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# An Exploratory Analysis of Cooperation Model Change in the Process of Tomato Industrialization in Xinjiang, China

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**Abstract** The cooperation models appeared in the process of tomato industrialization in Xinjiang include orders, intermediary agencies and workshops. The cooperation content, the closeness and the cooperation stability of these models are different from each other. From the local to the Corps in Xinjiang, the cooperation model has undergone corresponding changes. The internal interest mechanism, the constraint mechanism and the protection mechanism have also undergone some changes. In order to make a breakthrough in tomato industrialization in Xinjiang, the cooperation model should be changed from the loose and semi-compact type to the high-compact type. The interest mechanism, the constraint mechanism and the protection mechanism between farmers and companies will be strengthened.

**Key words** Industrialization, Cooperation model, Change, China

## 1 A general view of tomato industrialization and the cooperation models of Xinjiang

### 1.1 The research development of tomato industrialization of Xinjiang

As the typical agricultural industrialization of Xinjiang, the planting and the processing of tomato have attracted lots of attention. Pang Shengqun has made an analysis of the conditions and the future development of tomato industrialization in Xinjiang, viewing that the tomato-industry in Xinjiang has been characterized by regional planting of the raw materials, diversified planting seeds and the more excellent skills in planting<sup>[1]</sup>. Peng Xiuli, *etc.* think that the factors limiting the development of the whole tomato-industry are the slow development of the tomato industrialization, single species of products, the high intensity of the material supply, the high dependence on export and larger risks in international market<sup>[2]</sup>. Wei Bende, *etc.* from a perspective of performance analysis of farmers and companies in tomato orders, consider that the key points in developing the tomato industrialization are the construction of the agricultural infrastructure and the excellent cooperation between farmers and companies<sup>[3]</sup>. Zhang Yueqi made an analysis of the development situations and appeared problems of the tomato-industry under the Corps systems, viewing that the purchase of the materials are not standardized, the asset and interest connection mechanism has not been established between the leading companies and the local planting areas and the lack of trust exists both in the leading companies and the local planting areas. All of these lead to wild fluctuations in tomato orders, planting areas and the tomato outputs, and the interests of the

farmers and the companies suffer from a great loss<sup>[4]</sup>. From a perspective of the scope of researches, most are from a perspective of overall analysis of tomato industry chain just like yielding, processes and selling, while focusing on the cooperation models and mechanisms in industrialization process are less.

### 1.2 The general conditions of the cooperation model of the tomato industrialization in Xinjiang

The cooperation models appeared during the process of the tomato industrialization in Xinjiang include orders, intermediary agencies and workshops these 3 types. The cooperation content, the closeness and the cooperation stability of these models are different from each other. While all of which are having companies or Group companies with domination, with industries such as processing and selling as leaders, and with the yielding, processing and selling as focuses, having an organic connection with the farmers. According to the degree of the interest connection between farmers and companies, the cooperation models can be generally classified into loose type, semi-compact type and high-compact type. The loose type refers to the trade between farmers and companies is operated mainly through marketing, realizing the loose combination of farmers and companies through the simple yielding-selling contract, making clear the relations between farmers and companies. In fact, this is a simple trading relationship, which strictly is not a market organization model of agricultural industrialization. The semi-compact type realizes the combination of farmers and companies through intermediary agencies. Generally, companies and intermediary agencies are highly dependent on with each other, the relations between farmers and intermediary agencies are relatively more intimate. While all of the relations are not stable and apt to be influenced by interests fluctuations. The high-compact type connects farmers and the leading companies through property links, forming economic entities in forms of stock system and

shareholding cooperative system. The high-compact model is relatively more stable and lasting, while at present the number

of high-compact is small and is usually small-scale. The semi-compact model is dominant now. (Table 1).

