

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
http://ageconsearch.umn.edu
aesearch@umn.edu

Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

Inheritance, Innovation and High-quality Development of Tea Industry in Xianning City, Hubei Province

Li GAO¹, Zhiguo SUN^{1*}, Yueqiu HE¹, Deying ZHANG², Jiandong LAI¹, Zhen CHEN²

1. Centre for Cultural Studies on Southern Hubei Province, Hubei University of Science and Technology, Xianning 437100, China; 2. Xianning Ethnic and Religious Affairs Committee, Xianning 437100, China

Abstract Xianning City is a main tea producing area in Hubei Province, the capital of "border-selling tea" in China, and an important starting point for the Ten-Thousand-Mile Tea Road across the Eurasian continent. This paper studies the tea industry in Xianning from the aspects of top 100 counties of tea industry, important agricultural cultural heritage, famous Chinese historical and cultural villages, China's time-honored brands, major brands, and designated production enterprises of border-selling tea. Besides, it introduces intellectual property resources of the tea industry from traditional knowledge, biological genetic resources, new plant varieties, patents, geographical indications, trademarks, etc. Then, it analyzes major problems in the inheritance, innovation and high-quality development of Xianning tea, especially the border-selling tea. Finally, it comes up with constructive recommendations of starting the cultural inheritance and development project and upgrade project of the tea industry to build the capital of China's border-selling tea.

Key words Capital of border-selling tea, Ten-Thousand-Mile Tea Road, Tea industry, Inheritance of tea culture, Innovation driving, High-quality development

1 Introduction

The 14th Five-Year Plan for Key Projects of Chinese Excellent Traditional Culture Inheritance and Development Project issued by Publicity Department of the CPC Central Committee formulated a roadmap for inheritance and development in the next five years, and identified 23 key projects. Among them, there are 15 original projects including Intangible Cultural Heritage Inheritance and Development Project, Chinese Traditional Village Protection Project, China's Time-honored Brand Protection and Development Project, and Chinese Cultural Resources Census Project, and 8 new projects including the Farming Culture Inheritance and Protection Project, and Famous Historical and Cultural Cities, Towns and Villages, Blocks and Historical Buildings Protection and Utilization Project, etc.

It is necessary to strengthen intellectual property right protection and promote high-quality development^[1-3]. Specifically, creative intellectual property rights such as invention patents, utility model patents, and new plant varieties can escort scientific and technological innovation; traditional knowledge, biological genetic resources and other heritage intellectual property rights are conducive to inheriting the traditional culture; intellectual property rights such as geographical indications, trademarks, design patents, *etc.* are helpful for promoting regional brand cultivation^[4-7]. The *Strategic Plan for Rural Revitalization of Hubei*

Province (2018 – 2022) proposed to strengthen the "Top 10 Industrial Chains with Output Value of Hundred (Ten) Billion Yuan" of agricultural products, and required giving full play to the basic advantages of Hubei's agricultural production, developing and expanding the entire industrial chain of oil crops, vegetables, crayfish, bulk freshwater fish, tea, etc. with output value exceeding 100 billion yuan and citrus, edible fungus, Chinese herbal medicines, kiwi fruit, and duck with output value exceeding 10 billion yuan.

Hubei Province is the fourth largest tea-producing province in China and the hometown of the Chinese tea saint Lu Yu. In order to promote the high-quality development of the tea industry and promote tea culture, on January 22, 2021, the 20th meeting of the Standing Committee of the 13th Hubei Provincial People's Congress passed the *Regulations of Hubei Province on Promoting the Development of the Tea Industry*, which regulates an overall path for promoting the development of the tea industry in Hubei Province in terms of general principles, planting and processing, quality control, brand building and industrial integration, support and services, legal responsibilities, and supplementary provisions.

Xianning City has a long history of tea cultivation and profound tea culture. It is the main tea producing area in Hubei Province, the capital of border-selling tea in China, and an important starting point for the Ten-Thousand-Mile Tea Road across the Eurasian continent [8-12]. Its tea industry is a pillar industry of agriculture and an important source of income for tea farmers in mountainous areas (especially the Mufu Mountain area). In recent years, focusing on building a tea industry with an output value of 10 billion yuan, Xianning City has been making effort to work well in tea industry, and has become the largest producing area of blue brick tea in China.

In view of the above situation, through of field survey and lit-

Received: May 6, 2022 Accepted: August 3, 2022
Supported by Special Soft Science Research Project for Hubei Province Science and Technology Innovation Talents and Services (2022EDA060).

Li GAO, master, lecturer, research direction: traditional culture and famous, excellent and special products.

 \ast Corresponding author. Zhiguo SUN, PhD. , professor, research direction: agricultural intellectual property and rural revitalization strategy.

erature collection, we surveyed the tea industry and its intellectual property resources in Xianning City, to seek the strategies for inheritance, innovation and high-quality development of the tea industry in Xianning in the context of the strategy of strengthening the country with intellectual property and the strategy of rural revitalization.

