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# Comparative Analysis on Farmers' Specialized Cooperatives from the Perspective of Agricultural Industry Chain

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**Abstract** Taking three typical farmers' specialized cooperatives in Jingyuan County of Gansu Province as example, this paper compared with the operating mode of three cooperatives and their position in the agricultural industry chain, and analyzed operating characteristics, problems, and similarities of three cooperatives and their functions in the agricultural industry chain. The study indicated that the farmers' specialized cooperatives can accurately find their position in the agricultural industry chain. This is helpful for raising their comprehensive competitiveness and it is very important to manage the survival and development of farmers' specialized cooperatives, which is of utmost importance to their effective operation. According to this study, the government should strengthen its support, speed up the cultivation of new-type professional farmers, while farmers' specialized cooperatives should grasp the operating characteristics, locate themselves and integrate multi-resources. These are effective measures for promoting healthy operation of farmers' specialized cooperatives.

**Key words** Farmers' specialized cooperatives, Operating mode, Agricultural industry chain, Comparative analysis

## 1 Introduction

Since the implementation of the *Law of the People's Republic of China on Farmers' Specialized Cooperatives* in 2007, the farmers' specialized cooperatives have made great achievements in helping farmers to increase their incomes and bring farmers into the market. The farmers' specialized cooperative is a new entity for developing the rural economy and it has obtains strong support of state policies. Since 2012, Number 1 document of central government has provided policy guidance and support for the development of farmers' specialized cooperatives for five consecutive years. In 2016, Number 1 document of central government set forth the requirement for improving the benefit linkage mechanism between the agricultural industry chain and farmers, supporting farmers' specialized cooperatives in leading farmers to share benefits of agricultural industry chain, and strengthening the model construction of farmers' specialized cooperatives. Agricultural industry chain connects the pre-production, production, and post-production of agriculture. It is required to accurately find position and function of farmers' specialized cooperatives in the agricultural industry chain, explore the internal potential of income increase in each link of the agricultural industry chain, raise the comprehensive competitiveness, guide farmers to share benefits of agricultural industry chain, and ensure the healthy operation of farmers' specialized cooperatives, and promote rural economic development.

## 2 Literature review

The development of farmers' specialized cooperatives can be divided into three stages: start, effective operation, difficult operation, and decline<sup>[1]</sup>. To promote the healthy and effective operation of cooperatives, there should be policy guidance and legal guarantee.

The implementation of the *Law of the People's Republic of China on Farmers' Specialized Cooperatives* improved the construction of the cooperative mechanism and raised the degree of standardization of cooperatives<sup>[2]</sup>. Under different management models, there are big differences between the benefit mechanism and economic effect of the farmers' specialized cooperatives<sup>[3]</sup>. Some cooperatives are excessively inclined to capital in the distribution of profits, leading to farmers sharing less or no surplus of the cooperatives<sup>[4]</sup>. The agricultural industry chain is the concrete application of the industrial chain in the agriculture, and is the organic integration of the information chain, the logistics chain and the organization chain of the pre-production, production and post-production of agriculture<sup>[5]</sup>. About 70% farmers' cooperatives in China have not participated in deep processing of agricultural products. From the perspective of the agricultural industry chain, they still remain at a lower level of collaboration. Thus, it is recommended to make innovation in the operation model of farmers' specialized cooperatives and integrate the agricultural industry chain, which are helpful for obtaining more profits<sup>[6]</sup>. Each link of the agricultural industry chain is closely connected and can improve the comprehensive competitiveness of agriculture. The overall efficiency of China's existing agricultural industry chain is short, the profit margins for agricultural products is narrow, it is required to extend agricultural industry chain to the pre-production and post-production, increase the intermediate links, and explore the potential and profit margins of each link of the agricultural industry chain<sup>[7]</sup>. At present, few scholars make further study in combination with specific cases. Thus, taking Jingyuan County of Gansu Province as an example, we selected three typical farmers' specialized cooperatives to make a comparative study.

## 3 Basic conditions of the cases

Jingyuan County is located in the central east of Gansu Province.

It is a large agricultural county with a total area of 5809.4 km<sup>2</sup>. There are 18 towns in the county with a total population of 478000, of which agricultural population is 421000 and the total farmland area is 78200 ha. Under the guidance and support of the government, by the end of 2015, 1494 farmers' specialized cooperatives in Jingyuan County have been registered, attracted 3.8 million people to join in and drove 48000 farmers. In this study, we selected 3 typical cooperatives to make comparative analysis. The cooperative A is a typical cooperative led by able people and remaining at the front end of the agricultural industry chain. The cooperative B is a typical cooperative led by big farmers and remaining in the middle of the agricultural industry chain. The cooperative C is a typical cooperative organized spontaneously by farmers and remaining in the back end of the agricultural industry chain.

