

Application Status and Development of Agricultural Science and Technology in Shandong under the Background of Agricultural Science and Technology Service

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ABSTRACT

Based on the market background of rapid development of agricultural science and technology service industry, our agricultural market faces some new problems and challenges. By analyzing the present situation and existing problems of Chinese agricultural market, this article proposes countermeasures and suggestions for the development of Chinese agricultural science and technology.

KEYWORDS: *Agricultural science and technology service industry; Information asymmetry; Agricultural machinery technology; Labour*

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1. The introduction

After many years of unremitting efforts, our economy has been transformed from a high-speed growth stage to a high-quality development stage, at the same time, our country's agricultural technology transformation is also imminent. In May 2018, the state issued the National Strategic Plan for Rural Revitalization 2018-2022, calling for accelerating agricultural modernization, building modern agricultural industrial, production and business systems, and continuously raising total factor productivity. In 2020, the Ministry of Science and Technology, the Ministry of Agriculture and Rural Affairs, the Ministry of Education, the Ministry of Finance and other ministries jointly issued Several Opinions on Strengthening the Construction of a Socialized Service System for Agricultural Science and Technology, proposing to increase the effective supply of Agricultural science and technology services and accelerate the construction of a socialized service system for Agricultural science and

technology. China's agricultural arable land covers an area of 1.851 billion mu. However, due to several problems such as technology and labor force, the input-output ratio of China's agriculture is not high, so that most of the 100 million mu of arable land is not used rationally. Under the general background of the country vigorously promoting agriculture, the environment for the development of agricultural science and technology service industry is very promising. At present, the great information asymmetry problem exists in our agricultural modernization development process, the main performance is: 1. The technical information between first-tier cities and second-tier cities is asymmetrical, and agricultural technology is difficult to reach the grass-roots level. 2. Labor information is asymmetrical, and rural areas are faced with the problems of resource shortage and high labor cost. 3. Asymmetric agricultural basic information. Along with the development of market economy,

agricultural information in agricultural economy accounted for more and more heavy, lag of information will lead to a series of interlocking problems surfaced, use of agricultural science and technology to fundamentally solve the problem of agricultural information lag, belt line, with the dot to line into the surface, form China's exclusive agricultural information network, to achieve agricultural competitiveness, promote the modernization of agriculture development in our country. Under the traditional agricultural operation mode, the decentralized, difficult to form a system, high efficiency, and timely follow up the development of modern science and technology of the traditional agriculture has been out of touch with the development of The Times. Farmers need the emerging agricultural science and technology service platform to provide modern guidance and help for their agricultural activities. Chinese agricultural development needs more agricultural science and technology service enterprises to promote agricultural development to a new level.

2. Analysis of the application and development status of agricultural science and technology in farmers and small and medium-sized agricultural enterprises

2.1. Production technical services of individual farmers

Through the investigation of the current situation of agricultural production in Shandong Province, we found that there are three major problems: the asymmetry of farmers' individual production technology information, the lack of government guidance and the lack of agricultural machinery and equipment. Cherry is one of the local characteristics of Shandong fruits, large-scale production must be established on the basis of a complete sales chain, need to invest a lot of manpower, financial and material resources. However, cherry farmers lack professional knowledge, and large-scale planting will encounter a variety of problems, such as the maintenance of fruit trees, storage, sales channels, the severity of the epidemic; The high cost of agricultural technology transformation and long investment return cycle will also affect the fruit farmers. At the same time, the development level of farmers is uneven due to the lack of national cultivation technology guidance to farmers. Lack of government funding and information support, individual risk tolerance is weak, resulting in farmers unable to choose the best equipment to match the production chain. In addition, Zibo agricultural machinery equipment quality is poor, easy to break down in the use process, and the after-sales service is not perfect. However, due to the local sellers, dealers marketing efforts, as well as the

geographical and price advantages, farmers can not timely and clearly obtain the information of foreign agricultural machinery equipment, resulting in local equipment has become the first choice, agricultural machinery technology can not be actually improved.

In addition, farmers also face the problem of technology lag. Demonstration villages, base villages, scientific research institutions and other agricultural production structures are generally dominated by cash crops, and farmers have more opportunities to accept and adopt new production technologies. However, in the face of some more complex technologies, such as water-saving irrigation, farmers cannot rely on past experience to operate, and must go through appropriate training and other ways to learn, and these technologies often require high capital input and manpower. The learning cost and input cost of farmers have increased. In addition, this process requires a long period of cognition, observation and experiment, so there is a phenomenon of relatively backward technical level, which is reflected in the insufficient allocation of factors in production.

