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Study:

Development Status and Demand Analysis of Agricultural Production Cooperatives

By Chai Yu

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List of abbreviations

CAMA	Chairmen of University Student Employment Cooperatives of China Agricultural Mechanization Association
DCZ	Sino-German Agricultural Centre
jin	Chinese unit for mass, equal to 500 g
MARA	Chinese Ministry of Agriculture and Rural Affairs
mu	Chinese unit of land area, equal to 0.067 ha
VDMA	German Mechanical Engineering Association

1. Introduction

In 2021, China will enter the 14th Five-Year Plan period. The major objective of agricultural and rural work for a long period is to implement a rural revitalization strategy in an all-round way and promote the modernization of agriculture and rural areas.

However, China's agricultural and rural development still faces some deep-rooted problems. For instance, there are more older people than children among those 40% of the total population who stay in rural areas. The problem of aging is becoming much more prominent than before. Regarding this, how can agricultural modernization be ensured? Besides, China still faces problems such as the small scale of agricultural operations, the low degree of systematization and the overall weak competitiveness, all of which make it unlikely that the land holdings in China will develop soon into structures similar to those in Europe and the United States or learn from Japan and South Korea the high-cost and high-input models.

Concerning the above situation, for small-scale farms the most realistic and effective way is to entrust some services in the production process of farmers to specialized service organizations. In this way, the whole production process can be specialized, standardized, and intensified and agricultural modernization can be realized without transferring the land management rights from the farmer to the service organization.

Nowadays, those specialized service organizations operate within the so-called "agricultural socialized service system", which refers to a system of labor division into several services without abolishing the Household Contract Responsibility System¹. Despite the rapid development of "Agricultural socialized service cooperatives" the underlying problems such as the low education level of employees, are hindering the development of highly profitable farming. With regard to this, the Chinese Ministry of Agriculture and Rural Affairs (MARA) established a cooperative (c.f. 4.2.1.) composed of university student employees - the Working Committee for University Student Employment Cooperatives (hereinafter referred to as the Working Committee) - to explore a sustainable development model of farmers' cooperatives and guide more university students to be engaged in agriculture. Young knowledgeable farmers have become a new force in the development of modern agriculture in China, and their planting areas will be turned into experimental and demonstration fields for modern agriculture, which can be replicated and extended easily.

Since 2019, the German Mechanical Engineering Association (VDMA) has conducted fruitful dialogues with the Working Committee and carried out cooperation in areas such as product trials and personnel training, with good results achieved.

¹ The Household Contract Responsibility System (*jia ting lian chan cheng bao ze ren zhi*) was introduced in 1978 as an important reform of the rural land system. The ownership and the contractual management rights of arable land were separated (which they are still today) and the former remained with the village collectives, while the latter was assigned to the farmers (Yang et al., 2020).

2. Rapid development of China's agricultural production cooperatives

2.1 A brief overview of relevant agricultural organizations in China

Cultivated land in China is still very fragmented and the average plot per capita is 1.4 mu². Due to farmers' small production scale, they are often not able to negotiate effectively with other market participants and are excluded from products' value addition. On the other hand, the Chinese government aims at increasing the agricultural output to ensure food security and, therefore, modernize the agricultural sector. Since 2004, the formation of "farmer cooperatives" is explicitly supported and also mentioned in the No. 1 Documents ever since. The "Farmers' Specialized Cooperatives Law" defines specialized cooperatives³ as *"the mutual-aid economic organizations that produce and manage agricultural products or provide and use agricultural production and operation services on the basis of rural household contractual operations."*⁴ Even though agricultural enterprises can also join a cooperative, it is stated that farmers have to account for at least 80% of the members. Furthermore, farmers must be able to join and withdraw voluntarily and enjoy basic democratic rights in management decisions. It is the cooperative's main mission to serve its members by providing services, such as supply of production materials, sales, processing, transportation or storage services or technology-related operation services. The Chinese government provides financial and technological support as well as tax incentives to increase the number and size of cooperatives. Between 2010 and 2015 government subsidies to cooperatives amounted to CNY 25 billion (Huang & Liang, 2017).

Besides farmer cooperatives, the main types of agricultural organizations in China are agricultural companies and family farms. Agricultural companies and farmers collaborate via contract farming or more flexible arrangements with a focus on the supply of agricultural goods to the company. Family farms⁵ in China have an average production size of 107 mu and also receive governmental subsidies. Compared to agricultural companies and cooperative, family farms have the highest sales net profit rates. However, Huang & Liang (2017) consider farmer cooperatives as "the central of agricultural organization system in China" as they enable farmers to collectively negotiate with agricultural companies and hence, giving them more weight, while they as well get access to capital and professional marketing.