**Table 1 An overview of cooperation model**

Items	Companies & farmers	Companies & farmers & intermediary agencies	Ccompanies & farmers & planting areas
Cooperation models	Orders	Intermediary agencies	Workshops
Degrees of cooperation	Loose type	Semi-compact type	High-compact
Frequency	Relatively high	High	Low

## 2 The space shifting of cooperation models

### 2.1 Order-cooperation-model in the local in Xinjiang

Companies & farmers type is a kind of cooperation way by which the companies directly have a yielding and selling contract with farmers who plant tomatoes. Steps such as yielding, transporting, selling and clearing accounts absolutely happen in the interactions between farmers and companies. Generally, by making a contract with the farmers, the companies will guide the farmers to plant and yield products meeting the needs of the companies and the market. And after planting in basis of the contract, the companies will get stable and high-quality products and combine yielding, processing and selling together in order to upgrade the whole competitiveness of the products. So finally, their own interests have been maximized. Farmers have been ensured the sales of the products through orders. To some degree, it strengthens the abilities of the both to resist the risks of the market. Although the personal contract with farmers is complicated and costs a lot, responsibilities and rights will be taken in a clear way, and the constraints on farmers are larger. This kind of order model is universal in the local tomato planting areas in Xinjiang.

### 2.2 Intermediary agencies-cooperation-model in the local in Xinjiang

**2.2.1** Companies & committees & farmers cooperation model. This kind of intermediary agencies model usually has the basic organizations such as the local committees and battalions as their cooperation partners. After making contracts with companies, the committees will supervise the farmers to plant tomatoes and finally accomplish what the orders have. This model saves costs generated during personal orders with farmers and simplifies the management, and finally improves efficiency. Of course, this kind of model risks a lot to some degree, because the committees do not have the capacities of civil conducts corresponding to the signed orders. The leading companies would not impose an effective constraints on farmers and the committees once the orders being breached.

**2.2.2** Companies & consumers & farmers cooperation model. Another form of order-cooperation-model between companies and farmers is companies & consumers & farmers cooperation model, which means that the companies make contracts with some large-amount-producers in villages, then other farmers planting tomatoes make an oral or written contract with the large-amount-producers and sell tomatoes to the companies in the name of the large-amount-producers. The large-amount-producers may make contracts with a company or at the same time with several companies. In this way, the farmers will sell

tomatoes in a flexible way. They will choose to sell tomatoes to a company which provide a higher price without taking breach responsibility. This kind of orders usually does not set a fixed number on products, and the measures adopted by companies to farmers are encouraging. If the large-amount producers finish a good job in handing in a good source of material, they will get a certain award. The large-amount-producers are usually the leaders or the richers in villages and have a certain mass basis in villages. The companies only pay the large-amount-producers for the materials. Keeping a certain percentage of commission back, then the large-amount-producers pay other farmers for materials. This kind of model is common in the local in Xinjiang, which activates every parts participating in productivity. And the only limits existing is that some farmers complain of the discrimination by companies and exploitation by the large-amount-producers<sup>[5]</sup>.

**2.3 Companies & farms & farmers cooperation model of corps in Xinjiang** This kind of model is a key method adopted by the leading companies of tomato processing of Corps in Xinjiang, (Xinjiang Zhongji and Xinjiang Tianye), which means that the companies make directly contracts of tomato planting and selling with state farms, making it clear the obligations and rights of the both. Then the tasks are distributed among farmers by the farms. The farm orders fertilizer, pesticide and plastic sheeting and so on unifiedly, the employees of the farms manage the planting according to the needs of the company. And the company send skilled staff to guide, train and help farmers. The company pay the farms for the materials when harvest, and the farms distribute the remain capital among farmers after keeping back the costs of means of production. In the practice of this model, 2 kinds of interest-relations are involved among thee 3 subjects. The first is the relationship between leading companies and farms. The second is the coordination relations between farms and farmers. As the 2 parties of the orders, the leading companies and farmers are state agricultural industries subordinate to Corps in Xinjiang. When it is hard to go on the orders because of contractual disputes, the only way to solve the problem is not by legal section, but to coordinate the disputes with administrative means operated by high-level decision-making departments of Corps. Taking industrial training and planning these strategies into consideration, the decision-making departments usually choose to sacrifice the farms. And the final result is that the farms are reduced to receive the orders and distribute tasks of tomatoes planting among farmers by force. The farms take charge of a series of tasks like distribution and implementation of planting areas, planting, management, picking and transporting, usually all of which could not satisfy the farmers. Because at one hand,