2 Overview of tea industry in Xianning City

Located at the northern foot of Mufu Mountain, Xianning City has a moderate climate and fertile soil, making it a very suitable area for tea growing. With a long history of tea planting and profound accumulation of tea culture, Xianning is a famous tea hometown in the whole country, the hometown of Chinese blue brick tea, the hometown of Chinese rice brick tea, and the main producing area of Hubei famous and excellent spring tea and borderselling tea. At present, the development of the tea industry in Xianning is at the right time. It is necessary to combine the history and the current situation to focus on the development of blue brick tea and rice brick tea, stable development of famous green tea, and moderate development of other tea products such as black tea, white tea and yellow tea.

Xianning City actively responds to the Belt and Road Initiative, plans activities of bringing blue brick tea to borders, to seize the border market; it also plans to re-take "Ten-Thousand-Mile Tea Road" and "Silk Road for Tea" activities, seize the foreign trade market, make Xianning tea brand based in Hubei, famous in the whole China, and fragrant in the world.

- 2.1 Main tea producing areas in Hubei Province Xianning City is located in Mufu Mountain tea area, Hubei Province. Among the 13 main tea producing cities and prefectures in Hubei Province, it ranks fourth after Enshi Prefecture, Yichang City and Shiyan City. Among the 47 main tea producing counties in Hubei Province, Chibi City, Xian'an District, Chongyang County, Tongcheng County, Tongshan County and Jiayu County under the jurisdiction of Xianning City are all included.
- **2. 2 Top 100 counties of tea industry in China** In the top 100 counties of tea industry in China in 2021, Chibi City and Xian'an District ranked 17th and 78th, respectively.
- 2.3 Advantageous areas of agricultural products with Chinese characteristics Among the 308 national-level advantageous areas of agricultural products with Chinese characteristics, only 31 advantageous areas are related to tea industry. Among them, for the tea industry in Xianning City, there is Chibi blue brick tea advantageous area of agricultural products with Chinese characteristic.
- 2.4 China's important agricultural cultural heritage system. The Yangloudong Blue Brick Tea Cultural Heritage System in Chibi City of Hubei Province is an important agricultural cultural heritage system in China. It is located at the north foothill of the Mufu Mountains and the low hilly area at the junction of Hunan and Hubei provinces. It is one of the three sources of the Ten-Thousand-Mile Tea Road. Yangloudong Blue Brick Tea has a long history, originated in the Tang Dynasty and flourished in the Ming and Qing dynasties. It is globally recognized origin of blue brick tea and rice brick tea. In the Ming and Qing dynasties, Yangloudong in Chibi City became an international famous town with tea.

- 2.5 Famous historical and cultural villages in China Yangloudong Village in Zhaoliqiao Town of Chibi City has been reputed as the source of the Ten-Thousand-Mile Tea Road in Eurasia and the hometown of brick tea. In 2010, it was awarded the fifth batch of "Famous Historical and Cultural Villages in China" by the Ministry of Housing and Urban-Rural Development and the National Cultural Heritage Administration. Yangloudong Village has been cultivating and processing tea since the imperial edict during Taihe period in the Tang Dynasty to plant camellia. It is the origin of "Songfeng tea". As the source of the Ten-Thousand-Mile Tea Road in Eurasia in the early Jiajing period of Ming Dynasty, its tea-making industry was highly developed.
- 2.6 Important starting point of the linear cultural heritage Ten-Thousand-Mile Tea Road Xianning City is the important starting point of the linear cultural heritage Ten-Thousand-Mile Tea Road. The Ten-Thousand-Mile Tea Road is a long-distance trade route between ancient China, Mongolia and Russia with tea as a bulk commodity. It is another important international trade route that emerged in Eurasia after the decline of the Silk Road. It connects the core areas of farming civilization and grassland nomadic civilization in the north and south of the Asian continent, and extends to Central Asia and Eastern Europe, becoming a veritable Ten-Thousand-Mile Tea Road.
- **2.7 Main tea brands** The main brands of border-selling tea are "Zhaoliqiao", "Yangloudong", "Huochetou", "Paifang", "Dongzhuang", "Juxingshun" and so on.

The main brands of green tea are "Songfeng Tea", "Haofeng Tea", "Jinfeng Tea", "Chuanyu Tea", "Yuminglu", "Enan Jianchun", "Luozhen Tea", "Jiugong Baihao", "Fenghuang Shejian" and "Jiugong Baihao Tea", etc.