There are several challenges for the successful implementation of farmer cooperatives as they have been envisioned by the government. Even though the number of cooperatives increased rapidly to 1.93 million, with 100 million farmers joining cooperatives until 2017, the membership size in the respective cooperatives remains comparatively small⁶. Furthermore, the biggest challenge seems to be to distinguish between member-beneficial cooperatives and those cooperatives which actually do not fulfil the law's requirements. There are several reports on a high proportion of such "fake" farmer cooperatives, which receive subsidies without benefiting farmers as it was intended (Huang, 2013; Hu et al., 2017).

² 1.4 mu = about 0.1 ha

³ The terms „farmer cooperative“ and „specialized cooperative“ often refer to the same type of organization

⁴ Art. 2, Farmers' Specialized Cooperatives Law (nong ye zhuan ye he zuo she fa), in effect since 2007

⁵ „Family farms“ in China often refers to large-scale land cultivation, conducted by a family (often with several employees) who enlarged their land by contracting additional plots in the same area

⁶ In fact, the threshold for forming a cooperative is only 5 members (Farmers' Specialized Cooperatives Law, art.12)

2.2 Demands for agricultural socialized services drive the transformation and upgrading of agricultural production cooperatives

As mentioned above, the road to China’s agricultural modernization is to integrate the production of small farmers into large-scale production through socialized services of specialized organizations. At present, China’s agricultural socialized services are an important element for the development of private farms.

Firstly, there are huge demands for agricultural socialized services. With rural economic and social development and rapid changes in population structure, the problems of an aging population and increased number of farmers who manage their farms as a sideline business have become increasingly prominent. In busy farming seasons, these old farmers are too old to do farm work or even unwilling to do it, raising huge market demands for agricultural socialized services.

Secondly, there is much room for benefit-driven development. Due to current extensive production methods, organizations for agricultural socialized services are far from realizing scientific and standardized production. Before production, service organizations can conduct centralized procurement of production materials thus saving input costs. During production, large-scale standardized and mechanized operations can help to reduce production costs. After production, modern processing can help to improve the quality of products and increase selling prices.

Thirdly, there is policy support for agricultural socialized services. Since the start of 2017, the Chinese financial department of the central government has set up special funds for agricultural socialized services to guide and spark its development, mainly aiming at cultivating the service market and developing socialized services in key areas.

It is known that specialized service organizations can improve the cost-effective utilization of farming equipment. Some places are also adjusting their focuses and methods of policy support. All these policy measures will cultivate a good political environment for the development of agricultural socialized services.

2.3 The central government attaches great importance to farmer cooperatives

The central rural work conference was held in Beijing in December 2020. The meeting emphasized that the resolution of “three rural” issues should be at the top priority of the whole party’s work. The whole party and the whole society should make full efforts to accelerate rural revitalization, accelerate the advancements of key agricultural technologies, further push agricultural supply-side structural reforms and drive variety cultivation, quality improvement, brand building and standardized production.

Year	Contents
2014	Support the development of a new type of agricultural business entities. Encourage the development of various forms of farmer cooperatives such as specialized cooperatives and joint stock cooperatives, guide standardized operations, and focus on enhancing capacity building. Promote innovative pilots of farmer cooperatives with financial support and guide the development of specialized farmer cooperatives.
2015	Speed up the construction of a new type of agricultural management system. Guide farmer cooperatives to expand their service areas, back up large-scale development, implement an annual report publicity system, and further promote the construction of demonstration cooperatives. Lead farmers to join in cooperatives and leading enterprises with land management rights.

2016	Give play to the leading role of various forms of appropriately scaled-up agricultural operations. Encourage the development of joint stock cooperatives, guide farmers to voluntarily join in leading enterprises and farmer cooperatives with land management rights. Strengthen the construction of farmer cooperatives and support them to develop processing and distribution services as well as direct supply and sales services of agri-products.
2017	Actively develop appropriately scaled-up agricultural operations. Intensify the standardized construction of farmer cooperatives and actively develop three-in-one model integrating production, supply and marketing, credit.
2018	Implement the cultivation project of a new type of agricultural business entities, cultivate and develop agricultural industrialization complexes composed of family farms, cooperatives, leading enterprises and socialized service organizations, highlight the development of two new agricultural business entities including family farms and farmer cooperatives, carry out standardized improvement actions for farmer cooperatives and further promote the construction of agricultural production cooperatives.
2019	With regard to cultivating a new type of agricultural business entities by accelerating the establishment of a policy system, policy support is given from 6 aspects including improving fiscal and taxation policies, strengthening infrastructure construction, enhancing financial and credit services, expanding insurance support, encouraging the expansion of marketing markets, and supporting personnel training and introduction.

