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Institutional Challenges and Governance Pathways for Agricultural Cultural Heritage Conservation in Hebei Province

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Abstract

As a major agricultural province, Hebei boasts abundant agricultural cultural heritage resources, currently housing 3 globally important agricultural cultural heritage sites and 5 nationally important ones in China. This paper conducts an in-depth analysis of the current operational status of the agricultural cultural heritage system in Hebei, identifying such issues as the absence and fragmentation of institutional content, impeded implementation mechanisms coupled with a lack of inter-subject coordination, and the lagging development of supporting guarantee systems. By further exploring the root causes of these problems from the dimensions of legal hierarchy, policy coordination, governance structure and funding mechanism, the study concludes that multi-dimensional reforms and improvements are required, including optimizing the legal framework, improving implementation mechanisms and strengthening supporting safeguards.

Keywords: Agricultural Cultural Heritage; Institutional Operation Mechanism; Hebei Province

Introduction

China, with its millennia-old agrarian civilization, has developed a comprehensive cultural ensemble encompassing state institutions, ritual systems, and cultural education. This ensemble emerged from and adapted to the long-term needs of agricultural production and rural life, giving rise to what is now recognized as Agricultural Cultural Heritage [1]. China's Nationally Important Agricultural Heritage Systems represent traditional agricultural systems created and perpetuated through the enduring farming practices of the Chinese nation. They serve as both vivid testimony and living manifestations of this agrarian civilization [2]. Against the backdrop of global environmental change, rural transformation, and cultural homogenization, the protection and transmission of these precious heritages hold increasingly salient strategic significance. This importance extends to ensuring food and ecological security, promoting comprehensive rural revitalization, and perpetuating the legacy of agricultural civilization.

Located in northern China, north of the Zhang River, and bordered by the Bohai Sea to the east, Hebei Province enjoys inherent geographical advantages. As a major agricultural province in China, it is endowed with abundant agricultural resources. Over its long history, generations have created a series of outstanding agricultural cultural heritages adapted to diverse natural and geographical conditions. These heritages not only bear witness to Hebei's long-standing agricultural history but also embody the ecological philosophy of "harmony between humanity and nature," serving as living resources of immense contemporary value. In recent years, Hebei has made significant progress in the identification, application, and conservation of its agricultural cultural heritage. Several heritage sites have been successfully inscribed on global and national lists. Through approaches such as the integration of agriculture, culture, and tourism, these efforts have yielded positive outcomes in promoting rural industrial development. Nevertheless, challenges remain, including the absence of specialized legislative safeguards with a low regulatory hierarchy, inadequate cross-departmental coordination, and insufficient sustainable funding.

Analysis of the Current Status of the Agricultural Cultural Heritage System Operation

An Overview of Agricultural Cultural Heritage in Hebei Province

As a historically significant agricultural province, Hebei boasts a long-standing tradition of farming activities and a rich diversity of agricultural cultural heritage systems. Currently, Hebei

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is home to three Globally Important Agricultural Heritage Systems (GIAHS): The Xuanhua Urban Traditional Vineyards System in Hebei, the Shexian Dry Stone Terraced System in Hebei, and the Kuancheng Traditional Chestnut Cultivation System in Hebei, along with multiple China-Nationally Important Agricultural Heritage Systems [3]. These agricultural heritage systems not only reflect Hebei's profound agrarian cultural heritage but also constitute a vital component of China's outstanding traditional culture. They hold significant historical, cultural, scientific, and ecological value.

Overview of Globally Important Agricultural Heritage Systems: The Globally Important Agricultural Heritage Systems (GIAHS) initiative was launched in 2002 by the Food and Agriculture Organization of the United Nations,comprising a total of 102 systems. Among them, Hebei Province has three: The Xuanhua Urban Traditional Vineyard System, the She County Dryland Stone Terraced Field System, and the Kuancheng Traditional Chestnut Cultivation System [4]. Each system represents an agricultural practice created by ancestors based on local conditions, serving as a precious heritage for both China and the world. The Xuanhua Urban Traditional Vineyard System, located in Xuanhua District, Zhangjiakou City, is the first traditional agricultural system globally named as "Urban Agricultural Heritage. "With over 1,300 years of cultivation history, it still employs the traditional "funnel-shaped" planting method, exemplifying a typical courtyard production model [5]. This system adopts a "funnel-shaped" trellis cultivation method, which benefits grape growth, enhances yield and quality, and creates a unique agricultural landscape. The She County Dryland Stone Terraced Field System is situated in southwestern Hebei Province, covering a total area of 172,000 mu (approximately 11,500 hectares). Its distinctive rain-fed mountain agriculture system and grand stone terraced field landscape are hailed as "China's Second Great Wall, "with a heritage spanning over 700 years [6]. This system embodies the ancient wisdom of "storing grain in the land, storing grain in granaries, and conserving grain through mindful consumption. "The Kuancheng Traditional Chestnut Cultivation System is located in Kuancheng Manchu Autonomous County, Chengde City. Chestnut cultivation dates back to the Eastern Han Dynasty, boasting a history of over 3,000 years. It is a composite farming system centered on chestnut cultivation, featuring rational configurations of crops, medicinal herbs, and poultry[7].This system forms a "terraced field-chestnut-crop-poultry" composite farming model, where crops like perilla are grown under the trees, and poultry are raised, creating a three-dimensional, circular ecological agriculture system.

Meanwhile, five projects in Hebei Province, including the Ancient Pear Orchard in Zhao County, the Longyan Grape Cultivation System in Zhuolu, the Ancient Mulberry Forest in Botou, the Chestnut Composite Cultivation System in Qianxi, and the Traditional Hawthorn Cultivation System in Xinglong, have been recognized as China's Important Agricultural Heritage Systems. These agricultural heritage systems embody the wisdom of harmonious coexistence between humans and nature. For instance, the Ancient Pear Orchard in Zhao County plays a crucial role in windbreak and sand fixation, water conservation, biodiversity protection, and habitat creation. Similarly, the Ancient Mulberry Forest in Botou boasts the largest and most historically significant ancient black mulberry tree cluster in China, with 71 trees over 500 years old. The mature mulberry system preserves intangible cultural heritage practices such as sericulture and mulberry bark papermaking. These agricultural heritage systems possess ecological and environmental value, economic and livelihood value, social and cultural value, as well as demonstration and promotion value, making them indispensable components in building a harmonious society.

Current situation of institutional system construction: At the national level, in order to maintain the sustainable development of agricultural culture, the "Management Measures for Important Agricultural Cultural Heritage in China" [7] have been issued, and through continuous practice and improvement, relevant policies such as the "Guidelines for Writing Application Forms for Important Agricultural Cultural Heritage in China" and the "Guidelines for Writing Protection and Development Plans for Agricultural Cultural Heritage" have been introduced, providing scientific guidance for the development and protection of agricultural culture.

In recent years, Hebei Province has attached great importance to the protection of agricultural cultural heritage and has initially established a multi-level institutional system. At the provincial level, Hebei Province has successively issued relevant regulations such as the "Regulations on Intangible Cultural Heritage in Hebei Province", "Regulations on the Protection and Management of Cultural Relics in Hebei Province", and "Regulations on the Protection of Basic Farmland in Hebei Province", providing a legal basis for the protection of agricultural cultural heritage. At the same time, the General Office of the Hebei Provincial Government issued the "Implementation Opinions on Strengthening the Protection and Utilization of Agricultural Germplasm Resources", establishing 46 agricultural germplasm resource protection areas, preserving 57 types of crops and 60619 copies, accounting for 12.1% of the national total. However, through horizontal comparison, the industrial cultural heritage in Hebei Province has a regulatory framework supported by the "Regulations on the Protection and Utilization of Industrial Heritage in Hebei Province", while the agricultural cultural heritage in Hebei Province does not. It is currently a provincial-level special legislation gap and is in the stage of substantial promotion based on administrative recognition and project management mechanisms. There is still room for improvement in its institutional legal protection level and systematicity.

In terms of financial security, the Finance Department of Hebei Province has established a special fund for the protection of intangible cultural heritage. In 2024, the provincial special fund for the protection of intangible cultural heritage will be issued in advance to support agricultural cultural heritage protection projects. At the same time, a provincial-level cultural relic protection special fund management system has been established, and a provincial-level cultural relic protection special fund will be issued in 2024 to provide financial support for the protection of agricultural cultural heritage. In addition, Hebei Province has established a national level intangible cultural heritage protection fund management system, and in 2024, a national level intangible cultural heritage protection fund budget will be issued for the management and protection of national level intangible cultural heritage.

Management system construction: The protection and management system of agricultural cultural heritage in Hebei Province is gradually improving. At the provincial level, a leading group for the protection of agricultural cultural heritage in Hebei Province has been established, with the leader in charge of the provincial government serving as the group leader, and the Department of Agriculture and Rural Affairs taking the lead in coordinating the management of agricultural cultural heritage throughout the province. All relevant

departments shall work together to promote the protection of agricultural cultural heritage in accordance with their respective responsibilities. The cultural and tourism departments are responsible for the protection of intangible cultural heritage, the land department is responsible for land management, the environmental protection department is responsible for environmental protection, and the tourism department is responsible for tourism development, forming a multi-departmental collaborative management pattern.

At the specific project level, specialized protection and management agencies have been established in each heritage site. Xuanhua District has established a Vineyard Protection Office, responsible for the protection and management of traditional vineyards in Xuanhua; Shexian County has established an association for the protection and utilization of dryland terraced fields, responsible for the protection and utilization of dryland terraced fields in Shexian County; Kuancheng Manchu Autonomous County has established a mechanism for the protection of chestnut cultivation systems, responsible for the protection and development of traditional chestnut cultivation systems in Kuancheng. The establishment of these specialized institutions provides organizational support for the protection of agricultural cultural heritage.

