

Building a Rural Industrial Green Ecosystem based on Geographical Indications

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Abstract: At the intersection of the transition from rapid economic growth to high-quality development and the comprehensive promotion of rural revitalization, geographical indication trademarks can facilitate further integration of agricultural industries. This not only achieves the goal of high-quality development of the rural economy but also satisfies the requirements of a green and ecological economy. This article, based on the application of geographical indication trademarks, constructs a green ecological system for rural industries. However, there are still prominent issues in the countryside: the system and mechanism are not smooth; there is insufficient trademark awareness in county organizations; the degree of rural infrastructure construction is low; and the development quality of new agricultural business entities needs to be improved. We should: promote the simplification of geographical indication applications; enhance rural infrastructure construction; boost the awareness of patents and trademarks among rural enterprises; and improve the development quality of agricultural business entities to build a green ecological system for rural industries based on geographical indications.

Keywords: Geographical Indication; Industrial Green Ecological System; Agriculture; Green Economy.

1. Introduction

In 2021, the State Council of China issued the "Outline for Building a Strong Intellectual Property Nation (2021-2035)", explicitly stating that to coordinate the advancement of building a strong intellectual property nation, the significant role of the intellectual property system in socialist modernization must be fully utilized [1]. In the new development stage, there is an intrinsic connection between economic green development and intellectual property. Innovation is not only the primary driving force for development but also the preferred choice for green development. The role of intellectual property as a strategic resource for national development and a core element of international competitiveness has been highlighted. The question of how to integrate intellectual property with the green ecological development of rural industries has gained attention, and geographical indication trademarks, which possess both intellectual property and agricultural attributes, have been emphasized. Therefore, to address issues derived from the advancement of agricultural modernization, such as mechanization and enhancing agricultural use rate, to break through the current predicament of homogenization and low quality of agricultural products, and to improve the quality of agricultural products while achieving green and ecological development, the role of geographical indication trademarks in differentiating agricultural products needs to be leveraged. This article, based on the protection strategy of geographical indication trademarks, constructs a green ecological system for rural industries to realize the green and high-quality development of the rural economy.

2. Intrinsic Connection between Geographical Indications and Rural Industrial Green Ecological System

2.1. The Relationship between Geographical Indications and Rural Revitalization

Geographical Indications, utilizing a "place name + product name" format as a trademark, ensure that the quality of the product is dependent on its growing environment, solidifying the uniqueness of its locale through the geographical indication trademark. Geographical indications serve as a quality guarantee based on the reputation of an entire region, and can only be applied and managed as collective trademarks or certification marks by the local people's government or the industry competent department, not being exclusive to a single enterprise. After application, the natural and cultural factors of the region are embedded in the product, benefiting all producers and operators in the area, thereby making geographical indications intimately related to the economic development of the local area.

The quality and reputation of geographical indication agricultural products are associated with various elements of the entire region, including geographical location, ecological resources, historical culture, and humanistic elements, all of which can be influencing factors that enhance the fame of geographical indication products. These specific geographical locations are unrelated to the gradually homogenized urban areas and are generally discovered slowly in the process of rural agricultural development, thus geographical indications inevitably connect with the countryside. Through the widespread application of geographical indication trademarks, geographical indications can form an industrial agglomeration status within the entire rural area. After the industries and sectors are agglomerated, they promote high-quality, green development of the rural economy, while simultaneously facilitating the high-quality development of the entire urban economy.

2.2. Rural Revitalization's Requirements for a Green Agricultural Ecological System

Ecological poverty alleviation is a crucial component of China's ecological civilization construction, focusing on the rational development of industries based on regional ecological environments and endowed resources, which can effectively link economic development, environmental protection, and rural revitalization [2]. The essence of ecological poverty alleviation and promoting agricultural industry reform through geographical indications is the same, always prioritizing green development as the primary consideration. Utilizing geographical indications as a driving force for agricultural development, compared to merely enhancing the efficiency of agricultural mechanization in the past, aligns more with the concept of green development, which is a vital connotation in high-quality economic development.