some employees are not willing to plant tomatoes. At another hand, some farmers think that the unified model of the farms, including unified production, unified sales and clearing accounts, limit their activities in participation. An order which is operated by force could not encourage the farmers effectively.

**2.4 Analysis** During the tomatoes industrialization of the local and of the Corps in Xinjiang, the types of contracts, the supply of the technics, the autonomous operation rights of the farmers, the risks and interests are different from each other. The local committees and large-amount-producers in Xinjiang only play a leading, guiding or coordinating role in industrializa-

tion. The farmers themselves take charge of the purchase of means of production, sales and transportation of the products. The autonomous operation rights of the farmers are large, of course, they risks more (and more direct), and enthusiasm and interests of the farmers are relatively higher. While farms and leading companies are subordinate to Corps, the autonomous operation rights of farmers in purchasing, planting and selling are relatively smaller. The rights of interest-distribution among companies, farms and farmers are not equal. So the interests gained are much lower. (Table 2).

**Table 2 comparison of cooperation models between the local and the corps in Xinjiang**

Items	The Corps in Xinjiang		The local in Xinjiang	
	Companies & farms & farmers	Companies & committees & farmers	Companies & consumers & farmers	companies & farmers
Orders	Commodity contract	Commodity contract	Commodity contract	Commodity contract
Planting scale	Large	Small	Larger	Small
Supply of technics and services	Farms and industries	Industries	Industries	Industries
Transporting and selling	Unified organization by farms	Autonomous & coordination	Autonomous	Autonomous
Autonomous operation rights of farmers	Small	Large	Large	Large
Risks of farmers	Larger and indirect	Large large and direct	Larger and direct	Large and direct

In general, in the process of tomato industrialization in Xinjiang, the disposal rights of main interests of companies are too large which result in imbalanced distribution of interests no matter in a good marketing situation or in a bad situation. It also leads to an imbalanced distribution of costs indirectly. It reflects especially in that the rights of the leading companies are much larger, which leads to over-expansion of opportunism. It hurts the interests of other main entities including farmers even in some steps, having the farmers taken much more risks and having more costs<sup>[6]</sup>.

### 3 The changes of internal operation mechanism of cooperation models in the process of tomato industrialization in Xinjiang

The operation mechanisms of industrialization usually includes interests mechanisms, constraint mechanisms and protection mechanisms, among which, interests mechanisms are the center. The coordination of interests distribution has a di-

rect relation to the continuity of cooperation. Among the existing cooperation models, companies and farmers are the independent operators and interest entities. Cooperation between them obeys mainly the principles of marketing exchange. They make contracts based on willingness and mutual benefiting, having the contracts as the principles and the legal guarantees. According to different objects and nature, companies will provide 2 kinds of contracts for choice, the first is commodity contract, and the second is elements contract<sup>[7]</sup>. The commodity contract means that by making contracts with farmers, the company purchase the products at the marketing price or the agreed price. The elements contract refers to a adjusting mechanism built up between farmers and companies with property rights of factors of production as the connection ties and standards of interests distribution. Among the different kinds of cooperation models in Xinjiang, orders and intermediary agencies are dominant. The adjusting mechanisms of interests distribution are realized mainly through commodity contract. (Table 3)

**Table 3 Comparison of operation mechanisms of cooperation models**

Cooperation models	Contract types	Interest mechanisms	Constraint mechanisms	Protection mechanisms	Breach	Stability
Orders	Commodity contracts	Purchasing price in contracts	Constraint by contracts	Contracts	Many	Bad
Intermediary agencies	Commodity contracts	Services supplied to farmers	Constraint by contracts	Contracts	Much more	Bad
Base type	Elements contracts	Bonus by shares	Constraint by stock cooperation leasing constraint	Contracts	Few	Good