Analysis of institutional operation mechanism

Management System Architecture: The management system of agricultural cultural heritage in Hebei Province presents a characteristic of multi-departmental participation. At the provincial level, led by the Department of Agriculture and Rural Affairs of Hebei Province, it is responsible for coordinating the management of agricultural cultural heritage throughout the province. The Provincial Department of Agriculture and Rural Affairs has established a specialized department for the protection of agricultural cultural heritage, responsible for the specific work of agricultural cultural heritage protection. At the city and county levels, agricultural and rural departments at all levels, together with cultural and tourism departments, jointly promote protection work, forming a three-level linkage management system of provinces, cities, and counties.

At the specific project level, specialized protection and management agencies have been established in each heritage site, such as the Grape Garden Protection Office in Xuanhua District, the Association for the Protection and Utilization of Dryland Terraces in Shexian County, and the Chestnut Cultivation System Protection Mechanism in Kuancheng Manchu Autonomous County. These institutions play an important role in the protection, management, and development of heritage sites.

Progress in Protection Practice: In terms of protection practice, various heritage sites in Hebei Province have taken a series of protection measures. Xuanhua District has implemented a vineyard landscape protection project and established a germplasm resource protection nursery to protect and study traditional grape varieties; Shexian has launched a terraced field restoration project, established a mechanism for protecting crop variety diversity, and collected and preserved 171 traditional agricultural varieties; Kuancheng Manchu Autonomous County conducted a survey of chestnut resources and established a protected area for ancient trees and traditional chestnut orchards, registering and protecting over 100000 traditional chestnut trees that are over 100 years old.

At the same time, each heritage site actively explores the path of industrialization development, achieving an organic combination of protection and utilization through the development of leisure agriculture, characteristic agricultural product processing and other industries. Xuanhua District has developed grape picking tourism and built a grape culture exhibition hall; Shexian has developed terraced sightseeing tourism and launched traditional agricultural product brands; Kuancheng Manchu Autonomous County has established a chestnut industry park and developed the chestnut deep processing industry.

Technology support system: Hebei Province has made certain progress in providing technological support for the protection of agricultural cultural heritage. It has established cooperative relations with scientific research institutes such as the Chinese Academy of Sciences, China Agricultural University, Hebei Agricultural University, and carried out basic research on the protection of agricultural cultural heritage. Kuancheng Manchu Autonomous County cooperated with the Institute of Geographic Sciences and Resources of the Chinese Academy of Sciences to carry out a study on the climate suitability of Kuancheng's traditional chestnut cultivation system; Shexian County has collaborated with China Agricultural University to conduct research on the protection of crop variety diversity in the dryland terraced field system [15].

Each heritage site has also established a digital protection platform, using modern information technology to digitally record and display agricultural cultural heritage. Xuanhua District has established a digital management system for vineyards, which provides real-time monitoring of the environment, growth conditions, and other aspects of the vineyards; Shexian has established a terraced field geographic information system to digitally manage the spatial distribution and characteristics of terraced fields; Kuancheng Manchu Autonomous County has established a chestnut resource database for digital management and display of chestnut resources.

Achievements

Significant Protection Outcomes: Through institutional development and practical exploration, Hebei Province has achieved remarkable results in the conservation of its agricultural heritage. Three Globally Important Agricultural Heritage Systems (GIAHS) have been effectively protected, contributing to improved ecological environments in the heritage sites and the preservation of traditional agricultural techniques. Specifically, the funnel-shaped cultivation technique of the Xuanhua Traditional Vineyards, the construction method of the Shexian Dry-stone Terraced Fields, and the cultivation practices of the Kuancheng Traditional Chestnut have all been successfully safeguarded and transmitted [15].

In terms of biodiversity conservation, the protection of agricultural heritage systems in Hebei Province has also yielded significant achievements. The Xuanhua Traditional Vineyards preserve over 30 grape varieties and 74 other utilizable plant species. The Shexian Dry-stone Terraced Fields system safeguards 1,204 medicinal plant species from 176 families and 171 traditional local crop varieties. The Kuancheng Traditional Chestnut Cultivation System protects rich biodiversity and has formed a unique ecosystem.

Significant social benefits have been achieved: The conservation of agricultural heritage has boosted local economic development, increased farmers' income, and promoted rural tourism. According to surveys, the annual output value of the Kuancheng chestnut industry has reached 690 million yuan, accounting for over 80% of local agricultural income. In the Shexian terraced fields region,

farmers' per capita income has significantly risen, with an average annual household income increase of more than 5,000 yuan through the development of terrace sightseeing tourism. In Xuanhua District, the grape-picking tourism initiative attracts 200,000 visitors annually, generating tourism revenue of 20 million yuan.

Meanwhile, the conservation of agricultural heritage has also facilitated cultural transmission and social harmony. By preserving agricultural heritage, it has strengthened the cultural identity and pride of local residents, promoting the inheritance and promotion of traditional culture. The protection of the Shexian terraced fields has preserved and passed down local cultural elements represented by donkey culture and stone culture. The conservation of the Xuanhua grape vineyards has sustained grape cultivation traditions and grape festival culture, while the preservation of the Kuancheng chestnut system has upheld chestnut cultivation practices and chestnut blossom festival culture.

It has played a prominent exemplary role: The agricultural heritage conservation efforts in Hebei Province have exerted significant influence across China, serving as a valuable reference for other regions. The Shexian Dry-stone Terraced Fields System has been acclaimed by experts from the United Nations World Food Program (WFP) as "a wonder of the world" and "China's second Great Wall," garnering international recognition. Furthermore, the Kuancheng Traditional Chestnut Cultivation System has been designated as a Globally Important Agricultural Heritage System (GIAHS) by the Food and Agriculture Organization of the United Nations (FAO), significantly enhancing the visibility and influence of Hebei Province.

Hebei Province has also actively engaged in the national agricultural heritage conservation efforts, undertaking several key tasks. The Hebei Provincial Department of Agriculture and Rural Affairs has been designated by the Ministry of Agriculture and Rural Affairs as a key province for agricultural heritage conservation in China. Heritage sites such as Shexian County and Kuancheng Manchu Autonomous County have been established as national demonstration sites for agricultural heritage protection.

Analysis of Problems and Causes in the Operation of Hebei's Agricultural Heritage System

The Deficiency and Fragmentation of Institutional Content

Legal Gaps and Weak Statutory Authority: Hebei Province faces significant institutional deficiencies in the development of laws and regulations for the protection of agricultural heritage. These deficiencies are systemic, primarily manifesting as the absence of specialized protective legislation, weak applicability of existing regulations, low hierarchical authority of legal frameworks, missing legal liability clauses, insufficient enforcement basis, and incomplete institutional safeguards. Specifically, there is a lack of specialized regulations such as the "Hebei Province Agricultural Heritage Protection Ordinance." Existing regulations suffer from vague conceptual definitions of agricultural heritage, unclear protection standards and technical specifications, incomplete legal provisions, ambiguous division of departmental responsibilities, and poorly operable protective measures [17].

As a distinct category of cultural heritage, agricultural heritage possesses living, systematic, and region-specific characteristics [16], which differ significantly from traditional cultural relics and intangible cultural heritage. However, the current legal framework is primarily based on the Cultural Relics Protection Law and the Intangible Cultural Heritage Law, making it difficult to fully meet the inherent requirements of agricultural heritage conservation. The inadequacy of this legal and regulatory system results in a lack of clear legal basis and operational standards for protection work, leading to risks of improper conservation or overdevelopment. Moreover, it creates ambiguities in accountability, unstable funding guarantees, insufficient enforcement capacity, and an ineffective legal deterrent mechanism.

Furthermore, the national-level "Measures for the Administration of Important Agricultural Heritage Systems" operates at a relatively low hierarchical authority, making it difficult to provide robust legal support [17, 19].

The incomplete development of the legal and regulatory system for the protection of agricultural heritage in Hebei Province can be attributed to several key factors:

Firstly, legislative philosophy lags behind current needs. Traditional laws and regulations for cultural relics and intangible cultural heritage are ill-suited to fully address the living and systemic characteristics of agricultural heritage. Existing frameworks are primarily based on a static preservation mindset, whereas agricultural heritage oints: Provincial-level financial investment in agricultural heritage conservation remains relatively insufficient. Although special funds have been established, their scale still falls significantly short of actual needs. Investment is skewed toward hardware construction at the expense of software development. Most funds are allocated to infrastructure projects, with inadequate investment in talent cultivation, institutional development, monitoring, and evaluation. There is arequires dynamic conservation and sustainable development.

Secondly, interdepartmental coordination is insufficient. Agricultural heritage involves multiple administrative departments, yet there is a lack of a unified legislative coordination mechanism. The agriculture department focuses on production techniques, the cultural and tourism departments emphasize cultural transmission, the tourism sector prioritizes development and utilization, and environmental authorities concentrate on ecological protection. These differing perspectives hinder the formation of a cohesive legislative approach.

Thirdly, there is a shortage of professional expertise. Legislation for agricultural heritage demands interdisciplinary professionals knowledgeable in law, agriculture, culture, ecology, and other relevant fields. However, such expertise remains relatively scarce within the province, affecting the quality and sophistication of legislative efforts.

Fourthly, practical experience is limited. The conservation of agricultural heritage started relatively late, resulting in insufficient legislative practice and experience. Compared to the legal frameworks for cultural relics and intangible cultural heritage, the legislative system for agricultural heritage remains largely exploratory.

Fifthly, there is inadequate recognition of its importance. Some officials and departments lack sufficient awareness of the significance and urgency of agricultural heritage conservation, leading to insufficient attention and support.

