Regoverning Markets

Small-scale producers in modern agrifood markets

Innovative Practice

China
Collective action by small-farm households in big markets: case study of Ruoheng farmer watermelon cooperative

Huang Zuhui, Liang Qiao and Song Yu

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Regoverning Markets

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1 Introduction

With the growing economic globalization and trade liberalization of produce, all countries need to take positive measures to adapt to the national and international environment. In developing countries where agricultural development is lagging behind and farm households are generally small, small-farm households have to face the challenge of competing in big markets. Ability to compete is not only the main restriction on the development of the rural economy, but also a key factor in the equilibrium and stabilization of social development. Given this background, to keep up small-farm households have to innovate in various ways, updating their organizational structure, marketing system, and distribution system.

In the world trading system, China is a large country in terms of both production and consumption. She is easily affected by the international market and at the same time has a big influence on it. As a country with a large agricultural population and under-development in rural areas, China has very serious agricultural problems. China's produce system is in a chaotic phase, characterised by considerable diversification. Various forms of institution innovation are being stimulated by new factors, both incentives to produce and compulsory regulations. These innovations enrich rural markets and the produce supply chain. The farmer cooperative is a theoretically and practically feasible institutional innovation created by this environment. Small-farm households are entering markets collectively. Many Chinese and foreign scholars have been researching this field from different perspectives.

This paper chose the Ruoheng farmer watermelon cooperative to research, and analyses the institutional innovation that they have made to meet the challenges of large markets as a participant in the supply chain.

2 Research background

2.1 Difficulties faced by small-farm households in developing countries

Produce market chains in developing countries are being transformed in both structure and management. These changes are not only an important factor for the sustainable development of the rural economy and for poverty reduction, but they also influence the roles of agriculture in macroeconomic development. The existence of large numbers of small-farm households in many developing countries is a big bottleneck for the globalization of produce supply chains – and for a breakthrough in rural development. Small-farm households are barely able to cope with the existing dynamic farm produce markets.

Against this demanding background, the Global Consortium of Regoverning Markets[1] initiated a programme to collect case studies of institutional innovation by small-farm households in developing countries, and to find examples of successful innovation by small-farm households in dynamic markets.

2.2 China's farm produce supply chain and agricultural problems

China is a huge country with an equally huge population. According to China's sixth census in 2005, the population was 13.06 billion, 43 per cent urban and 57 per cent rural. Between this census and the previous one the urban population grew by 6.77 per cent. Gross rural product was only 15.9 per cent of GDP, although it accounted for the production of nearly 60 per cent of the population. Although it is not currently productive enough, having such a large agricultural population means that agriculture needs to be the foundation of economic development, social stabilization and national self-reliance.

Economic development in China is in an important phase, and solving the problems of agriculture has been the most important challenge. Agricultural development lags behind the rest of the economy and farmers' income is increasing only slowly, which has led to a growing income gap between rural and urban areas.

The produce supply chain is in flux. Farmers as producers are in an unfavourable position, and small-farm households in particular face many difficulties in the marketing and distribution chains. Transportation and transaction costs are high, and

[1] The Regoverning Markets Programme is build around a global consortium of Southern and Northern institutions. Each programme component is led by consortium members. The programme covers nine regions worldwide and the programme of each region is led by a regionally-based consortium member. An international Advisory Group is in place with members from the business sector, the OECD, the International Federation of Agricultural Producers, research and academia.

small-farm households are not able to protect their interests. Thus, the distribution of risk throughout the supply chain is distorted, and the distribution and share of gains and risks is unbalanced. Small-farm households have to shoulder both natural and market risks, and at the same time their risks and efforts vastly outweighed their gains. Farmers usually get little of the produce's added value, most of which is won by other participants further along the supply chain.

2.3 The marketing and distribution of farm produce in China

China's current produce distribution system is really many systems. It includes not only the traditional production-supply-marketing system, but also small-farm households, peddlers, processing businesses, wholesalers and retailers. The system depends not only on links between wholesale markets in the producing and selling areas, but also on a modern supply chain that depends on new ways of marketing, although these are constrained by technology and include cooperative organizations as well as 'added-value marketing and distribution', in particular by the new retailers such as supermarket chains. There are two main problems in produce distribution:

- The producers do not have a marketing association to represent them and promote their interests. Farmers should create and run this association, but it is not easy for them to take on that role. Their small-scale production, outdated ideas and small amounts of capital are far from what is required to create a modern marketing association.

- The system is unfair to farmers. Farmers' rights and interests cannot be ensured effectively because of the disorderly and disjointed market systems and farmers' low status in those systems. Since the rural market economy in China is not perfect and the produce marketing and distribution system is in a critical transition period, new thinking is needed to guide its development.

As an institutional innovation, farmer cooperatives have sprung up spontaneously during this period of chaos in the produce supply chain system and transition in the rural market economy. It is inevitable that when existing institutions are unable to realize the potential income from economies of scale, risk, and transaction costs, institutional innovation will take place. Farmer cooperatives appeared in order to help small-scale farmers compete in dynamic markets. Now they are spreading like wildfire, especially in the eastern and coastal areas. Some 60 per cent of the cooperatives are growers, while the others are in breeding, processing, transportation, etc. Both Chinese and foreign academics have commented positively on the cooperatives' effectiveness in enabling farmers to participate in the market, and the trend appears to have raised small-farm households' previously low status. Chinese farmer cooperatives do still have problems, however. First, regional development is unbalanced, because the cooperatives prosper relatively well in areas with a mature

market economy and do not prosper in areas where the economy is still very conventional. Second, although they bring together a number of small-farm households, Chinese farmer cooperatives are still small. The third obvious problem is that there are still only a few cooperatives working in distribution.

This paper describes the successful Ruoheng farmer watermelon cooperative.

3 Literature review

3.1 Small-farm household's supply chain and markets challenges

Economic and social development brings with them great changes in people's consuming habits. The traditional consumption system is being replaced by an 'agro-industrialized food' system. With the flourishing development of supermarkets and the appearance of the logistics industry and middlemen, farmers are losing direct contact with consumers (Gereffi, 1999). Accordingly, farmers get a smaller proportion of their produce's value, because most of the value is distributed among the other participants in supply chain. In addition, trade liberalization further enlarges the income gap between domestic and overseas agricultural producers (Litchfield et al., 2003).

Congjiu Liu (2004) thinks that the 'family is still the basic unit of the agro-food distribution network', and that 'it is not good for improving food quality' if small-farm households participate in the agro-food network individually instead of collectively. A scattered distribution network will probably restrict the emergence of large industrial organizations, and make it hard to realize economies of scale. At the same time, producers and consumers are segregated, so information about markets cannot play its roles of coordinating production and consumption, which limits improvements in produce quality.

It is very difficult for small-farm households in many developing countries to enter the market at all. Chinese scholars Tao Tan and Yihua Zhu (2004) cite three main barriers to small-farm households entering markets: transaction costs are high when small households work alone; the lack of sufficient and accurate information combined with farmer's lower education levels and long-term isolation result in poor analysis of information and weak negotiating positions; and the disadvantages of small farms, including low production, shortage of capital, poor competitivity and so on further diminish their operational efficiency.