Table 1 Discussions on promoting the development of agricultural production cooperatives in the Central Document No. 1 from 2014 to 2019

2.4 An effective organization form of agricultural socialized services - agricultural production trusteeship and its development

2.4.1 Agricultural production trusteeship and subjects

Agricultural production trusteeship is an agricultural operation method by which farmers and other business entities entrust all or some of their operation activities such as land cultivation, planting, crop protection and harvesting to agricultural service organizations while not transferring land management rights.

Agricultural production trusteeship is one of the important socialized service models for realizing large-scale agricultural production. Through centralized and continuous land trusteeship, large-scale, intensified, mechanized and specialized production of land can be realized, thereby greatly reducing the costs of production inputs and improving agricultural production efficiency, which is of great significance for achieving efficient sustainable development of agriculture in China.

At present, there are five types of entities that carry out agricultural socialized services, including specialized service companies, service-oriented farmer cooperatives, supply and marketing cooperatives and rural collective economic organizations.

2.4.2 Benefits of agricultural production trusteeships

In the agricultural production trusteeship model, both the service entities and entrusted farmers can achieve win-win results.

(1) Benefits for the service organizations. For the full trusteeship model, production efficiency can be enhanced, production costs can be reduced, and large-scale production benefits can be obtained by integrating land resources and adopting modern agricultural production management methods. Service organizations can make use of their purchasing power to buy inputs at bulk and earn a profit through the difference between purchase and sale prices for the semi-trusteeship model, service organizations can earn service fees by providing services such as mechanized operations and

agricultural technology management. In addition, subsidies for agricultural projects given by the government are also sources of income for some service organizations.

(2 Benefits of participating farmers. Farmers can improve production efficiency, reduce production costs, increase output, and achieve increased production and income by improving production conditions, conducting large-scale and continuous planting, and adopting a large number of new varieties and new technologies. Large-scale production of agri-products standardized technical management, and brand marketing will form a strong brand value-added effect, expand sales channels and increase the added value of agri-products. Through centralized procurement of agricultural materials and unified sales of agri-products, farmers can further reduce the cost of purchasing agricultural materials, enhance the bargaining power of agri-products and the ability to resist market fluctuation risks, and increase agricultural production efficiency.

2.4.3 The role of agricultural production trusteeship

Nowadays production trusteeship is developing rapidly. It is estimated that by the end of 2020, China's land area under trusteeship will exceed 1.6 billion mu, out of which grain crops will exceed 900 million, and more than 70 million small farmers will be served. Practices show that agricultural production trusteeship, as the main service method and operation method of agricultural services, has become an important path to realize synergy between small farmers and modern agricultural development, with broad prospects and vigorous vitality.

Farmer household management is the basic management system in China and small farmers still cultivate nearly 70% of the arable land. It can be seen from the experience of agricultural development in various countries in the world that agricultural modernization is based on family operation as the basic unit, and the core is to realize specialized, intensive and large-scale agricultural production through socialized services. At this stage, the promotion of agricultural modernization can be achieved through land transfer and the development of large-scale land management. More importantly, most areas need to develop agricultural socialized services. Without changing their management rights, small farmers can entrust activities that they cannot do or cannot do well or which are not cost-effective to service organizations, thus realizing agricultural modernization through scaled-up services. From the lens of practices, the process of advancing agricultural socialized services is the process of popularizing and applying advanced agricultural technology and equipment, the process of improving the input structure and quality of resource elements, the process of extending standardized agricultural production and large-scale operations, and the process of improving farmers' systematization process.

3. Development status and demand analysis of agricultural production cooperatives

We conducted interviews and surveys with 466 agricultural production cooperatives across China focusing on four aspects including basic conditions, main practices and results, prospects and developments and selected 70 representative agricultural production cooperatives to conduct questionnaire surveys concerning the development demands of agricultural production cooperatives.

3.1 Development status of agricultural production cooperatives

(1) Geographical distribution. This survey collected 70 valid questionnaires, mainly covering Liaoning, Henan, Inner Mongolia and Jilin. Due to the higher fragmentation of agricultural fields in the south, the number of agricultural production cooperatives in the north and in the east is relatively more than that in the south and in the west, while western regions such as Xinjiang, Gansu and Tibet still need further investigation. This is also reflected by the distribution of survey samples which is shown in Figure 1.

