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Research on the Construction of GX-ASEAN Agricultural Science and Technology Expo Park

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***Abstract*—The China-ASEAN Free Trade Area had been under construction since 2002. In order to promote the exchange and cooperation between GX and the agricultural industry of ASEAN countries, the project unit plans to build the ASEAN Agricultural Science and Technology Expo Park. This paper studies the project from the aspects of construction background, location advantage, natural advantage and construction content.**

Keywords—agricultural science and technology; expo park; research

I. INTRODUCTION

ASEAN, Southeast Asia's most populous international body, has recently become a "sought-after partner" for its big neighbors. On November 4, 2002, leaders of China and 10 ASEAN countries signed the China-ASEAN comprehensive economic cooperation framework agreement. According to this agreement, China and the ASEAN agreed to establish a China-ASEAN Free Trade Area by 2010. The free trade area strategy of China and ASEAN was launched from this. In order to promote the exchange and cooperation between GX and the agricultural industry of ASEAN countries, the project unit plans to build the ASEAN Agricultural Science and Technology Expo Park.

II. PROJECT CONSTRUCTION BACKGROUND AND ENVIRONMENT ANALYSIS

A. Favorable Development Trend Between China and ASEAN

Since the establishment of the China-ASEAN free trade area in 2010, the two sides have achieved rapid development in regional economic integration. In 2015, the China-ASEAN free trade area was successfully upgraded. The two sides attach great importance to cooperation under such sub-regional frameworks as the Lancang-mekong River, Great Mekong Subregion Cooperation, and the Brunei Darussalam-Indonesia-Malaysia-Philippines East ASEAN Growth Area, to encourage relevant local authorities and enterprises of the two sides to actively participate in regional economic integration.

The scale of bilateral trade increased significantly, from $13.3 billion in 1995 to $113.5 billion in 2005 and further to $368 billion in 2016. Over the period, ASEAN-China trade grew at an annual rate of about 18 per cent, while the trade between ASEAN and the world grew at an annual rate of only 7 per cent. In 2017, trade between China and ASEAN reached $514.82 billion, accounting for one eighth of China's total foreign trade. China has been ASEAN's largest trading partner for nine consecutive years, and ASEAN has been China's third largest trading partner for seven consecutive years. From January to May 2018, the trade volume between China and ASEAN increased by 18.9% year-on-year to $232.64 billion.

B. Development of Agricultural Trade Between China and ASEAN

With the continuous progress of the "China-Singapore southbound passage" project, in mid-march 2018, the China-Europe (Nanning-Hanoi) cross-border refrigerated container line for agricultural products began to be in regular operation. The "Nanning-Hanoi" cross-border container line, as an important part of the China-Europe line, carries GX agricultural products and fruits from temperate zones in western China to Hanoi, Vietnam, via the "Baise 1" refrigerated container, and distributes them to major fruit markets in Ho Chi Minh, Da Nang and Tonnai, Vietnam. At the same time, 12 tons of ASEAN fruits have been transported to Lanzhou, Gansu province, via the China-Singapore connectivity southbound sea-rail transport line. It is expected that in the second half of this year, the Pingxiang railway port in GX will be approved as the first railway port for import and export of fruits in China. At that time, fruits, seafood, nuts and other high-quality agricultural and sideline products from Vietnam and other ASEAN countries will be transported back to Nanning by the return "Baise 1" refrigerated container line, and then distributed to all parts of the country for sale by the "Baise 1" cold chain system. In this way the connectivity between China's temperate agricultural products and ASEAN countries' tropical agricultural products will be formed, providing a convenient, economic and safe new logistics mode for China and ASEAN's cold chain transport.

C. Market Demand Analysis of Super Rice in ASEAN Countries

Hybrid rice is so popular in ASEAN, one of the world's main rice-growing regions, that farmers there are hoping that one day Chinese super rice will arrive in their paddy fields. At present, 10 million mu of hybrid rice has been planted in

Vietnam, and the yield is more than 20% higher than that of conventional rice. The local rice varieties in the Philippines produce only 4 tons of grain per hectare, which is not enough to feed and feed its people, so the country spends at least 400 million to 500 million us dollars on imported food every year. When Yuan Longping's hybrid rice was introduced in the Philippines, it produced 10.37 tons of grain per hectare, much more than the 7 tons of grain per hectare grown here at International Rice Research Institute.

D. Summary

Through the analysis of China-ASEAN trade, especially agricultural products trade, GX-ASEAN agricultural products trade and agricultural cooperation, and the market demand of ASEAN countries for super rice, it can be predicted that with the continuous development of trade, there will be an increasingly urgent demand for the construction of GX-ASEAN Agricultural Science and Technology Expo Park.