Yuefeng Ma (2005) pointed out that the family, as the basic unit of the produce network, carries out two important tasks at the same time: production and distribution. Farmers cannot fully devote themselves to production to improve output and quality nor to distribution to increase the value of the agro-food.

3.2 The advantages and requirements of collective participation in the market

To raise their low status in the produce chain, farmers should improve their ability to participate, increasing their chances of gaining more from marketing activities.

American scholar Jim Bingen (2003) described three ways to improve farmers' ability to participate in the supply chain: contract/business programmes, project/technology programmes, and process/human capacity investments. Human capacity investment is preferred and particularly emphasized, with the development of foundation skills and social capital as the initial focus, including assistance for collective self-help, literacy programmes, marketing activities, and decentralized development planning. This type of investment can also facilitate the adoption and extension of technology.

The main aim of financial innovations is to lower transaction costs. That is to say, where it might be possible to reduce transaction costs, there is potential for institutional innovation. According to Zuhui Huang and Dongying Liu (2005) the potential transaction cost savings in produce distribution system will come from:

- changing the way farmers are organized to participate in the distribution system;
- investing in better technology and logistics in the distribution system;
- enriching the symbiosis between different segments of the supply chain; and
- keeping the number of logistics actors in balance and ensuring that they are fair.

3.3 Domestic and foreign research into Chinese small-farmer cooperatives

At the international symposium on 'The Institutional Structure and Legal Arrangements of Farmer's Cooperatives' held in China in 2005, Professor Jerker Nilsson pointed out that although there were ongoing discussions about farmer cooperatives, they are still protected by law in most countries, because it is thought that they enable farmers to participate better in competitive markets. Weatherspoon (2003) thought that producers organized on a large scale would be able to provide large volumes of produce regularly and in a timely fashion, and could ensure food safety and quality more easily. Apparently farmer cooperatives are one of the best ways to organize producers.

Through farmer cooperatives, small-farm households can build up credit mechanisms and secure relationships with other supply chain participants, for their mutual benefit (Stockbridge, 2003).

Experience shows that neither the market nor the state on their own is enough. The former is likely to lead to high transaction costs and market failure, while the latter usually results in exorbitant organization and regulation costs. Seen from the point of view of transaction costs and institutional arrangements, a farmer cooperative is an institutional arrangement that sits in between the free market and state options (Zuhui Huang, 2002). The more developed the market is, the more the cooperative is needed to make up for the disadvantages of the free market mechanisms and inadequacy of the state mechanisms.

If farmers want to take the initiative in the market or to earn as much profit as possible in the produce chain, they have to think differently and identify the potential profits in the production and marketing process. The main actors in rural commodity chains have to be the farmers, and with the requirement of scale production and the development of the market economy, farmers have to organize themselves into cooperatives (Dongmin Liu, 2001).

4 Contents and methods

Although farmer cooperatives have been studied extensively, much research is theoretical, about farmers' benefits, institutional innovation, transaction costs, and management difficulties. Case studies are limited to brief descriptions and simple analyses of particular cases. There are few case studies that penetrate into the collective actions and institutional innovation of small-farm households in dynamic markets or farmer cooperatives from the angle of farmers' participation in the supply chain and/or markets. This study looks in depth at the Ruoheng farmer watermelon cooperative, describes how it innovated and evolved, and outlines the way the cooperative runs, including organizing, marketing and distribution. It analyses the innovations, supply chain, environmental development factors, cost-benefit status, expansion and extension, then describes the cooperative's roles and its existing and potential problems.

This study used both a literature review and a field survey. The literature review covered produce supply chains, participation of small-farm households in dynamic markets, farmer innovations, and farmer cooperatives. Basic information was collected on the Ruoheng watermelon cooperative and a questionnaire was designed to collect further information. A field survey was conducted at the cooperative, in Changshan village. Data was obtained through both the questionnaire and interviews. The head and some other members of cooperative were interviewed, as were non-members who had not joined the cooperative. To ensure the reliability of the data, five cooperative members and five small farmers were interviewed about their costs and benefits.

5 Case study

5.1 Innovation

5.1.1 Watermelon growing in Zhejiang and Wenlin

Watermelon is known and grown worldwide, and is the fifth biggest fruit in the world. China has the largest growing area and gross output of watermelon globally, and could be called the No.1 watermelon country.

Zhejiang province is one of the largest growers of watermelon in China, with some 1.27 million mu under cultivation in 2004 (about 84,600ha) (1 mu = 667m^2 or 0.0667ha, or 1 hectare = 15 mu). Gross output was 2.66 billion kg, and gross production value Y2.6 billion.

In order to increase quantity and improve quality, many farmers grow watermelons in greenhouses. Wenlin, a town in Zhejiang province, has a long history of growing watermelon, and is even called 'the Chinese home of greenhouse watermelons'. With the help of the south-eastern coasts ideal climate and soil conditions, Wenlin's farmers have succeeded in growing high-grade watermelons using advanced production technique and facilities.

5.1.2 Brief introduction to Ruoheng town and Changshan village

Ruoheng is a township (area 115km^2) south-east of Wenlin with 111 associated villages and a population of 145,000. The town has many watercourses and beautiful scenery. Agriculture is the heart of the town's economy, and both agriculture and township enterprises, such as sugarcane processing companies and machinery companies, are quite developed. In fact it is famous for its well-developed and highly productive agriculture.

Changshan is one of Ruoheng's small villages. It is an immigration village; more than 40 families immigrated there in 1989 because of rebuilding initiated by government. They were poor and got by growing rice, but now the village is famous for its watermelon, which has given villagers a much higher standard of living.

5.1.3 The watermelon cooperative's path of innovation

Youda Peng, who is now head of the cooperative, gained experience growing watermelon in his hometown, a small village of Huangyan. He acquired some high-quality seed from the Xinjiang Academy of Agriculture and began growing watermelon on his 3mu (0.2ha) plot in Changshan village in 1992. He made a net profit of more than Y5,000. The next year he grew his watermelon in a greenhouse. Thanks to his careful cultivation and favourable soil conditions, the greenhouse watermelons not only ripened earlier, but also tasted better. The watermelon sold well, and Peng had a net profit of more than Y10,000 that year. As soon as Peng

succeeded in growing high-quality watermelon, he selflessly showed other villagers how to do it. There are many major watermelon producers in Changshan village, and now almost all the villagers grow watermelon, and villagers' average income is nearly Y20,000 annually.

Because temperatures in Zhejiang drop in the winter, watermelon is only a summer crop. But the villagers had an idea – why not grow them in Guangdong province, which is further south and has higher temperatures. In 1998, Peng and 35 other farmers travelled to Guangdong and rented more than 180mu (12ha) of land to grow watermelon, and their crop was a great success. The next year, the holding in Guangdong was expanded to 600mu (40ha).

In 1999, Peng registered the brand 'Yulin' for their fine watermelon, and implemented 'four elements' that are the brand's standards: production, quality inspection, packaging, and sale. The same year, the villagers established another holding in Hainan province, just south of Guangdong province. With these two holdings, Yulin watermelon could be grown year-round. In summer the watermelons were produced mainly in Ruoheng, and in winter they were produced in Guangdong and Hainan to serve the national market.