- 2.8 China's time-honored brands and Hubei's time-honored brands In the tea industry of Xianning City, there is one China's time-honored brand, Zhaoliqiao (registered "Chuan" trademark, Hubei Province Zhaoliqiao Brick Tea Co., Ltd.), and 6 Hubei's time-honored brands: Yangloudong (Yangloudong Tea Industry Co., Ltd.), Huochetou and Paifang (Hubei Province Zhaoliqiao Brick Tea Co., Ltd.), Dongzhuang (Hubei Province Dongzhuang Tea Industry Co., Ltd.), Juxingshun (Hubei Province Zhaoliqiao Brick Tea Co., Ltd.), and Songfeng (Chibi City Yangloudong Tea Farm).
- 2.9 Capital of "border-selling tea" in China The border-selling tea, also known as compressed tea, commonly known as brick tea, is made of black tea, old green tea and its suitable tea as raw materials, and is processed into brick-shaped or other shapes by typical processes such as stacking, steaming and compressing. Since the bulk varieties of this type of tea are mainly sold to the ethnic areas in the border, it is called "border-selling tea". Xianning City is the capital of border-selling tea in China. Since ancient times, the minority herdsmen in the border "would rather eat without grain than without tea". The "border-selling tea" is their life tea, which has become a bond of national integration, and has made great contributions to the stability of the borders and the stability and unity of the country. Chibi blue brick tea is a kind of border-selling tea in China. It has a history of more than 1 000 years since the Tang Dynasty. It has experienced

rise, prosperity, decline, rebirth and re-prosperity. Especially after the founding of New China, it specially formulated the border-selling tea production and operation policy of "national pricing, designated production, centralized management, and planned allocation", to guarantee the stable supply of border-selling tea and meet the living needs of ethnic minorities. Xianning's border-selling tea and its related industries have become improved and grown in the establishment and continuous reform of China's socialist economic system, and have been continuously developed, showing great vigor. At present, among 16 designated production enterprises of border-selling tea in Hubei Province, Xianning City has 10 (Table 1).

Table 1 Ten designated production enterprises of border-selling tea in Xianning City

City (County/ District)	Numbers	Designated production enterprises
Chibi City	5	Hubei Province Zhaoliqiao Brick Tea Co., Ltd.
		Hubei Province Dongzhuang Tea Industry Co. , Ltd.
		Yangloudong Tea Industry Co. , Ltd.
		Hubei Province Chibi City Sizhuang Tea Industry
		Co., Ltd.
		Hubei Province Zhaoliqiao Brick Tea Co. , Ltd.
Xian'an	3	Xianning City Baizhuang Tea Industry Co. , Ltd.
District		Xianning City Baidun Shenchuan Brick Tea Factory
		Xianning City Sanshanchuan Tea Co., Ltd.
Chongyang	2	Hubei Yizhong Spring Tea Technology Co. , Ltd.
County		Hubei Liwo Tea Industry Co., Ltd.

3 Intellectual property resources related to tea industry in Xianning City

The intellectual property resources related to the tea industry mainly include: traditional knowledge, biological genetic resources, new plant varieties, patents, geographical indications, trademarks, *etc.* [13-14].

- 3.1 Traditional knowledge Xianning City is rich in the tea industry brand and traditional craftsmanship, including traditional agricultural planting knowledge, traditional production craftsmanship, traditional tea medicine knowledge, etc. "Zhaoliqiao brick tea making craftsmanship "belongs to the national (traditional craftsmanship) intangible cultural heritage project; "Hubei Chibi Yangloudong Brick Tea Cultural Heritage System" was approved as an important agricultural cultural heritage system in China; Zhaoliqiao belongs to China's time-honored brand, and Yangloutong, Huochetou, Paifang, Dongzhuang, Juxingshun, and Songfeng belong to Hubei's time-honored brands.
- 3.2 Biological genetic resources Xianning City has a long history of tea planting and is rich in tea biological genetic resources, mainly including Echa 1 (*C. sinensis* cv. 'Echa 1'), Echa 2 (*C. sinensis* cv. 'Echa 2'), Echa 3 (*C. sinensis* cv. 'Echa 3') and other local tea biological varieties. Besides, in Jianchun Tea Base, Huangjingtang Village, Tingsiqiao Town, Xian'an District, it has established a tea biological variety garden, and introduced more than 60 excellent tea varieties, including

Fuding Dabai, Zhenong 113, Longjing 43, Zhongcha 108, Anji White Tea, Golden Guanyin, and Huangjinya (Golden Bud), etc.

- **3.3** New plant varieties By now, 80 new varieties of agricultural plants for tea have been approved. However, the holders of the variety rights of these new plant varieties have nothing to do with Xianning City.
- **3.4 Patents** So far, Xianning City has obtained only 425 national patents involving tea products (Table 2). Among them, there are 120 invention patents, accounting for 28.24%; 261 utility model patents, accounting for 61.41%; 44 industrial design patents, accounting for 10.35%.