On the one hand, in the era of the digital economy, there is no information asymmetry between consumers and enterprises. Differentiation strategies unleash tremendous potential in the network era, and homogenized products resulting from mechanized agricultural production may gradually be replaced by differentiated products or become low-quality products, only able to develop through cost advantages. On the other hand, integrating the concept of green development throughout the process of rural revitalization is an effective way to strengthen the construction of rural civilization and promote the formation of new cultures and trends in rural areas. Geographical indications may encourage enterprises to shift their focus from pursuing "large quantity" to seeking "qualitative change". This shift may enhance enterprises' innovative research and development of crop species, making crops more adaptable to the local geographical environment. Through researching crops' ability to adapt to specific environments, the impact of natural disasters on crops can be reduced, enhancing enterprises' innovative capabilities and propelling agricultural development into a virtuous cycle.

2.3. Geographical Indications Promote High-Quality Development of Economies

Geographical Indications are a unique form of trademark, and the core value of a trademark lies in its reputation. The quality of a product is directly reflected in the consumer's perception of its reputation, which in turn affects consumer preferences. Geographical Indications use the "place name + product name" format as a trademark, and the quality of such products is often directly related to their growing environment. After obtaining Geographical Indication status, these products can be distinguished from others, emphasizing the uniqueness of their growing conditions. Geographical Indications rely on the reputation of an entire region as a guarantee of product quality. Therefore, Geographical Indications can only be applied for and managed as collective trademarks or certification marks by the local people's government or industry competent department, and cannot be exclusively owned by a single enterprise. After approval, the natural and cultural factors of the region are embedded in the product, benefiting all producers and operators in that area. These attributes make Geographical Indications closely related to the economic development of the local region.

The product quality and reputation associated with Geographical Indications are linked to various elements of the

entire region, including geographical location, ecological resources, historical culture, and cultural elements. These factors contribute to increasing the fame of Geographical Indication products. These unique geographical locations are not related to already homogenized urban areas but are gradually discovered in the process of rural agricultural development. Geographical Indications are thus inherently linked to rural areas. On the other hand, considering Geographical Indication applications at the village level would be too narrow, as distinctive geographical locations and resources often cluster within a larger area. This leads to the concept of county-level considerations. Using the county level as the unit for Geographical Indication applications and promoting rural revitalization is more suitable. Therefore, there is an intrinsic connection between Geographical Indications and the high-quality development of county-level economies.

3. Constructing a Rural Industrial Green Ecological System Model Based on Geographical Indication Trademarks

The construction of a rural industrial green ecological system is a complex system project. It needs to meet the inherent requirements of a green economy and achieve high-quality development of the rural economy. Both are complementary rather than absolutely opposed. These requirements are consistent with the inherent requirements of regions to develop industries by applying for geographical indication trademarks. Therefore, it is crucial to explore how to construct a rural industrial green ecological system after applying for geographical indication trademarks. Based on geographical indication trademarks, industrial integration by regional leading enterprises is a good way to solve this problem, transforming agricultural products from "increasing quantity" to "improving quality". For instance, "Leping Snow Pear Melon" from Foshan City, Guangdong Province [3], a well-known geographical indication agricultural product in Guangdong Province, has always been in an awkward position of low-end fruit. It could not show its differentiation from similar commodities. Later, through the "government + media" model to increase brand publicity, excavate cultural value, and solve the logistics problems of agricultural products through the industrial integration of "agriculture + service industry", this geographical indication agricultural product has become a characteristic industry of Foshan.

3.1. Enhancing the Innovation Ability of Leading Enterprises

Firstly, local governments and organizations should apply for geographical indication trademarks according to local conditions and relying on the advantages of specific regional endowed resources, attract large enterprises to settle in or support local agricultural operators, and operate geographical indication trademarks uniformly to promote these characteristic agricultural products through market means. The government should cultivate the innovative ability of these enterprises, on the one hand, by introducing talents to help enterprises establish a sound research center, enabling these enterprises to initially possess innovative capabilities. The main innovations include: researching and testing local existing species, trying to improve species to be more compatible with local endowed resources and geographical

conditions; innovatively cultivating new seeds that are suitable for the local ecological environment and can be distinguished from the original geographical indication products, cultivating innovative agricultural products; and the laboratory also needs to undertake research on the risk resistance ability of geographical indication species during the planting process.