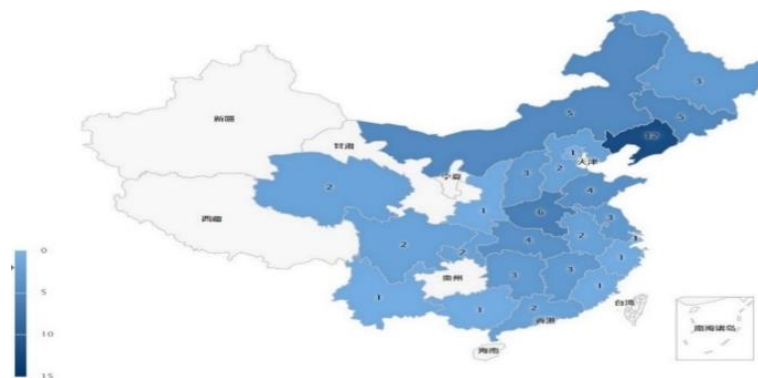


Figure 1 Geographical distribution

(2) Registered capital and number of members. According to the data of 70 agricultural production cooperatives surveyed, it was found that their registered capital is RMB 6.1065 million on average. Among them, the largest registered amount is RMB 50 million, while the smallest registered amount is RMB 450,000. The average number of members of agricultural production cooperatives is 126. Among them, the maximum number of members is 1065, while the minimum number of members is 5.

(3) The education level of the leaders of agricultural production cooperatives. In the surveyed samples, the leaders of agricultural production cooperatives are generally highly educated. More than 50% of them have a college degree or above, 34.3% of them have a senior high school degree, 12.9% of them have a junior high school degree, and none of them have degrees under junior high school. It can be seen from the development of agricultural production cooperatives, more and more university students are returning to their hometowns to start businesses, using their knowledge, technology and information advantages to drive the rapid development of specialized agricultural production cooperatives and agricultural industrialization, enhance the vitality of agricultural production cooperatives and achieve the win-win results of farmers' wealth and agricultural development.

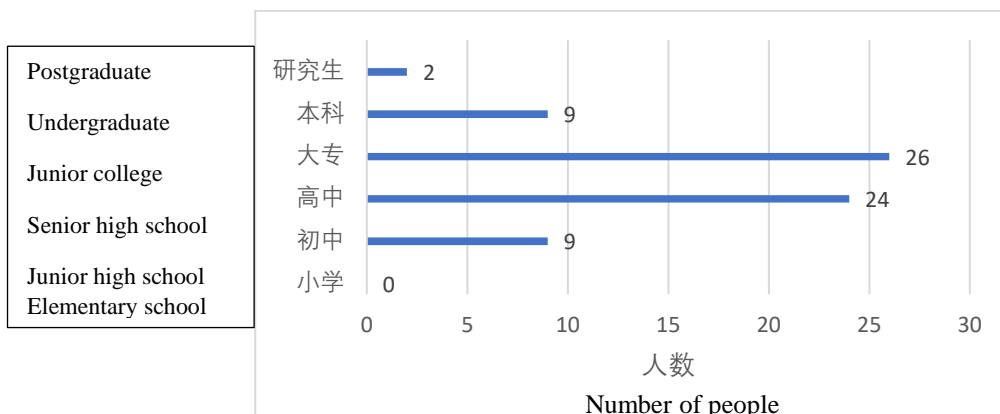


Figure 2 Statistical chart of education levels of leaders of agricultural production cooperatives

(4) Scope of main businesses. It can be seen from Figure 3 that agricultural production cooperatives carry out a large number of mechanized operations as well as planting and production trusteeship services. While at the same time, some cooperatives also participate in agricultural machinery consulting and maintenance services, agricultural product processing and sales services, aquaculture, forestry services. Among the 70 agricultural production cooperatives surveyed, cooperatives which carry out mechanized operations account for 95.7% of the total samples, cooperatives which carry out planting operations accounted for 90.0% of the total samples, while cooperatives which carry out production trusteeship services account for 92.9% of the total samples.

