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## FINANCIAL SUPPORT AND FUNCTIONAL AGRICULTURE DEVELOPMENT OF SHANXI PROVINCE IN CHINA: DEVELOPMENT BASIS, INFLUENCING MECHANISM AND PROMOTION PATH

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### ABSTRACT

Building a functional agricultural province is a key measure for Shanxi Province to comprehensively promote high-quality agricultural development. Based on relevant theoretical foundations and research literature, identify the existing development foundations such as the whole industry chain of functional agriculture, regional brand demonstration, integration of scientific research resources, and construction of characteristic production bases, and systematically sort out financial support to help functional agriculture through financial subsidies, tax incentives, and loan support in Shanxi Province. The mechanism of agricultural development and a feasible path for the development of functional agriculture are proposed. Research results show that the development of functional agriculture in Shanxi Province faces development bottlenecks such as insufficient industrial chain coordination and value-added, heterogeneity of agricultural products and ambiguous regional brand positioning, prominent shortcomings in investment in scientific research elements, and lagging follow-up support for characteristic bases. Based on this, it innovatively proposes a package of policy support for the development of functional agriculture, build a value co-creation system between leading enterprises and the whole industry chain, use geographical indication resources to shape regionally featured



brands of products, focus on deep integration and innovation of big data across the whole industry chain, and fully integrate key advantageous resources. It aims to cultivate and support the characteristics of the park to provide feasible decision-making support for the high-quality development of functional agriculture in Shanxi Province.

**KEYWORDS:** financial support, functional agriculture, whole industry chain, investment in scientific research elements

## 1. INTRODUCTION

With the development of economy and the improvement of living standards, consumption demand for agricultural products is increasingly diversified and personalized. Traditional agriculture mainly produces staple agricultural products such as grain and cotton, which is difficult to meet consumers' demand for high-quality and high value-added agricultural products. Demand for healthy food is increasing. Functional agriculture aims to produce agricultural products with specific health functions, which is in line with the trend of health consumption. The development of functional agriculture can meet the needs of consumers for healthy food and promote the development of health industry. Therefore, it needs to develop functional agriculture, adjust the agricultural industrial structure, increase the variety and quality of agricultural products, and meet the market demand for Shanxi province.

Shanxi Province is located in the Loess Plateau, and the shortage of water resources, barren soil and other environmental problems are more prominent. The traditional mode of agricultural production has caused great pressure on the environment, which is not conducive to the sustainable development of agriculture. The development of functional agriculture can improve resource utilization efficiency, reduce environmental pollution and achieve green, low-carbon and circular development of agriculture by adopting advanced agricultural technology and management mode. The continuous development of agricultural science and technology and the emergence of new agricultural technologies and management models have provided strong support for the development of functional agriculture. Shanxi Province has rich agricultural scientific research resources and talent advantages. By strengthening agricultural science and technology innovation, it can promote the development of functional agriculture and improve the comprehensive efficiency and competitiveness of agriculture.

As an important national energy base and industrial base, it faces the pressure of transformation and upgrading in its economic development for Shanxi Province. The development of functional agriculture can drive the extension and expansion of the agricultural industry chain, promote the integrated development of agriculture, industry and service industry, and promote the transformation, upgrading and sustainable development of regional economy. As a new agricultural development

model, functional agriculture has broad development prospects and important research value in Shanxi Province. Through in-depth research and practical exploration, we can promote the development of functional agriculture in Shanxi Province, realize the green, low-carbon and circular development of agriculture, promote the integrated development of agriculture, industry and service industry, and promote the transformation, upgrading and sustainable development of regional economy.

## **2. LITERATURE REVIEW**

As a new agricultural development model, functional agriculture not only meets the needs of consumers for high-quality and high value-added agricultural products, but also promotes the optimization of agricultural industrial structure and the sustainable development of agriculture. Financial support has played a key role in the development of functional agriculture, providing the necessary financial guarantee for the research, technological innovation and market promotion of functional agriculture. With the transformation of global agriculture and the improvement of consumers' health awareness, functional agriculture has become a research hotspot in the field of agricultural economics.

### **2.1 Connotation and characteristics of functional agriculture**

The concept of functional agriculture originated in the early 21st century. Its core idea is to enrich agricultural products with specific functional components, such as antioxidant substances, dietary fiber, trace elements, etc., through biotechnology and agricultural engineering, so as to meet the multiple needs of consumers for health, nutrition, delicious food and so on (Rout, 2020). Through biological nutrition enhancement or other biotechnology means, agricultural products can have specific health functions, so as to meet the special nutritional needs of consumers. Compared with traditional agriculture, functional agriculture pays more attention to the nutritional value and health function of agricultural products, and emphasizes the close combination of agricultural production and human health (Liang, 2020). The research focus on the characteristics of functional agriculture mainly includes the nutritional and health functions of agricultural products, adoption of advanced biotechnology and agricultural engineering technology, the balance and sustainable development of agricultural ecosystem, and the high-end market and consumer demand (Yihua, 2019).