**3.1 Changes of interests mechanisms** Lowering price and qualities are frequently happened in purchasing products by to-

mato processing industries of Corps in Xinjiang, which in fact is the imbalanced distribution of interests. Farmers can not enjoy

the excess profits, sometimes even the normal profits cannot be promised. The imbalanced interests structure will result in the instability of organization and low efficiency of industrialization. Therefore, the structure of tomato industrialization needs to be improved further. The mechanism of interest distribution is in fact a kind of constraint relations on interests of each entity. The variation of the mechanisms of interest distribution depends on the variation of the structure of industrialization. The structure of industrialization can be optimized through building commission systems between leading companies and farmers, improving the efficiency and the flexibility of industrialization operation to realize the flow and combination of the capital.

**3.2 Shift in constraint mechanisms** Constraint mechanisms of industrialization generally include contract binding mechanisms, stock cooperation binding mechanisms and rent constraint mechanisms. The contract binding mechanism is the universally adopted operation method in the process of tomato industrialization in Xinjiang at present. With the further development of tomato industrialization, shareholding cooperative systems prevail between farmers and companies. Farmers have shares in companies with land, the workshop models will have a great development which attracts farmers with shareholding cooperative systems. Other leasing methods prevailing in local areas will become the ties of farmers and companies. The formation of stock cooperation binding mechanisms and rent constraint mechanisms will make a great contribution in accelerating the development of process of industrialization, which also become the embodiment of the deep development of industrialization.

**3.3 Shift in protection mechanisms** The operation of agricultural industrialization needs corresponding protection mechanisms. Only if the corresponding policies are made to constrict the entities can guarantee a healthy development of industrialization, assuring that the interests both of the farmers and the companies not been hurt or to lower the harm to its lowest point to maintain a normal operation of organization systems of industrialization. Contract policies in a kind of producing and selling method widely adopted in the process of industrialization in Xinjiang. The formation of protection mechanisms of tomato industrialization also gives a guarantee to the formation of protection-price policy and risk-fund system. The protection-price policy means that companies purchase products from farmers at a protection-price when marketing price is lower than the protection-price in contracts. Otherwise, the companies purchase the products at a marketing price. The risk-fund system refers that the companies, farmers and the government coordinate with each other effectively, raising funds to build a system against risks. The systems of protection-price and risk-fund are the shifting trend of the tomato industrialization in Xinjiang.

## 4 Conclusions and enlightenment

After more than 20-year-development, the tomato industrialization in Xinjiang has begun to form a scaled shape. The tomato processing industries in Xinjiang take advantages of quantities, qualities or even the competitiveness both at home and abroad. But the base construction, which is the basis of indus-

trialization, is relatively backward. Conflicts have become more and more abrupt between the scattered and random ways of production by farmers and the standardized and commercialized ways of production of companies, which has become the bottleneck of the industrialization operation. There needs a further cooperation between farmers and companies. The author concludes that the cooperation models of tomato industrialization in Xinjiang will change from the loose and semi-compact models to the high-compact ones, the interests mechanisms, constraint mechanisms and protection mechanisms between farmers and companies will be strengthened, the cooperation methods will be shifted from the order types to the intermediary agency and the workshop types. Especially, the workshop model not only realizes the scaled operation, but also at the same time lowers the risks of breaches by both parties, which also overcomes the instabilities of the traditional interests mechanisms of companies & farmers models. It solves effectively the problem of appropriate scale of land operation under the system of Household Responsibility System. This kind of model guarantees the stabilities of cooperation, which assures farmers stable incomes, companies a good and a qualified source of materials. Therefore, to some degree, this kind of model represents the developing trend of industrialization of Xinjiang.

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