Lastly, coordinating diverse interests presents challenges. The protection of agricultural heritage involves multiple stakeholders—including the government, enterprises, farmers, and tourists—each

with differing interests and demands. The complexity of reconciling these interests significantly impedes the legislative process.

Unclear and Conflicting Policy Objectives: The policy system for the protection of agricultural heritage in Hebei Province faces significant issues, including ambiguous positioning, overlapping and contradictory policies, and poor coordination. The objectives of relevant policies are often unclearly defined, leading to cross-cutting, duplication, and internal contradictions. Policies issued by different departments may conflict during implementation. Specific manifestations include unclear positioning between conservation and development/utilization goals, ineffective coordination between departmental policies, conflicts between short-term benefits and long-term conservation objectives, a lack of mechanisms to balance local and overall interests, inconsistent policy implementation standards, and an underdeveloped policy evaluation mechanism.

Taking the Xuanhua Traditional Vineyards as an example, the cultural relics protection department emphasizes the preservation of ancient vines and traditional structures, requiring strict limits on development. The tourism department, however, aims to increase revenue through tourism projects, advocating for appropriate commercial development. Meanwhile, the agriculture department focuses on grape yield and quality, promoting the application of modern agricultural techniques. These divergent policy objectives create conflicts in practice, mainly reflected in disputes over development intensity control, technical application standards, benefit distribution mechanisms, and performance evaluation indicators, which directly undermine conservation outcomes. According to research by Wei Yunjie, Sun Yehong, and colleagues, "the development of sustainable tourism and the conservation of agricultural heritage are mutually reinforcing" [11]. However, in practice, inconsistent policy objectives across departments often lead to ineffective protection.

The problem of unclear and contradictory policy objectives for agricultural heritage conservation in Hebei Province is primarily attributed to the following reasons: Lack of top-level design: There is an absence of a unified master plan for agricultural heritage conservation. Different departments operate independently, failing to establish cohesive policy goals. Inadequate coordination mechanisms: Cross-departmental coordination mechanisms are underdeveloped. Insufficient communication during policy formulation leads to inconsistent policies. Diversification of stakeholders: Different stakeholders have divergent interests—the government focuses on administrative performance, enterprises prioritize profits, farmers emphasize income, and tourists seek experience—making it difficult to align objectives. Unsound evaluation system: The current assessment framework overemphasizes economic benefits while neglecting the long-term value of heritage conservation, resulting in skewed policy orientations across departments. Non-standardized policy formulation process: Policy development often lacks thorough research and deliberation, with a prevalent tendency toward isolated decision-making. Weak policy implementation oversight: There is a lack of effective monitoring mechanisms for policy execution, making it difficult to promptly identify and rectify issues during implementation. Absence of a unified plan: Hebei currently lacks a comprehensive development plan for agricultural heritage conservation. Policies are formulated based on the respective functions of different departments, increasing the risk of incoherence and inconsistency.

Lack of Legal Framework for Long-term Protection Mechanisms: The conservation of agricultural heritage in Hebei Province lacks sustainable institutionalized support, with the development of protection mechanisms severely lagging. Conservation efforts often rely on temporary policy measures, lacking guarantees for long-term sustainability [17]. Specific manifestations include: the absence of a stable funding mechanism, no institutionalized arrangement for practitioner training, an incomplete monitoring and evaluation system, low penalties for violations with insufficient deterrence, inadequate implementation of protection responsibilities, and underdeveloped emergency response mechanisms—all of which constitute systemic issues. These institutional deficiencies result in a lack of long-term stability in conservation work, unstable financial support, an underdeveloped transmission mechanism, an imperfect monitoring system, weak enforcement, and difficulties in establishing a sustainable protection framework.

Taking the Kuancheng Traditional Chestnut Cultivation System as an example, there is no regular monitoring of its conservation status, making it difficult to objectively evaluate protection outcomes. Although the conservation of traditional crop varieties in the Shexian Dry-stone Terraced Fields System has achieved some results, the training of practitioners lacks institutional safeguards [20]. The protection of the Xuanhua Traditional Vineyards primarily depends on temporary government support, with no stable long-term mechanism in place.

The lack of sustainable institutionalized support for the conservation of agricultural heritage in Hebei Province is primarily attributed to the following reasons: Inadequate institutional design: There is a lack of systematic institutional planning, with a pronounced emphasis on construction over management. Many localities prioritize infrastructure development but pay insufficient attention to establishing long-term management mechanisms. Inefficient resource allocation: Resource investment tends to favor infrastructure development while neglecting the construction of sustainable mechanisms. Limited funding is primarily directed toward building tourist sites and promotional activities, with inadequate investment in soft capacities such as talent training and institutional development. Underdeveloped oversight system: Regulatory responsibilities are unclear, oversight methods are relatively limited, and effective monitoring mechanisms are lacking. Weak legal awareness: Some managerial personnel demonstrate insufficient legal consciousness and awareness of protection through legal means, often relying on administrative approaches instead of legal instruments. Insufficient recognition of sustainable development: There is a tendency to prioritize immediate benefits over long-term developmental goals. neffective supervision of implementation: The absence of robust monitoring mechanisms for institutional execution results in inadequate oversight of implementation processes. Imperfect funding mechanism: Although Hebei Province has established special funds for intangible cultural heritage conservation, the scale of funding remains limited and lacks a stable growth mechanism. Funds are primarily allocated for emergency protection measures, with insufficient long-term institutional arrangements. Absence of a practitioner training system: Agricultural heritage conservation requires a substantial number of professionals, yet there is currently a lack of systematic talent development and incentive mechanisms. The transmission of traditional skills primarily relies on informal master-apprentice models, lacking institutionalized safeguards.

Ineffective Implementation Mechanisms and Lack of Multi-stakeholder Coordination

Issues of Cross-Departmental Coordination and Governance Structure: Due to the multifaceted functions carried by agricultural heritage, various departments inevitably face issues such as blurred responsibility boundaries and increased coordination challenges while performing their duties. Any agricultural heritage site simultaneously encompasses four functional dimensions: agricultural production, cultural transmission, resource bearing, and ecological regulation. These four dimensions correspond respectively to the primary responsibilities of the departments of agriculture and rural affairs, culture and tourism, natural resources, and ecological environment, thereby forming a multi-departmental functional convergence framework centered on agricultural heritage (see Figure 1).

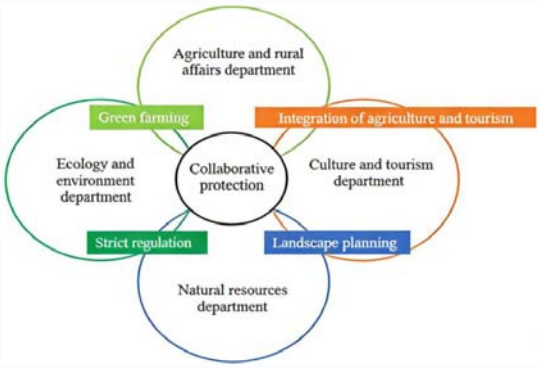


Figure 1: Cross-over of Responsibilities of Agricultural Cultural Heritage Administrative Departments.

In agricultural heritage conservation work, the problem of overlapping responsibilities and blurred boundaries among multiple departments is particularly prominent, mainly concentrated among core participating departments such as agriculture and rural affairs, culture and tourism, natural resources, and ecological environment. Differences in departmental functional positioning, work priorities, and target orientations lead to overlapping and conflicting demands in key areas such as value identification, conservation approaches, development planning, and resource allocation, posing significant challenges to cross-departmental coordination and governance structure optimization.

Specifically, the agriculture and rural affairs department focuses on heritage content directly related to agricultural production, aiming to promote agricultural upgrading and increase farmers' income. The culture and tourism department emphasizes heritage value exploration and tourism resource transformation to boost cultural and tourism industry development. The natural resources department is responsible for territorial spatial planning and land regulation in heritage sites. The ecological environment department concentrates on ecological conservation and pollution prevention in these areas.

Differences in functional positioning lead to overlapping responsibilities among multiple departments, highlighting the necessity for cross-departmental coordinated governance. The intersection between the agriculture and rural affairs department and the culture and tourism department centers on divergences in heritage value identification and tourism development orientation—the former prioritizes agricultural development and farmers' income growth, while the latter focuses on the cultural and tourism industry, resulting in conflicts over conservation concepts and resource allocation.

The overlap between the agriculture and rural affairs department and the natural resources department lies in land use management and construction approval within heritage sites—the former ensures production capacity, while the latter oversees land spatial planning, with blurred boundaries increasing coordination difficulties.

The agriculture and rural affairs department and the ecological environment department overlap in the field of agricultural ecological conservation, where tensions between traditional ecological wisdom and modern governance concepts further elevate coordination needs.

The connection challenge between the culture and tourism department and the natural resources department involves coordinating spatial control with tourism planning, where planning conflicts can easily lead to unclear responsibilities, requiring collaborative resolution of differences in landscape protection standards.

The coordination core between the culture and tourism department and the ecological environment department is balancing ecological conservation with tourism development, necessitating consensus between heritage value exploration and ecological stability, alongside establishing information-sharing mechanisms.

The intersection between the natural resources department and the ecological environment department focuses on ecological conservation red-line control and resource utilization, requiring unified regulatory standards and collaborative application of traditional ecological wisdom.

The core issue of cross-departmental responsibility overlap lies in divergent departmental objectives, priorities, and unclear boundaries, urgently requiring resolution through optimized governance structures and improved coordination mechanisms.