III. LOCATION AND NATURAL ADVANTAGES OF THE PROJECT CONSTRUCTION

A. Location Advantages of GX

GX is located in the center of China-ASEAN free trade area, connecting the two markets of China and ASEAN, and has the regional advantage of two-way communication between China and ASEAN. It is the only province in China that has land borders and sea routes with ASEAN. At present, it has built a major passage to the sea and out of the border, forming a three-dimensional transportation network with ASEAN countries. Being along the coast and in the western part of China, it is one of China's most growth potential provinces.

GX has 17 first-class ports and 11 second-class ports. At present, the total mileage of GX expressway has reached 1,157 kilometers, and the expressway network covers all cities of GX. In terms of airports, GX now has five major airports and more than 100 air routes. The four-hour direct flight can cover all capitals in East Asia and Southeast Asia. GX has built the airport into an international hub port and an international tourism hub port leading to ASEAN countries.

GX has many coastal harbors with the advantages of deep water, wind sheltering, small waves, straight and smooth shoreline, large tidal capacity, no or little silting in the harbor basin, which is very favorable for the construction of harbors, especially for berths over 10,000 tons. There are 21 ports of various sizes in the coastal area of GX, among which 5 ports are suitable for the construction of wharf berths over 10,000-ton, basically forming the pattern of large composite port group, and the eventual handling capacity can reach more than 200 million tons.

There are 8 counties (cities) on the GX border with Vietnam, and 12 border ports and 25 border trade points. The unique geographical advantages of railway and highway connection make the GX channel play an increasingly significant role.

With the advance of the construction of China-ASEAN free trade area, GX will play a more prominent role as a part of the new economic growth belt on the west coast of the Pacific Ocean, new growth pole of China-ASEAN free trade area, and the new engine of China's western development strategy.

B. Natural Advantages of Project Construction

1) Natural advantages of rice planting in GX: GX is located in the square area of China, which is a low latitude area. Surrounded by mountains, GX is covered mainly hilly territory, bordering the tropical ocean in the south. This special geographical environment, combined with the atmospheric circulation, has formed the climatic characteristics of rich heat, farming suitability in four seasons, abundant rainfall, distinct dry and wet, moderate sunshine, less winter and more summer, frequent disasters and prominent drought and waterlogging.

2) The natural advantages of building seed production base: The climate of the project site is a subtropical monsoon climate, with abundant light and heat, hot rain in the same season, long summer and short winter. Its annual average temperature ranges from 19.0 ℃ to 22.1 ℃, with the highest temperature of 36.0 to 42.5 ℃, the lowest temperature of 2.0 ℃ to 5.3 ℃; it has an annual average sunshine of 1906.6 hours, annual average rainfall of 1114.9 millimeters, frost-free period for 357 days.

The land area is 3600000 hectares, including red clay, red sand-mud, yellow sand-mud loam, Baise tidal sand-mud field, and calcium black clay. The cultivated land area accounts for 11.91% of the total land area of Changyu. Among them, 145688.22 hectares are irrigated paddy field, 21367.13 hectares are rained paddy, 264087.79 hectares are dry land, and the rest are vegetable fields and irrigated fields.

It is the best place for rice breeding with sufficient light and suitable temperature.

IV. CONTENT OF PROJECT CONSTRUCTION

A. Construction of Hybrid Rice Cultivation and Display Base

In recent years, the increasing number of new rice varieties has enriched the variety types and enriched the seed market supply, thus promoting the development of grain production. However, due to the opening of the seed market, with too many new varieties, farmers have increasing blindness when choosing seeds. As a result, a number of excellent new varieties failed to give full play to their excellent characteristics for lack of suitable ecological environment and cultivation methods. In order to select the leading varieties that meet the market demand, ecological environment and planting habits of Changyu, avoid planting risks in production, promote the popularization and application of new crop varieties in production, and achieve the goal of increasing grain yield and farmers' income, the project unit will build a hybrid rice cultivation demonstration base. It is to achieve the effect of point with surface through

variety display and introduction of improved varieties, in order to achieve the introduction of hybrid rice to ASEAN countries as soon as possible.

The base acquisition scale of Hybrid rice cultivation and display is 400 mu.

B. Construction of Hybrid Rice Seed Production Base

To meet the demand of GX and ASEAN countries for hybrid rice seeds, a hybrid rice seed production base covering an area of 300,000 mu was built. The seed production base can be operated in the way of "company-farmers", that is, seed companies choose suitable production areas and establish seed production bases together with farmers. The seed company shall provide the necessary means of production and technical services to the farmers, who shall provide land and shall be responsible for production management. The seeds produced shall be purchased by the seed company, at the purchase price that is determined in accordance with the contract, and the production and operation risks shall be assumed in accordance with the contract. The contract of seed production of this kind of "company- farmer" has the following ways of profit distribution. The first way is the acquisition at protection price. The farmers themselves bear the cost of seed production, and the seed company shall pay no less than the protection price when purchasing the seeds. Protection price includes the sum of the cost of production, the price of means of production and the price of labor plus the average profit. When the market price is lower than the protection price, the seed company shall purchase the seeds at the protection price; and when market price is higher than protection price, the company shall purchase seeds at market price. The second is the grain price comparison acquisition. Currently the "company-farmer" seed production contract generally purchases seeds with grain price comparison acquisition. The third is financial support. The company pays advance payment to the farmers. The advance payment is not issued to the farmers in monetary form, but is the price paid by the farmers to the company for seeds, fertilizers, agricultural film and pesticides. The price of these means of production is generally not higher than the market price and this part of money will be the deduction for seeds payment.