**3.1 Case A: able people founding seedling cultivation cooperative** The cooperative A, mainly engaged in vegetable and fruit seedling cultivation, was established in 2013, registered by five people with a registered capital of 3 million yuan. In the operation mode, the cooperative A mainly adopted contractual seedling cultivation. It signed contract with other cooperatives or farmers. Then, it cultivated seedlings according to the required variety, quantity, size, transplantation time. The cultivation methods included direct sowing and grafting. Direct sowing seedlings had price of 0.35 yuan per plant, while the grafted seedlings have price of 1 yuan per plant, and grafted seedlings were characterized by high yield and disease resistance. In the infrastructure construction, the cooperative A built 12 greenhouses with a total area of 4 ha, each greenhouse could cultivate seedlings twice, and the cultivation period was 70–80 days. At present, it prepared to purchase the sowing equipment to increase the emergence rate and degree of mechanization. In personnel arrangement, the cooperative A held 20 employees, including 3 management personnel and 4 technical staff. In the time of sowing and busy season of sprouting, it would employ local farmers for production. With 3 years of development, the cultivation technology of the cooperative A has gradually become mature. The annual emergence rate has increased continuously and the annual emergence rate is up to 7.6 million plants. It is suitable for the local climatic conditions.

**3.2 Case B: big farmer leading planting and cultivation cooperative** Cooperative B, as a kind of planting and cultivation combined cooperative, was established in August 2010. At first, it was launched by 50 people with a registered capital of 20 million yuan, the first shareholder contributed 16 million yuan accounting for 80%, the remaining shareholders contributed 400 million yuan, and the shares were allocated by the amount of capital contribution. In 2011, the cooperative B obtained agricultural project support of the government, developed and consolidated 240 ha land, and carried out planting and cultivation on the consolidated land. In the process of production management, it introduced fine seeds for the members before the production; in 2011, it introduced 100000 new varieties such as Fuji; during production, it provided services for members to provide planting guidance, irri-

gation water management, and bagging technology; after production, it set the standard for acquisition and sales, to help farmers to open market. In the planting method, the cooperative B used chicken and sheep manure as fertilizer for apple and walnut trees. In the supporting facilities, the cooperative B has built three cave-style refrigerated environmental protection and energy conservation warehouses with volume of 9600 cubic meters, 300 square meters of feed storage, 2 drip irrigation reservoirs with volume 1000 cubic meters, and 6 agricultural vehicles. With 6 years of development, the cooperative B have planted 66.67 ha apple trees, 13.33 ha walnut trees, bred more than 1200 lambs, more than 800 chickens, and was awarded as the "municipal model farmers' specialized cooperatives" in 2014. By now, 167 farmers have joined in the cooperative, its agricultural products are mainly sold to Beijing, Shenzhen and the local market, the annual output value is nearly 35 million yuan, the expected output value in bumper period will be up to 75 million yuan. At present, the cooperative remains in the effective operation stage.

**3.3 Case C: sales cooperative spontaneously organized by farmers** Cooperatives C, as a farmer specialized cooperative integrating technology promotion, vegetable cultivation, classification, packaging and marketing, was established in 2008 and was spontaneously set up by 38 farmers in the same village, with the registered capital of 5 million yuan. In the internal management, it established the General Assembly and the Council to strengthen its management and technical personnel training. Now, it holds 5 management personnel, 8 farmer experts, 18 farmer technicians, and 36 farmer technical personnel. In the source of funds, the cooperative C collected 100 yuan to members every year as expenses for new variety introduction, technical training, and residual pesticide testing, and strengthened infrastructure construction through the government fund and project support. In the distribution of surplus, the cooperative C allocated the dividends twice a year, the first time by the capital contribution at the time of establishment of the cooperative, and the second by the sales of farmers. In the development strategy, during the period from 2008 to 2012, the cooperative C paid attention to production and guidance management, and provided services such as introduction of varieties, to promote the rapid development of vegetable production. From 2013, it focused on looking for sales market, setting up brand. The cooperative C has established relatively stable sales market. Its agricultural products were mainly sold to Beijing, Inner Mongolia and other provinces and surrounding areas. It was awarded by Beijing University Joint Purchasing Committee as the base for direct supply of green foods, realizing the docking between colleges and universities and supermarket. With more than seven years of development, the cooperative C now has 165 members, has cultivated 62 farmer technical personnel, and built pollution-free fruit and vegetable testing room. In 2013, it won the exhibition gold medal for agricultural products in Gansu Province, rated as "the city-level model farmers' specialized cooperative", the annual transport of vegetable nearly 20000 tons, promoting steady growth

of economic income of the surrounding three townships, seven villages. At present, the cooperative remains at the effective operation stage.