The root causes of cross-departmental coordination and governance structure issues in the conservation of agricultural heritage in Hebei Province mainly include the following: Fragmented management system: Agricultural heritage conservation involves a wide range of aspects but lacks a unified management system. Departments operate according to their own functions, resulting in insufficient overall coordination. Mismatch between authority and responsibility: There is an imbalance of power and responsibility among departments. Some departments hold authority but do not bear corresponding responsibilities, while others bear responsibilities but lack the necessary authority. High coordination costs: Interdepartmental coordination requires significant time and effort, affecting work efficiency and often leading to buck-passing among departments.

The absence of effective incentive and constraint mechanisms results in insufficient motivation for interdepartmental cooperation, often leading to a "sweeping only one's own doorstep" mentality. Unreasonable institutional design: The departmental structure and functional division are poorly designed, showing a strong tendency to protect departmental interests. Influence of cultural factors: A culture of protecting departmental interests hampers coordination efforts, as departments habitually approach issues from their own perspectives. Inadequate coordination bodies: There is a lack of specialized cross-departmental coordination agencies. Coordination efforts largely

rely on leadership directives and meetings, lacking institutionalized arrangements. Unstandardized coordination procedures: Coordination processes lack institutionalized regulations, often relying on temporary measures without standardized procedures or criteria.

Lack of motivation and capability in grassroots implementation mechanisms: Grassroots governments, as the direct implementers of agricultural heritage conservation, have revealed a series of systemic issues in practice, including insufficient awareness, low motivation, inadequate capacity, weak funding guarantees, and a lack of supervision and evaluation mechanisms. Specific manifestations encompass: weak conservation awareness among grassroots officials, a shortage of professional and technical personnel, inadequate allocation of conservation funds, compromised implementation of protective measures, underdeveloped supervision and evaluation systems, and a lack of reward and penalty incentives.

The difficulties faced by grassroots governments are primarily reflected in insufficient awareness, inadequate capacity, limited resources, lack of motivation, and high pressure. According to Wang Yining's research in Study on the Transformation from Traditional to Modern Agriculture in Hebei, grassroots governments face significant developmental pressure during the transition from traditional to modern agriculture, often prioritizing economic development over the conservation of agricultural heritage.

Specifically, the number of professional and technical personnel is severely insufficient. Although Shexian County has established an Association for the Protection and Utilization of Dry-stone Terraces, it has only a dozen professional staff, far below the needs of conservation work. The personnel structure is also ill-structured, lacking high-level professionals—most current staff have agricultural technical backgrounds but lack expertise in cultural conservation or tourism development. Furthermore, there is a serious issue of staff turnover, leading to an unstable workforce, and a lack of systematic training has resulted in suboptimal professional competency.

The problem of inadequate fund allocation is mainly reflected in unstable funding sources, with conservation funds heavily reliant on unstable upper-level transfers. Difficulty in securing matching funds due to local financial constraints, inefficient use of limited funds often diverted to image projects, and non-standardized fund management due to the absence of clear usage standards and supervision mechanisms are also prominent issues.

Problems in grassroots implementation include inaccurate grasp of standards, insufficient supervision and inspection, underdeveloped reward and penalty mechanisms, and inadequate technical support.

The primary reasons for the lack of motivation and capacity in the grassroots implementation mechanisms for agricultural heritage conservation in Hebei Province include the following eight points: Misaligned Assessment Orientation: The current evaluation system overemphasizes economic development indicators and insufficiently prioritizes cultural heritage conservation. As grassroots government assessments primarily focus on economic metrics, agricultural heritage protection is often marginalized. Lagging Capacity Building: Grassroots officials lack relevant professional knowledge and skills, and training opportunities are limited, resulting in delayed capacity development. Insufficient Resource Allocation: With limited resources at their disposal, grassroots governments struggle to undertake the demanding tasks of conservation. There is a consistent shortage of personnel, funding, and technological resources. Lack of Incentive Mechanisms: The absence of effective incentive mechanisms leads to low motivation among grassroots officials. There is often a lack of distinction between good and poor performance, and effective incentive-restraint systems are missing. Inadequate Institutional Safeguards: Effective institutional guarantee mechanisms are lacking. Responsibilities for grassroots governments are not clearly defined, and sufficient pressure is not effectively transmitted through the system.Poor Implementation of Responsibilities: The mechanisms for assigning and fulfilling conservation responsibilities are underdeveloped, making it difficult to hold parties accountable when problems arise. Insufficient Awareness: Some grassroots officials do not fully recognize the importance and urgency of agricultural heritage conservation. They often perceive it as an additional burden, lacking initiative and proactiveness. Challenging Work Environment: The relatively difficult working conditions affect the stability of personnel retention.

Absence of Assessment Mechanism: Hebei Province lacks a scientific and robust monitoring and evaluation mechanism for the conservation of its agricultural heritage, making it difficult to objectively assess conservation outcomes and ensure the quality of conservation efforts. The shortcomings are specifically manifested in systemic issues such as inconsistent assessment criteria, non-standardized evaluation methods, insufficient application of evaluation results, the absence of a dynamic adjustment mechanism, limited participation of third-party evaluations, and low transparency in the disclosure of assessment findings. The existing monitoring and evaluation framework suffers from an inadequate system of standards [18].

The existing monitoring and evaluation framework suffers from issues such as unreasonable indicator settings, simplistic evaluation methods, overreliance on a single evaluation entity, and insufficient application of evaluation results. The lack of a scientific and unified assessment standard makes objective evaluation difficult, as current assessments primarily rely on experiential judgment and lack a scientific indicator system. There is an overemphasis on the quantity of infrastructure construction while neglecting the quality of conservation and the effectiveness of cultural transmission. The evaluation methods are relatively simplistic, relying mainly on qualitative analysis with insufficient quantitative analysis, resulting in a lack of scientific rigor. Assessments are primarily conducted by government departments, with inadequate participation from third parties, leading to a lack of objectivity and impartiality. Evaluation results are mainly used for reporting purposes, with limited role in driving improvements, and no effective mechanism has been established to link assessment outcomes with policy adjustments or resource allocation.

The absence of a comprehensive evaluation standard system manifests in effects such as inconsistent assessment criteria, strong subjectivity, insufficient scientific basis, and weak guidance. Specific problems include: unclear evaluation standards, as Hebei Province lacks unified assessment criteria for agricultural heritage conservation, with each heritage site developing its own standards based on individual understanding; non-standardized evaluation procedures, often conducted on an ad-hoc basis due to a lack of institutionalized regulations; unscientific evaluation methods that are relatively simplistic and predominantly qualitative; unqualified evaluators, primarily consisting of government staff who lack professional backgrounds; and non-transparent evaluation results,

with insufficient public disclosure and inadequate social oversight.

The primary reasons for the absence of a robust monitoring and evaluation mechanism for agricultural heritage conservation in Hebei Province include the following eight points: Inadequate Standard System: There is a lack of a scientific evaluation standard system, making objective assessment difficult. The development of evaluation standards for agricultural heritage conservation requires multidisciplinary expertise, which is currently insufficient. Deficient Professional Capacity: Evaluation work demands professional knowledge, yet there is a relative shortage of relevant talent. Current evaluators primarily possess administrative backgrounds and lack professional technical expertise. Insufficient Technical Support: The technical means for evaluation are relatively outdated, affecting assessment quality. There is an insufficient application of modern evaluation technologies, with a continued reliance on traditional methods. Weak Institutional Safeguards: Institutionalized evaluation procedures and mechanisms for applying results are lacking. Evaluations are often conducted as ad-hoc arrangements without proper institutional backing. Inadequate Recognition of Importance: Evaluation work is often treated as a mere routine formality and fails to fulfill its intended role effectively. Insufficient Investment in Evaluation Work: Limited human, material, and financial resources allocated to evaluation activities constrain their overall quality. Imperfect Evaluation Standard System: The absence of a scientific and unified set of evaluation standards hinders objective assessment. Lack of Systematic Evaluation Methodology: Current practices rely heavily on simplistic approaches such as listening to reports and conducting site visits, lacking in-depth investigation and analysis.

Lagging Development of Support and Guarantee System

Defects of Financial Input and Fund Mechanism: The financial investment and funding mechanisms for the conservation of agricultural heritage in Hebei Province exhibit significant systemic flaws, including insufficient total investment, overreliance on a single source of funding, inefficient utilization of funds, low motivation for social capital participation, and a lack of diversified guarantee mechanisms. Specific issues manifest as inadequate total government investment, a narrow range of funding channels, low efficiency in fund use, insufficient involvement of social capital, an irrational investment structure, and unstable funding commitments.

An analysis of the current funding situation reveals a clear shortfall in government investment relative to the actual needs of agricultural heritage conservation. Although the Hebei Provincial Department of Finance has established a special fund for intangible cultural heritage protection, its scale is limited and insufficient to meet the demands of conservation work. Investment growth has been slow; while government funding has increased in recent years, the rate of growth is relatively sluggish and fails to keep pace with the expanding requirements of conservation. Regional disparities are pronounced, with significant variations in investment levels across different areas. Less-developed regions suffer from particularly inadequate funding. For instance, Kuancheng Manchu Autonomous County, the site of a Globally Important Agricultural Heritage System (GIAHS), receives only a few million yuan in annual conservation funding—a figure far below what is necessary. Furthermore, investment is unevenly distributed among projects, with key projects receiving relatively more resources while general projects are underfunded.

The problem of overdependence on a single funding source is primarily reflected in heavy reliance on fiscal input, minimal participation from social capital [19], inadequate financial support, and limited contributions from public welfare foundations. Research by Li Miaoran and others indicates that financial support channels for intangible cultural heritage conservation in Hebei Province are singular, relying mainly on government investment, with low motivation for social capital participation [21].

Reasons for the low efficiency in fund utilization include imperfect management systems, inadequate supervision mechanisms, a lack of performance evaluation, and low information transparency. Taking the Kuancheng Traditional Chestnut Cultivation System as an example, its current conservation funding primarily comes from county-level finances, with an annual investment of approximately 5 million yuan, mostly directed toward infrastructure construction. This situation highlights issues such as limited funding scale, unstable investment, a predominant focus on hardware development, and a lack of diversified funding sources.