C. Construction of Exhibition and Trading Center

On the whole, the main function designing of the expo park should be in accordance with the principle of ecological environment index, regional characteristics and humanized design. The development of the project should take agricultural science and technology exhibition, application and promotion of agricultural science and technology as the theme, highlights ecological agriculture, and focuses on the display and trade of agricultural products, animal husbandry products, aquatic products and packaged foods. In this way can the expo park be built into a modern agriculture comprehensive demonstration area integrating exhibition, application and promotion of science and technology, ecological agricultural tourism, featured agricultural products trading and conference reception.

1) Agricultural exhibition area

a) Agricultural means of production: The agricultural means of production include but not limited to environmental protection and green pesticides, fertilizers, seeds (to reflect the display and trade of super rice seeds), large and medium-sized agricultural machinery, agricultural tools, agricultural and sideline products deep processing equipment, etc.

b) Agricultural high-tech: The project negotiation can be carried out focusing on agricultural breeding technology, deep processing technology of agricultural products, biotechnology, energy conservation and environmental protection technology, new materials and new energy to display China's advanced and applicable technology achievements targeted at the ASEAN market and promote the technology transfer and cooperation between China and the 10 ASEAN countries.

c) Agricultural products: A. Tea: Black tea, green tea, white tea, yellow tea, dark tea, oolong tea, scented tea, health tea, tea bag paper, scented flower and other tea and related products.

B. Fruits: all kinds of fresh fruits, specialty fruits, frozen fruits, quick-frozen fruits, freeze-dried fruits, dried fruit preserves, nuts, fruit products, etc.

C. Bee products: honey, royal jelly, bee pollen, propolis, beeswax, beekeeping equipment, etc.

d) Products of animal husbandry and aquatic products: Meat, fish, poultry, aquatic products, seafood and so on.

e) Packaged food: The exhibition part uses one floor exhibition hall, which can be divided into 5 exhibition halls of different specifications according to agricultural production materials, agricultural high-tech, agricultural products, animal husbandry and aquatic products and packaged food, with a capacity of 1200 international standard booths to the limit.

The administrative complex building is composed of the administrative complex building, multi-functional exhibition hall, exhibition equipment processing room, warehouse, etc., and is equipped with a conference hall that can hold 200 people at the same time.

2) Agricultural expo trade zone: There is mainly a permanent display and trading platform of the expo park, with emphasis on trading functions. It is required to conduct the overall planning according to the characteristics of each country. There are obvious signs for the distinction, to facilitate the later business product positioning — a never ending agricultural expo. In the early stage, China and the ten ASEAN countries are the main subjects, and the plan also reflects the participation of Japan, Russia and South Korea.

3) Ecological, healthy and livable area

a) Ecological international club hotel: With agricultural expo exhibition area as the main axis, ecological

international club hotel is built according to the characteristics of each country (quantity of countries is taken as the construction unit). In the early stage, China and the ten ASEAN countries are the main subjects, and the plan also reflects the participation of Japan, Russia and South Korea.

b) Senior ecological apartments: The construction of senior ecological apartments is to provide related supporting facilities for the agricultural expo business owners, and to form a good structure level along with ecological international club hotel.

4) Agricultural history and culture exhibition area: The construction of the agricultural culture exhibition area is not only a tribute to China's long agricultural civilization, but also an integration of the successful elements of the past agricultural sightseeing and leisure park, especially in the aspect of rice planting, which represents the highest level of agricultural culture. The highlight of the in-depth experience of farming culture can provide tourists with both a strong regional cultural atmosphere and a happy world of modern leisure.

5) Characteristic sightseeing agricultural area: The area is equipped with characteristic agricultural planting, ecological restaurant, aquaculture fishing and leisure club of agricultural expo park.

6) Logistics service area: The area provides integrated logistics services for the expo park.

V. CONCLUSION

The construction of the project has built a platform for the mutual exchange and trade of China-ASEAN agricultural products, agricultural machinery and tools and agricultural technologies, and promoted the development of China-ASEAN trade. The construction of seed production base on the one hand provides sufficient seeds for the promotion of hybrid rice; on the other hand, it provides guarantee for the increase of farmers' income in Baise city.

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