The existing literature mainly focuses on the following connotations of functional agriculture. Through genetic engineering, molecular biology and other biotechnology means, improve crop varieties, improve their nutritional value or give them special functions (Li, 2021). Through gene editing technology, crop varieties rich in specific nutrients were cultivated. Using modern agricultural engineering technology, such as precision agriculture and intelligent agriculture, we can optimize the agricultural production process and improve the yield and quality of agricultural products (Gazetdinov, 2016). The application of these technologies will help to realize the refinement,

efficiency and sustainability of agricultural production. The core of functional agriculture is to realize the health function of agricultural products. This requires scientific agricultural production methods and management means to ensure that the nutrients and bioactive substances in agricultural products are beneficial to human health (Adesanya, 2020). At the same time, it is also necessary to study the nutritional needs and health problems of different populations in order to produce functional agricultural products that meet the personalized needs.

## **2.2 Driving factors of functional agriculture development**

Part of the existing literature mainly discuss the driving factors of functional agriculture, such as changes in consumer demand, technological progress and innovation, government policy guidance and support, market mechanism and economic benefits, and environmental protection and sustainable development (Banov,2021). With the improvement of living standards and the enhancement of health awareness, demand for agricultural products is no longer limited to the basic food supply, but pay more attention to the nutritional value and health function of agricultural products. This demand change directly promotes the development of functional agriculture, and urges agricultural producers to adjust the planting structure and produce agricultural products with specific health functions. The rapid development of biotechnology has made it possible for functional agriculture. Through gene editing, gene transfer and other technical means, the directional improvement of crop genetic characteristics can be achieved, so as to produce agricultural products rich in specific nutrients or with health functions (Vasileva, 2020). In addition, the application of modern agricultural technologies such as intelligent agriculture and precision agriculture has also provided strong support for the development of functional agriculture. The government plays an important role in promoting the development of functional agriculture. On the one hand, the government formulates relevant policies and regulations to regulate the development of functional agriculture and protect the rights and interests of consumers; On the other hand, the government encourages and supports agricultural research institutions and enterprises to carry out research and development and promotion of functional agriculture by providing R&D funds, tax incentives and other measures. Functional agricultural products usually have high added value and market competitiveness, and can bring higher economic benefits (Kirieieva, 2019). Driven by this economic benefit, agricultural producers have the power to adjust the production structure and develop functional agriculture. At the same time, the role of market mechanism also makes functional agricultural products better promoted and popularized in the market. The development of functional agriculture contributes to the realization of green and sustainable agricultural production. By adopting environmentally friendly agricultural technology and management mode, functional agriculture can reduce pollution and damage to the environment and improve resource utilization efficiency. This concept of environmental protection and sustainable development is increasingly concerned and recognized by the society, and has become one of the important factors to promote the development of functional agriculture.

## **2.3 Impact and mechanism of financial support on the development of functional agriculture**

### **2.3.1 Impact of financial support on the development of functional agriculture**

#### **(a) Direct effect of fiscal expenditure on the development of functional agriculture**

A large number of studies show that fiscal expenditure directly promotes the development of functional agriculture. The government can improve the technical level and production efficiency of functional agriculture by increasing investment in agricultural research, technology promotion and infrastructure construction (Usman, 2021). In addition, fiscal expenditure can also reduce the production cost of functional agriculture and enhance its competitiveness in the market by providing financial subsidies, tax incentives and other measures. Financial support provides financial support for the research and development of functional agriculture, and promotes the innovation of agricultural science and technology and the transformation of achievements.

#### **(b) Indirect effect of fiscal expenditure on the development of functional agriculture**

Fiscal expenditure indirectly promotes the development of functional agriculture by influencing other factors. Fiscal expenditure can improve the transportation, communication and other infrastructure in rural areas, and improve the living standard and consumption ability of farmers, so as to increase the demand for functional agricultural products (Wang, 2020). Financial support helps to promote the improvement and expansion of the functional agricultural industry chain, and improve the added value and market competitiveness of agricultural products. In addition, fiscal expenditure promotes the improvement and upgrading of the agricultural industry chain and provides a good industrial environment for the development of functional agriculture.