3.2. Farmers Engage in Large-scale Planting

Secondly, local farmers should plant and sell geographical indication species. However, there are a series of risks and unknowns in the planting of species. How to deal with these risks requires professional researchers from local government and leading enterprise research institutions to help farmers with planting to ensure that farmers will not fall back into poverty due to planting new species. With the continuous development of agriculture, the past model of farmers autonomously choosing species, selling them on their own, or unified purchasing and selling can no longer bring the maximum benefit to farmers, and industrial integration has become the key model for further development of agriculture. It encompasses a series of pre-planting businesses such as special species cultivation, species storage, and species sales, and also undertakes after-sales services related to quality inspection and technical personnel stationed at planting points after species sales. After the harvest, it is uniformly sold and promoted with geographical indication trademarks, and even integrated with the logistics industry to form an "agriculture

+ logistics" industrial integration model.

3.3. Establishment of Related Sub-industries

To further promote the development of geographical indication agricultural products, it is imperative to establish enterprises for processing and packaging of by-products of geographical indication agricultural products, including derivative products such as canned products and preserved fruits, as a direction for related industrial agglomeration. Consequently, the entire industrial process of geographical indication agricultural products is established, ranging from the primary industry to the tertiary industry, all of which can serve as the focus of development in this process, forming a trend of industrial integration among agriculture, scientific research, and manufacturing. Simultaneously, during the operation of this process, a series of other sub-industries should also be established to ensure the development of the green economy, including related industrial auxiliary enterprises such as environmental protection, pollution discharge, and meteorological risk avoidance. By integrating these sub-industries into the main industry chain of geographical indication agricultural products, a comprehensive and sustainable industrial ecosystem can be established. This not only ensures the high-quality production of geographical indication agricultural products but also contributes to the overall socio-economic and environmental sustainability of the region.

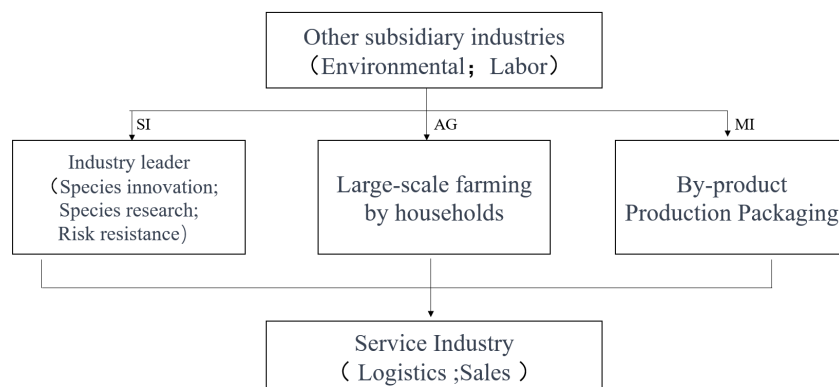


Figure 1. Rural Industrial Green Ecosystem

By constructing such a rural industrial green ecological system, integrated development of the economy, society, and environment can be achieved. Throughout the process of economic development, the depreciation of the natural environment is reflected, while the utilization of natural resources is imbued with fairness, devoid of any abuse of natural ecological resources. The entire industry demonstrates the survival of the fittest, establishing a robust industrial ecological environment.

4. Factors Restricting the Construction of a Green Agricultural Ecological System

4.1. Inefficient System and Mechanism

In the past, China's geographical indication protection system has always adopted a 'three-carriage' structure[4]: The former General Administration of Quality Supervision, Inspection and Quarantine, the former Ministry of Agriculture, and the Trademark Office under the former State Administration for Industry and Commerce respectively

handled the application review and protection of origin geographical indications, agricultural product geographical indications, and geographical indication trademarks, forming three major protection systems. The entire process is overly complex, which does not align with China's acceleration of government function transformation and the promotion of modernizing the national governance capacity and governance system. In 2018, the State Intellectual Property Office (the former Trademark Office) was incorporated into the State Administration for Market Regulation, thus the management and protection functions of origin geographical indications and geographical indication trademarks were integrated into one department. The shift from a 'three-carriage' to a 'two-carriage' system is a significant progress. However, in reality, the Trademark Office under the State Intellectual Property Office still identifies and manages geographical indication trademarks (certification, collective certification trademarks), and the State Administration for Market Regulation sets up a special expert review committee for the registration of agricultural product geographical indications to grant origin geographical indications after

expert review, which does not change the parallel state of the three systems. This means that some organizations and enterprises in rural areas do not have a clear understanding of the application capability, process, and cost of geographical indications, find it difficult to obtain accurate information from official channels, and increase the chance of 'passing the buck' between departments, without effectively safeguarding the interests of applicants.

