30	15 to 20	Mainly households in Shandong province, Beijing and Hebei Province
Company B	Shandong Qidi Agricultural Science and Technology Co., Ltd.	3.7	~20	~5	Mainly households and restaurants in Shandong province
Company C	Shandong Liaoyuan Agricultural Science and Technology Co., Ltd.	2.2	~15	~10	Mainly households and restaurants in Shandong province
Company D	Qingzhou Huikangyuan Vegetables Co., Ltd.	1.4	15 to 20	~10	Mainly households in Shandong province

The Group recorded revenue growth of approximately 4% from FY2020 to FY2022 which underperformed the market as the revenue growth of potted vegetable produce in China and Shandong province were approximately 16% and 14%, respectively, during the same period. This is mainly due to the fact that, notwithstanding that our revenue increased by approximately 28% from approximately RMB121.4 million in FY2020 to approximately RMB154.9 million in FY2021, our revenue decreased significantly to approximately RMB126.7 million in FY2022. Such sharp decrease in revenue from FY2021 to FY2022 was primarily attributable to the decrease in the sale volume of our potted vegetable produce from approximately 10.3 million pots in FY2021 to approximately 8.4 million pots in FY2022 due to the resurgence of COVID-19 cases in Shandong province between March 2022 to April 2022 which had led to a temporary suspension of business activities of our Laixi Facility and Dalian Facility during the lockdown period.

Key Industry Norms

- Potted vegetable produce is a small segment of the vegetable market as a whole which is predominantly cultivated under traditional in-ground methods.
- The Group's business was materially affected in FY2022 by the temporary suspension of business activities of our Laixi Facility and Dalian Facility as a result of the resurgence of COVID-19 cases in Shandong province between March 2022 to April 2022 leading to decline of revenue by approximately 18.2% between FY2021 and FY2022 whereas the overall effect caused by the resurgence of COVID-19 cases in China and other provinces in Shandong province is less severely impacted as compared to Qingdao area where Laixi Facility situated.
- Notwithstanding the increase in our revenue by approximately 28% between FY2020 and FY2021, our business was materially affected in FY2022 by the temporary suspension of business activities of our Laixi Facility and Dalian Facility as a result of the resurgence of COVID-19 cases in Shandong province between March 2022 to April 2022, leading to decline of revenue by approximately 18.2% between FY2021 and FY2022. However, the overall effect caused by the resurgence of COVID-19 cases in China and other provinces in Shandong province is less severely impacted as compared to Qingdao area where our Laixi Facility situated. Thus we underperformed the potted vegetable produce market in China and Shandong province in terms of the revenue growth.

Impact of COVID-19

F&S's basis and assumption to the impact of COVID-19 to the industry:

- Under the great effort made by the PRC government on the epidemic control and medical treatment, the outbreak of COVID-19 in the PRC has been effectively brought under control. According to the data from National Health Commission, there were 1,850 existing confirmed cases in the PRC by 24 January 2021, and 288 of which were imported from overseas. The PRC government has established strict quarantine and preventive measures to prevent the risk of importing confirmed COVID-19 cases from overseas. Under this circumstance, the global impact of the COVID-19 pandemic hardly affects the vegetable and potted vegetable produce market in the PRC in the foreseeable future;
- China's economy is gradually recovering and has restored positive growth in the second quarter of 2020. According to the National Bureau Statistics of China, China's GDP in the third quarter of 2020 has grown approximately 4.9% compared to the GDP in the third quarter of 2019. Along with the successful control of the COVID-19 epidemic, China's macroeconomy is forecast to be continuously growing in the fourth quarter of 2020. Moreover, according to the International Monetary Fund, China is expected to be the only country to achieve positive growth in 2021 among global major economies; and
- The initial outbreak of COVID-19 did adversely affect China's vegetable and potted vegetable produce markets in a short term. After the outbreak of COVID-19, China and local governments had issued regulations to postpone resumption of work in late January and early February 2020, which restricted workers to go back to the workplace. In such case, the production and delivery of vegetable and potted vegetable produce were affected due to the shortage of workers and supervision requirement. However, the market has already restored to normal state with the recovery of macroeconomy and work resumption. In addition, due to the outbreak of COVID-19, people are increasingly concerned about the safety and quality of food. The increasing awareness of food safety and health may drive the demand for vegetables and potted vegetable produce among residents in China. In February and March 2020, in light of the closure of some hotels and restaurants and the government policy of home isolation and quarantine which restricted the movement of local residents, as a temporary and extraordinary arrangement. Most restaurants and hotels were reopened and local residents were allowed to dine out by the end of March 2020.
- In October 2020, 6 people with symptoms and another 6 without any have tested positive for the virus that causes COVID-19 in Qingdao, Shandong province. By 16 October 2020, government of Qingdao says it has carried out more than 10 million tests in the Qingdao, with no new cases of coronavirus found among all results received. By 24 January 2021, there are no existing confirmed cases in Qingdao. Hence, the outbreak of COVID-19 in October 2020 has a slight impact on Qingdao's economy and is not expected to impact the vegetable and potted vegetable produce market in Qingdao.
- On the other hand, although the outbreak of COVID-19 appeared to be under control in the PRC since March 2020, more and more case of infection have been confirmed in the rest of the world, including the United States, Europe, Japan and South Korea. Consequently, these countries have imposed travel restrictions and social distancing measures, which have seriously undermined the local and cross-boarder economic activities in these area. The number of tourists, business events and social functions has substantially decreased and the economy of the affected countries and territories slacked. The global financial markets have undergone extreme volatilities and the risk of global recession has significantly increased. There is no assurance that there will not be any direct or indirect adverse impact on the Company's business, financial condition and results of operations arising from any effect on the PRC economy or other parts of the world as a result of the outbreak, exacerbation, continuance or reoccurrence of COVID-19. There is also no assurance that the global economic performance will improve shortly even after the containment of the outbreak of COVID-19 and the withdrawal of the respective travel restrictions and social distancing measures and thus the Company's business could be materially and adversely affected.
- The spread of COVID-19 strongly impacted the catering industry in China in the first half year of 2020. In April and May, the total revenue of catering industry witnessed a year-on-year drop of 29.7% and 17.0%, respectively. The drop of catering market may lead to a decrease of revenue of potted vegetable producers who mainly target restaurant and hotel customers.

