

Study on the Development of Agricultural Modernization in the Southern Xinjiang Production and Construction Corps

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Abstract: The development of agricultural modernization is an important approach that the country is unwaveringly advancing to boost rural revitalization, accelerate agricultural technological innovation, and seek well-being for the vast number of farmers. The Southern Xinjiang Production and Construction Corps, located in the remote northwest, has been committed to the orderly development of agricultural modernization and has achieved a series of outstanding results: continuously improving levels of agricultural mechanization, rapid development of digital agriculture, ongoing improvement of agricultural industrial structure, and increasing levels of green and sustainable agricultural development year by year. However, there are also problems of varying degrees in the process of agricultural modernization in the Southern Xinjiang Production and Construction Corps that require full attention. Against this backdrop, this article takes the lead in exploring the current status of agricultural modernization in the Southern Xinjiang Production and Construction Corps, then analyzes the issues faced by the agricultural modernization in the Southern Xinjiang Production and Construction Corps, and finally proposes a path for the agricultural modernization of the Southern Xinjiang Production and Construction Corps: improving the investment and maintenance mechanism for agricultural infrastructure construction; strengthening the support of agricultural talent and technical standards; enhancing the level of green development in modern agriculture; and improving the agricultural socialized service system.

Keywords: Agricultural modernization; Agricultural mechanization; Digital agriculture; Agricultural industrial structure; Southern Xinjiang Production and Construction Corps

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1. Introduction

The report of the 20th National Congress of the Communist Party of China on comprehensively advancing rural revitalization and adhering to the priority development of agriculture and rural areas has clarified the direction

and provided guidance for continuing to do well in the great work of rural revitalization. As a major grain-producing province in the country, the importance of agricultural development in Xinjiang is self-evident. The whole of Xinjiang is a chessboard, with the southern region being the key piece. To better play the role of the “key piece”, it is essential to continuously accelerate the process of agricultural modernization, refine and implement key tasks such as accelerating the modernization of agriculture and rural areas, and promote comprehensive rural revitalization with high-quality development.

2. The current status of agricultural modernization in the Southern Xinjiang Production and Construction Corps

2.1. The level of agricultural mechanization continues to improve

In recent years, the agricultural mechanization level of the Southern Xinjiang Production and Construction Corps has been in a continuously improving state of positive operation. In particular, there has been a significant growth trend in important indicators such as the rate of agricultural mechanization and the rate of cotton mechanical harvesting.

Among them, firstly, the rate of agricultural mechanization. In 2017, the agricultural mechanization rate of the Southern Xinjiang Production and Construction Corps reached 93.7%. By 2021, the agricultural mechanization rate had exceeded 95%, reaching 95.3%. Over the four years from 2017 to 2021, the agricultural mechanization rate of the Southern Xinjiang Production and Construction Corps increased by 1.6%. It is evident that in recent years, the Southern Xinjiang Production and Construction Corps has shown a trend of continuous improvement in the enhancement of agricultural mechanization rates, reaching new heights in the process of exploration and development ^[1].

Secondly, the rate of mechanized cotton harvesting. In 2017, the mechanized cotton harvesting rate in the Southern Xinjiang Production and Construction Corps was 80%. By 2021, the rate had significantly increased to 94.2%. The growth over the four years was nearly 15%, reaching 14.2%. It is evident that the Southern Xinjiang Production and Construction Corps has shown an excellent development trend in improving the mechanized cotton harvesting rate. The mechanized harvesting advantage of the cotton industry has largely saved labor and resources, enhancing the modern competitiveness of the cotton industry in the Southern Xinjiang Production and Construction Corps, and contributing to the increasingly improved agricultural industrial structure.

In summary, the agricultural mechanization rate and cotton mechanical harvesting rate in the Southern Xinjiang Production and Construction Corps have shown a clear upward trend in important indicators. The level of agricultural mechanization is gradually improving, providing an effective guarantee at the mechanization level for the agricultural modernization of the Southern Xinjiang Production and Construction Corps.

2.2. The agricultural industrial structure is constantly improving

The orderly development of agricultural modernization in the Southern Xinjiang Production and Construction Corps is inseparable from the continuous improvement of the agricultural industrial structure. Over the years, the Southern Xinjiang Production and Construction Corps has established a superior operational system in the cotton industry, livestock industry, and other aspects, gradually advancing the modernization of the agricultural industrial structure of the corps ^[2].

Among these, firstly, in terms of the development of the cotton industry, during the “13th Five-Year Plan” period, more than 10 new cotton varieties in the southern Xinjiang Production and Construction Corps have

been approved by the autonomous region, and the work of breeding new cotton varieties has been generally leading the average level of the autonomous region, with some cotton varieties even reaching an international leading level. It is evident that the cotton industry, after years of development, has become a dominant industry in the agricultural structure of the southern Xinjiang Production and Construction Corps, gradually showing the agricultural prosperity of “China’s cotton looks to Xinjiang, and Xinjiang’s cotton looks to the corps.”