Table 2 National patents involving tea products in Xianning City (number of items)

City (County/District)	Inventions	Utility model	Industrial design	Total
Chibi City	27	75	25	127
Xian'an District	64	127	5	196
Chongyang County	9	3	0	12
Tongcheng County	8	51	10	69
Tongshan County	2	4	3	9
Jiayu County	10	1	1	12
Xianning City (total)	120	261	44	425

- **3.5** Geographical indications China's geographical indication protection system is imperfect, and there are currently three main systems: (i) the geographical indication product protection system of China National Intellectual Property Administration; (ii) the geographical indication trademark (certification trademark or collective trademark) registration system of Trademark Office of China National Intellectual Property Administration; (iii) the agricultural product geographical indication registration system of the Ministry of Agriculture and Rural Affairs. In accordance with *EU-China Agreement on Cooperation on and Protection of Geographical Indications*, 275 China's geographical indication products will be protected within the EU.
- **3.5.1** Geographical indication products. In Xianning City, only "Yangloudong brick tea (cave tea)" was protected by geographical indication products of the China National Intellectual Property Administration from June 27, 2011. The protection scope is five towns and townships in Chibi City: Zhaoliqiao Town, Xindian Town, Cha'anling Town, Shenshan Town, and Yujiaqiao Township.
- **3.5.2** Geographical indication trademark. A geographical indication trademark is a mark that indicates that a commodity comes from a certain region, and the specific quality, reputation or other characteristics of the commodity are mainly determined by the natural factors or human factors of the region, and the geographical indication trademark belongs to the commodity collective trademark or commodity certification trademark.

In the Trademark Office of China National Intellectual Property Administration, the tea industry in Xianning City has not yet registered a collective trademark, but only registered 6 geographical indication certification trademarks, involving "Chibi Blue Brick Tea", "Chibi Rice Brick Tea", "Chongyang White Tea", "Tongcheng Haolu Green Tea", a total of four brands (Table 3).

Table 3 Geographical indication certification trademarks for tea products in Xianning City

Trademark name	Registration No.	Registration time//YMD	Registration party
Chibi Blue Brick Tea	15279687	2015 - 03 - 27	Chibi City Tea Association
Chibi Blue Brick Tea	20024336	2017 - 12 - 20	
Chibi Rice Brick Tea	15279686	2015 - 03 - 27	
Chibi Rice Brick Tea	20024335	2017 - 12 - 20	
Chongyang White Tea	40753632	2021 - 11 - 06	Chongyang County Tea Association
Tongcheng Haolu Green Tea	33153879	2021 - 06 - 20	Tongcheng County Wild Tea Research Institute

- **3.5.3** Geographical indications of agricultural products. Xianning City has only registered four types of geographical indications for agricultural products in the Ministry of Agriculture and Rural Affairs: "Xian'an Brick Tea", "Jiugongshan Tea", "Baizhangtan Tea" and "Tongshan Black Tea" (Table 4).
- **3.5.4** Protection of China's geographical indications in the EU. In accordance with EU-China Agreement on Cooperation on and Protection of Geographical Indications, 275 China's geographical indication products will be protected within the EU. However, for Xianning City, only one kind of tea product will be protected, that

is Chibi Blue Brick Tea.

3.6 Trademarks Xianning City has registered many common trademarks in the tea industry, but has not registered the collective trademarks. As shown in Table 3, Xianning City has registered 6 certification trademarks in the tea industry. Its tea industry has 4 advantageous trademarks in Hubei Province: "Chuan", "Yangloudong", "Chibi Blue Brick Tea", "Shengshenchuan and its pictures"; and 3 well-known trademarks in China: "Chibi Blue Brick Tea", "Tongtaihe" and" "Jiugongshan and its pictures".

2022

Table 4 Geographical indications of tea agricultural products in Xianning City

Agricultural products	Registration year	Registration party	Protection scope of geographical indications
Xian'an brick tea	2015	U	7 towns in Xian'an District: Guihua Town, Maqiao Town, Damu Township, Shuangxiqiao Town, Heshengqiao Town, Tingsiqiao Town, and Henggouqiao Town
Jiugongshan tea	2019	Tongshan County Jiugongshan Tea Association	5 towns in Tongshan County: Xiapu Town, Chuangwang Town, Jiugongshan Town, Yang Fanglin Township, and Honggang Town
Baizhangtan tea	2020	Tongcheng County Specialities Association	11 towns in Tongcheng County: Magang Town, Wuli Town, Junshui Town, Guandao Town, Shadui Town, Maishi Town, Tanghu Town, Sizhuang Township, Daping Township, Shinan Town, and Beigang Town
Tongshan black tea	2021	Tongshan County Jiugongshan Tea Association	5 towns in Tongshan County: Xiapu Town, Chuangwang Town, Jiugongshan Town, Yangfanglin Township, and Honggang Town