In July 2001, Peng and 29 other villagers established the farmer watermelon cooperative and created local Yulin brand standards for both growing techniques and quality. The cooperative's holdings extended to other provinces, such as Guangxi, Jiangxi, Anhui and Yunnan. At the end of 2005 the cooperative had 152 full members. They were all offered training on the standard growing techniques and a marketing group was organized. The cooperative established a marketing network – which includes more than 50 fruit wholesale markets in more than 20 cities – which directly promotes the development of the watermelon industrial belt of 80,000mu (5,333ha) on the south-eastern coast of China.

In 2003, the Yulin brand was recognized as a 'notable brand' and the watermelon as a 'famous brand product'[2]. Then in 2005 the watermelon was approved as 'green food'[3]. Peng also won the titles of 'Outstanding farmer cooperative leader', and 'Skilled buyer and seller of excellent agro-product or by-product', among others.

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[2] Both 'notable brand' and "famous brand product' are awards established by the government of Zhejiang province for farm produce.

[3] The main certification system in China covers pollution-free food, green food and organic food.
Pollution-free food is produced within an ecological and clean environment and the amount of harmful substances is controlled. The standard is much lower than green food and organic food.
Green food is produced according to the principle of sustainable development and with limited amounts of fertilizers and pesticides. It should be safe and of superior quality and with high nutritional content.
Organic food is free from pesticides, fertilizers, hormones, synthetic pigment, herbicides and other artificial substances.

5.1.4 Establishment and operation of the cooperative

The Ruoheng farmer watermelon cooperative was established in July 2001 with the approval of the Wenlin Bureau of Agriculture and Forestry. In 2002, it was registered as a business with a registration capital of Y522,000. Each member's farming area and share is decided by his production and management ability and capacity, as well as his capital to buy shares. Each share costs Y1,000, and no member is allowed to have more than 10 per cent of the shares, e.g. Peng had 5 per cent of the total shares.

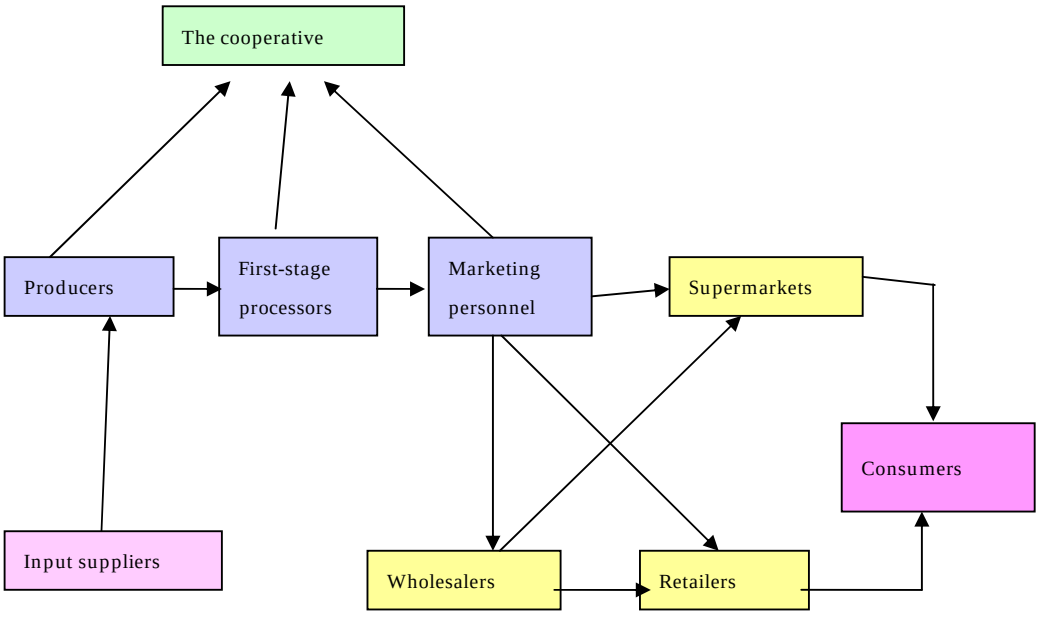
The join the cooperative, farmers have to meet certain criteria. They have to have: more than three year's experience growing watermelons; mastered the Yulin brand production techniques; and some organizing and managing ability. Tthere is a probation period before anyone becomes a full member, and anyone who fails to prove the three qualifications described above will be refused. According to Peng, 130 farmers were admitted as quasi-members in 2006 and they will become full members or rejected after one year.

5.2 The supply chain and its participants

5.2.1 Supply chain participants

The supply chain participants and their relationship to the watermelon supply chain is described in Figure 1.

Figure 1. Supply chain participants and their relationships



(1) Input suppliers. The cooperative's inputs are bought from approved suppliers with long-term agreements. They are usually relatively big factories. Since the Yulin brand watermelon has strict production standards, the variety and use of fertilizer and pesticide are strictly controlled, and all the seeds are supplied by the local agriculture academy.

(2) Producers, first-stage processors, and marketing personnel. As with the farmers, these people are cooperative members or workers employed by the cooperative. There are four types of worker in the cooperative: core members, common members, quasi-members, and non-member workers. Core and common members are full members.

The core members not only produce or process watermelon, but also are responsible for the daily management of the cooperative, including solving technical and marketing problems, overseeing the accounts, capital and personnel, and dealing with other issues as they arise.

The common members are the main production force. They know the production techniques well, and can organize and manage the non-member production labour force.

The quasi-members shoulder the same responsibilities as full members. The difference is that they are still in their probation period. If they cannot meet the cooperative's requirements after a year, they will be refused full membership.

The non-member workers are employed by the cooperative to carry out less skilled work. They are not so familiar with the whole Yulin watermelon production chain. The cooperative usually employs them in their holdings in the other provinces.

(3) Wholesalers, supermarkets and retailers. Watermelon is not usually contract-grown. The cooperatives negotiate directly with wholesalers (40 per cent), supermarkets (25 per cent), and retailers (35 per cent). The cooperative established a marketing network that covers many cities to facilitate the marketing.

The growth of food supermarkets is leading development, but this produces more, and more difficult, distribution challenges. Supermarkets reduce conflict between small-scale farmers and dynamic markets. Supermarkets use their information networks and management systems to analyse demand. They feed back the information to food producers, and the information directly affects food production. Thus the previous connection between small-scale farmers and dynamic markets has changed into a connection between small-scale farmers and supermarkets. The supermarkets are also bringing and accelerating the development of contract farming.

This not only removes the chance and uncertainty of spot transactions, but also gives small-scale farmers a comparatively regular income.

But the development of food supermarket also creates conflict between small-scale production and supermarkets. Farmers are still in an inferior negotiating position, and it is not easy for farmers to win contracts with supermarkets. So it is still important to organize farmers into cooperatives. The rise of supermarkets also brings new challenges to the cooperatives, and pushes them to achieve higher safety and production standards. The cooperative has to think not only about consumer demands from the traditional distribution system, but also about the supermarkets' new demands. The result is that the cooperative sells their standard-shaped watermelons in packaging to the supermarkets or special retailers, and sells their other watermelons through traditional distribution channels.