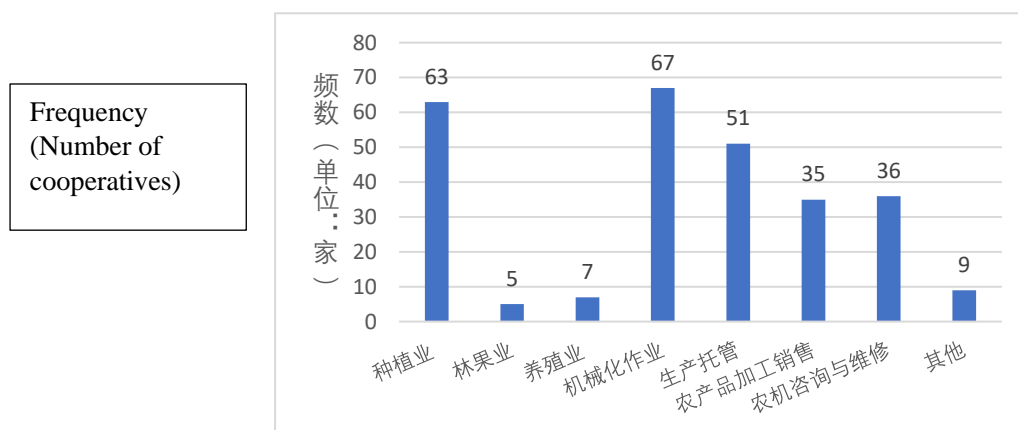


Figure 3 Statistical chart of main businesses

From left to right: Planting industry, Forestry and fruit industry, Breeding industry, Mechanized operations, Production trusteeship, Agricultural product processing and sales, Agricultural machinery consulting and maintenance, others

(5) Land area under operation. According to the statistics of land areas operated by the 70 agricultural production cooperatives, the minimum area under operation is 9 mu, while the maximum is 50,000 mu. The average area under operation is 6331 mu, the average contracted land area is 2351.8 mu, and the average transferred land area is 4628.9 mu. Agricultural production cooperatives can concentrate large-scale land areas for agricultural production, enhance land utilization and expand their scope of services. Among them, 13 have an area of less than 1,000 mu, accounting for 18.6% of the total; 24 have an area of 1,000-3,000 mu, accounting for 34.3%; 22 have an area of 3,000-10,000 mu, accounting for 31.4%; 11 have an area of more than 10,000 mu, accounting for 15.7% (See Figure

2-4). Agricultural production cooperatives can make full use of land to invigorate rural economy, increase farmers’ income, and ultimately achieve common prosperity.

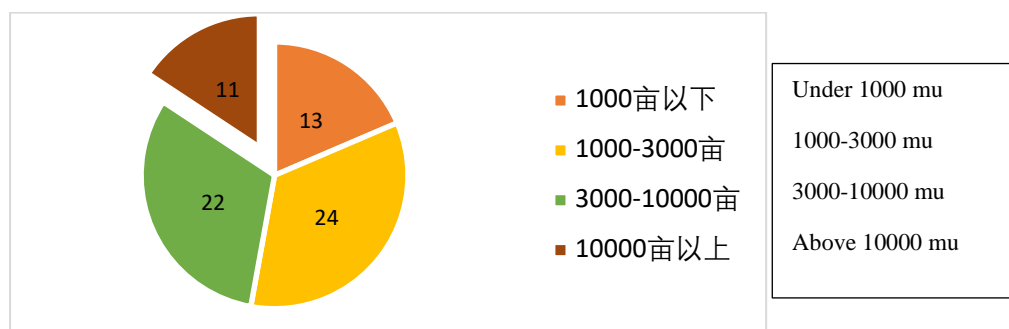


Figure 4 Statistical chart of land areas under operation

3.2 Demand analysis of agricultural production cooperatives

(1) The demands for the types of agricultural machinery shown in Table 2-1 are analyzed by collecting the demands of the cooperatives. Farming and land preparation machinery, supporting power and harvesting machinery are the most needed machines. In recent years, the systematization degree of agricultural production cooperatives has been gradually improved. The cooperatives have gradually broken geographical and ownership boundaries and introduced advanced agricultural machinery to back up specialized, scaled-up and mechanized development of agricultural production.