4.2. Insufficient Trademark Awareness among Governments, Organizations, and Enterprises

According to the geographical indication statistics released by the State Intellectual Property Office, as of June 2021, a total of 2478 geographical indication protection products have been identified, and a cumulative total of 6339 geographical indications have been approved for registration as collective trademarks and certification trademarks, with 12789 market entities approved to use special geographical indication marks [5]. Compared with other countries, this data is still at a relatively low level, which is related to the current situation of 'valuing patents and neglecting trademarks' in our country. Many urban enterprises and organizations do not have a good understanding of geographical indications, let alone rural areas that are remotely located and relatively weak in transportation and education. They do not have a good awareness of the application and protection of geographical indications. How to enhance the trademark awareness of these groups and help them understand the impact of geographical indications on product sales is crucial. Agricultural products also depend on geographical locations, as regional conditions can directly influence the suitability of certain crops for a particular area. The agricultural products best suited for a specific region often possess unique characteristics that differentiate them from similar products in other regions. It is precisely this feature that makes Geographical Indication trademarks effective in creating a lasting impression in the minds of consumers. When consumers see a Geographical Indication, they associate it with the distinctive features of the product. It is this characteristic that creates an inseparable link between Geographical Indications and agricultural products.

4.3. Low Level of Rural Infrastructure Construction

The inherent characteristics of Geographical Indications, such as strong regional specificity, collective rights, permanent rights, and non-transferability, set it apart from other intellectual property categories. Among these, the most prominent feature is its close relationship with the natural resources of the specific geographical area it represents. The distinctiveness of products labeled with Geographical Indications is not artificially created but rather bestowed by the geographical location itself. Currently, the intellectual property environment in China's rural areas is still relatively harsh. Most rural areas in China still lack comprehensive infrastructure construction; the internet has not been fully covered; the 'last mile' of logistics, and digital devices cannot be used conveniently. These are objective factors that restrict enterprises and organizations from applying for geographical indications online. At the same time, some counties do not have a department or organization that can specifically handle geographical indications and manage related administrative affairs. Therefore, effectively solving intellectual property-related issues and eliminating objective obstacles are

particularly important.

4.4. The Development Quality of New Agricultural Business Entities Needs to be Improved

The lack of innovative capability has always been a key factor hindering the improvement of China's economic development quality. Even relatively developed enterprises in China are still affected by this issue, not to mention new agricultural business entities that do not have the ability to access knowledge and resources as large enterprises do. Both systemic and technological innovations can become a major boost for the future development of enterprises.

The agricultural field often inevitably faces the problem of talent outflow. Firstly, this is due to generally poor working conditions, long working hours, and high work intensity, coupled with issues related to remuneration and professional identification. Secondly, such enterprises generally have complex internal personnel relationships, and nepotism is relatively serious, lacking a standardized management model. This makes it impossible for new agricultural business entities to attract high-level, high-tech talents, or, after attracting talents with high salaries, it is difficult to retain them or allow them to fully utilize their skills. Such entities often use geographical advantages and have high-quality products, but they cannot break through market constraints and differentiate their products. At this time, they need to rely on geographical indication trademarks to fix product differences and allow consumers to directly understand product differences. At the same time, geographical indication agricultural products are also subject to the impact of climate change. Although the continuous popularization of 'smart agriculture' is ongoing, agricultural business entities that are truly capable of dealing with the impact of climate change are still in the minority. Increasing investment in this area and encouraging geographical indication agricultural products to respond to the impact of climate change requires continuous investment in innovation by agricultural business entities, and continuous deepening of exchanges and cooperation with other related experts and entities. For example, during the vulnerable period of responding to climate change, 'Shaanxi Kiwifruit'[6] in Zhouzhi County and Meixian area of Shaanxi can only be protected through special subsidies from the government, which can easily lead local farmers to return to poverty. In order to solve the problems brought about by the climate at the root, rural business entities need to innovate actively.