(4) Consumers. Consumers are at the end of the supply chain. As people's living standards have improved, their consumptions habits have changed a lot. They pay more attention to food safety, taste, and the product's appearance, and they have more diverse and specific demands. These new consumer demands make improved production and processing necessary.

5.2.2 The organizational system

Management is one of the key factors in the operation and development of the cooperative, and this includes legal, judicial, and executive governance. On 1 June, 2005 Zhejiang province began to enforce the 'Regulation of special farmer cooperative organization in Zhejiang province', which is China's first local regulation covering farmer cooperatives (national regulation is forthcoming). The regulation identifies the special legal status of farmer cooperatives, which is different from that of companies.

The cooperative carries out economic activities as a legal person.[4] Its management and operation is unique, and different from corporations. The decision-making mechanism of the cooperative is a democratically managed member congress. They use a 'one person, more than one vote' mechanism to embody the principle of efficiency (and maximizing farmers' income). The cooperatives are usually established and managed by the most able person in the village, who plays a key role in the decision-making. And common members, i.e. the farmers, participate by offering advice and ideas. They also help establish the agreed local quality and technique standards, which they follow in production, first-stage processing and

[4] 'Legal person' is a legal term. It is an organization which has its own independent assets, takes part in civil and economic activities independently. It enjoys civil rights and takes on obligations on its own. Organizations and corporations are legal persons.

packaging. All farmers in the cooperative agree to follow the growing plans and standards set by assembly.

As to personnel management, the cooperative offers fixed wages and bonuses to its members and workers every month. Profits are distributed annually according to both transaction volume and shareholdings at the end of watermelon sale season. The cooperative pays all the costs and makes an agreed contribution to the reserve and risk funds, all of which is deducted from the gross profit. The net profit is distributed among the members according to their shareholdings and volume produced and sold. The reserve fund is used to expand to new holdings, and the risk fund is to cover the costs of accidents and natural disasters such as a typhoon.

5.3 Macro and micro context

Small-farm households in China usually have to produce and sell their produce by themselves, which not only leads to high production and transaction costs but also to difficulties in marketing. And now that the produce circulation system has diversified, there are both traditional production-supply-marketing systems and new distribution elements like supermarkets. In this context, we analyse the environmental factors from the perspectives of economy, policy and culture.

5.3.1 Economic environment

Although the people's commune and farmer's organizations, which appeared and developed between the 1950s and 1970s in China as mutual-help teams, were big failures, we have identified the key success factors for farmer cooperatives. Since China's reform and opening-up in the 1980s new farmer cooperatives have come into being. The appearance of the new cooperatives indicates that there are economic environments that continuously accelerate and require the further development of farmer cooperatives.

With the weakening of the effect of rural reform and the change of the structure of the market economy, farm produce has gone from scarcity to surplus. But farmers do not receive more income from their increased production due to their failure to participate in the new supply chain and because of falling prices. And the rural economy is developing slowly. With economic globalization and China's entrance into the WTO, all small-farm households are finding it difficult to deal with dynamic markets. The farmers, working individually on a small scale, are powerless and in an inferior position. It is hard for them both to enter the dynamic markets and to protect their interests, so organizing farmers is necessary.

The small per-capita holdings of farmland (less than 0.1ha) in China and the special property and economic system ensure that small-scale production will exist for a long time. We can imitate neither the American nor the Japanese models. We can only

innovate industrially on the basis of the 'Household Responsibility System'[5]. Farmer cooperatives not only have the advantages of family management, but also they make up for the deficiencies of the diseconomy of small-scale management and the farmers' inferior position in markets.

5.3.2 Political environment

The Household Responsibility System created in 1979 is a real condition for the rise of new-style farmer cooperatives.

In recent years the Chinese government has promulgated several documents and favourable policies to encourage the development of farmer cooperatives. For example, the Report of the Sixteenth People's Congress said that we must improve the organization of farmers in dynamic markets, and another national report pointed out that farmers should develop special cooperative organizations with principles of free will and equality. The main central government policy document included policies to encourage the development of farmer cooperatives. All these policies together create a favourable institutional environment for farmer cooperatives and drive the cooperative into a new stage of development.

5.3.3 Cultural environment

The appearance and development of farmer cooperatives is influenced by society, history and culture. It comes from deep within our traditional culture. The rural community is the soil that sustains the growth and development of the cooperative. Unlike in western countries, villages in East Asia are stable and the villagers are usually closely related and live near their family. Thus, it is relatively easy for the villagers to cooperate at a low transaction cost.

5.4 History of the innovation that resulted from the evolution of the supply chain

Year	Supply chain	Innovation event
1995	Peng found that large-scale watermelon growing could not only bring down the production cost but also attract wholesalers.	Peng and six other experienced farmers began to rent relatively large areas of land to grow watermelons together, and their high-quality watermelons began to gain fame in the markets.

[5] The 'Household Responsibility System' is the contract system for farmland in China since the reform in 1978. The village collectively holds the ownership of the land, and households in the village rent the land from the village. In other words, farmers in China under this land system only have the right to use and manage the land in accordance with a long term contract, usually 30 years, which can be extended if the farmer wishes to continue to farm after the contract has expired. But they do not have the right to buy and sell the land they contract.

1998	To meet the year-round demand for watermelon, they began to grow the watermelons in other provinces that have higher temperatures in the winter.	Peng and 35 other villagers went to Guangdong province and established a holding there, realizing the year-round supply of watermelon.
1999	With the development of the market economy and produce markets, as well as the continually increasing production, there was a need to grow watermelon to standard requirements. A brand was necessary to boost the marketing of the watermelon.	Supported and encouraged by local government, Peng and the villagers registered the brand 'Yulin' for the watermelon, and standardised production in four areas: growing, quality inspection, packaging and sales.
2001	After registration of the Yulin brand, some fake Yulin watermelon appeared. To increase the distribution of the watermelon and further expand the marketing network, villagers thought that a formal farmer cooperative was needed to safeguard the proprietary techniques and standards.	The Ruoheng farmer cooperative was founded by 29 members. They established local quality and technical standards for the Yulin watermelon. After this, four holdings in other provinces were established.
2001	The first special sale shop was opened in Hangzhou[6].	The cooperative established a marketing network and began to open special shops in different cities, and appointed marketing personnel. Thus the marketing area and market share were expanded.
2005	With consumers' increasing concern with and demand for quality and safety, pollution-free food, green food and organic food became popular.	Yulin watermelon was officially recognized as green food, which affirmed the quality and safety standards and great taste.

[6] Hangzhou is the city where the provincial government of Zhejiang is.

5.5 Farmers' participation in and exclusion from the cooperative and supply chain

Cooperative members participate in both market activities and distribution through the cooperative. But there are large numbers of small-scale farmers who don't belong to the cooperative because they 'don't think it is profitable to join', or they think that 'the subsidies from the government are kept by the head of the cooperative or core members'; or because of the restrictions, such as the entrance qualifications and the limit on the size of the cooperative.