#### **(c) Synergy between fiscal expenditure and the development of functional agriculture**

There is synergy between fiscal expenditure and the development of functional agriculture. On the one hand, the development of functional agriculture needs the support of government financial expenditure; On the other hand, the development of functional agriculture can also provide an effective carrier for the use of government fiscal expenditure. Financial support guides social capital to invest in the field of functional agriculture, and promotes the large-scale development and industrial upgrading of functional agriculture (Théophile, 2019). By optimizing the structure and efficiency of fiscal expenditure, we can better promote the development of functional agriculture; At the same time, the development of functional agriculture can also provide impetus and support for the growth of government fiscal expenditure.

### **2.3.2 Influencing mechanism of financial support on the development of functional agriculture**

#### **(a) Innovation investment mechanism**

Through the innovation of investment mechanism, financial support will guide social capital and

financial capital to invest in functional agriculture (Manogaran, 2021). On the one hand, the government directly supports the R&D, production and promotion of functional agriculture by setting up special funds, providing loan discounts, subsidies and incentives. On the other hand, financial support can stimulate the vitality of social capital, attract more enterprises and individuals to invest in functional agriculture, and promote the formation of a diversified investment pattern.

**(b) Integrating and coordinating agriculture related funds**

Through the integration and coordination of agriculture related funds, financial support forms a joint force to support the development of functional agriculture. The government will integrate all kinds of agricultural funds, optimize the allocation of funds and improve the efficiency of fund use (Maas, 2021). At the same time, through pilot projects, demonstration area construction and other ways, we will promote the fund to tilt to the field of functional agriculture, forming a policy superposition effect.

**(c) Leverage financial capital support**

By leveraging financial capital, financial support provides richer financing channels for functional agriculture. The government can reduce the entry threshold and risk of financial capital by means of guarantee, discount interest, risk compensation and so on, and guide financial capital to invest in functional agriculture (Rizaeva,2019). In addition, the government can also broaden the financing channels of functional agriculture by setting up agricultural investment funds and issuing agricultural bonds.

## **2.4 Review**

As an emerging agricultural field, functional agriculture aims to produce agricultural products with specific health functions through the combination of biotechnology and agricultural practices. In recent years, functional agriculture has developed rapidly as consumers have become increasingly concerned about healthy food, and financial support has played a key role in this process. However, despite the growing body of research on the impact of financial support on functional agriculture development, there are still some shortcomings in the existing literature.

First, the research perspectives are limited. Most of the existing literature discusses the overall impact of financial support on functional agriculture from the macro level, and there is a lack of research that deeply analyzes how financial support specifically affects functional agricultural enterprises or individual farmers from the micro level. This limitation results in insufficient understanding of the specific mechanism of financial support in the development of functional agriculture.

Second, the research methods are imperfect. Many studies use qualitative methods, such as case analysis or policy interpretation, and lack quantitative analysis and verification of actual data.

Although these methods help us understand the impact of financial support on the development of functional agriculture, the lack of supporting data calls into question the reliability and generalizability of the conclusions.

Third, the research content is one-sided. Existing literature often only focuses on the impact of financial support on functional agricultural output, while ignoring the role of financial support in improving product quality, promoting technological innovation, and improving market structure. In addition, there is a lack of in-depth research on the interaction and impact between financial support and other factors.

Fourth, there are difficulties in data acquisition and processing. Since functional agriculture is an emerging field, there are relatively few relevant statistical data and information, which poses great challenges to research. At the same time, the existing literature also has some shortcomings in data processing and analysis, such as small data sample size, inconsistent data sources, etc. These problems will affect the accuracy and reliability of the research results.

To sum up, there are some shortcomings in the existing literature on the research on financial support for the development of functional agriculture in terms of perspective, methods, content and data. In order to more comprehensively understand the role and effect of financial support in the development of functional agriculture, future research needs to pay more attention to micro-level analysis, improve research methods, broaden research content, and strengthen data acquisition and processing capabilities.

### **3. Development basis and current progress of functional agriculture in Shanxi Province**

#### ***3.1 The whole industry chain of functional agriculture accelerates the improvement of industrial efficiency and quality***

Functional agricultural industry chain is undergoing rapid integration in Shanxi Province, effectively making up for the short board of competition in the traditional mode of operation, so as to more actively participate in market competition, promote the upgrading of industrial structure and the growth of farmers' income. Seizing the opportunity of upgrading the consumption structure on the demand side and accelerating the reform on the supply side, functional agriculture should be based on the actual situation of the province, implement classified measures, and actively explore the integration mode of functional agricultural industry chain with characteristics in Shanxi Province. In addition, Shanxi functional agricultural service chain has also developed rapidly. Driven by both market demand and policy support, new functional agricultural service providers have sprung up. In the construction of the whole industry chain, Shanxi functional agriculture should strengthen the position of the leading industry, strengthen the connection between various links, deepen industrial

integration, promote the improvement of infrastructure, and attract more diversified participants. This strategy promotes the proportion of functional agriculture in the total agricultural output value of the province and promotes the development of agricultural industrialization. By continuously improving production, processing, circulation, service and other links, functional agriculture will build symbiotic and prosperous industrial development ecology, and pay special attention to the weak links such as deep processing and productive services in Shanxi Province.