2.2. Technology application and development of small and medium-sized agricultural enterprises

Through the investigation of small mushroom production enterprises in Shandong Zibo region, we found that at present, our small scale agricultural enterprise technology, human resources, financial resources are in the disadvantage, and technology resources can not compare with large companies. Problems such as insufficient technical information, weak technical ability, low work efficiency and shortage of core technical personnel exist in small and medium-sized agricultural enterprises in our country. Small and medium-sized enterprises are facing great pressure of fierce competition, and their living space is very narrow. Companies compete with each other to survive and develop, and the market is in a highly competitive state. From the external development environment, on the one hand, the financing environment of smes is poor, the overall strength is weak, and the condition of asset mortgage is poor. On the other hand, rural smes have narrow financing channels. As rural smes have obvious financing characteristics of high financing frequency and small loan base, the cost of bank loans increases. In addition, banks make less profit, and such situation of high pay and low return makes small enterprises obtain less funds.

2.3. advice,

Technology is the high concentration and dissemination carrier of the new agricultural technology, but our country's agricultural

development must rely on science and technology to lead in the final analysis. The process of technology transmission is divided into six stages, including technology demand, innovation, confirmation, sales, application and evaluation. Information exchange is very frequent among all links. However, due to the unblocked information, the speed of technology transmission in the next step will be negatively affected. Therefore, whether science and technology can be rapidly promoted in the majority of agricultural areas concerns the long-term development of our agriculture; If contemporary enterprises only follow the traditional agricultural model, they can no longer connect with the society. Small companies have irremediable shortcomings in capital and technology. Therefore, for farmers and small agricultural enterprises, it is inevitable to find a new way to keep pace with The Times, and the development of e-commerce is one of the ways.

Take Shandong as an example. As a major agricultural trade area, Shandong can give full play to the advantages of the Internet, strongly catalyze the integration of agricultural industries, and promote brand, quality, e-commerce and other new forms. At the same time, the use of big data to create a traceability platform, so that agricultural enterprises can directly establish customer groups, so as to further improve the quality of products, and according to the preferences of customers, to provide reference for future development. In addition, through the integration of resource elements, it can also realize the integration of "leading" agricultural enterprises and maximize economies of scale. However, nowadays we still lack a suitable channel to realize the rapid spread of agricultural technology and the spread of technology.

3. Analysis of agricultural labor force and its application of science and technology

3.1. Agricultural labor force and its application of science and technology

Through the study of the villages in Tai 'an City, Shandong Province, we found that the problems in the local labor market were prominent in the following aspects:

First, the problem of labor shortage is very serious. The reasons are as follows: (1) young and middle-aged people in agricultural areas go out for work; (2) The local surplus labor force is generally older and less educated, the planting method is relatively old, and the coverage rate of mechanization and science and technology is low, resulting in low pay and yield rate. Second, the introduction of agricultural science and technology lacks talent support. The introduction of agricultural science and technology can better

solve the problem of local labor shortage. However, with the increasingly high labor cost, no introduction of agricultural science and technology and other problems, the local demand for high-quality young labor is very urgent.

In the investigation of the villages in Tai 'an City, we collected the quantity and planting content of the cultivated land in the village. There are 318 mu of cultivated land in the village, mainly planting corn, peanut, wheat, soybean and other food crops, but also planting garlic, onion and other crops. Due to the local planting industry as the main industry, the loss of young labor force is serious, the age of the local labor force is generally over 65 years old, the cultivation is still the most primitive form of self-sufficient and artificial labor, resulting in the agricultural development in this region has not been great.

3.2. Innovative attempts to solve problems

In the process of poverty alleviation, in order to solve a series of problems, the local residents of Tai 'an established a land supply cooperative, which transferred nearly 300 mu of land in the village, made maximum use of land resources, and realized a large income. In addition, the local government invested in the construction of a water plant, which provided jobs for local villagers such as Dali Prefecture, and attracted the return of young labor force. It not only reduced the production cost, but also boosted the income of farmers, realizing "two worries and three safety", but the most prominent problem was still not solved. In order to solve the practical problems, we went to the shandong weifang institute of science and technology to learn technology and finally came to an organic fertilizer breeding techniques such as cooperation, from the source of technology to provide support for the region, from the aspects such as planting with information technology exchange, let people from low labor, high yield began to feel the charm of agricultural science and technology, Introduce new technology and solution for Tai 'an city.