- 4 Main problems in the inheritance, innovation and development of Xianning's tea industry with output value of 10 billion yuan
- Weak promotion and inheritance of tea culture culture is a treasure of Chinese culture. It contains the beauty of broad and profound Chinese traditional culture, such as philosophy, aesthetics, and rhythm. Drinking tea can enhance personal cultivation and promote the construction of spiritual civilization. The collection and sorting of tea culture in Xianning is not sufficient, especially for black tea, green tea, sweet-scented osmanthus tea, etc. The geographical indications of some famous and excellent tea productions are not clear enough. The protection of the intangible cultural heritage of the traditional tea making craftsmanship is weak, and in the list of national and provincial intangible cultural heritage projects, there is only "Zhaoliqiao Brick Tea Making Craftsmanship". Yangloudong Blue Brick Tea Cultural Heritage System is only China's important agricultural cultural heritage system, but still not Globally Important Agricultural Heritage System.
- **4.2** Bottleneck of purification and rejuvenation of existing varieties and cultivation of new varieties In recent years, Xianning City has lagged far behind in the cultivation of new varieties.

ties of tea plants, has not obtained new varieties of agricultural plants in the tea group, and has not been able to create patents in terms of biological breeding of tea. Both the local tea biological varieties and the imported tea biological varieties are seriously degraded, and the existing varieties need to be purified and rejuvenated. Tea biological breeding has become the bottleneck of key core technology.

- **4.3 Few high-value patents** Xianning City (especially Chongyang County, Tongshan County, and Jiayu County) has obtained few national patents related to tea, only 425 in the city. There is a lack of high-value national patents, especially national invention patents and national utility model patents in the fields of tea biological breeding (class A01H in the International Patent Classification (IPC)) and deep processing of tea products.
- **4.4 Incomplete protection of geographical indications** The tea industry in Xianning City has only one geographical indication product, 6 geographical indication certification trademarks, and 4 geographical indications of agricultural products. Actually, it only involves eight kinds of teas, including Chibi blue brick tea, Chibi rice brick tea, Xian'an brick tea, Tongcheng Haolu green tea, Baizhangtan tea, Jiugongshan tea, Tongshan black tea, and Chongyang white tea. However, many famous and excellent tea

products have not yet implemented the intellectual property protection of geographical indications. All these geographical indications lack the corresponding national standards, industry standards and local standards, which seriously hinders the standardization process of geographical indication tea. At present, there is still no national geographical indication product protection demonstration area in Xianning City.

Except Chibi blue brick tea and Chibi rice brick tea, each of which has 22 market entities that can legally use their geographical indication certification trademarks, the corresponding special marks of other geographical indications (geographical indication products, geographical indication trademarks, and geographical indications of agricultural product) in the tea industry of Xianning City are not used much. For Yangloudong brick tea (cave tea), only three market entities, Yangloudong Tea Industry Co., Ltd., Hubei Province Dongzhuang Tea Industry Co., Ltd., and Hubei Province Chibi City Zhaoliqiao Brick Tea Co., Ltd. can legally use the special marks for their geographical indication products. Tongcheng Haolu Green Tea and Chongyang White Tea have 3 and 0 market entities legally using their geographical indication certification marks. In short, the protection of geographical indications of tea industry in Xianning City is not perfect.

- 4.5 Few registrations of regional public trademark By the end of 2021, Xianning City has registered very few regional public trademarks (collective trademarks, certification trademarks) in the tea industry, and no collective trademark has been registered yet. A total of only 6 certification trademarks were registered, which hindered the protection of geographical indication marks and the integration of regional brands, and hindered the building of Hubei Province's dominant trademark and China's well-known trademark.
- **4. 6** Weak competition of border-selling tea in mainland market The blue brick tea and rice brick tea produced in Xianning City (especially Chibi City) are the dominant varieties of border-selling tea, which are special commodities for ethnic minorities. Over the years, the blue brick tea and rice brick tea have enjoyed a good reputation in Inner Mongolia, Xinjiang, Qinghai, Tibet and other ethnic minority areas, become famous brand and have strong market competitiveness. However, their reputation and competitiveness in the mainland market are weak, and the sales volume in the mainland is very limited. At present, the border-selling tea cannot compare with Anhua dark tea.
- 5 Strategies for inheritance, innovation and highquality development of Xianning's tea industry with output value of 10 billion yuan
- 5.1 Starting the cultural inheritance and development project of Xianning's tea industry with output value of 10 billion yuan to lead the promotion and inheritance of Chinese excellent traditional culture Xianning City should start the cultural inheritance and development project of its tea industry with output value of 10 billion yuan, to systematically collect and sort out the cultural heritage of tea, the geographical indications and human factors of famous and excellent tea products, strive for national and provincial intangible cultural heritage projects, set up intangible

cultural heritage productive protection bases, and promote intangible cultural heritage inheritance and development projects. Besides, it is necessary to strengthen the protection of Chinese historical and cultural villages and traditional Chinese villages Yangloudong Village, China's important agricultural cultural heritage system Chibi Yangloudong brick tea cultural heritage system, China's time-honored brand, and Hubei's time-honored brand, strive for globally important agricultural cultural heritage system, and promote the protection and utilization of historical and cultural cities, towns and villages, blocks and historical buildings, the protection of traditional Chinese villages, the inheritance and protection of farming culture, and the protection and development of China's time-honored brands.