Types of agricultural machinery	Frequency
Land preparation machinery	43
Supporting machinery	40
Harvesting equipment	37
Seeding/transplanting machinery	33
Plant protection machinery	31
Feed machinery	7
Livestock and poultry breeding machinery	2

Table 2 Demands for types of agricultural machinery

(2) The priority areas for the improvement of agricultural machinery are shown in Figure 2-5. It can be seen that by calculating the average score of prices, work efficiency, convenience of operations and after-sale services that agricultural production cooperatives most hope to adjust the prices of agricultural machinery products sold on the market, reduce agricultural production costs, and increase the purchase of agricultural machinery. Secondly, they improve the work efficiency of existing agricultural machinery on the market, replace human and animal power with machinery, achieve high efficiency in agricultural production and drive the rapid development of agricultural economy. Furthermore, they simplify operation procedures of agricultural machinery products and improve the efficiency of operators. Finally, with regard to after-sales services, some of them hope that agricultural machinery companies can improve their after-sales services, ensure the long-term use of agricultural machinery, and reduce the loss rate.

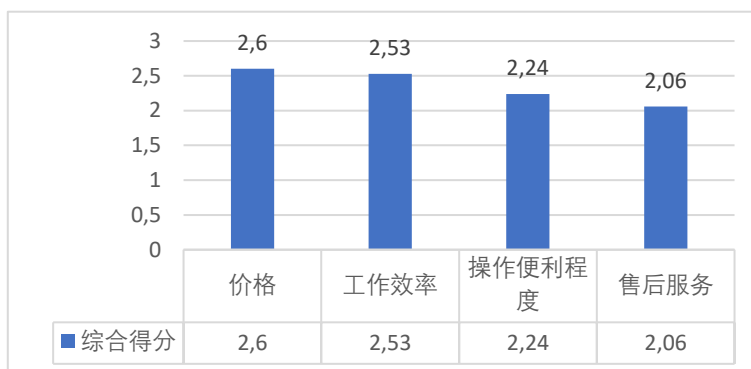


Figure 5 Scores for priority improvement areas of agricultural machinery. Price, Work efficiency, Operation convenience, After-sales service

Note: average score= (Σ frequency × weight)/number of samples

(3) Analysis of brand factors affecting the purchase of agricultural machinery. As shown in Figure 2-6, by calculating the average score of six factors including brand reputation, peer recommendation, price, technician recommendation, advertisement attraction, and others, it can be seen that reputation is the primary factor affecting the purchase of agricultural machinery. Secondly, peer recommendation is another important factor affecting the purchase of agricultural machinery. Then, technician recommendation can also encourage agricultural production cooperatives to purchase agricultural machinery. In general these cooperatives trust technicians more than peers. Finally, some agricultural production cooperatives use advertisements to attract the sale of agricultural machinery. Through this survey, it is seen that agricultural production cooperatives still give their first priority to brands and tend to make purchases based on their familiarity with the brands.

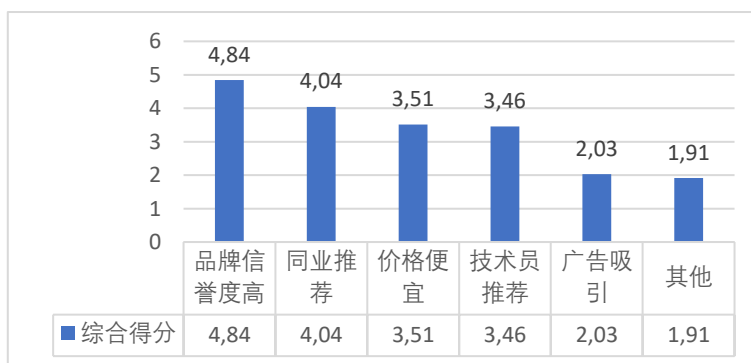


Figure 6 Scores for priority brand factors affecting the purchase of agricultural machinery

Brand reputation, Peer recommendation, Price, Technician recommendation, Advertisement attraction, and Others

Note: average score= (Σ frequency × weight)/number of samples

(4) Analysis of factors affecting the demands for agricultural machinery of agricultural production cooperatives. As shown in Figure 2-7, by calculating the average score of five factors including the prices of agricultural machinery, the business scales of agricultural production cooperatives, the types of agricultural machinery, the soundness of agricultural machinery service system and the number of workers, it can be seen that the first factor affecting the purchase demands of agricultural machinery is the price of agricultural machinery, indicating that the prices is one of the primary considerations for agricultural production cooperatives to purchase agricultural machinery. The difference among the

scales of agricultural production cooperatives, the types of agricultural machinery, the soundness of the agricultural machinery service system, and the required labor force is not large, which also shows that agricultural production cooperatives can make wise choices when purchasing agricultural machinery and buy suitable agricultural machinery.