4. Asymmetric agricultural basic information leads to unsalable agricultural products

4.1. Through the survey of many villages in Shandong Province, it is found that most farmers think that the asymmetry of basic agricultural information is one of the most easy reasons for unsalable agricultural products. According to the principle of supply and demand, when supply exceeds demand, prices fall; When supply is less than demand, the price goes up. This just reflects the importance of farmers to understand market prices and market planting trends. Knowing where the

damage is severe and which crops are scarce, farmers can make early adjustments to adapt to market trends and gain more profits. Basic agricultural information is asymmetrical, and the government lacks guidance to farmers in terms of supervision, standardization and policy issuance, etc., leading to the fluctuation of local agricultural production, the imbalance between supply and demand is prominent, and the problem of unsalable agricultural products often occurs when supply exceeds demand.

4.2. The impact of basic agricultural information on farmers' income -- Taking fertilizer as an example

As we all know, there is a certain relationship between farmer's income and fertilizer price. The high price of fertilizer will directly lead to the decrease of farmers' income. Influenced by the substantial increase of fertilizer exports and the continuous rise of raw material prices, all kinds of subjects reduced inventory, and the inventories of production enterprises, distribution enterprises and ports all decreased significantly. From the perspective of production enterprises, the inventory of Chinese urea production enterprises at the end of September 2020 was about 448,000 tons (material volume, the same below), a year-on-year decrease of 63,000 tons, or 12.4%; At the end of August, the inventories of diammonium phosphate and monoammonium phosphate manufacturers were down 12.5% and 3.6%, respectively, from the same period last year. From the perspective of circulation enterprise inventory, the overall inventory of fertilizer in the national supply and marketing cooperatives was basically flat with that of last year at the end of August, but the inventory of urea and potash decreased by 9.3% and 19.7%, respectively. From the perspective of port inventory, affected by the shortage of international potash supply and delayed delivery by foreign investors, the inventory of potassium chloride in China's main ports on October 9 was 2,172,000 tons, down 878,000 tons year-on-year, or 28.8%. Since the beginning of this year, the price of various kinds of fertilizer has increased significantly year-on-year, increasing the cost of fertilization for farmers. According to estimates, the average fertilizer input per mu of land increased by more than 100 yuan year-on-year, and the grain production income per mu of land increased by 20 yuan year-on-year (calculated according to the yield of 800 kg per mu), the input and output are not proportional. For large growers, fertilizers with lower nutrient content may be selected for autumn and winter sowing to reduce input costs; For small farmers, it is likely to reduce the scale of planting or borrow money to plant, which not only

cannot guarantee the benefits, but also reduces the cost too much.

5. The conclusion

Through a long-term study and analysis of the agricultural situation in Shandong Province, the following conclusions can be drawn for the specific problems of agriculture in Shandong Province, agricultural modernization and specific rural revitalization strategy:

1. The construction of basic agricultural information, the specific application of agricultural technology and the improvement of agricultural modernization are interdependent basic relations.

Agricultural basic information construction includes market supply and demand relationship, market demand level. Under the promotion and construction of socialism with Chinese characteristics, the theoretical system of socialism with Chinese characteristics in the new era and the socialist market economy, perfect basic information can only promote and improve the interaction among the four parties of government, market, consumers and producers with equal basic information and sufficient data. To a certain extent, the basic information construction of agriculture as the primary industry has certain backwardness and imperfection. When the basic information construction of agriculture is imperfect and underdeveloped, there will be a certain degree of inadequacy in the rural industrial system construction of poverty alleviation and rural revitalization strategies. For example, when each county adopts its own industrial construction according to its own conditions, it will lead to the duplication of industries, resulting in market saturation and affecting the capital investment in rural areas. On the premise of perfect agricultural information infrastructure construction, it can provide specific plans to improve the application of agricultural technology, drive the village collectives and individuals to upgrade their own agricultural application technology, and drive the collective and individual modernization of the primary industry. Under the technological application of science and technology upgrading after reasonable planning, farmers and village collectives will realize benign agricultural modernization competition and industrial efficiency upgrading, so as to realize rural revitalization and industrial technology dual upgrading, and realize agricultural modernization through agricultural basic information construction in technology and application. To sum up, the construction of agricultural basic information is the basic condition of the application of agricultural technology, the application of agricultural technology

is an important means of agricultural modernization, and the improvement of agricultural modernization requires the construction of agricultural basic information and the application of agricultural specific technology as an important condition. Therefore, there is a triangular relationship among the three, one is indispensable.