In addition, Xianning City should cooperate with other important producing areas of brick tea to strive for the protection of the world intangible cultural heritage of brick tea making craftsmanship, and combine other important starting points to strive for the world linear cultural heritage of Ten-Thousand-Mile Tea Road, and lead the promotion and inheritance of Chinese excellent traditional culture with tea culture.

5.2 Strengthening the technological innovation of the tea industry and promoting the development of the tea seed indus-

try It is recommended to collect and sort out local tea biological varieties, vigorously introduce excellent tea biological varieties from other places, establish tea germplasm gardens, and enrich the diversity of tea genetic resources. Xianning City should introduce. select, screen and promote a batch of special-purpose tea tree varieties and those tea varieties that can make green tea or black tea in accordance with the actual situation of the tea areas, improve the tea structure and increase the biodiversity; strengthen the low-level reform of old tea gardens, and build tea gardens with fine varieties, ecological tea gardens, and high-efficiency tea gardens. In addition, Xianning City should establish an innovation platform for production, education, research and use, strengthen the purification and rejuvenation of existing varieties, the cultivation of new varieties, and the deep processing of products, etc., and cultivate excellent new varieties, create high-value national patents, promote the development of the seed industry, and break through the bottleneck of key core technologies.

5.3 Improving the protection of geographical indications and building regional public brands Xianning City should collect and sort out the human factors and natural factors of the geographical indications of famous and excellent tea products, strive to implement the protection of geographical indication products of the China National Intellectual Property Administration, register the geographical indication collective trademarks and certification trademarks of Trademark Office of China National Intellectual Property Administration, and register the geographical indications of agricultural products in the Ministry of Agriculture and Rural Affairs, and strive for geographical indication protection of more famous and high-quality teas.

Besides, it is recommended to formulate and improve the national standards, industry standards, or local standards for geographical indication products, geographical indication trademarks, and geographical indications of agricultural product corresponding

to geographical indications, and lead the standardization process of the tea industry in Xianyang City with geographical indications.

Xianning City should encourage large professional house-holds, family farms, farmers' cooperatives, and enterprises in the scope of geographical indication protection to use geographical indication products, or geographical indication trademarks, or special marks corresponding to geographical indications of agricultural products, and integrate regional brands with geographical indications, so as to comprehensively build regional public brands.

5.4 Strengthening the protection and application of intellectual property rights, and developing the knowledge economy of the tea industry. It is recommended to cultivate the intellectual property protection awareness of new agricultural business entities and scientific and technological innovation entities, and strengthen the creation of invention patents, utility model patents, and new plant varieties, open up the entire chain of intellectual property rights, improve the level of intellectual property creation, application, protection, management, and service, enhance the cultural and technological connotations of tea products, and develop the knowledge economy (especially the intellectual property economy) of the tea industry.

Besides, it is necessary to strengthen the protection and application of intellectual property rights, make full use of traditional knowledge, biological genetic resources and other heritage intellectual property rights, inherit traditional culture, take full advantage of invention patents, utility model patents, new plant varieties and other creative intellectual property rights, to escort scientific and technological innovation; make full use of intellectual property rights such as geographical indications, trademarks, and design patents to promote the cultivation of regional public brands.

Also, Xianning City should start with tea brand products, cultivation management, processing and other technical regulations, international certification standards, *etc.*, formulate local standards, group standards, and enterprise standards, promote the clean, standardized and large-scale tea processing, and enhance the quality of tea and the international influence of the regional brand.

5.5 Building China's capital of border-selling tea and forging the sense of community for the Chinese nation It is necessary to objectively face the market situation of the main production areas of border-selling tea in China, focus on supporting 10 designed production enterprises of border-selling tea, strengthen the high-quality supply of border-selling tea, special commodities for ethnic minorities, build a "heart-to-heart bridge" to promote exchanges and integration of various ethnic groups, improve the mainland market, open up the "Silk Road" market, and comprehensively build China's border-selling tea capital, taking Chibi blue brick tea, Chibi rice brick tea, Xian'an brick tea, etc. as characteristic advantageous products, combined with border-selling tea culture.

Xianning City should strengthen national unity education in Xianning's tea industry, create a demonstration area for national unity and progress (demonstration unit), and promote the high-quality development of designated production enterprises of border-selling tea in the new era by taking forging the sense of community for the Chinese nation as the main line.