Non-members and the cooperative are both indispensable participants in the distribution of watermelon. They take part in the production and sale of watermelons in different ways. Although the cooperative participates in marketing and economic activities as a legal person, non-members have to take on the responsibilities from production to sale on the basis of the family unit.

5.5.1 Farmers' inclusion or participation in the farmer cooperative

When Peng Youda began growing watermelon most villagers did not trust him completely. But after the first successful year of experimental planting and up to and including the later scaling-up, villagers in and even around Changshan village began to want to join in watermelon growing. Then Peng Youda established the farmer cooperative and accepted members openly. But because watermelon growing was not yet widely known all the members were local villagers. And the only qualification to join was enough capital to buy a share.

Once the cooperative reaches a certain size its capacity to absorb new members will be limited. And not all the farmers who want to join the cooperative will be accepted. Putting restrictions on membership not only protects the incomes of the existing members, but also enables farmers to increase their income group by group. The cooperative introduced a probation system in 2004, and all farmers have a one-year probation before becoming full members. New members must meet three requirements:

- three or more years' experience of growing watermelon;
- some abilities in organizing production and management. Besides growing, all full members have to organize and manage some quasi-members and workers;
- capital to buy a share of the cooperative.

5.5.2 Distribution of watermelon by small-scale farmers who do not join the cooperative

In order to market and sell watermelon, non-members have different requirements from the members. The four main qualifications are:

- capital to invest;
- knowledge of the techniques used to produce watermelon;
- some marketing capabilities;
- enough capital and management ability to survive disasters like typhoons.

The main advantages that non-members have over the cooperative are their lower price and the sundry sales channel. Non-members have various sales channels. Besides selling their products to the wholesalers, they can increase their sales volume through traditional produce markets or transport the watermelon directly to selling areas.

Non-members can also grow different varieties of watermelon and use different inputs. They are not restricted by production and quality standards, while the cooperative has to produce and package using the agreed Yulin standards. Thus non-members can meet the demands of other consumers.

5.5.3 Cooperative's advantages in the produce chain

Capital. The cooperative runs on a shareholding system. Share capital and accumulated capital not only insure the various costs of cooperative operation but also build up the ability to survive disasters. The subsidies from the government and bank loans guarantee good operating capital and strengthen the cooperative. But non-members can only produce based of their limited capital which restricts production and is high risk, especially in places like Wenlin that are affected by typhoons.

Techniques. With its particular production techniques and packaging, Yulin watermelons sell for a higher price than other local watermelons, which is the cooperative's main source of profit. But non-members can only afford common materials and inputs. They are unable to improve the quality and taste of their watermelons and can only improve their techniques through a long process of trial and error.

Sales. First, most wholesalers are attracted to the cooperative. Only a few wholesalers who are looking for the lowest price will deal with non-members individually. Second, all the supermarkets like to do business with cooperatives that produce on large scale. The cooperative can deliver large volumes on a regular and timely basis and can more easily ensure food safety and quality standards. In addition, because the cooperatives are growing their fruit in several provinces they can supply products year round, and they have established marketing networks in more than 20 provinces.

Subsidies from government. The development of farmer cooperatives is vigorously encouraged and supported by the country and government. Government policy for cooperatives includes tax breaks and other tax reduction measures, implemented

through favourable policies and subsidies. Although non-members share the favourable tax breaks and exemptions, they get very few subsidies from government. For instance, according to Peng, the cooperative received a subsidy of Y650,000 after a recent typhoon.

5.6 Participation, and its costs and benefits (2005 data)

Members and non-members of cooperatives participate in the watermelon supply chain in different ways, and have different roles and obligations. We conducted the field survey at Changshan village in 2006, which is a local base for watermelon production in Ruoheng town. The costs and benefits of the cooperative compared to those of non-members are described below.

The following should be noted:

- Watermelon production cycle: seeds are sown in November and ripe watermelon is harvested from the following May until November. So the whole production cycle is about one year.
- All of the cooperative members earn Y1000 per month. And every member is responsible for 5 mu on average. Thus income per member (or the labour cost of the cooperative) is Y2400 per year per mu.
- The average growing area for non-members is 10 mu, compared with the average of 5 mu for each member.
- Both cooperative members and non-members spend all their time and effort on watermelon production, and have no other income.
- The field survey excluded differences in regions, soil, climate, etc between the plots of cooperative members and non-members by controlling investigated sites and objects.
- As to the costs for members and non-members, some items, such as plastic films, bamboo slices and burettes, are categorized as fixed costs, because these inputs are used for more than one year.
- Farmers with more than three years' experience in growing watermelons were interviewed about costs and benefits. Data on the costs and benefits obtained from these interviews are very similar for each interviewee, which indicates that the data are representative and credible.
- Non-members have to employ one or two labourers to erect the plastic canopies or in the midseason, and on average 0.9 labourer per mu is needed. The cost of the labour is Y50 per day, so the average cost of wage labourers was Y45/mu in 2005.

5.6.1 Comparison of variable costs and benefits between the cooperative and non-members

The variable costs and benefits of the cooperative members and non-members are described in table 1.

Table 1. The variable costs and benefits of the cooperative members and non-members for 2005 (yuan/mu)

Items	Cooperative	Non-members	Variance
Seeds	45	27	18
Fertilizer and pesticide	1,100	1,100	0
Machinery costs	250	110	140
Packaging materials	1,500		1,500
Labour costs	2,400	45	2,355
Land rental	850	850	0
Total cost	**6,145**	**2,132**	**4,013**
Sale price (RMB per kilogram)	3.0	1.2	**1.8**
Output (kilogram)	2,600	2,500	100
Benefit	**7,800**	**3,000**	**4,800**
Net benefit	1,655	868	**787**

Cooperative members use better seeds to ensure better produce and to stick to the brand standard. Thus costs are higher for cooperative members than non-members.

The costs of fertilizer and pesticide are the same for the cooperative and non-members. The cooperative uses smaller quantities of fertilizer and pesticide, but of better quality which means it is more expensive than those used by non-members, to achieve the green food standard.

The cooperative is more mechanized than non-members. The cooperative has its own machines but non-members do not. So the machinery costs of the cooperative mainly relate to the oil cost, while the machinery costs for non-members relate to the cost of hiring someone with machinery.

From Table 1 we can see that the costs of the cooperative and non-members are Y6,145 and Y2,132 respectively. The cooperative appears to have a much higher cost. The main disparity comes from costs of labour and packaging material such as labels, net bags and paper boxes.

The difference in costs of Y4,013 is significant. It leads to a difference in the price of the watermelon between the cooperative and non-members of Y3.0 and Y1.2 per kilogram respectively. Such a large difference is because of the superior appearance, taste, packaging, quality, safety and brand effect achieved by more inputs and a high production standard.

Due to the joint effect of yield and price, there is notable difference in the revenue between them. The revenue per mu is Y7,800 for members and Y3,000 for non-members.

In the last row of the table, we can see the net benefits of the cooperative and non-members are Y1,655 and Y868 per much, with a revenue disparity of RMB Y787.