The primary reasons for the deficiencies in financial investment and funding mechanisms for the conservation of agricultural heritage in Hebei Province include the following eight p lack of effective oversight mechanisms for the use of funds, making misuse or waste of resources more likely due to insufficient monitoring of expenditure. Insufficient Application of Market Mechanisms: Effective market mechanisms to attract social capital participation are lacking. Although agricultural heritage conservation carries public good attributes, it could also attract social investment through industrial development approaches. Inadequate Policy Support: There is an absence of effective policy support mechanisms—such as tax incentives or fiscal subsidies—to guide social capital participation. Insufficient Recognition of the Importance of Funding Safeguards: Funding for agricultural heritage conservation is often viewed as a non-essential expenditure rather than a critical investment. Imperfect Fund Management Systems and Non-standardized Usage: Clear standards and supervision mechanisms for fund utilization are lacking, leading to irregular management practices. Absence of a Scientific Performance Evaluation Mechanism: It is difficult to objectively assess the effectiveness of fund utilization without a robust performance evaluation framework.

Talent Shortage and Insufficient Capacity Building: The development of a professional talent pool for the conservation of agricultural heritage in Hebei Province is severely lagging, characterized by systemic issues such as a shortage of professional and technical personnel, a critical lack of grassroots technicians, an underdeveloped talent cultivation system, prominent brain drain, an ill-structured talent composition, and a need for improved professional competency [17]. Specific manifestations include an insufficient number of professional and technical staff, a scarcity of grassroots technicians, an imperfect talent training system, serious talent attrition, an unreasonable talent structure, and qualifications requiring enhancement.

An analysis of the current talent situation reveals that the total number of professional and technical personnel dedicated to agricultural heritage conservation in Hebei Province is inadequate to meet operational demands. Despite being responsible for three Globally Important Agricultural Heritage Systems (GIAHS) and several China-Nationally Important Agricultural Heritage Systems (China-NIAHS), the province has only a few dozen such professionals—far below the required number. The talent structure is ill-structured, with a relative shortage of high-level experts. Most

existing personnel possess backgrounds in agricultural technology but lack interdisciplinary expertise in areas like cultural conservation, tourism development, and ecological protection. Distribution is uneven, with talent concentrated mainly at the provincial and municipal levels. Grassroots levels suffer from a significant shortage, as counties and townships have almost no professional technical staff, severely hampering conservation work on the ground. There is also a mismatch between professional backgrounds and job requirements. While most current staff have backgrounds in agricultural production techniques, agricultural heritage conservation demands multidisciplinary knowledge encompassing culture, ecology, and tourism.

Problems within the talent cultivation system include gaps in higher education, insufficient vocational training, a lack of continuing education opportunities, and weak practical skills development. The primary reasons for talent attrition involve relatively low compensation, limited career advancement pathways, challenging work environments, and low social recognition.

Manifestations of lagging capacity building include insufficient professional knowledge, low skill levels, weak management capabilities, and poor coordination skills. Taking the conservation of the Shexian Dry-stone Terraced Fields as an example, the local Association for the Protection and Utilization currently has only over a dozen professional and technical staff. Most come from agricultural technology backgrounds and lack specialized expertise in cultural conservation or tourism development. While familiar with agricultural production techniques, these individuals have an inadequate grasp of the theories and methods required for agricultural heritage conservation, making it difficult for them to handle the complexities of the work.

The primary reasons for the talent shortage and insufficient capacity building in the conservation of agricultural heritage in Hebei Province include the following eight points: Inadequate Talent Cultivation System: Higher education lacks specialized programs in agricultural heritage conservation. Although Hebei Agricultural University offers agronomy-related disciplines, it does not have a dedicated program for agricultural heritage conservation. Unclear Career Development Pathways: Relevant professions lack defined career progression routes. The career paths for professional and technical personnel are ambiguous, with limited promotion opportunities. Relatively Low Remuneration: Salaries for related positions are comparatively low, making it difficult to attract talent. The compensation for grassroots professional and technical personnel is generally modest. Challenging Work Environment: The working conditions at the grassroots level are relatively tough, affecting talent retention. Rural work environments are often demanding, with poorer living conditions. Insufficient Societal Emphasis: Society does not place enough importance on agricultural heritage conservation. The work has not yet gained adequate public recognition or sufficient attention. Weak Institutional Safeguards: The development of the talent pool and corresponding institutional guarantees are inadequate. There is a lack of effective mechanisms for talent recruitment, cultivation, motivation, and accountability. Imperfect Education System: Higher education institutions lack relevant specialized programs in agricultural heritage conservation, and vocational colleges lack corresponding course offerings, making it difficult to cultivate applied professionals. Deficient Training Mechanisms: Continuing education opportunities for existing staff are insufficient, leading to slow knowledge updates. There is also a lack of systematic training plans and mechanisms.

Lack of Systematic Scientific Support and Information Platform: The scientific and technological support system for the conservation of agricultural heritage in Hebei Province suffers from severe systemic lags, including insufficient research investment, low levels of technological application, delayed information platform development, a low degree of digital conservation, weak capacity for technological innovation, and poor integration of industry, academia, and research. Specific manifestations encompass inadequate research funding, subpar technological application, lagging information platform construction, a low level of digital preservation, weak innovation capabilities, and insufficient industry-university-research collaboration.

An analysis of the current state of the scientific and technological support system reveals that investment in technological innovation for agricultural heritage conservation remains relatively insufficient. Although cooperative relationships have been established with research institutions such as the Chinese Academy of Sciences and China Agricultural University, research funding is limited and insufficient to support large-scale technological innovation activities. Research efforts are fragmented, with research institutes, universities, and enterprises operating independently, resulting in inadequate collaborative innovation, a lack of effective coordination mechanisms, and poor resource integration. Conservation technologies remain relatively outdated, and innovation capacity is weak, with a shortage of independently developed conservation techniques and methods. The conversion rate of research outcomes is low, and their practical application effectiveness is not significant; results often remain at the laboratory stage and are difficult to implement in practical work.

The problem of lagging information platform development is mainly reflected in the absence of a unified platform, with heritage sites managing their own independent information platforms and lacking uniform standards. Platform functionalities are incomplete—existing platforms offer relatively basic functions that fail to meet operational needs. The technical level is low, resulting in a poor user experience, and data quality is suboptimal due to non-standardized data collection processes, necessitating improvement.

The low level of digital conservation is manifested in underdeveloped digitalization, lagging technological application, a lack of unified standards, and a shortage of professional personnel [20]. Issues related to poor industry-university-research integration include an unsound cooperation mechanism, difficulties in translating results into practice, a disconnect in talent cultivation, and insufficient technological innovation.

Taking the Xuanhua Traditional Vineyards as an example, its current informatization development remains relatively rudimentary, primarily consisting of a basic website for introducing the vineyard's general information. However, this website offers only simple functions, mainly for information display, lacking features such as data analysis, online services, and interactive communication. Moreover, data updates are infrequent, and the accuracy of the information requires improvement.

The main reasons for the lack of a systematic scientific and technological support and information platform for the conservation of agricultural heritage in Hebei Province include the following nine aspects: Insufficient Investment in Scientific and Technological Innovation: Funding for technological innovation in agricultural

Table 1: Three-level Collaborative Governance Framework.

Question type	Embody	Degree of impact	Genetic analysis
Inadequate institutional content	Low regulatory tier	Secondary	The legislative concept is lagging behind, the lack of support from the higher law, the imperfect legal provisions, still in the exploratory stage
	Conflict of policy objectives	Secondary	Inadequate coordination mechanisms, poor interdepartmental collaboration, inconsistent objectives, and lack of communication
	Lack of long-term mechanisms	Secondary	Lack of systematic protection and development planning, insufficient emphasis on long-term management mechanisms
The execution mechanism is not functioning properly.	Cross-departmental coordination is difficult	Secondary	Fragmented governance structures, unclear delineation of authority and responsibility, and high coordination costs, which require significant time and effort.
	Weak enforcement at the grass-roots level	Secondary	Grassroots governments face insufficient resources, limited training opportunities, lagging capacity building, and inadequate implementation of responsibilities.
	The absence of an evaluation mechanism	Secondary	The lack of a scientific evaluation system, the relative shortage of professional personnel for evaluation work, and insufficient technical support for evaluation
Lagging support and guarantee	Insufficient funding	Secondary	The financial input mechanism is imperfect, the scale of funds is limited, and it needs a stable growth mechanism.
	The development of talent team lags behind	Secondary	Lack of professional talent cultivation system and incentive mechanism, lack of institutional guarantee
	Insufficient technological support	Secondary	Lack of systematic scientific and technological support platforms, with significantly insufficient investment in technology research and development

heritage conservation remains relatively inadequate. Scientific and technological investments are primarily concentrated in traditional agriculture, with limited allocation for innovations specific to agricultural heritage conservation. Weak Integration of Industry, Academia, and Research: Collaboration among research institutions, universities, and enterprises remains insufficient, lacking an effective cooperation mechanism, which leads to inefficient resource allocation. Lack of Unified Technical Standards: There is an absence of unified technical standards and specifications. Different regions and departments adhere to their own standards, reflecting a lack of coordinated planning. Low Awareness of Information Technology: There is insufficient recognition of the importance of digital conservation. Traditional conservation mindsets dominate, with inadequate attention given to the application of modern information technologies. Lagging Talent Development: The cultivation of scientific and technological talent lags behind, particularly in attracting high-level and interdisciplinary technical professionals. Nadequate Policy Support: Policy support for technological innovation is weak, lacking effective incentive mechanisms and resulting in an unconducive environment for innovation. Slow Technological Updates: Conservation technologies evolve slowly and fail to keep pace with contemporary needs, with insufficient motivation and mechanisms for technological innovation. Weak Capacity for Independent Innovation: The approach relies heavily on imported technologies, with limited capability for original and integrated innovation. Shortage of Professionals in Digital Conservation: Existing personnel predominantly possess traditional technical backgrounds, lacking sufficient expertise in digital technologies.