Secondly, in terms of the development of the animal husbandry industry, the Southern Xinjiang Production and Construction Corps has gradually strengthened the role of agricultural science and technology support. This is evident in the scale and systematic development trends in dairy cow and pig farming, as well as in the production of beef and mutton. The milk products, pork products, and beef and mutton products produced by the Southern Xinjiang Production and Construction Corps supply the entire autonomous region and are even exported to neighboring provinces and cities, providing more security for the public to enjoy fresh and high-quality meat products.

In summary, the continuous improvement of the agricultural industrial structure in the Southern Xinjiang Production and Construction Corps is achieved based on the sustained enhancement of technological advantages. The Southern Xinjiang Production and Construction Corps leverages the brand influence and capital return of advantageous industries such as livestock and cotton to support other agricultural industries, perfecting the operational approach of “advantages compensating for disadvantages” and gradually optimizing the agricultural industrial structure of the Southern Xinjiang Production and Construction Corps.

2.3. The level of green and sustainable development in agriculture has been improving year by year

The level of agricultural green and sustainable development in the Southern Xinjiang Production and Construction Corps has shown a positive trend of increasing year by year, especially in the construction of an integrated protection mechanism for mountains, rivers, forests, fields, lakes, grasslands, and sands, and in the development of systematic governance activities for green agriculture, demonstrating a gradual development trend with increasingly significant results ^[3]. The Southern Xinjiang Production and Construction Corps continues to strengthen the synergy among various battalions, making considerable progress in reducing carbon emissions, reducing pollution, expanding green space areas, and developing green and low-carbon agriculture.

3. Issues faced by the agricultural modernization in the Southern Xinjiang Production and Construction Corps

3.1. The construction of agricultural infrastructure needs to be improved

For the agricultural modernization development of the Southern Xinjiang Production and Construction Corps, the key role of agricultural infrastructure construction is self-evident. However, the issue of the need for improvement in the agricultural infrastructure construction of the Southern Xinjiang Production and Construction Corps still objectively exists. Whether it is agricultural life-related facilities or agricultural productive facilities, there is space that urgently needs improvement ^[4].

The issues with the improvement of agricultural infrastructure construction are mainly reflected in the following aspects. Firstly, agricultural living facilities need to be improved. Living infrastructure covers a wide range and is closely related to the lives of the general public. At this stage, basic electricity and road construction still need further optimization and improvement. In particular, in relatively remote battalions, the

improvement of living infrastructure needs to be put on the agenda. Secondly, agricultural productive facilities also need to be improved. The strategic layout space for the construction of modern agricultural bases in the Southern Xinjiang Corps is relatively large, and the connection with big data and information technology is not very close. At the same time, the construction of agricultural productive facilities in many battalions is in a relatively random state, and the aging trend of productive infrastructure is common. Moreover, due to the relative lack of replacement mechanisms, the corresponding agricultural productive infrastructure cannot fully meet the actual needs of agricultural modernization in the Southern Xinjiang Corps.

3.2. The quality of agricultural practitioners needs to be improved

The development of agricultural modernization in the Southern Xinjiang Production and Construction Corps cannot be achieved without the effective support of agricultural practitioners. However, the significant issue of the need to improve the quality of agricultural practitioners has weakened the orderly operation of agricultural modernization in the Southern Xinjiang Production and Construction Corps.

The issue of the quality of agricultural practitioners needing improvement is mainly reflected in the following aspects. Firstly, the quality of grassroots technical talents in the agricultural field is uneven, the standards for talent cultivation are relatively vague, and they cannot be effectively implemented^[5]. Affected by this, the theoretical literacy of some grassroots technical personnel cannot be further optimized, and there is a lack of necessary information sharing and experience sharing among technical personnel from different farms, which also restricts the improvement of practical literacy. Secondly, the quality of the general agricultural practitioners also needs to be improved. A large number of practitioners are stuck in traditional agricultural concepts and are unwilling to continuously learn scientific agricultural knowledge. In addition, some practitioners who are aware of the need to improve their agricultural knowledge literacy do not have stable learning channels and opportunities, and can only be limited to traditional agricultural methods with lower production efficiency, which is not conducive to the basic implementation of agricultural modernization in the Southern Xinjiang Corps.

3.3. The agricultural socialization service system needs to be improved

The agricultural socialization service system of the Southern Xinjiang Production and Construction Corps needs to be improved, which also largely restricts the further operation of agricultural modernization, especially in terms of sales services and the construction of information service systems; there is much room for improvement^[6].

The issues with the agricultural socialization service system that need to be improved are mainly reflected in the following aspects. Firstly, the construction of the agricultural socialization sales service system needs to be improved. The existing “party building + e-commerce + cooperative” new model of agricultural sales in the Southern Xinjiang Production and Construction Corps is still in its infancy. Many companies have not established their own agricultural cooperatives, and the sales of their agricultural products still rely mainly on traditional methods, supplemented by online sales, with the sales service unable to keep up with the constantly developing pace of agricultural production. Secondly, the construction of the agricultural socialization information service system needs to be improved. The advantages of information services are self-evident; however, for some companies in the Southern Xinjiang Production and Construction Corps, information on agricultural product production, sales, and breeding science and technology is relatively lagging behind. This

not only fails to demonstrate the intended guiding role of information but also places the construction of the agricultural socialization information service system in a relatively lagging state.