- 5.6 Adhering to the concept of green development and improving the quality and safety system It is recommended to deeply implement the Two Mountains Theory (lucid waters and lush mountains are golden mountains, proposed by Xi Jinping, general secretary of the Communist Party of China Central Committee), strengthen the environmental protection and land restoration of tea gardens, and build high-quality tea gardens. Xianning City should adhere to the concept of "prioritizing ecological conservation and boosting green development", stabilize production area, speed up green development, accelerate supply-side structural reform, improve scientific and technological content, and promote the production of "ecological high-quality tea". In addition, it is necessary to further reduce the fluorine content of brick tea. strengthen the certification of pollution-free agricultural products, green food certification, and organic food certification, formulate quality standards and safety measures, reinforce the standardized production and improve the quality and safety system.
- 5.7 Boosting the integrated development of industries and making effort to create national-level brick tea characteristic and advantageous industrial clusters. Xianning City should concentrate on the development of the whole industry chain, explore the medicinal value and cultural value of tea, develop tea nutritional products and health products and tourism products, extend the industrial chain, enhance the value chain, promote the integrated development of tea planting industry, tea product processing industry, tea culture industry, tea tourism industry, and tea health care industry.

It is recommended to create a national "one village, one brand" demonstration village and town with tea as special and excellent product, and build a strong town with tea industry. Besides, it is necessary to improve the tea industry management organization system, coordinate the agglomeration of elements such as finance, land use, and information services, and cultivate industrialized association in reliance on the model of "government-led + enterprise-led + cooperatives + family farms and ranches + technological support + financial assistance + trade logistics + farmers and herdsmen", to make effort to create national-level brick tea characteristic and advantageous industrial clusters.

5.8 Launching the upgrade project of Xianning's tea industry with output value of 10 billion yuan and promoting high-quality development of the tea industry Xianning City should adhere to the innovative development concept, launch the upgrade project of Xianning's tea industry with output value of 10 billion yuan, implement the *Regulations of Hubei Province on Promoting the Development of the Tea Industry*, and promote the high-quality development of the tea industry in Xianning City from cultural heritage, technological innovation, regional public brand, intellectual property, China's capital of border-selling tea, green development concept, and industrial integration development, etc.

References

 XIA JB. Building intellectual property right power and promoting highquality economic development [N]. China Economic Times, 2021-10-13 (003). (in Chinese).

- nicipal solid waste disposal [J]. Henan Building Materials, 2016(6): 61-62. (in Chinese).
- [2] XU HY. Development report on urban domestic refuse treatment industry in 2017[J]. China Environmental Protection Industry, 2018(7): 5-9. (in Chinese).
- [3] YANG CM, JIANG W, WANG XX. Treatment of domestic waste landfill pollution [J]. Science and Technology Innovation Herald, 2008 (16): 91. (in Chinese).
- [4] CAO MH. Pollution control and ecological restoration of landfill site[J]. China Science and Technology Information, 2010 (13); 21 – 23. (in Chinese).
- [5] ZHAO PP. Current situation and countermeasures of domestic waste treatment in small towns[D]. Lanzhou: Lanzhou University, 2011. (in Chinese).
- [6] ZHANG L, ZHANG JB. Assessment to groundwater pollution in Zhangluoping landfill site[J]. Journal of Changchun Institute of Technology (Natural Sciences Edition), 2012, 13(1): 65-68. (in Chinese).
- [7] MENG BF. Current situation and development trend of urban waste resource treatment technology in China[J]. Recycling Research, 2003(5): 22 24. (in Chinese).
- [8] WANG YH, ZHAO YS. Pollution of municipal landfill to groundwater in Beitiantang, Beijing [J]. Hydrogeology and Engineering Geology, 2002 (6): 45-47, 63. (in Chinese).
- [9] EMAMI S, NEGAHDAR A, ZAREI M. Investigating the influence of the leachate from the municipal solid waste on the mechanical and environmental properties of soil around the landfill (case study: The municipal landfill located in Ardabil-Iran) [J]. Arabian Journal for Science and Engineering, 2019, 44(10): 8417 – 8428.
- [10] JIANSHE Y, XIAO C, CHAO C, et al. Emerging sustainable technologies for remediation of soils and groundwater in a municipal solid waste landfill site; A review[J]. Chemosphere, 2019(227); 681-702.
- [11] YAO JG, LONG W, LI QY. The investigation and control measures of grounder water pollution in the simple landfill of Sichuan red beds [J]. Sichuan Environment, 2018, 37(3): 79 – 84. (in Chinese).
- [12] LIU X, MA XG, LEI HJ, et al. Risk assessment of groundwater pollution in typical landfill sites in Beijing [J]. Journal of North China University of Water Resources and Electric Power (Natural Science Edition), 2012, 33(4): 97-100. (in Chinese).
- [13] YU X, KANG T, ZHENG XD, et al. Study on groundwater quality impacted by Chenjiachong sanitary landfill [J]. South-to-North Water