5.6.2 The cooperative's profit distribution system

The cooperative does its financial accounting on the basis of landholdings. After paying all the costs, 10 per cent is deducted from the gross net profit and put into both the reserve and the commonwealth fund for expansion and welfare (split between the two funds), then 5 per cent of the gross net profit is put into a risk fund in case of natural disasters such as typhoons or accidental costs. The risk fund covers all of the holdings as necessary. The remaining profits are distributed to members according to their shares and contributions. This distribution mechanism can stimulate members' enthusiasm to invest and produce.

There are three kinds of members in the cooperative: core members, common members (both are full members), and quasi-members. Whether the benefit distribution mechanism reflects fairly the contributions of the three kinds of members is a good way to measure the innovation success of the cooperative. All the members have to work full-time in the production and they receive Y1,000 a month plus a monthly bonus based on their performance and the growing condition of watermelon. Core and common members also get a dividend on profits, which quasi-members are not entitled to until they become full members. Full members help the quasi-members, including solving their technical production problems.

The cooperative's profit distribution system ensures that 'each gains his proper reward' by returning the profits to members, which is an important part of the motto 'serving the farmers'.

5.6.3 Analysis of benefit variance between cooperative members and non-members

To explain the different earnings of the members and non-members, a simple function of cost/benefit is established, that is: $r = (R-C)(1-I)$[7].

[7] The 'I' relates to the ratio of the reserve fund of the cooperative, so '1-I' relates to the ratio of fund returned to

r = the net profit per mu of the members
R = the profit per mu of the cooperative
C = the cost per mu of the cooperative
I = the ratio of reserve fund of the cooperative

The corresponding data for non-members are denoted as r_1, R_1, and C_1. A set of equations can then be drawn:

$r_1 = R_1 – C_1$
$r = R – C \times 1 – I$

To put in the data showed in table 1 and we get the formula:

$r_1 = 868$
$r = 1655 \times 1 – 15\%$[8] $= 1,406.75$

The data 868 and 1,406.75 are net benefits per mu. As we know, the average growing area of non-members is 10 mu, while the average managing area of members is 5 mu. So in 2005, the average total net benefit of non-members is Y8,680[9] and the average total net benefit of members is Y19,033.75[10].

Thus, even with the reserve and risk fund, the members have apparently higher incomes than non-members, i.e.. a variance of Y10,353.75[11], which shows the distinct and substantial benefit brought by the cooperative.

5.7 The potential for expansion and extension

From 3mu of farmland in 1998 to thirteen holdings and an area of thousands of mu; from a registration capital of Y500,000 in 2002 to a total stock capital of Y21,000,000 in 2005; from 29 members to 152 full members and 100 quasi-members; from a common farmer to a well-known ‘ king of watermelon’ – the cooperative has developed very fast. According to Peng’s plan, the cooperative will go on acquiring new holdings and expanding its growing area at a rate of 20 per cent per year. The cooperative is also

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members.

[8] As we mentioned above, 10% of the gross net profit is reserved for expansion and welfare, and then 5% of the gross net profit is reserves as a risk fund. Thus the total reserve ratio is 15% of the gross net benefit.

[9] Y8,680=Y868 per mu x 10 mu

[10] Y19,033.75=Y1,405.75 per mu x 5 mu + Y12,000. The data Y12,000 is the wage of the members for 2005.

[11] Y10,353.75 Y19,033.75-Y8,680

considering growing watermelon in foreign countries, most likely Vietnam and Burma.

6 Discussion and analysis

6.1 Key factors of the institutional innovation and development

Institutional innovation takes place when interested parties realize that they can earn more or that their current interests are limited by the way the economy is developing. These parties will discuss and then implement better institutional arrangements. The cooperative is a collective activity of small-scale farmers who are trying to earn more profit despite being limited and influenced by various environmental factors. The development of the cooperative is not accidental, but is influenced and restricted by the economy, government policy, and culture.

The cooperative not only improves on the efficiency of the market, but also makes up for the inadequacies of the government system. With the continual development of a market economy and the liberalization of the global produce trade, low-status farmers need to get organized and enter the market collectively to improve their status and power. They did so in this case, and it was a spontaneous institutional innovation.

The vigorous support from local government introduces invaluable help for the development of the cooperative. The local farmer cooperative law entitles it to operate as a legal person. The local government promotes the cooperative in different ways, all of which greatly enhances the cooperative's status. It also offers subsidies every year to cover natural disasters, and encourage the rural credit cooperative to provide loans to cooperatives, which create conditions for prosperous development and enables cooperatives to expand.

The achievements of the watermelon cooperative are closely tied to its institutional structure and way of working. Various innovations on the cooperative principles and development model sustain the tenets of 'serving the farmers' and 'returning profit to the farmers' . These innovations can be summarized in three categories:

6.1.1 Category 1: Innovations on the principles of the cooperative

The traditional principles of farmer cooperatives include membership access to all, freedom to resign, democratic management, one person one vote, fair treatment, return of profits to members, and so on. The new generation of farmer cooperatives do not comply rigidly to the traditional principles any more. They have established new, more favourable principles. Such is the case with the watermelon farmer cooperative. They put into practice innovative new principles, and this is one of the reasons for their great success:

- **System of quasi-members.** It does not change the principle of serving farmers, but absorbs farmers gradually. If all the farmers could join freely then the

production technique and quality standards could not be guaranteed. And if the cooperative admitted more members than it needed, it would be inefficient. With the system of quasi-members, the cooperative tends to absorb homologous members, and this not only enhances the training effect, but also protects the interests of the old members.

- **System of balancing "one member, one vote" and "one share, one vote".** When there are important decisions to be taken, all the shareholders usually vote on a 'one member, one vote' system. The key of balancing "one member, one vote" and "one share, one vote" is actually to balance equity and efficiency. On the one hand, the cooperative, as an economic unit, is involved in market competition has to be profitable. On the other hand, according to the principle of "serving farmers", it should be non-profitable within the cooperative.

- **System of double return based on shares and transaction volume.** The system of rewarding farmers according to both their share capital and their transaction value is an important guarantee of the smooth operation and development of the cooperative. It encourages members to invest and, more importantly, it boosts production. It prevents freeloaders from being content with low efficiency, and saves the costs of prompting and supervising members. Members also remain committed to improving the quality and yield of their watermelon crops.

6.1.2 Category 2: A leader with strategic courage and insight

In the rural areas of China there is little education or human resource development, which means there is a scarcity of people with knowledge of business management, law, farmer cooperatives, and so on. An entrepreneur with team spirit is a prerequisite for the establishment and development of a farmer cooperative.

With the establishment and development of the watermelon farmer cooperative, Peng became famous. He studies watermelon production techniques, and really tries to improve his own skills as an entrepreneur. He is responsible for everything at the cooperative, from decision-making to benefits distribution. Because most farmers have little education and poor communication skills, the management of the cooperative is very difficult. And with the expansion of the cooperative, Peng is facing more difficulties and pressures.

6.1.3 Category 3: Continuously improving production techniques and brand promotion.

One of the benefits brought by the cooperative is the 'information spillover'. Members are in close contact and information is shared widely; a technical innovation or useful bit of information will be promoted and disseminated rapidly at very low cost.