4. The path selection for agricultural modernization in the Southern Xinjiang Production and Construction Corps

4.1. Improve the investment and maintenance mechanism for agricultural infrastructure construction

In response to the practical issue of the need to improve agricultural infrastructure construction, the Southern Xinjiang Production and Construction Corps needs to continuously improve the construction of agricultural infrastructure, structure an investment and maintenance mechanism, to address the adverse effects of these issues, and gradually advance the optimization and operation of agricultural infrastructure construction in the Southern Xinjiang Production and Construction Corps.

The specific implementation path is as follows. First, strengthen the construction of agricultural-related living facilities and agricultural production facilities, and improve the new infrastructure construction planning. On one hand, the Southern Xinjiang Production and Construction Corps, based on a macro strategic perspective, further optimizes and improves basic electricity and road construction, especially for relatively remote teams, incorporating the improvement of living-related infrastructure into the development schedule. On the other hand, the Southern Xinjiang Production and Construction Corps continuously strengthens the construction of agricultural production facilities. With the premise of having ample strategic space for the construction of modern agricultural bases, the corps continuously refines construction goals, highlights the value of modernization, and strengthens its connection with big data and information technology. Second, actively promote the scientific construction of the investment and maintenance mechanism for agricultural-related infrastructure, curb the relatively arbitrary state of agricultural production facility construction, and solve the problem of aging production infrastructure. The Southern Xinjiang Production and Construction Corps has established specialized investment and maintenance teams, set up regular inspection mechanisms, and immediately initiated a timely replacement system once old facilities are discovered. Depending on the difficulty of the replacement, they complete the work efficiently within 24 hours to 7 days.

4.2. Strengthening the support of agricultural talent technical standards

In response to the objective reality of the need to improve the quality of agricultural practitioners, the Southern Xinjiang Production and Construction Corps, starting from their own actual conditions, continuously strengthens the improvement of the overall literacy of ordinary agricultural practitioners and grassroots technical personnel, and reinforces the technical standards support for agricultural talent.

The specific implementation path is as follows. Firstly, in response to the uneven quality of grassroots technical talents, the Southern Xinjiang Production and Construction Corps continuously refines the technical standards for talent cultivation. This standardization of training drives the gradual improvement of the quality of rural grassroots technical talents and ensures its effective implementation in agricultural production. At the same time, technical personnel from different corps need to achieve information and experience sharing through a combination of “offline + online” methods, promoting the enhancement of practical literacy among grassroots technical talents. Secondly, the improvement of the literacy of ordinary employees also requires strengthening the support of agricultural talent technical standards. Helping employees break away from the misconception of

being confined to traditional concepts and engage in continuous learning of scientific agricultural knowledge. In addition, the Southern Xinjiang Production and Construction Corps continuously constructs stable learning channels and opportunities for employees, expanding their knowledge horizons, and flexibly applying new knowledge and concepts to effectively enhance the comprehensive literacy of ordinary employees.

4.3. Enhancing the level of green development in modern agriculture

In response to the practical issue of the need to improve the level of green development in agriculture, the Southern Xinjiang Production and Construction Corps has pooled efforts and adopted multiple measures, taking agricultural pollution control and ecological protection work implementation as entry points to continuously enhance the level of green development in modern agriculture.

The specific measures mainly focus on: First, strengthening agricultural pollution control. Based on their own actual conditions, the Southern Xinjiang Production and Construction Corps effectively curb the vague awareness and random behavior of some grassroots people towards agricultural pollution prevention and control, strengthen the scientific construction of real-time and traceable mechanisms for agricultural pollution control, to prevent sporadic and hidden agricultural pollution, and enhance the level of green agricultural development. Second, strengthening ecological protection work. The Southern Xinjiang Production and Construction Corps participates in various aspects, adheres to a scientific and powerful cognitive attitude, innovates ecological protection measures, highlights the timeliness and advancement of protection, so that any ecological damage in the Southern Xinjiang Production and Construction Corps can be dealt with in a timely manner.

5. Research conclusion

For the Southern Xinjiang Production and Construction Corps, the orderly development of agricultural modernization is of great significance to the nation and its people. At this stage, the Southern Xinjiang Production and Construction Corps has achieved remarkable results in the work of agricultural modernization. However, there are still objectively existing issues that constrain further progress in agricultural modernization, such as the need for improvement in agricultural infrastructure construction, the need to enhance the quality of agricultural workers, the need to increase the level of agricultural green development, and the need to improve the agricultural socialized service system. Therefore, the Southern Xinjiang Production and Construction Corps must adopt multiple measures, including investing in and maintaining the agricultural infrastructure, strengthening the support of agricultural talent and technical standards, improving the level of modern agricultural green development, and perfecting the agricultural socialized service system. Only by doing so can the Southern Xinjiang Production and Construction Corps truly promote the realization of sustainable development in agricultural modernization.

Disclosure statement

The authors declare no conflict of interest.

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