5. Improvement Measures for Building a Green Agricultural Ecosystem

5.1. Promoting Simplification and Decentralization of Geographical Indication Applications

To fully utilize geographical indications as collective certification trademarks and facilitate agricultural business entities in further market expansion, the government should fully play its role at the macro-control level, fully recognize the essence of geographical indications, promote simplification and decentralization, and completely get rid of the 'multi-carriage' model. Establishing a 'single window' for geographical indication review in the administrative hall of the National Intellectual Property Administration, which will

be responsible for the identification, review, and management functions related to geographical indications, can avoid uncoordinated cooperation between multiple departments, reduce 'passing the buck', 'time-consuming', and 'running around' phenomena. The 'single window' system has been promoted nationwide after a long-term trial in the Free Trade Zone, effectively reducing the administrative efficiency of the government and greatly saving the time and financial costs of organizations and enterprises. Meanwhile, to respond to the limitations of personnel mobility brought about by the COVID-19 pandemic, further promote the development of the online trademark service system, so that its coverage can involve the application of geographical indication trademarks, effectively reduce the application cost of county applicants, and empower the development of rural revitalization.

5.2. Promoting Rural Infrastructure Construction

Promoting Rural Infrastructure Construction and Promoting the Modernization of Agriculture and Rural Areas. Most rural areas still lack comprehensive infrastructure construction and do not have a clear concept of the online application process for geographical indications. Local governments should improve rural infrastructure construction, focus on digital construction, achieve full network coverage, and thereby lower the objective conditions for applying for geographical indication trademarks. For example, Shaanxi Province has established the Shaanxi Geographical Indication Network. Through this website, organizations can easily apply for geographical indication trademarks, and villagers can easily see which geographical indications have been applied for locally, thereby choosing their sales strategy. Similarly, policy preferences should be provided to local organizations that have the ability to apply but not the ability to operate, allowing enterprises to 'stand up' locally and 'go out'. For instance, provide tax relief to local enterprises or farmers operating geographical indication products and provide financial support to such enterprises in conjunction with local banks. Only when the hardware and software of rural infrastructure can keep up with the pace of cities, reducing the objective barriers for rural applications of geographical indications, can the modernization of agriculture and rural areas be further realized. Once both are realized, it will, in turn, promote the improvement of farmers' quality, providing a means to solve the 'three rural' problems.

5.3. Promoting the Enhancement of Patent and Trademark Awareness

Promoting the Enhancement of Patent and Trademark Awareness among Rural Enterprises. Under China's macro institutional guarantee, how to make localities aware of the dividends brought by geographical indications requires, on the one hand, the National Intellectual Property Administration to introduce relevant policies at the macro level, such as regularly conducting geographical indication knowledge training on the Internet platform, inviting experts and enterprises in related fields to explain the application process and share successful experiences, effectively reducing the knowledge threshold for organizations and enterprises that have not applied for geographical indications. On the other hand, each place should effectively explore local leading enterprises, guide the development direction of leading enterprises, guide enterprises to form intellectual property trademark awareness, and guide enterprises to

innovate and develop. Farmers generally deal directly with the land, so it is essential to enhance farmers' trademark awareness, choose the most beneficial sales method, use geographical indication trademarks to sell products everywhere, increase farmers' income, and achieve common prosperity for farmers in the region.

5.4. Enhancing the Development Quality of Agricultural Business Entities

Firstly, local governments need to support enterprises from the macro-policy level, introduce corresponding talent introduction policies, establish online talent identification platforms, evaluate individuals who are interested in development online, quickly review them, and provide economic and authority benefits to the introduced talents, ensuring that they can fully utilize their abilities after being introduced. Secondly, enterprises themselves also need to make changes at the organizational management level, change the nepotistic human resource model, and while seeking development, they need to further improve the enterprise's administrative management system, clarify responsibility distribution, and form a clear, well-divided, and efficiently coordinated management system. Lastly, enterprises should enhance technological innovation. For species that rely on local characteristic geographical resources, they can continuously improve through biotechnology, cultivate high-quality, high-yield, and locally suitable multifunctional excellent varieties, and fully play the differences of similar products carried behind the geographical indication trademark. The continuous improvement of enterprise innovation capability should implement a differentiation strategy around its products, make innovation capability the core competitiveness of the enterprise, and continuously improve its international competitiveness.

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