## 4 Comparison of the three cases

### 4.1 Comparison of the operation mode between three farmers' specialized cooperatives

**4.1.1** Three farmers' specialized cooperatives have unique outstanding operation characteristics. Outstanding characteristics of the cooperative A include meeting the needs of farmers, orienting towards market, providing farmers with seedlings with high disease and drought resistance, and high yield through contractual purchase and sales, to obtain approval of farmers. The found sources, development decisions and surplus distribution of the cooperative are undertaken and negotiated mainly by the five registered partners. Thus, in essence, the cooperative A is a joint venture. The cooperative B is actually an agricultural company launched by the big farmers. Its outstanding characteristics include pursuit for green health, achieving the business objectives of green eco-agricultural park, and taking the road of green leisure ecological agriculture. The cooperative C adheres to the principle of voluntariness, fairness and democracy. Members voluntarily join in, share risks and profit. Its outstanding characteristic is to require mem-

bers to invest a small amount annually, ensure the sustainable development of cooperative, seize the development demand, attach importance to promote agriculture through technology, and implement farmers teaching farmers. At the early stage of development, it focused on introduction of varieties, planting guidance, technical training and self-management mechanism. In the recent two years, it focused on warehousing and logistics, establishing brand, and opening up the market to ensure prompt sales of vegetable.

**4.1.2** Similarities between three farmers' specialized cooperatives. In order to ensure sustainable and effective operation and ensure benefits of farmers, three farmers' specialized cooperatives have made following efforts. In the management system, they actively strengthen internal management, arrange personnel according to demand, put the supervision in place, and make clear the operation objectives. In the production management, they increase investment in infrastructure construction, introduce high drought resistant varieties, provide technical guidance for members in pest and disease prevention and control, and establish their own brands. In the economic drive, the three cooperatives give full play to their role, guide the production of farmers, increase farmers' income, and promote the healthy development of local economy.

**Table 1 Comparison in operation characteristics between different scope of business of farmers' specialized cooperatives**

Operation characteristics		Cooperative A	Cooperative B	Cooperative C
Characteristics	Mode of establishment	Able person launching	Big farmer leading	Spontaneously organizing by farmers
	Scope of business	Cultivation of seedlings	Planting and breeding	Planting and sales
	Operation objectives	Large comprehensive seedling breeding base	Green eco-agricultural park	Integrated production, processing, and sales of vegetable
	Fund source	Financing by promoters	The promoters and first shareholder take up 80%	Promoters and cooperative members contribute 100 yuan annually
	Distribution of surplus	As per the contribution rate and management contribution	As per shares	As per the shares and sales
	Problems	Fund, equipment, and technology	Infrastructure, cost, and profit	Deep processing and market
Similarities		Three cooperative stay in the effective operation stage, pay attention to their own mechanism construction, provide services for cooperative members and farmers in the production management process, and bring members and farmers to get rich, to promote local economic development.		

### 4.2 Comparison of the position and function of three farmers' specialized cooperatives in the agricultural industry chain

**4.2.1** The cooperative A remains in the pre-production of the agricultural industry chain. It seizes the demands of local farmers, undertakes cultivation of seedlings of vegetables and fruits, determines the scale of cultivation and variety using the contract, and takes mechanical control of temperature and humidity, to realize mechanization of breeding, centralization, scale operation, and to provide farmers with seedling cultivation services. The cooperative B remains in the middle part of the agricultural industry chain. It provides guidance for farmers in irrigation water introduction, production technology, pest and disease prevention control, combined with government support projects and low interest loans, the construction of cave cold storage, feed depots and other basic storage facilities, and does a good job in preservation and storage prepara-

tion, and extends the sales time. Cooperative C remains in the post-production part of the agricultural industry chain. It actively develops sales market, establishes direct docking relationship with many colleges and universities and a number of supermarkets, establishes product traceability platform, to provide safe and secure products, conduct product classification, packaging and transportation, and sales, strengthen the brand building and ensure sales.