Source: Frost & Sullivan

Appendix and Methodology

- Frost & Sullivan is an independent global consulting firm, which was founded in 1961 in New York. Frost & Sullivan has over 50 global offices with more than 3,000 industry consultants, market research analysts, technology analysts and economics. It offers industry research and market strategies and provides growth consulting and corporate training. Its industry coverage in China includes automotive and transportation, chemicals, materials and food, commercial aviation, consumer products, energy and power systems, environment and building technologies, healthcare, industrial automation and electronics, industrial and machinery, and technology, media and telecom.
- The market research process for this study has been undertaken through detailed primary research which involves discussing the status of the industry with leading industry participants and industry experts. Secondary research involved reviewing company reports, independent research reports and data based on Frost & Sullivan's own research database.
- Primary interviews are conducted with relevant institutions to obtain objective and factual data and prospective predictions. Secondary research involves information integration of data and publication from publicly available resources, including official data and announcements from PRC government departments, and market research on industry and enterprise player information issued by our chief competitors.
- Projected total market size was obtained from historical data analysis plotted against macroeconomic data as well as specific related industry drivers.
- Frost & Sullivan's report was compiled based on the below assumptions:
 - China's economy is likely to maintain steady growth in the next decade;
 - China's social, economic, and political environment is likely to remain stable in the forecast period;
 - Increasing frequencies of dining out and growing concerns about food safety of China's residents are likely to drive the future growth of the industry;
- All the data and information regarding the Group is provided by the Group.
- Fertilisers and seeds are major raw materials of China's potted vegetable produce market. It is normal in the market that given the large number of suppliers and abundant supply of fertilisers and seeds, market players may source from different suppliers depending on prices, product quality and changing demands.

Source: Frost & Sullivan Analysis

Abbreviations and Terms

Chinese Name	English Abbreviation	English Name
内蒙古乾蒙有机农牧业科技开发有限公司	Qian Meng	Inner Mongolia Qian Meng Organic Agricultural Science and Technology Development Co., Ltd.
山东寿光蔬菜种业集团	Shouguang Seed	Shandong Shouguang Vegetable Seed Industry Group Co., Ltd.
太仓绿丰农业资源开发有限公司	Lvfeng	Taicang Lvfeng Agricultural Resource Development Co., Ltd.
山东启迪农业科技股份有限公司	QIDi	Shandong Qidi Agricultural Science and Technology Co., Ltd.
山东燎原农业科技股份有限公司	Liaoyuan	Shandong Liaoyuan Agricultural Science and Technology Co., Ltd.
青州市惠康源蔬菜有限公司	Huikangyuan	Qingzhou Huikangyuan Vegetables Co., Ltd.

Source: Frost & Sullivan

Thank You!

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