Based on a systematic review of the issues in agricultural heritage conservation, they can be summarized as a "Three-Level Collaborative Governance Problem Framework." This refers to a comprehensive diagnostic system formed through processes such as problem identification, impact assessment, and cause analysis across the institutional, implementation mechanism, and support guarantee levels. Driven by a problem-oriented approach and linked by categorized governance, this framework treats various issues as "governance units." Through systematic analysis, it reveals a closed-loop system of negative correlations, including deficiencies in institutional content, conflicting policy objectives, lack of long-term mechanisms, ineffective implementation mechanisms, weak grassroots execution, absence of evaluation mechanisms, insufficient funding, lagging talent development, and inadequate scientific and technological support (see Table 1).

Suggestions for Optimizing the Operation of Hebei Agricultural Cultural Heritage System

Improve the institutional content system and eliminate fragmentation

Establishing and Improving the Legal Framework for Agricultural Heritage Conservation: A dedicated "Hebei Province Agricultural Heritage Protection Regulations" shall be enacted to define the conceptual framework, core characteristics, and evaluation criteria of agricultural heritage. The regulations shall establish fundamental principles and guiding ideologies for protection, including conservation priority, sustainable utilization, government leadership, and public participation. The legislation shall specify the management system and organizational structure, delineate the responsibilities of provincial, municipal, and county governments, and outline concrete protection measures and requirements such as holistic preservation, living heritage conservation, and sustainable use. It shall standardize the rational utilization of agricultural heritage by clarifying applicable principles, methods, and conditions, while establishing support mechanisms for funding, talent, and technology. Additionally, the regulations shall define the legal liabilities of all stakeholders, encompassing governmental, social, and individual responsibilities.

Meanwhile, it is essential to improve the supporting institutional framework by formulating specialized regulations such as the "Hebei Province Agricultural Heritage Conservation Planning and Management Measures", "Hebei Province Agricultural Heritage

Conservation Technical Standards", "Hebei Province Agricultural Heritage Conservation Effectiveness Evaluation Standards", "Hebei Province Agricultural Heritage Conservation Fund Management Measures", and "Hebei Province Agricultural Heritage Conservation Inheritors Certification Management Measures" to establish a comprehensive institutional system. Legal liability provisions should be strengthened, with administrative penalty systems refined to specify the types and severity of penalties for various violations. A tiered and categorized penalty mechanism should be established, standardizing administrative penalty procedures and requirements while clarifying criminal liability for severe damage to agricultural heritage. Civil liability should be enhanced by specifying compensation responsibilities for heritage destruction and establishing ecological restoration and damage compensation systems. A cross-departmental coordination mechanism should be established, including a provincial-level joint conference system for agricultural heritage conservation chaired by the deputy governor in charge, with participation from relevant departments such as the Provincial Department of Agriculture and Rural Affairs, Provincial Department of Culture and Tourism, Provincial Department of Natural Resources, Provincial Department of Ecology and Environment, Provincial Department of Housing and Urban-Rural Development, Provincial Department of Education, and Provincial Department of Finance. A departmental responsibility list system should be implemented to clarify specific duties, establish joint law enforcement mechanisms, form cross-departmental task forces, develop joint enforcement procedures, and conduct coordinated operations. This will create strong legal deterrence to effectively curb violations, foster interdepartmental collaboration, and provide robust legal safeguards and institutional support for agricultural heritage conservation.

Clarify policy objectives and enhance interdepartmental coordination: Through the formulation of the unified "Hebei Province Agricultural Heritage Conservation and Development Plan", the guiding principles, fundamental tenets, and development objectives for agricultural heritage conservation are clarified. This plan coordinates the conservation and development strategies and key tasks across all heritage sites, establishes conservation measures and implementation plans, specifies funding arrangements and safeguard mechanisms, and develops a timeline and roadmap for plan execution to provide unified planning guidance. Regular joint meetings on agricultural heritage conservation are convened to deliberate major policies, resolve critical issues in conservation efforts, coordinate conservation projects and funding, monitor implementation progress, share best practices, and establish a coordinated working mechanism.

To enhance the policy framework, we must conduct a comprehensive review of existing agricultural heritage protection policies, evaluate their implementation effectiveness, identify conflicts and inconsistencies, revise conflicting policies, repeal outdated regulations, supplement missing policies, and refine incomplete ones. Establish unified policy implementation standards, develop operational guidelines, implement supervision mechanisms, and create feedback systems to ensure coordinated policy execution. A unified management platform should be established, including a provincial-level agricultural heritage protection information system that integrates departmental data systems for information sharing and collaborative operations. This platform will provide decision support and public services through functions like information visualization, data analysis, operational management, and policy recommendations. Utilizing advanced technical architectures and development platforms, standardized data and interface protocols will be implemented to ensure system stability, improve management efficiency, and facilitate seamless information sharing and business coordination.

Establishing a Long-term Protection Mechanism and Strengthening Legal Safeguards: To ensure stable funding, a fiscal input mechanism will be established by incorporating conservation funds into the fiscal budget. Provincial, municipal, and county-level governments will integrate agricultural heritage protection budgets, with a mechanism for funding growth aligned with economic development. Clear requirements will be set for the proportion of conservation funds in fiscal expenditures, and a dedicated account management system will be implemented. A provincial-level special fund for agricultural heritage protection will be established, specifying its sources and usage scope, along with a management system for fund utilization. A three-tiered fiscal sharing mechanism will be implemented, with proportions determined by regional economic development levels, providing preferential support to economically underdeveloped areas. A transfer payment mechanism will be established to ensure the stability and reliability of conservation funds.

Refine the inheritor system by establishing certification standards and procedures, creating a nomination mechanism, and conducting certification processes. Develop an inheritor archive management system, formulate training plans, and organize professional development programs. Establish practice bases to support inheritor activities, implement incentive policies with appropriate subsidies and rewards, and provide career development opportunities. Implement an honor system, develop skill inheritance plans, establish mentorship relationships, conduct inheritance activities, evaluate effectiveness, and ensure the effective transmission and development of traditional crafts.

To strengthen the monitoring and evaluation system, provincial-level monitoring centers will be established with dedicated monitoring stations at heritage sites, equipped with monitoring devices and personnel. A data reporting system will be implemented, along with a scientific evaluation index framework. Evaluation standards and methodologies will be developed, accompanied by established procedures and quality control mechanisms. Annual comprehensive assessments will be conducted, supplemented by periodic specialized evaluations and timely emergency assessments. An evaluation archive management system will be implemented, alongside risk identification and early warning systems. Emergency response plans and countermeasures will be formulated, supported by a robust emergency response mechanism. Damage assessment and restoration mechanisms will be established to ensure timely monitoring of conservation status and prompt resolution of identified issues.

Strengthen law enforcement oversight by establishing provincial-level agricultural heritage protection teams. Key heritage sites shall be equipped with specialized enforcement agencies staffed by qualified personnel. A comprehensive system shall be implemented, including training protocols, standardized procedures, and quality control mechanisms for enforcement documentation. Regular inspections and targeted campaigns shall be conducted, supported by a case investigation mechanism and an effectiveness evaluation system. Internal supervision shall be reinforced alongside public oversight,

with mechanisms for NPC (National People's Congress) and judicial supervision. These measures collectively uphold legal authority and curb unlawful activities.

Improving the Implementation Mechanism to Facilitate Collaborative Efforts

Optimizing the Cross-Departmental Coordination Governance Structure: Through establishing a departmental responsibility list, a comprehensive review of the duties involved in agricultural heritage conservation is conducted, clarifying each department's specific responsibilities and authority boundaries. The Provincial Department of Agriculture and Rural Affairs oversees overall coordination, technical guidance, and project management. The Provincial Department of Culture and Tourism is responsible for cultural preservation, intangible cultural heritage inheritance, and tourism development. The Provincial Department of Natural Resources manages land use, ecological conservation, and spatial planning. The Provincial Department of Ecology and Environment handle environmental protection, pollution control, and ecological monitoring. The Provincial Department of Housing and Urban-Rural Development is in charge of rural and town preservation, construction management, and urban planning. The Provincial Department of Education is responsible for educational promotion, talent development, and technological support. Work requirements and standards for each department are specified, and a supervision mechanism for duty fulfillment is established to clarify responsibilities and avoid overlapping duties.

A cross-departmental coordination committee will be established, chaired by the provincial vice governor in charge, with deputy chairpersons appointed from relevant department directors and bureau chiefs. Members include departmental leaders and experts. The committee's office will be located at the Provincial Department of Agriculture and Rural Affairs. Its responsibilities include formulating major policies for agricultural heritage conservation, coordinating solutions to cross-departmental challenges, allocating major projects and funds, monitoring policy implementation, sharing best practices, and establishing a coordinated working mechanism.

Enhance communication channels by establishing a cross-departmental information sharing platform to achieve system interoperability. Implement a data exchange and sharing mechanism while ensuring information security and privacy protection. Each department shall designate dedicated liaison officers with clearly defined responsibilities, establish a training system, and conduct regular liaison activities. Progress updates and critical information shall be communicated promptly, with shared best practices and coordinated solutions for common issues. Regular joint research activities shall be conducted to gain in-depth understanding of operational realities, address key challenges, and produce research reports with actionable recommendations, thereby facilitating effective information sharing and communication.