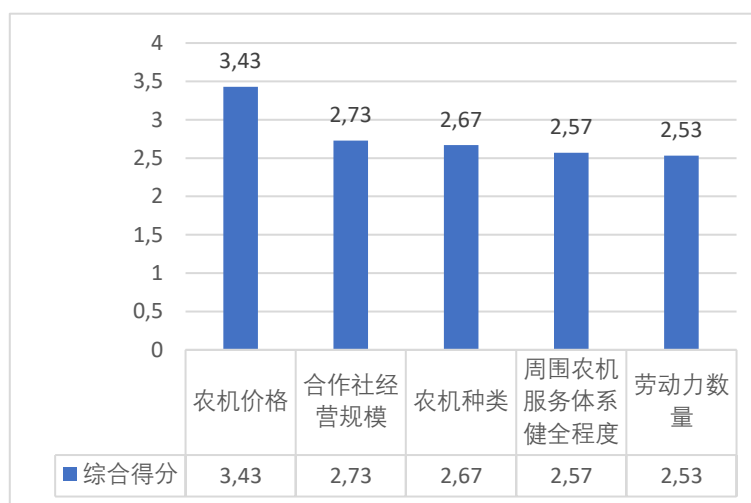


Figure 7 Scores for factors affecting the demands for agricultural machinery of agricultural production cooperatives

The prices of agricultural machinery, the business scales of agricultural production cooperatives, the types of agricultural machinery, the soundness of agricultural machinery service system, the number of workers

Note: average score= (Σ frequency \times weight)/number of samples

4. Research on the sustainable development model of agricultural production cooperatives

4.1 Project description and objectives

The main parties presently involved in the project are the Working Committee for the Chairmen of University Student Employment Cooperatives of China Agricultural Mechanization Association (CAMA), Shenyang Agricultural University, and members of VDMA Association. The purposes and objectives of the project are described here:

- (1) Explore the sustainable development model and analyze the current status of agricultural production cooperatives; in line with the national policies to drive the upgrading of agricultural machinery, enhance agricultural production cooperatives, and develop agricultural socialized services; and improve the ability to realize whole-process mechanization operation.
- (2) Determine the core indicators for the operation of agricultural production cooperatives and analyze the current status of agricultural production cooperatives including its organizational structure, member structure, business model, management process, and operation standards, based on China's agricultural and rural development status and the experience of German agricultural development.
- (3) Establish models of agricultural machinery cooperatives, extend successful models, make full use of the professional knowledge and customer resources of VDMA member companies, as well as

government and German expert resources, optimize and improve the operation mode of agricultural machinery cooperatives, formulate development goals for core parameters and development plans and measures, supervise the implementation of measures.

4.2 Cooperative units

4.2.1 Introduction to the Working Committee of the Chairmen of University Student Employment Cooperatives

In 2016 and 2017, during the investigation process of the Department of Agricultural Mechanization of the Ministry of Agriculture and Rural Affairs, a group of relatively advanced agricultural production cooperatives were found, most of which were set up or managed by university students and graduates, with advanced management concepts, huge demonstration effects and great development potential. In order to better play the exemplary role of these cooperatives and advance the process of agricultural modernization led by talents and technology, the Department of Agricultural Mechanization of the Ministry of Agriculture and Rural Affairs proposed to establish the Working Committee for the Chairmen of University Student Employment Cooperatives, which received active responses from CAMA, local agricultural machinery management departments, agricultural enterprises and university student chairmen. On October 26, 2018, the Working Committee was formally established at the China (Wuhan) International Agricultural Machinery Exhibition. Since its establishment, committee members have joined hands to forge ahead with the concepts of “mutual benefits, mutual sharing and win-win results.”

At present, the Working Committee has a total of 53 recognized members, including 1 director general, 6 deputy directors, and 1 secretary general. Agricultural production cooperatives where committee members work is distributed in 31 provinces, cities, and districts across China, with total assets of RMB 1.302 billion, out of which the original value of agricultural machinery is RMB 585 million. The crops planted are mainly corn, wheat, rice, soybeans, rape, sugarcane and cotton, with a total land area of 1.9573 million mu. The cooperatives provide agricultural machinery operation services of 3.2723 million mu, with an annual turnover of RMB 887 million.

4.2.2 Demonstration objects of cooperation between VDMA and the Working Committee for the Chairmen of University Student Employment Cooperatives

In October 2019, after conducting 5 physical and online meetings including on-site visits VDMA and the Working Committee initially determined 6 agricultural machinery cooperatives with whom they will cooperate, with the aim to build a new type of modern farms that can be replicated.