### **3.2 Agricultural regional brand demonstration effect effectively promotes the development and growth of new business formats**

The core of the brand building of functional agriculture in Shanxi Province is the strategy of specialty and excellence. Through all-round control from the source to the product, we will strive to build a reassuring and high-quality agricultural brand system. In recent years, with the national attention and promotion of agricultural brand construction, agricultural brand has entered a rapid development stage. The key to brand building is product quality, which determines consumers' purchase decision and brand loyalty. By building a seven-dimensional-integration brand building system, functional agricultural brand building integrates quality, standards, subject, innovation, culture, marketing, supervision and other aspects to achieve the comprehensiveness and systematic of brand building. At the same time, the development of regional branding is of great significance to solve the problem of homogenization of functional agriculture. Agricultural brand building is a systematic project, which needs to cover the whole industry chain of agricultural products, including production management, circulation and processing, quality standards, green ecology, scientific management, agricultural culture and other fields. The provincial agricultural and rural system has expanded online and offline marketing channels. The brand soft power further enables the continuous improvement of enterprise value and becomes the main business card for the promotion of functional agriculture. Based on the construction of regional public brands at the provincial and municipal levels, we will work together to build Shanxi functional food brands and cultivate the scale advantage of new kinetic energy development clusters.

### **3.3 Integration of multi-party scientific research resources builds an efficient collaborative mechanism of functional agricultural scientific research system**

Shanxi Province has actively established a functional agricultural scientific research and innovation base with Shanxi National Agricultural High-tech Zone and Shanxi Agricultural University (Shanxi Academy of Agricultural Sciences) as the core, breaking through barriers to cooperation and promoting collaborative innovation among the main bodies. Shanxi Province focuses on organic dry farming and relies on the technical strength of scientific research institutes, high-tech enterprises and professional cooperatives to strengthen the advantages of coarse grain production. At the same time, we will strengthen the research and development of core technologies and components of intelligent



and accurate agricultural machinery and equipment, apply intelligent and information technology to the mechanized production of functional crops, and meet the precise and efficient production needs through the Beidou satellite positioning system. This measure aims to promote the intelligent and high-quality development of the characteristic coarse grain industry in Shanxi Province, and provide important technical and equipment support for the industrial integration and technology improvement of functional agriculture. In addition, relying on the National Agricultural High-tech Zone in Shanxi Province, Shanxi Province reasonably plans the organic dry farming scientific research demonstration base, carries out the introduction and screening of new varieties, realizes mechanized precision sowing, Precise Fertilization and pesticide application, and adopts the mechanized loss reduction combined harvesting and organic dry farming cultivation mode, so as to further promote the scientific research and experimental demonstration of functional agriculture.

Relying on the National Agricultural High-tech Zone in Shanxi Province, and combining the advantages of scientific research talents such as Shanxi Agricultural University (Shanxi Academy of Agricultural Sciences), it focuses on the research and development of functional agriculture and drug and food homologous products in Shanxi Province, so as to realize collaborative innovation. Through the establishment of relevant professional education, the introduction of high-end talents, the formation of high-level research teams, the innovation and development of theory and technology application. Actively participate in high-level forums and conferences at home and abroad, enhance the popularity and influence of Shanxi functional agricultural scientific research, and consolidate the leading position in China.

### **3.4 Functional agricultural production demonstration base helps the transformation and upgrading of production mode**

Functional agricultural park in Shanxi Province is in the primary stage of development, but its industrial marginal radiation effect has initially appeared, driving the coordinated development of raw material production, scientific and technological services, logistics and other related industries. With the background of urban and rural coordinated development, the park is committed to optimizing the allocation of resources, tapping the potential of characteristic agriculture, and focusing on characteristic fruits and vegetables, livestock breeding and eco-tourism. With the upgrading of consumption, the market potential of functional products continues to be released, promoting the development of intensive processing industry. The business entity of the park is gradually shifting from large-scale to local characteristics, focusing on the development of famous and high-quality products that adapt to the local environment. At the same time, the park continues to improve its brand effect, enhance its marketing and R&D capabilities, protect intellectual property rights, and accumulate new momentum for future development. In addition, the park also gives full play to the leverage of financial funds, actively introduces social capital, and injects new vitality into the

sustainable development of the park.