Establish a supervision and evaluation mechanism by formulating cross-departmental assessment indicators, clarifying evaluation standards and procedures, and creating a mechanism for utilizing evaluation results. Conduct regular assessments and evaluations, establish internal supervision mechanisms, accept public oversight, and implement supervision mechanisms through the People's Congress, judicial oversight, commendation and reward systems, accountability systems, notification and criticism systems, rectification and supervision systems, problem rectification systems,

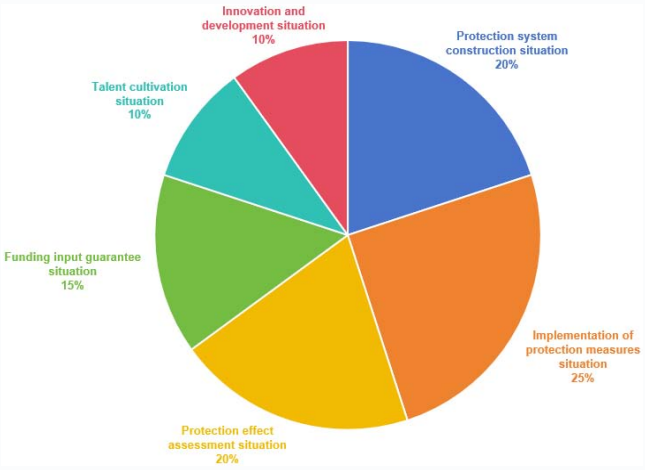


Figure 2: Protection indicators of agricultural cultural heritage.

continuous improvement mechanisms, experience promotion systems, and innovation incentive mechanisms to form an effective incentive and restraint system.

Enhancing Grassroots Implementation Motivation and Capacity: By improving the assessment system, we should add the index of agricultural cultural heritage protection to the government performance assessment system (see Figure 2), establish the assessment procedure and requirements, establish the assessment results application mechanism, link it with the government performance, as a reference for the selection and appointment of cadres, link it with the fund allocation, establish the reward and punishment mechanism, and improve the attention of the grass-roots government to the protection work.

To strengthen capacity building, we will implement tiered and categorized training programs, including county-level cadre training, township cadre training, and technical personnel training. The curriculum will cover fundamental knowledge of agricultural heritage conservation, relevant laws and policies, conservation technologies, management and coordination skills, as well as innovative development concepts. Training methods will be diversified, combining centralized and decentralized approaches, theoretical learning with practical field visits, in-province training with out-of-province study, and offline with online learning. Provincial training bases and heritage site training points will be established, equipped with necessary facilities and staffed by qualified trainers to significantly enhance the conservation awareness and capabilities of grassroots cadres.

Enhance support by increasing funding for grassroots initiatives, providing preferential assistance to economically underdeveloped regions, and establishing a sustainable funding mechanism. Strengthen oversight of fund utilization, develop a technical support service system, and offer technical guidance and consulting services. Promote advanced conservation technologies, establish demonstration sites, and dispatch technical experts to grassroots communities. Create a technical exchange mechanism, conduct training programs, and implement talent incentive policies. Simplify project approval procedures, provide preferential policy support, and establish effective implementation mechanisms to deliver robust support to grassroots levels.

Establish incentive mechanisms by creating agricultural heritage

conservation awards and organizing regular commendation events with both material and spiritual rewards. Develop standardized reward criteria and honor titles for conservation efforts through periodic evaluations. Enhance publicity campaigns to foster a supportive environment, while providing development opportunities and platforms. Support capacity-building training programs and establish career advancement pathways with preferential policies. Improve working conditions, enhance compensation packages, refine social security systems, address practical challenges, and ultimately boost grassroots engagement.

Establishing a Scientific Assessment Mechanism: To establish a scientific evaluation mechanism, a comprehensive assessment indicator system should be developed, encompassing core dimensions such as protection system indicators (legal framework development, policy refinement, organizational management), protection measures indicators (planning formulation, implementation of measures, project execution), protection effectiveness indicators (quality of protection, inheritance outcomes, socio-economic benefits), and safeguarding condition indicators (financial investment, talent support, technical assistance). A scientific evaluation standard system should be established, combining qualitative and quantitative assessment criteria with clear weight distribution and grading for each indicator. A diversified evaluation methodology should be constructed, utilizing field surveys, questionnaires, data analysis, and expert reviews to ensure the scientific validity and reliability of evaluation results. Standardized evaluation procedures should be implemented through a well-structured organizational framework. Provincial-level evaluation leadership groups should be established, along with expert panels and evaluation offices, with clearly defined responsibilities. Detailed evaluation workflows and implementation plans should be developed, covering preparation, execution, and result generation. An evaluation quality control mechanism should be implemented, including quality standards, regular inspections, and archival management to ensure standardized and orderly evaluation processes. Results utilization should be strengthened by linking evaluation outcomes to policy adjustments, resource allocation, performance incentives, and accountability. Timely feedback mechanisms should be established to address identified issues and propose improvements. A time-bound rectification system should be implemented, requiring clear timelines for corrective actions, progress tracking, and effectiveness evaluation. A rectification tracking ledger should be maintained, with regular inspections to leverage the guiding and improvement role of evaluations. Establish a dynamic adjustment mechanism by building a monitoring and early warning system with a dedicated monitoring network, while formulating standardized monitoring indicators and early warning protocols. Implement regular assessments through annual evaluations and targeted review systems. Maintain an assessment archive management system that undergoes timely updates based on evaluation outcomes, evolving circumstances, practical needs, and effectiveness assessments. Conduct experience summaries to disseminate best practices, innovate operational models, and establish a sustainable mechanism for continuous improvement and dynamic adaptation.

Strengthening the Support and Guarantee System

Improving the Mechanism of Financial Investment and Funding Guarantee: To strengthen financial support, a funding growth mechanism will be established. Provincial governments shall allocate no less than 50 million yuan annually for agricultural heritage conservation, with an annual funding growth rate matching fiscal revenue growth. Municipalities and counties must provide matching funds at least 50% of the provincial share, while economically underdeveloped regions may receive reduced matching ratios. All conservation funds will be budgeted, with provincial, municipal, and county governments incorporating them into annual budgets. A dedicated fund account system will ensure dedicated use, supported by supervision mechanisms including regular inspections, performance evaluations, and targeted funding for three globally significant agricultural heritage sites. Key projects will receive at least 20 million yuan annually, managed through coordinated fund allocation, emergency response mechanisms, and tiered funding standards. Funding levels will be adjusted based on heritage site importance, conservation objectives, implementation progress, and effectiveness assessments to ensure stable and reliable financial support.

Establish a diversified funding mechanism by formulating policies to encourage private capital participation in conservation efforts. Develop a benefit-sharing framework and provide preferential policies for private investors [19]. Build a service system for private capital involvement, collaborate with financial institutions to develop loan products for conservation projects, and establish a financing guarantee mechanism with preferential interest rates. Implement insurance protection mechanisms for conservation projects, apply for international organization funding, and participate in global conservation initiatives. Establish international cooperation and exchange mechanisms, set up a public welfare fund for agricultural heritage conservation, mobilize social donations, and implement fund management systems with supervision mechanisms to create a diversified funding landscape.

To establish an ecological compensation mechanism, policies for protecting agricultural heritage through ecological compensation shall be formulated, with clear principles and standards, specified compensation methods and procedures, and a funding guarantee mechanism. The compensation system shall include: vertical compensation (from higher to lower levels), horizontal compensation (beneficiary regions compensating protected regions), special-purpose compensation (for specific projects), and comprehensive compensation (combining multiple approaches). Additionally, management systems for compensation funds, projects, and effectiveness evaluation shall be established, along with supervision mechanisms. This will establish a robust ecological compensation framework to promote sustainable protection and development.

Strengthening Talent Team Building: To strengthen the talent development framework, we will optimize the training system by establishing specialized programs in higher education institutions. Specifically, we will collaborate with Hebei Agricultural University to launch the Agricultural Cultural Heritage Conservation program, Hebei Normal University to offer Cultural Conservation and Management, and Hebei University of Economics and Trade to develop Tourism Management (Cultural Heritage Track). This initiative includes creating professional curricula and practical teaching systems, while establishing talent cultivation bases. Key facilities will be set up at the Provincial Academy of Agricultural Sciences for heritage conservation research, the Provincial Cultural Relics Research Institute for heritage protection training, and heritage sites for hands-on education. A university-local cooperation mechanism will be implemented to develop systematic training programs for administrators, technicians, and heritage inheritors. The comprehensive training system will cover provincial, municipal,

county-level, and heritage site-specific tiers, ultimately building a robust talent pipeline to expand the professional workforce.

Enhance in-service training by developing provincial, municipal, and county-level training programs, as well as heritage site-specific training plans. Establish a systematic training archive management system and implement categorized training programs for leaders, managers, technical personnel, and the general public. Innovate training approaches through centralized, decentralized, on-site, and online formats. Create training bases at provincial, municipal, county, and heritage site levels to significantly improve the professional competence of existing personnel.

Establish incentive mechanisms through salary incentives, a rational compensation system, and performance-based rewards to enhance professional staff's remuneration. Develop special allowance programs and career development incentives by providing growth opportunities and platforms, supporting academic advancement, vocational training, and international exchanges. Create recognition systems through professional honors and regular commendation events, while strengthening publicity to foster a positive environment. Improve working conditions, refine social security systems, address practical challenges, and implement support mechanisms to motivate talent retention and attract outstanding professionals.