The cooperative was established and developed on the basis of 'one village (town), one product', a Chinese phenomenon designed to overcome the challenges of so many small-farm households. It is an economic movement that originated in Japan. Farmers in one village choose to grow the product that makes the best use of local resources and adjust their farming techniques to local conditions. 'One village, one product' has a relatively high degree of standardization and a reasonable degree of economy scale. It is developing quickly, and particular products and bases have been created. It enhances competition in markets by improving product quality and increasing production. Thus it is an effective way of improving the regional economy and increasing income.

The villagers chose watermelon as their product because of the condition of the soil and their resources, and little by little they began to specialize in watermelon production. Compared with the intensive production of the past, 'one village (town), one product' is a more effective way to create a distinct and famous brand. And the Yulin brand increases the sale price of the watermelon, as it is well-known. The Yulin brand not only has the brand image of the cooperative, but has also become a sort of regional brand, which has a greater and more long-lasting impact than a corporate brand. It is an intangible asset shared by all the farmers in the community. Not only the cooperative members, but also non-members benefit from the brand. The Yulin brand also attracts many wholesalers, which increases sales for the small-scale farmers.

6.2 Why does joining up small-scale farmers make the cooperative more effective?

The analysis in Section 5 showed how the watermelon cooperative creates substantial benefits for its members. Farmers who have participated in the cooperative know they are no longer far from the market.

Farmers engage with the markets through the cooperative and thereby gain a larger share of the benefits, mainly because their negotiation skills have improved, they have reduced their transaction costs, and the brand effect has pulled in buyers. The cooperative often sends a representative to government meetings and science seminars who brings back to the farmers useful information on technical innovation, improved management, market information, and trends inside and outside of China. But non-members cannot avail of this information.

6.2.1 Increased income due to reduced transaction costs

Farmers' income has increased substantially since they joined the cooperative. The standardized production and the brand name secures a high price for their watermelon, and their transaction costs are reduced.

Transaction costs include the costs of finding customers and products; pricing; bargaining; signing contracts; and executing, supervising, and monitoring the transaction. The farmers' transaction costs also include production, supply, and sale though a market mechanism.

As for non-members, the production and distribution of agrifood is based on the family management unit. This means that the incentive costs are minimal because of the credit mechanism is based on kinship. Moreover, due to the abundant labour resources, farmers' opportunity cost of production is very low. Thus family management has a relatively low production cost, but a high transaction cost in an increasingly developed and complicated market economy. The high transaction costs are caused by various factors:

- In modern markets there are considerable information and power asymmetries in farmers' purchasing of inputs, and in selling of their products. So the costs of information, negotiation, preventing fake products from appearing on the market, and protecting their own rights and interests are very high.

- Agricultural assets, such as personnel, technology and greenhouses, are highly specialized; it is hard to adapt them for use with other crops. If they are not used correctly it will lead to higher transaction costs.

- A plethora of small-scale farmers all buying inputs and selling their produce individually results in diseconomies of scale for those transactions. If these small farmers can be organized to work together then it will reduce the transaction frequency of purchases and sales, and thus reduce transaction costs.

- Small-scale farmers have to bargain with the government if they want to protect their own interests and rights, and ask for more public goods and services. Individual farmers cannot afford such a transaction cost.

In order to improve negotiating ability and reduce transaction costs, it is beneficial for small-scale farmers to join together and negotiate and to deal with markets and government as a group.

6.2.2 Sustainable benefit of increased incomes brought by the cooperative

There is another form of innovation in China: 'company + farmers' . But decades of experience proves that it is not a good institutional arrangement for increasing the income of farmers. The company's aim is to maximize profit. When there are excess profits, they may pay an average social dividend to the farmers. When the company earns just an average profit, they will only pay farmers just enough to cover the production costs. But when there is little profit or even a loss, most of the loss will be

borne by the farmers who are paid a dividend that is insufficient to offset the production costs.

Unlike a company, a farmer cooperative is a farmer's organization; it is established, managed and run by farmers. The aim of a farmer cooperative is to maximize the farmers' gains – a very different aim to that of a company. The cooperative's profits are returned to the farmers, after deducting a small proportion for the reserves and risk protection fund. We believe that a cooperative will bring farmers substantial benefits if it sticks to its principle of returning profit to farmers, not expanding the cooperative excessively; and maintaining an effective brand.

6.3 Opportunities and challenges of expanding and extending the cooperative

6.3.1 Potential problems and barriers to expansion

Expanding at the rate of 20 per cent every year, the cooperative is developing very rapidly. Its increasing number of landholdings and expanding scale leads not only to a bigger marketing network and increasing market share, but also to lower transaction costs. Because the intangible assets (such as production techniques, marketing networks, and management experience) owned by the cooperative have fixed costs, then the larger the scale, the lower will be the use cost per unit. The scale of the cooperative depends on its decreased transaction and increased innovation costs. Only when the costs of institutional innovation and maintenance are lower than the reduced transaction costs, will the expansion of the cooperative be effective and advisable.

The greatest barrier to the expansion of the watermelon cooperative is not a lack of capital but a shortage of technical skills, poor management, and scarcity of farmland. Specialist technical skills are key to the production of watermelon. But once the cooperative has expanded to a certain scale, it will be difficult to attract enough people who have the specialized skills for growing watermelon. Thus the cooperative has created a quasi-membership system. All those wishing to join the cooperative have to undertake a period of internship. During that time quasi-members receive training until they are qualified. This system not only promotes the development of farmers' skills, but also maintains the cooperative's productive efficiency.

With the expansion of the cooperative, there are more and more non-local members, which brings a challenge to the management of the cooperative. The original cooperative community did not need much specialist management. The leader's prestige and local customs kept people on board. Besides, having members with similar culture, skills, and expectations facilitated the negotiations and transactions. The original management was established on the basis of community, and it worked according to traditional routines and systems of authority. But management after the

expansion is more complex and difficult. It is a challenge for the cooperative's managers.

The scarcity of farmland is another barrier to the further development of the cooperative. Watermelon cannot be grown in the same field continuously. Farmland that has been used to grow watermelon has to be sown with other crops for more than three years before it can be used to grow watermelon again. So the cooperative has to rent other lands and set up new holdings to carry on production the following year. There are also other requirements about soil, temperature, humidity and so on to ensure optimum growth of watermelon, all of which have to be taken into consideration in the expansion and sustainable development of the cooperative.

6.3.2 Opportunities and challenges for developing cooperatives in other provinces or countries

Once the marketing network has been established in most provinces and cities in China, it is natural to think about selling watermelons outside of China – perhaps even growing them in foreign countries. Growing watermelon in foreign countries will not only broaden the marketing network and gain a position in overseas markets, but also reduce the costs of marketing and transport. There are still considerable challenges and barriers, however.

Besides the difficulties in human resources and management, production for the international market involves differences in language, communication and culture. More importantly, will the Chinese seeds grow properly on different soils? Trials will have to be carried out on overseas landholdings and improvements made if necessary. The costs of both the trials and the improvements will be high. And capital, which is not a problem in the domestic expansion, will also be a barrier to production for international markets.