Name	Date of Establishment	Location Area	Number of Members/Number of Farm Machinery Operators/Number of Maintenance Workers	Crop/Planting Cost of Major Crops/Mu	Original Value of Agricultural Machinery	Transferred land + trusted Land/10,000 mu	Operation Area for Non-members/10,000 Mu
V-Land Agricultural Technology Co., Ltd.in Liaoning Province	January 2013	Songhua River Plain, Liaohe Plain	9775/354/4	Corn/1800 jin /RMB 440	1000	12.3	0
Safe Modern Agricultural Machinery Cooperative in Kedong County, Heilongjiang Province	March 15, 2013	Songnen Plain	56/10/2	Soybean/300 jin /RMB 180 Corn/1300 jin /RMB 320	2600	1.5	3
Da'an Agricultural Machinery Professional Agricultural Production Cooperative in Zhangwu County, Liaoning Province	December 30, 2013	Liaohe Plain	41/20/5	Corn/1700 jin /RMB 280	600	1.05	10
Huimin Shengfeng Farmers' Professional Cooperative Association in Tongliao City, Inner Mongolia	March 5, 2015	Liaohe Plain	96/15/3	Corn/1700 jin /RMB 600	600	3	3
Fuyuan Agricultural Machinery Farmers' Professional Cooperative in Shizhong District, Zaozhuang City, Shandong Province	January 11, 2013	North China Plain	57/31/12	Wheat/1100 jin /RMB 390 Corn/1300 jin /RMB 370	975	2.616	5
Changfeng Agricultural Machinery Cooperative in Chang'an District, Xi'an City, Shaanxi Province	July 8, 2010	Guanzhong Plain	112/23/6	Wheat/1000 jin /RMB 400 Corn 1300 jin /RMB 300	1050	3.15	8

Table 3 Basic situation of 6 agricultural machinery cooperatives

4.3 Three priorities and progress of project planning

4.3.1 Three priorities

Firstly, integrate VDMA resources to provide agricultural production cooperatives with urgently needed services such as purchase financing, maintenance of agricultural machinery and related supporting equipment. Secondly, utilize agricultural production cooperatives for demonstration to establish local production processes and operation standards. On this basis, learning from the experience of overseas farms and agricultural production cooperatives, improve the management of the samples of agricultural production cooperatives and form a standardized operation model that could be extended. Thirdly, enhance exchanges and training in advanced farm management, agricultural machinery management, agronomy, etc.

4.3.2 Preliminary cooperation between VDMA and the Working Committee

Since the establishment of the cooperative relationship, companies including Lemken, Kverneland, Maschio, Deutz-Fahr and Claas have visited agricultural production cooperatives they want to cooperate with for many times and decided to conduct mechanical skills training for the members of the cooperatives for their first-time cooperation. At present, manufacturers such as Claas, Lemken, Horsch, Kverneland, Hardi have finished pre-training preparations and plan to conduct training on modern agricultural machinery application and operation quality for members of Inner Mongolia Tongliao Yellow Corn Industry Alliance including Huimin Shengfeng Agricultural Production Cooperative.

5. The problems to be solved urgently and recent priorities for the Working Committee

5.1 The problems to be solved urgently

(1) It is necessary to do a clear positioning of the role of agricultural production cooperatives. Production organization, operation, and execution are the strengths of these cooperatives. This advantage should be continuously strengthened to form a service brand.

(2) The supply of production materials, planting experiments, technology and management methods before and after production make a great difference in the agricultural production process, but agricultural production cooperatives are unable to provide the above services while upstream service organizations can. It is recommended that upstream service organizations have a close cooperation relationship with agricultural production cooperatives, which has not yet been formed.

(3) Modern farm management models and methods are extremely lacking, and there is no experience to learn.

5.2 Recent priorities

(1) County-level agricultural production standardized construction. Taking the member units of the Working Committee as the main body, fuel up the formation and demonstration of typical agricultural production trusteeship services based on agricultural development in the main grain production areas.

(2) Giving full play to the leading role of the member units of the Working Committee, establish county-level agricultural production socialized service associations in various counties to improve the systematization degree of agricultural production.

(3) Integrate the resources of universities, science and technology departments, and industry enterprises to vigorously cultivate the technical level and management ability of the members of agricultural production cooperatives.

(4) Based on the above three aspects, set up a socialized service network for agricultural production so as to share agricultural machinery and its maintenance experience, supply channels of production material, human resources, etc.

5.3 DCZ's support of the project

The DCZ was involved in preliminary discussions with the stakeholders and will on this basis and in communication with the stakeholders draft a concept paper to outline a possible cooperation.

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