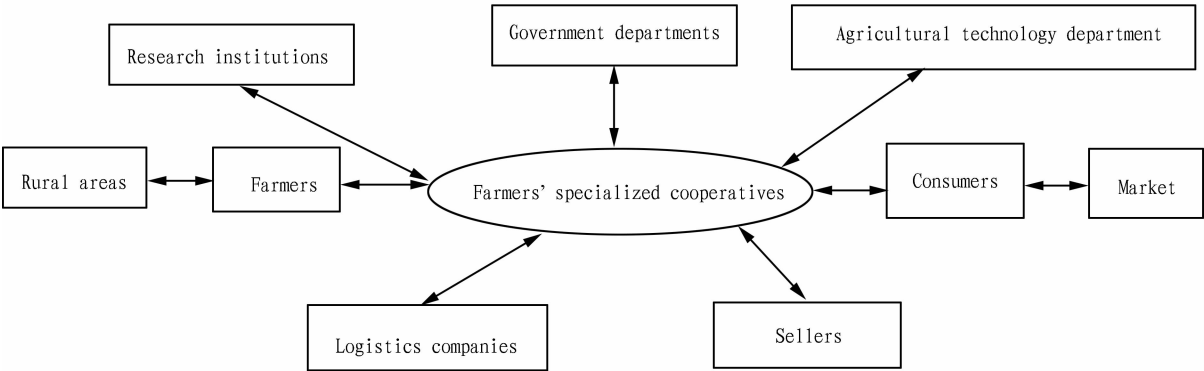
**4.2.2** Three farmers' specialized cooperatives give full play to their role and integrate multi-resources. As shown in Fig. 1, these three cooperatives serve as bridges between rural areas and markets, effectively integrating scientific research, government, logistics companies, vendors and other resources, and aggregating scattered farmers, to achieve large-scale, centralized production, and satisfy market demands and consumer needs. The cooperative A plays the role of pre-production extension through research and development, and cooperates with agricultural departments and agri-

cultural institutions, to transform agricultural science and technology research results into real productive forces. Cooperatives B and C mainly play the role of agglomerating force, drive farmer households and activate the industry. Through the government support projects and the guidance of agro-technical departments, the cooperatives agglomerate various forces, provide farmers with field

management and technical guidance, raise farmers' bargaining ability, and promote the development of agricultural industrialization. This is favorable for organizing agricultural production, activating the development momentum of agricultural cooperatives in the agricultural industry chain, and lifting the level of integrated production, processing and sales of agriculture.

**Table 2** Comparison of the position of three farmers' specialized cooperatives in the agricultural industry chain

Item	Cooperative A	Cooperative B	Cooperative C
Position in the industry chain	Pre-production	Production	Post-production
Content of service	Cultivation of seedlings and purchase of means of agricultural production	Production management, technical guidance, warehousing sales	Grade classification, packaging and transportation, wholesale sales
Main works	Cultivation of fine seed, research and development	Production and planting	Logistics, sales, and brand
Profit margins	High	Low	High



**Fig. 1** Functions of farmers' specialized cooperatives in the agricultural industry chain

5 Conclusions and policy recommendations

**5.1 Conclusions** Taking three typical farmers' specialized cooperatives in Jingyuan County of Gansu Province as example, we compared with the operating mode of three cooperatives and their position in the agricultural industry chain, and analyzed operating characteristics, problems, and similarities of three cooperatives and their functions in the agricultural industry chain. Agricultural industry chain connects the pre-production, production, and post-production of agriculture. In our interview, some farmers were indifferent to the cooperatives. They considered that cooperatives are just tools for responsible person to obtain profit and not providing actual services for farmers. Pan Jin<sup>[8]</sup> surveyed suburban cooperatives and found that 50% of the cooperatives have not taken activities. It can be seen that the existence of some "shell cooperatives" and "false co-operatives" distorts understanding of farmers about cooperatives and weakens their recognition of cooperatives. Therefore, in the actual development and management of cooperatives, it is required to pay close attention to their survival, supervise and inspect their activities, and allow their cancellation. It is of utmost importance to promote development through encouragement, strengthen regulation through supervision, and attach importance to regulation through development. These are favorable for promoting effective operation of model construction of cooperatives.

5.2 Policy recommendations

**5.2.1** The government should strengthen its support and speed up the establishment and improvement of the agricultural industry

chain. The government should make more farmers fully understand farmers' specialized cooperatives and strengthen the cooperative awareness through the policy guidance; provide financial support for farmers' cooperatives through agricultural projects and low-interest loans; provide technical guidance and variety research and development through the agricultural technology extension centers and research institutes; at the same time, the government should strengthen the implementation of tax relief to solve the electricity, water and other utilities of cooperatives, reduce operating costs, increase irrigation, storage, transportation and other support, improve infrastructure construction, and promote establishment and improvement of agricultural industry chain.

**5.2.2** Farmers' specialized cooperatives should seize their respective characteristics, identify their position, and explore their internal potential in the agricultural industry chain. Farmers' specialized cooperatives should combine their business scope, identify their own operating characteristics and position in the agricultural industry chain, give full play to their functions in extending the industrial chain, and enhance product competitiveness; the production development should keep appropriate scale and make effort to develop towards agricultural modernization, industrialization, and commercialization; post-production should actively expand the market, promote the extension of the agricultural industry chain, to obtain more profits in sales. It is required to attach importance to research and development, processing, marketing and other fu-

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