As for human resources, the cooperatives not only need people with specialist production skills but also unskilled labour. It is not feasible to take farmers with little education abroad in case they are unabe to adapt to the different environment, so local workers have to be hired abroad, which will bring management challenges. It is impractical to establish holdings in developed countries because of the high labour costs. Therefore, transnational holdings will have to be restricted to developing countries with relatively cheap labour forces.

Farmer entrepreneurs often lack strategic management skills. And the development of farmer cooperatives depends on the culture of community and traditional routines to some extent, which is an important challenge for the multinational development of farmer cooperatives.

6.3.3 Key to extension of the cooperative

Farmer cooperatives, which appeared in the 1980s and developed further in the 1990s, are now flourishing in China. Their further development needs to be encouraged by successful case studies, and the watermelon farmers' cooperative is typical of the new generation. It is relatively successful in terms of the benefits it brings to farmers and the contributions it makes to the local economy. Such a development model is worth extending. In south-eastern China, where there is a relatively developed market economy, there are many similar farmer cooperatives. They have followed similar routes of innovation and operate in a similar way but they also have different ways of working and have developed differently.

A developed, market-economy system with produce supply chains and distribution channels is a precondition for the creation of a farmers' cooperative. If too many farmer cooperatives are established or over-extended they will fail. As long as there is an enabling environment for the development of farmer cooperatives, and government support and encouragement, the development of farmer cooperatives will be inevitable. The cooperatives that spring up spontaneously are the most vigorous.

Besides the environmental factors, a leader with strategic foresight is also important. Such leaders are usually villagers who are held in high regard or skilled farmers who have mastered the technique of growing a certain product.

7 Conclusions and suggestions

7.1 Conclusions

This report has outlined cooperatives' roles and their influence on both farmers' participation in the supply chain and the effectiveness of farmers' participation in competitive markets. These changes resulted from institutional innovation by small-scale farmers' collective activities. Looking at the farmer cooperatives in China or in other developing countries with similar levels of development, some lessons have been learned. We can draw the following conclusions from the analysis:

- Farmer cooperatives play a fundamental role in providing new information and techniques to small-scale farmers, and in helping farmers to both participate in markets and supply chains and negotiate with government on behalf of small-scale farmers. Farmer cooperatives not only enhance farmers' security and competitiveness, but also improve their negotiation skills.

- Effective farmer cooperatives have not only large-scale production and marketing networks, but also effective agricultural production and diverse opportunities.

- Farmer cooperatives not only reduce the high transaction costs that farmers face in markets, but also increase farmers' share in the supply chain by strengthening their negotiating power, guaranteeing the quality of produce and brands. Farmer cooperatives play an important role in increasing incomes and developing agriculture.

- Farmer cooperatives keep the economy residuals, which come from the reduction of transaction costs, within the agricultural system, consequently developing capacity in the agricultural sector.

- There is a cost to institutional innovation such as farmers' collective action. Only when the income from the institutional innovation is more than the cost, will the institutional arrangement be a success. Both the system and the institution of the market economy in China are immature, and the ideas, accumulated knowledge, and behaviour of both government and farmers are not enough to meet with the requirements of the fast-developing market economy and supply chain.

7.2 Suggestions

- **Continuous and effective provision of farm produce**

One objective of farmer cooperatives should be the continuous and effective provision of farm produce. With changing consumer behaviour and the emergence of

new supply chains and supermarkets, year-round provision should be one of aims of cooperatives in order to gain access to the modern supply chain.

- **Invest in human resource development to improve both the skills and the market awareness of farmers.**

According to the new institutional economics, skills in the social sciences and related special knowledge will reduce the costs of institution innovation. In addition, the more scientific knowledge people have, the more effective the institution innovation will be. Farmer's low levels of education is a barrier to some institution innovation. The development of farmer cooperatives in China is restricted by farmer's ideas and education. Thus, investments in the cultural and human resources development of farmers are important. Farmers have to be more market aware, know more about the cooperative, and be taught new techniques. If farmers change their ways and are able to compare benefits and costs, they will spontaneously establish or join cooperatives and cooperatives will develop well.

- **Cultivate farmer entrepreneurs or cooperative leaders.**

A good leader is necessary for cooperatives to develop and succeed. An entrepreneur with team spirit is what cooperatives need. There is an urgent need to cultivate entrepreneurs with knowledge of modern business management, law, and cooperatives.

- **Control the size of the cooperative properly, and plan to absorb new members in a way that ensures the efficiency of the cooperative.**

Some cooperatives accept as many members as want to join, without limits or joining requirements, but also without necessarily having enough management capacity. These cooperatives do not participate in markets on behalf of farmers, and they are not cooperatives in the real sense. Such farmer cooperatives cannot help farmers to increase their income. In the operation and management of cooperatives, close cooperative relationships should be established and the scale should be kept to the most profitable size. Absorb members only within the management capacity of the cooperative, and farmers will gain substantial benefits in the long run.

- **Perfect relative laws and policy covering farmer cooperatives**

The "Law of farmer cooperatives of China" was passed on 31 October, 2006 and came into force on 1 January, 2007. Prior to this, Zhejiang province had been at the vanguard of development of farmer cooperatives and legislation. A local law on "Rules of Farmer Cooperative Organizations of Zhejiang Province" was passed in 1992, and "Rules of Professional Farmer Cooperatives of Zhejiang Province" came into force on 1 January, 2005. This was the first law on farmer cooperatives in China.

The authors recognize that perfecting the existing laws and regulations is a long-term project. Due to the special nature of farm cooperatives, the rules need to be flexible

and able to be revised continually to keep up with the developing rules of farmer cooperatives. Moreover, China is a large country with very different regions, with great economic disparity between the eastern and middle regions. Thus it is necessary to legislate to synthesize various factors on the basis of farmers' best interests, and ensure that they really hear the grassroots views.

- **Government support is required, particularly at the initial stages, but excessive government intervention in farmer cooperatives must be avoided.**

Cooperatives leaders in China now tend to have technical and marketing skills, and some are even village leaders. It can be beneficial for them to manage cooperatives based on this status. However they sometimes confuse the affairs of cooperatives with governmental affairs. They sometimes intervene in or control the operation of cooperatives with the governmental influence, which will lead to violation of the democratic management principle of cooperatives.

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Regoverning Markets

Regoverning Markets is a multi-partner collaborative research programme analysing the growing concentration in the processing and retail sectors of national and regional agrifood systems and its impacts on rural livelihoods and communities in middle- and low-income countries. The aim of the programme is to provide strategic advice and guidance to the public sector, agrifood chain actors, civil society organizations and development agencies on approaches that can anticipate and manage the impacts of the dynamic changes in local and regional markets. The programme is funded by the UK Department for International Development (DFID), the International Development Research Centre (IDRC), ICCO, Cordaid, the Canadian International Development Agency (CIDA), and the US Agency for International Development (USAID).

Innovative Practice

Innovative Practice is a series of case studies from the Regoverning Markets programme providing examples of specific innovation in connecting small-scale producers with dynamic markets at local or regional level. Based on significant fieldwork activities, the studies focus on four drivers of innovation: public policy principles, private business models, collective action strategies by small-scale farmers, and intervention strategies and methods of development agencies. The studies highlight policy lessons and suggest working methods to guide public and private actors.

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