The park is committed to promoting the standardized technology system of functional agriculture, so as to further consolidate the scientific research foundation advantage of the development of functional agriculture. By creating unique functional agricultural products, the park strives to maintain the strong momentum of the development of functional agriculture and actively cultivate new development momentum. These measures jointly promote the sustainable development of Shanxi functional agricultural parks and provide strong support for agricultural transformation and upgrading and Rural Revitalization.

#### **4. Bottleneck restriction of the development of functional agriculture in Shanxi Province**

##### ***4.1 The whole industry chain of functional agriculture is lack of synergy and weak value-added ability***

At present, functional agriculture suffers from a lack of strategic design in the planning of the whole industry chain in Shanxi Province. The lack of advanced production technology and scientific management models has resulted in high upstream production costs, low efficiency, and high risks, insufficient midstream circulation and processing innovation capabilities, and downstream sales brand management chaos, poor channels, and insufficient participation. The midstream circulation and processing link faces the problem of insufficient innovation capabilities. This may result in products with low added value and weak market competitiveness. In the downstream sales link, there are problems such as chaotic brand management, poor channels and insufficient participation.

The development of functional agriculture in Shanxi Province is affected by factor market segmentation and product circulation is restricted. The degree of informatization of the industry chain is low, the dual urban-rural industrial structure and the agricultural back-feeding industrial policy hinder the in-depth development of the industry chain and increase transaction costs. In addition, per capita land resources are insufficient, product production is scattered, management is unscientific, and technology is backward, resulting in low production efficiency and product quality problems. Each business entity has limited management capabilities, human resources, brand benefits and funds, making it difficult to bear the risks of the whole industry chain, affecting product quality and safety, and restricting brand building and the formation of advanced forms of the whole industry chain.

##### ***4.2 Functional agricultural products are weakly differentiated and brand regional positioning is vague***

Agricultural brand building in Shanxi Province faces multiple challenges. The core issues lie in misunderstandings in brand building strategies and limitations of natural conditions and market environment. At present, brand building focuses too much on evaluation and form, while neglecting

cultivation and infrastructure construction, resulting in weak brand building entities and unclear brand positioning. In addition, because the production areas of functional products are far away from economically developed consumer markets, there is a dislocation effect in brand spillover, making it difficult to develop regional brands locally. Limited by natural geographical conditions such as water resources, functional agricultural production scale is small and operations are scattered in Shanxi Province. This means that although some products have unique comparative advantages in the fields of grains and beans, fruits and vegetables, and livestock products, their brand influence nationwide is limited.

There is a significant deviation between the brand construction of Shanxi functional industry and the development of rural industry, which is mainly reflected in the unity of product brand connotation. Although the support for regional public brand, enterprise brand and product brand of agricultural products is relatively strong, the construction of agricultural service brand and regional comprehensive image brand is ignored, which weakens the role of brand in promoting the high-quality development of rural industry to a certain extent. There are difficulties in resource integration and organizational linkage in the construction of regional brands, which limits their ability to lead the development of regional industrial scale.

#### **4.3 The shortcomings in investment for functional agricultural scientific research elements are highlighted and stability is difficult to maintain**

Functional agriculture has a low proportion of output value, and the product premium effect has not yet been fully exerted in Shanxi Province. The enthusiasm for promoting agricultural science and technology is insufficient, the organizational structure lags behind in long-term agricultural management, and the overall planning and integration work is not yet in place. In addition, technical training for front-line functional agricultural practitioners lacks practicality, and the attrition rate of agricultural scientific and technological personnel is high. Leading enterprises have limited investment in capital, technology and other factors, and lack long-term investment management and control awareness. The development of functional agriculture ultimately depends on consumers' acceptance of functional agricultural products.

In terms of research on mechanized application technology, the development of functional agricultural automation machinery and equipment lags behind and is difficult to adapt to diverse geographical and terrain conditions in Shanxi Province. At the same time, quality control mainly relies on standardized production, but the research and development of complete sets of automation and mechanization technologies for different stages such as crop fertilization, harvesting, and steorage are still in their infancy, and the corresponding demonstration and promotion mechanisms also need to be improved. In order to produce functional agricultural products rich in nutrients, it is necessary to carry out

characteristic soil surveys and improve the soil through soil testing and formula fertilization. However, soil surveys in the direction of functional agriculture have not yet been carried out, which limits the development of functional agriculture to a certain extent.