2. Basic agricultural information construction is the important exploration mechanism and means to solve and improve our agricultural industry upgrading.

In agricultural development and construction in our country, there exists the characteristic of self-sufficiency and small-scale peasant economy in feudal period. After the new democratic revolution and socialist construction, especially after land reform, farmers have been liberated in the production relations, and our agricultural modernization has taken great strides forward. After the reform and opening up, China's rapid development of science and technology level and industrial production and in agricultural production, played an important and positive role of socialist public ownership economy, the modern agriculture and rural industry has realized the comprehensive modernization of production and high yield, the transformation of rural realized at the production level, but there are still on the objective conditions is not advanced. Due to the development of agricultural basic information construction and urbanization, a large number of rural people entered the urban work in the early stage of the reform and opening up, and there was a certain degree of labor shortage in agriculture. Therefore, there were a large number of left-behind rural farmers as the main producers of agricultural labor. Therefore, to some extent, the agricultural industry upgrading of our country has a series of problems caused by the backward agricultural basic information construction. For example, the means and ability of farmers to obtain market information and technical information lag behind and thus the planting technology and quantity of agricultural crops lag behind objectively. With the popularization of the Internet, the basic information construction of agriculture can solve the lag of agricultural production and agricultural labor force through the Internet and TV as the carrier, and improve the per capita disposable income of rural areas through agricultural production machinery and agricultural production technology according to local conditions, so as to realize the return of rural population. On the agricultural production, the technological innovation of Chinese agricultural industry was realized, and the most efficient agricultural production was realized. In conclusion, the construction of Chinese agricultural basic

information is an important way for further upgrading of agricultural industry.

3. The construction of agricultural basic information can integrate and perfect the specific problems in various agricultural production, is an important way to ensure agricultural production.

Since the reform and opening, our country agricultural technology and the types of crops in the escalating products brought about by science and technology under the escort of production and mode of production is more and more mature, but because of the vast rural areas because the remote and occlusive lead to farmers and rural problem in production problem cannot be solved properly, so the protection of agricultural production cannot be perfect. After the reform and opening up, with the rapid economic development, advanced tools have gradually entered the countryside, such as light bulbs, biogas digesters, TV sets, computers, Internet, smart phones. The basic information construction of agricultural development has a suitable carrier. The basic information construction of agriculture can perfectly solve the planting mode of crops needed by farmers in production and life, clarify the output through understanding the basic information of agriculture, and learn more about the knowledge needed for agricultural development through timely information. This is an important means to solve the problem of agricultural production and integrate the market.

Generally speaking, in the construction of the national unified big market and "crucial" poverty and achieve rural revitalization, driven by the agricultural informatization is crucial, for the agricultural production mode, production level, has the role of guidance and technological efficiency, is the construction and the regionalization of specialization, scale, and formed the basis of the socialist agricultural economy market service system.

Reference

- [1] Xiong Chunlin, Zhang Ziwei, Yang Jianguo, Yang Bing. Strategic research on Social forces' participation in "Internet +" agricultural Science and technology Services -- Based on the analysis of the SWOT PEST combination model [J]. Journal of Beijing Vocational College of Agriculture, 20, 34(06):11-18.
- [2] Yin Chong, Ding Qingyan. An analysis on the Development Evaluation of Science and technology Service Industry in Shandong Province: An Empirical Study based on the statistics of prefectural cities [J]. Journal of Technology Entrepreneurship, 201, 34(02):104-108.

- [3] Liu Jun, Wang Xuwei. Problems and countermeasures of the development of intelligent agriculture in Shandong Province [J]. Southern Agriculture, 2021, 15(25):122-126.
- [4] Yang Yang. New direction of agricultural development: Science and technology service industry [J]. China Rural Science and Technology, 2017(01):59-60.
- [5] Ma Zhixiong. Household type classification method based on household theory and its application [J]. Ding Shijun. China Rural Economy, 2013.4
- [6] Zhu Qiarong. Analysis of Agricultural Informatization and agricultural economic development [J]. Agricultural Staff.2022,(10).