Strengthening Technological Support and Informatization Platform Development: To significantly enhance innovation capabilities, the initiative will increase technological investment by establishing a dedicated fund for agricultural heritage conservation. This fund will allocate no less than 20 million yuan annually, with a management system and supervision mechanism in place. It will support various projects, including basic research, applied technologies, demonstration programs, and talent development. Key measures involve building provincial-level innovation platforms, establishing heritage site technology workstations, and creating industry-academia-research collaboration platforms. International cooperation platforms will also be developed, alongside fostering tech enterprises through incubation mechanisms and preferential policies. A comprehensive service system for tech enterprises will be established to drive innovation.

We will advance digital preservation through establishing provincial-level digital protection platforms, developing heritage site management systems, and creating standardized digital protection protocols. Key initiatives include: conducting digital data collection, compiling foundational heritage information, digitizing traditional craftsmanship, creating digital exhibitions of cultural heritage, and documenting conservation processes. By integrating advanced technologies such as VR (virtual reality), AR (augmented reality), big data analytics, and AI, we will establish comprehensive protection mechanisms encompassing digital preservation systems, management frameworks, service models, and monitoring protocols. These efforts will significantly enhance the overall effectiveness of digital preservation.

To establish an innovation mechanism, we will develop industry-academia-research collaboration frameworks by partnering with the Chinese Academy of Sciences, China Agricultural University, Hebei Agricultural University, and other higher education institutions. This includes forming technology innovation alliances such as the Agricultural Heritage Conservation Alliance, Digital Conservation Alliance, Traditional Craftsmanship Inheritance Alliance, and Sustainable Development Alliance. We will implement a comprehensive system for technology transfer, featuring a platform, service network, incentive mechanisms, and safeguard measures. Intellectual property protection will be strengthened through enhanced awareness, management systems, and patent applications. Additionally, a technical secret protection mechanism will be established to create an integrated innovation ecosystem that combines industry, academia, and research.

Promote advanced technologies by establishing a comprehensive technology dissemination system encompassing provincial, municipal, county, and heritage site levels. Implement training programs for managers, technicians, farmers, and the general public. Develop demonstration projects including technology application, model innovation, industrial development, and sustainable development initiatives. Establish mechanisms for technology promotion, institutional frameworks, demonstration systems, technical support, and evaluation to enhance the adoption of advanced technologies.

Conclusion

As a historic agricultural powerhouse with three UNESCO-listed agricultural heritage sites and multiple nationally recognized agricultural heritage sites, Hebei Province has established a robust foundation for heritage preservation and development. Through establishing institutional frameworks, creating multi-departmental collaborative management systems, implementing targeted conservation projects, and exploring industrialization pathways, the province has not only achieved effective protection of heritage resources, preservation of traditional craftsmanship, and ecological enhancement, but also stimulated local economic growth. For instance, the annual output value of Kuan Cheng chestnut industry has reached 690 million yuan, significantly boosting farmers' incomes and rural vitality, marking a phased success in balancing conservation efforts with economic benefits.

Meanwhile, the system's operation has exposed core weaknesses: at the institutional level, there is a lack of specialized legal support, fragmented policies with poor goal alignment; at the implementation level, insufficient cross-departmental coordination, inadequate grassroots capacity and motivation, and an underdeveloped evaluation mechanism; at the support level, deficiencies in funding, talent, and technological resources. These issues constrain the sustainable development of agricultural heritage conservation.

Moving forward, Hebei Province's agricultural heritage conservation must overcome existing bottlenecks through systematic reforms to drive high-quality development, revitalizing its millennia-old farming civilization in the new era. Institutional development requires accelerating specialized legislation to establish a well-structured policy framework with clear hierarchies and seamless coordination. This will codify protection responsibilities, standardized protocols, and long-term mechanisms into legal frameworks, reducing reliance on temporary policies and achieving institutionalized, routine conservation practices. Through unified top-level design, a balanced approach should be adopted to reconcile protection with development, short-term benefits with long-term value, ensuring policy focus on dynamic inheritance and sustainable utilization of heritage. Governance efficiency demands breaking down departmental barriers and grassroots challenges to create a collaborative governance model with clear accountability. Leveraging

digital platforms for cross-departmental resource sharing and efficient collaboration, heritage conservation should be incorporated into government performance evaluations. Through professional training, resource allocation, and incentive mechanisms, grassroots stakeholders' enthusiasm and execution capabilities can be activated to ensure effective implementation of conservation measures. Simultaneously, a scientific assessment system should be established to continuously improve protection quality through dynamic monitoring and precise adjustments. Finally, a diversified and coordinated support network must be built to provide comprehensive safeguards. Expand funding channels to establish a financing mechanism primarily supported by government investment with broad social capital participation, thereby enhancing fund utilization efficiency. Improve talent cultivation and recruitment systems by optimizing university programs, providing on-the-job training, and improving compensation packages to build a highly skilled workforce deeply rooted in grassroots communities. Strengthen technology-driven empowerment through digital heritage conservation, deepen industry-academia-research collaboration, and promote advanced conservation technologies to improve the precision and sustainability of heritage protection.

In the long run, Hebei Province should foster deeper integration between agricultural heritage and rural revitalization, ecological conservation, and cultural-tourism synergy, transforming heritage resources into distinctive advantages for rural development. By exploring cultural significance, building unique brands, and innovating industrial models, we can achieve a virtuous cycle of cultural preservation, ecological protection, and economic growth. Agricultural heritage should thus become a vital force in inheriting China's excellent traditional culture and empowering comprehensive rural revitalization, writing a new chapter in the protection and development of agrarian civilization.

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References

1. Han Z, Xie L, Wang Y, et al. Research on the protection and inheritance of agricultural heritage projects in Hebei Province. Science of Crop Production. 2020, (23), 51–53.
2. Wei Y, Sun Y, Min Q, et al. Research on sustainable agricultural ecotourism based on agricultural multifunctionality: A case study of traditional vineyards in Xuanhua, Hebei. In Proceedings of the 16th Annual Conference of the China Association for Science and Technology (pp. 1–8). Yunnan, China: China Association for Science and Technology. (2014, May 24–26).
3. Li H & He X. Characteristics, value, and conservation practices of the dryland terrace system in Shexian County, Hebei. Heritage and Preservation Research. 2019, 4(1), 45–52.
4. Tan K, Min Q & Wu D. Analyzing the natural endowment of agricultural heritage sites from a soil-climate perspective: A case study of the Kuancheng traditional chestnut cultivation system. Chinese Agricultural Science Bulletin. 2021, 37(7), 88–94.
5. Standing Committee of Hebei Provincial People's Congress. Regulations on the protection of intangible cultural heritage in Hebei Province. 2014.
6. Department of Finance of Hebei Province. Notice on the early allocation of special funds for provincial-level intangible cultural heritage protection in 2024 (Document No. Jicai Jiao [2023] No. 138). 2023.
7. Department of Finance of Hebei Province. Notice on the allocation of special funds for provincial-level cultural relics protection in 2024. 2024.
8. Department of Agriculture and Rural Affairs of Hebei Province. Notice Regarding the Excavation and Application Work for the Sixth Batch of China's Important Agricultural Heritage Systems [S]. 2021.
9. Guan C, Mei B, Liu H & et al. Research on the value and conservation of agricultural cultural heritage of Xuanhua traditional vineyards. Journal of Beijing Vocational College of Agriculture. 2020, 34(1), 19–24.
10. He L & Min Q. Research on agricultural biodiversity of traditional vineyards in Xuanhua District [Conference paper]. The 16th Annual Conference of China Association for Science and Technology, Yunnan, China. (2014, May).
11. Sun Y, Min Q & Zhang L. Sustainable agro-ecotourism based on agricultural multifunctionality: A case study of traditional vineyards in Xuanhua, Hebei [Conference paper]. The 16th Annual Conference of China Association for Science and Technology, Kunming, Yunnan, China. (2014, May).
12. Jiang H, Zhao J & Chen W. Conservation and utilization of orchard systems in important agricultural heritage systems: A case study of traditional vineyards in Xuanhua, Hebei. Yantai Fruits. 2021, (4), 24–26.
13. Kuancheng Chestnuts: Gaining Honor Through "Tradition". Hebei Daily, 2023-11-23.
14. Liu Z & Liu H. Crisis and inheritance of traditional Chinese farming culture: Based on a survey of 1000 farmers in Hebei Province. Agricultural Network Information. 2016, (12), 11–13.
15. Song Z, Liu S, Li Z & et al. Protection of rural cultural heritage in transitional society: Realistic dilemmas and countermeasure research [Conference paper]. The 6th Hebei Provincial Annual Conference on Social Sciences, Shijiazhuang, Hebei, China. Min Qingwen, Zhang Dan, He Lu, et al. Major Advances in Research and Conservation Practices of Agricultural Heritage Systems in China. Resources Science, 2011, 33(6): 1018-1024.
16. Min Q, Zhang D, He L & et al. Main progress in the research and conservation practices of China's agricultural heritage systems. Resources Science. 2011, 33(6), 1018.
17. Yang Y & Wu Y. The contemporary value and conservation of China's outstanding traditional farming culture. China Rural Survey. 2025, (4), 59–79.
18. Wang J, Lu L, Xu H & et al. Modernization of tourism community governance from the perspective of rural revitalization: Scientific connotation, key issues, and strategic pathways. Journal of China Ecotourism. 2025, 15(1), 1–18.
19. Sun J & Sun J. Research on improving the conservation system of germplasm resources in agricultural heritage sites. Research of Agricultural

Modernization. 2024, 45(2), 188–196.

20. Tan K & Min Q. Climatic suitability for tourism development in rice terrace agricultural heritage sites. Journal of Ecology and Rural Environment. 2022, 38(12), 1501–1507.

21. Li M, Chang X, Wu C & et al. Research on financial support strategies for intangible cultural heritage protection in Hebei Province. Inner Mongolia Science Technology & Economy. 2021, (10), 46–48.