In terms of technology application, there is a lack of technology suitable for small farmers and small plots, especially the development needs of smart agriculture based on organic dry farming. The diverse characteristics of functional agriculture in Shanxi Province put forward different demands for technologies such as soil trace element monitoring, which makes it difficult to apply the large-scale replication and promotion model of industrial technology products. Therefore, while R&D entities bear the risk of R&D investment funds, they also face the challenge of insufficient R&D motivation and low enthusiasm.

#### **4.4 Follow-up management and support for the construction of functional agriculture demonstration bases lag behind**

The park lacks a special plan for integrated development, and the construction of high-level and high-quality demonstration and promotion bases is insufficient, and support needs to be strengthened. The development direction of the parks is vague and the positioning is unclear. They are often characterized by small scale, scattered layout, mixed varieties, and low added value and industrialization level. At the same time, the park has insufficient investment in production technology. Application research on key technologies such as the Internet of Things, smart greenhouses, and organic production are still in their infancy, making it difficult to meet the actual needs of park construction. The unique advantages of the park are not outstanding, homogeneous competition is serious, and there is a lack of clear strategic planning for the development of the whole industry chain, especially in the pre- and post-production links, processing and circulation, and other industry chain construction plans.

The scientific and technological service platform of Shanxi Functional Agriculture Demonstration Park is still absent, making it difficult to provide necessary support for cooperation in cutting-edge fields. By limited capital and industrial base, the implementation and integration effects of new varieties, sophisticated processing technologies and advanced management experience that have been promoted still need to be improved. At the same time, the park lacks enough market-oriented leading enterprises, making it difficult to develop external markets such as the eastern coast through cooperation and competition. In order to make full use of the advantages of industry agglomeration, the location layout of Shanxi functional agricultural parks needs further scientific and systematic planning.

## **5. Mechanism of financial support in promoting the functional agriculture development**

### **5.1 Fiscal subsidies make up for the shortcomings of market regulation**

#### **5.1.1 Optimize the allocation of agricultural production factors**

Fiscal subsidies guide the flow of production factors such as capital and labor into functional agriculture. Through subsidy policies, the government encourages farmers to increase investment in functional agriculture, improve land use efficiency, and promote the optimal allocation of agricultural production factors. Fiscal subsidies directly reduce the production costs of functional agriculture and increase farmers' profit expectations. Subsidize production materials such as seeds, fertilizers, and pesticides to reduce farmers' production costs; subsidize the purchase and use of agricultural machinery to improve the mechanization level of agricultural production and improve production efficiency. These measures will help increase the supply of functional agriculture and promote the development of functional agriculture in Shanxi Province.

#### **5.1.2 Promote the transfer and diffusion of technological innovation**

Financial subsidies effectively stimulate the innovation motivation of enterprises and individuals and promote technological innovation and model innovation in functional agriculture. By providing R&D subsidies, achievement transformation subsidies, etc., the government reduces innovation costs and increases innovation benefits, thereby attracting more innovative resources to invest in the field of functional agriculture. Financial subsidies promote technology transfer and diffusion and accelerate the promotion and application of new technologies. Through subsidies for technical training and demonstration and extension projects, the government helps farmers and enterprises master new technologies and improve the technical level of agricultural production.

#### **5.1.3 Stimulate market demand growth**

Financial subsidies expand the market demand for functional agricultural products by influencing consumer purchasing behavior and preferences. By subsidizing consumers' purchasing behavior, the government reduces the market price of functional agricultural products and increases consumption purchasing willingness and purchasing power. Financial subsidies are used to publicize and promote functional agricultural products and increase the visibility and reputation of the products. Through publicity and education activities, the government helps consumers understand the characteristics and advantages of functional agricultural products, and improves consumers' awareness and purchase intention.

## **5.2 Tax incentives stimulate the enthusiasm and creativity of market entities**

### **5.2.1 Stimulate capital accumulation and social investment growth**

Tax incentives can directly increase the disposable income of functional agricultural enterprises. These additional funds are used by enterprises for savings or reinvestment, thereby enhancing the enterprise's

capital accumulation capacity. When companies face lower tax burdens, they are more likely to increase investment in the functional agriculture sector. This includes purchasing advanced agricultural equipment, expanding production scale, improving production efficiency, etc. These investment behaviors help improve the overall competitiveness and sustainable development capabilities of functional agriculture. The development of functional agriculture is often accompanied by processes such as technological innovation and industrial upgrading, which require large amounts of capital investment. However, due to the weak nature of agriculture itself and the uncertainty of the development of functional agriculture, enterprises and farmers often face the problem of shortage of funds. At this time, tax incentives can effectively alleviate financial constraints and provide enterprises with necessary working capital and long-term investment funds, thereby promoting investment growth and technological progress in functional agriculture.