- Transfers and Water Science & Technology, 2017, 15(5): 82 88. (in Chinese)
- [14] LIANG YX, LIU X, YU LJ. Current situation and trend of groundwater pollution in China[J]. Science & Technology Information, 2007 (27): 584. (in Chinese).
- [15] LI YJ, HUANG QZ. Strengthen ecological protection and promote the construction of beautiful villages in Tibet[J]. The Farmers Consultant, 2018(21): 24. (in Chinese).
- [16] CIREN LB, DUO J, LOU ZY, et al. Talking about the current situation of urban domestic waste in Tibet[J]. Tibet's Science and Technology, 2007(10): 26-27, 33. (in Chinese).
- [17] XIAO M, MA ZQ. Pollution assessment on groundwater of an informal waste landfill; Case study of an informal waste landfill in certain district [J]. Southern Energy Construction, 2017, 4(3): 115-118. (in Chinese).
- [18] ZHANG L, NIE JX, ZHAO ZY, et al. Field survey on the heavy metal concentration and health risk assessment in the soil with plastic residue [J]. Nonferrous Metal Materials and Engineering, 2017, 38(1): 35 – 39. (in Chinese).
- [19] LIU SM, LIU ZC. Fluoride and arsenic levels in drinking water in rural areas and health risk assessment [J]. Chinese Preventive Medicine, 2015,16(6): 446-449. (in Chinese).
- [20] AGENCY U. Guidelines for carcinogen risk assessment [A] // Risk Assessment Forum [C]. US EPA, Washington, DC., 2005.
- [21] ZHANG Y, HUANG JS, ZHAO L, et al. Health risk assessment for residents exposure to groundwater in a formal landfill [J]. Environmental Science and Management, 2015, 40(9): 172 176. (in Chinese).
- [22] USEPA. Risk assessment guidance for superfund [M]. Washington, DC.; Environmental Protection Agency, 1989.
- [23] USEPA. Exposure factors handbook: Volume I. General factors [M]. Washington, DC.: Environmental Protection Agency, 1997.
- [24] ZHANG Z. Study on health risk assessment of groundwater pollution in Ningyang Chemical Industry Park [D]. Jinan: University of Jinan, 2016. (in Chinese).
- [25] XU Y, MA YM, ZHANG X, et al. Health risk assessment of groundwater drinking pathway around a municipal solid waste landfill[J]. Ecology and Environmental Sciences, 2021, 30(3): 558-568. (in Chinese).
- [26] CHENG QG, WANG HD, LI Y, et al. Characteristics and health risk of heavy metals in groundwater for a waste landfill and surrounding areas in Liaoning Province [J]. Journal of Shenyang University: Natural Science, 2021, 33(5): 374 – 381, 429. (in Chinese).

(From page 20)

- [2] WAN LL, CHEN YR. The impact of intellectual property protection on high-quality economic development: Empirical data from 30 Chinese provinces from 2008 to 2017 [J]. Science and Technology Management Research, 2021, 41(17): 136-143. (in Chinese).
- [3] ZHANG ZC. Strengthening intellectual property protection and supporting high quality development [J]. Flag, 2020(10): 57 58. (in Chinese).
- [4] SUN YP, LIU YS, CHENG Z, et al. Study on the inheritance, innovation and development of *Scutellaria baicalensis* Georgi in the treatment of COVID-19[J]. Medicinal Plant, 2020, 11(4): 3-9.
- [5] SUN YP, SUN YL, CHENG Z, et al. Intellectual property protection and high quality development of Radix Glycyrrhizae for treatment of COV-ID-19[J]. Asian Agricultural Research, 2020, 12(5): 1-6.
- [6] SUN YP, SUN YL, SIMA XQ, et al. Protection of intellectual property and authenticity of Chinese herbal medicine Chrysanthemum morifolium [J]. Medicinal Plant, 2019, 10(4): 9-15, 19.
- [7] SUN YP, WU Z, SIMA XQ, et al. Study on agricultural intellectual property protection and high-quality development of traditional Chinese medicine of ginseng[J]. Asian Agricultural Research, 2019, 11(6): 5-11.

- [8] Research Team of Traditional Process and Technology Protection Engineering Group of Special Commodities for Ethnic Minorities in China. Border-selling Tea[M]. Beijing: the Ethnic Publishing House, 2008. (in Chinese)
- [9] TAO DC. The ups and downs of green (rice) brick tea production in modern China[J]. Agricultural History of China, 2021, 40(5): 56 – 69. (in Chinese).
- [10] WAN JH. Tea sources of Ten-Thousand-Mile Tea Road in Hunan and Hubei; Anhua and Yangloudong[J]. Wuhan Wenshi Ziliao, 2016(5); 43-47. (in Chinese).
- [11] YU Y, LIU F. The role and development tendency of Yangloudong tea area in Sino-Russian tea trade[J]. Value Engineering, 2015, 34(27): 24-26. (in Chinese).
- [12] SUN ZG, DING GP, XIE Y, et al. Geographical indication and cultural heritage of Yangloudong brick tea[J]. Journal of Zhejiang Agricultural Sciences, 2012(10): 1474 – 1477. (in Chinese).
- [13] ROBERT M, LIU F. Intellectual Property Strategy for Business [M]. Beijing; China Legal Publishing House, 2020. (in Chinese).
- [14] SONG M, ZHAO YF. Agricultural Intellectual Property (Second Edition) [M]. Beijing; China Agriculture Press, 2018. (in Chinese).