### **5.2.2 Drive technological innovation and transformation of R&D results**

Preferential tax policies for R&D activities, such as super deductions for R&D expenses and accelerated depreciation of R&D equipment, can significantly reduce the R&D costs of functional agricultural enterprises. This provides more financial support for enterprises to carry out technological innovation. Tax incentives also reduce the risks of technological innovation for enterprises. When companies face R&D failure or market uncertainty, tax policy support helps companies share some of the risks and encourages them to continue investing in R&D activities. Innovation is the key driving force for the development of functional agriculture. Tax incentives can stimulate the innovation vitality of enterprises and farmers and promote technological progress and industrial upgrading by providing financial support for innovative projects and reducing innovation costs. This support not only helps improve the overall competitiveness of functional agriculture, but also helps cultivate new growth points and development momentum.

### **5.2.3 Promote industrial structure optimization and resource allocation**

Tax preferences adjust the tax burden levels in different agricultural fields to guide the flow of resources to priority areas such as functional agriculture. This will help optimize the agricultural industrial structure and improve resource allocation efficiency. Tax incentives also encourage functional agricultural enterprises to carry out industrial upgrading and transformation. Tax incentives will be given to enterprises that adopt advanced technologies or produce high value-added products to encourage enterprises to transform to higher-level and more efficient agricultural production models. Tax incentives not only provide financial support, but also guide the optimal allocation of resources through interest rates, loan conditions and other means. In the field of functional agriculture, tax incentives can encourage enterprises and farmers to invest resources in more efficient and technologically advanced production links, thus improving overall production efficiency. At the same time, the directionality and pertinence of tax incentives can also ensure the effective use of funds and

avoid waste and misallocation of resources.

### **5.3 Loan support eases capital market constraints**

#### **5.3.1 Strengthen risk management and improve the guarantee mechanism.**

As an emerging agricultural form, functional agriculture faces many uncertainties and risks during its development process. The development of functional agriculture faces a variety of risks, including natural risks, market risks, etc. Loan support provides risk management funds for agricultural enterprises and farmers, helps establish a risk management system, and reduces production risks and market risks. This risk management and guarantee mechanism provides an important guarantee for the stable development of functional agriculture and enhances the ability of agricultural enterprises and farmers to resist risks.

Loan support can help farmers and enterprises reduce risks and enhance their development confidence by providing risk management tools and credit guarantee mechanisms. These risk management tools and credit guarantee mechanisms can include government guarantees, insurance products, etc., which provide strong risk protection for the development of functional agriculture. Loan support can reduce the development risks of enterprises and farmers by providing risk guarantees, risk diversification and other means, thereby enhancing their confidence and motivation for development. In addition, loan support can also provide credit enhancement for enterprises and farmers, helping them obtain more opportunities and resources in the market.

#### **5.3.2 Mechanism of capital injection and capital circulation**

Loan support has injected a large amount of capital into Shanxi functional agriculture, which has been directly used in agricultural production, technology introduction, equipment purchase, etc., effectively easing the financial bottleneck in the development of functional agriculture. With the injection of funds, the production capacity of agricultural enterprises and farmers has been improved, thus promoting the rapid circulation and value-added of funds. This capital injection and capital circulation mechanism provides strong financial support for the development of functional agriculture.

The loan support first provided an initial capital injection for Shanxi functional agriculture. These funds are usually used to purchase agricultural equipment, introduce new technologies, carry out research and development activities, expand production scale, etc. Loan support can also provide ongoing financial support for functional agriculture. This continued financial support ensures that functional agriculture will not be hindered by lack of funding during its development process. The funds supported by the loan are circulated through production and operation activities. This capital circulation mechanism ensures the effective utilization and value-added of loan funds. When functional agriculture projects make profits, agricultural enterprises and farmers can use part of the

profits to repay loans and reinvest the remaining profits to further expand production scale, improve production efficiency, expand markets, etc. This investment return and reinvestment mechanism promotes the accumulation and value-added of funds in the field of functional agriculture.

## **6. Development path of functional agriculture with financial support**

### ***6.1 Innovatively build a value co-creation system for leading enterprises and the whole industry chain***

The construction of functional agricultural industry chain occupies an important position in modern functional agriculture in Shanxi Province and is a core component of its industrial support. In order to promote the construction of a modern functional agricultural industry chain, it is necessary to achieve a transformation from loose to tight organization and an upgrade from pure production to functional expansion. This will help promote the healthy and high-quality development of the whole functional agriculture industry chain in Shanxi Province. In the context of promoting comprehensive rural revitalization, the value-added development trend of the whole functional agriculture industry chain has become increasingly obvious. Therefore, with the value-added of the whole industry chain as the core breakthrough, functional agriculture industry chain will be carefully built through various strategies such as product value-added, service value-added, scale value-added, brand value-added, platform value-added, and link value-added in Shanxi Province.

Enhance industrial value and maximize benefits, actively expand the value-added and efficiency-increasing space of the industry, and increase farmers' income from the industry. Cooperatives play a leading role in the upstream production links of the industry chain and ensure that farmers can obtain the benefits they deserve by optimizing production paths. Leading enterprises are responsible for the processing and circulation links in the midstream, and maximize profits in the processing and circulation links by introducing functions such as technology promotion, modern logistics, information interaction, financial docking, and food safety inspection and tracking.

### **6.2 Utilize geographical indication resources to create regionally featured brands for products**

Utilize the unique advantages of functional agricultural resources to build and shape an agricultural product brand with regional characteristics, natural functions and cultural and emotional value. By integrating the professional resources of third-party organizations, a unified brand management, supervision, service and promotion system is formed to strengthen the brand's market competitiveness. Accelerate the formulation and improvement of product quality standards, ensure safety throughout the entire process from production to consumption, and enhance brand quality assurance and public awareness. Concentrate efforts to enhance the competitiveness of 100 functional agricultural product brands in Shanxi Province, and actively promote these characteristic and high-quality products to domestic and foreign markets. By using domestic and foreign exhibitions and well-known e-



commerce platforms, we will expand brand influence and realize the commercial transformation of brand value, especially in target markets in important urban areas such as Beijing-Tianjin-Hebei, the Yangtze River Delta, and the Greater Bay Area. effective expansion.

### **6.3 Focus on in-depth application and integrated innovation of big data across the whole industry chain**

In response to the development needs of functional agriculture in Shanxi Province, we are committed to accurately making up for scientific and technological shortcomings and promoting the in-depth integration of big data technology and functional agriculture. By building a comprehensive system covering production, management, operation, and services, the concept of "big data + functional agriculture" is integrated into the agricultural supply chain, providing solid support for the rapid rise of functional agriculture in Shanxi Province. In this process, cutting-edge monitoring technologies such as the Internet of Things and video analysis are fully utilized to provide scientific basis for the growth of functional crops and disaster prevention and reduction.

By integrating advanced information technologies such as the Internet of Things, big data, and blockchain, it has integrated functional agricultural product quality and safety digital testing, intelligent supervision, and traceability systems to provide comprehensive data support for high-quality green functional agricultural products in Shanxi Province. Establish a full-process traceability system for the quality and safety supervision of agricultural products with visual functions of "standardized production - origin access - market access - full traceability - full supervision". This system not only ensures real-time sharing and full traceability of data, but also focuses on data confidentiality. Develop agricultural product traceability standards, systems and regulatory systems with Shanxi characteristics to provide data support for the entire business.

Guide and support new business formats and new models, accurately predict market consumption trends, with the core goal of enhancing the pricing power and voice of the product industry, and strive to build a Shanxi functional agricultural product trading center with global influence.

### **6.4 Fully integrate advantageous resources to focus on cultivating and supporting the characteristics of the park**

In order to give full play to the resource advantages of specialty products, a high-quality functional product promotion park will be built to further highlight the distinctive competitive advantages of key enterprises in the park and achieve synergistic and complementary effects. Practice the industrialization development path of functional agriculture, build an Internet marketing network for functional products, and promote the deep integration of functional agriculture and the Internet to cultivate a reputable market for functional agricultural products. Vigorously promote the integrated

operation of production, processing and sales, actively encourage key enterprises in the park to cooperate with scientific research institutes, and strengthen the transformation and application of scientific research results.

Strengthen the leading role of the park's core industries and focus on the high-quality improvement of specialty industries such as grains, fruits and vegetables, Chinese medicinal materials and animal husbandry. Build a R&D and production demonstration base for selenium-rich functional products to optimize the cooperation model and level of functional agriculture, thereby cultivating key development areas for functional agriculture and forming a model for modern functional agriculture cooperation and exchanges. Improve the product quality and safety system of the park, strengthen the quality and safety supervision of functional products, and build a traceable product quality and safety system.

Promote the construction and development of the park's public service platform, make full use of the engine role of technological innovation, and achieve endogenous growth in the park. Accelerate the improvement of the public service technology platform and provide comprehensive public services for the park's advantageous industrial clusters, including but not limited to product testing, production pilot trials, technology transfer, achievement transformation, talent training, policy guidance, and technology financing. Promote the construction of demonstration projects such as functional crop standard gardens, industrial cultivation of edible fungi, and high-standard facilities for fruits and vegetables.

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