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Geographical Indication Intellectual Property Protection and Regional Public Brand Construction of Rape Industry in China

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Abstract As China's largest oil crop, rape occupies a central position in ensuring the safety of China's cooking oil supply. This paper introduced China's rapeseed industry from the rape type, rapeseed production, planting area, national rapeseed production protected area, rape national dominant characteristic industrial clusters, and rapeseed industry, *etc.* Besides, from the aspects of geographical indication products, geographical indication trademarks, and geographical indications of agricultural products, this paper discussed the intellectual property protection of geographical indications of rape, rapeseed, and rapeseed oil in China. It analyzed the main problems such as the lag in the formulation of relevant standards for geographical indications and the low use of special signs for geographical indications, and finally came up with recommendations including building a public brand of geographical indications and expanding foreign exchanges of geographical indications.

Key words Rape, Rapeseed, Rapeseed oil, Geographical indication, Regional public brand, China

1 Introduction

China is highly dependent on imports of edible vegetable oils, importing 10.39 million t in 2021. The rapeseed oil accounts for about 50% of domestic cooking oil. As China's largest oil crop, rape occupies a central position in ensuring the safety of China's cooking oil supply^[1–3]. In recent years, China has always attached great importance to the production of rapeseed oil, an important agricultural product. The winter rape region is actively promoting the "rice rape rotation" model and making full use of idle fields to grow rape^[4–5]. Cabbage-type rape has a dual purpose of oil and vegetables, and is a main vegetable in China.

Geographical indications, as important agricultural intellectual property mainly aimed at specialty products, are an effective tool for building regional public brands of specialty products and also an important resource for traditional cultural carriers and market competition^[6–11]. The *14th Five-Year Plan for the Protection and Use of Geographical Indications* issued by China National Intellectual Property Administration proposes to consolidate the foundation for the protection and management of geographical indications, improve the level of protection and management of geographical indications, strengthen the brand building of geographical indications, develop characteristic industries of geographical indications, and expand foreign exchanges of geographical indications. In view of this, we discussed the protection of intellectual

property rights of geographical indications of China's rapeseed industry and the construction of regional public brands.

2 Rapeseed industry

2.1 Rape types The rape cultivated in China generally can be divided into *Brassia campestris* L., *Brassica juncea* (L.) Czern. et Coss., and *Brassica napus* L.^[12–13]. *B. campestris* and *B. juncea* are native to China and have been cultivated for more than 8 000 years. *B. campestris* used to be widely grown in the north and south, but now it is mainly used for vegetables, and also planted for rapeseed. *B. juncea* was widely planted in the southwest plateau and northwest dry areas, but now the planting area has become smaller and smaller. *B. napus* has been introduced to China for nearly 90 years and is replacing the locally originated *B. campestris* and *B. juncea* in the main rapeseed production area.

2.2 Rapeseed yield and rape planting area According to the 2022 *China Rural Statistics Yearbook*, China's total rapeseed production is 14.714 million t, with an acreage of 69.916 thousand ha, and an average single output of 956.0–3 111.4 kg/ha in various regions, and a national average of 2 104.5 kg/ha. As shown in Table 1, the top ten rapeseed production provinces in China are Sichuan, Hubei, Hunan, Anhui, Guizhou, Jiangxi, Jiangsu, Yunnan, Chongqing, and Henan; the top ten provinces with planting area are Sichuan, Hunan, Hubei, Jiangxi, Guizhou, Anhui, Chongqing, Yunnan, Inner Mongolia, and Jiangsu; the top ten provinces with the yield are Shanghai, Jiangsu, Xinjiang, Henan, Shandong, Sichuan, Anhui, Tibet, Gansu, and Hubei.

2.3 National rapeseed production protection area Guiding Opinions of the State Council on the Establishment of Functional Food Production Areas and Protection Areas for the Production of

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Important Agricultural Products issued on March 31, 2017 proposed focusing on the Yangtze River basin, defining 4.667 million ha of rapeseed production protection areas (4 million ha of rice and rapeseed multiple crop planting areas). Later, the winter rapeseed production protection areas were determined, including 1 million ha separately in Hubei and Hunan, 0.667 million ha in

Sichuan, 0.466 million ha separately in Anhui and Jiangxi, 0.2 million ha in Jiangsu, 0.166 million ha in Chongqing, and 0.133 million ha separately in Guizhou and Henan. At present, Sichuan, Hubei and Hunan have significantly increased the rape planting area.

Table 1 Rapeseed yield and rape planting area in regions of China

Region	Total yield//t	Planting area//10 ³ ha	Per unit area yield//kg/ha	Region	Total yield//t	Planting area//10 ³ ha	Per unit area yield//kg/ha
Sichuan	3 386 631	1 354.1	2 501.0	Hebei	60 079	32.0	1 877.5
Hubei	2 517 789	1 094.0	2 301.5	Tibet	45 632	19.0	2 401.7
Hunan	2 302 509	1 351.6	1 703.5	Guangxi	33 557	35.1	956.0
Anhui	910 589	372.9	2 441.9	Shanxi	27 943	18.8	1 486.3
Guizhou	808 703	446.7	1 810.4	Shandong	23 948	9.3	2 575.1
Jiangxi	733 565	504.5	1 454.0	Fujian	10 232	6.3	1 624.1
Jiangsu	563 844	193.1	2 920.0	Guangdong	7 593	4.4	1 725.7
Yunnan	544 913	253.2	2 152.1	Ningxia	5 415	4.2	1 289.3
Chongqing	524 582	261.5	2 006.0	Shanghai	4 356	1.4	3 111.4
Henan	494 414	189.9	2 603.5	Liaoning	1 086	0.6	1 810.0
Shaanxi	389 738	178.4	2 184.6	Heilongjiang	275	0.2	1 375.0
Gansu	337 306	144.0	2 342.4	Tianjin	67	0.0	–
Inner Mongolia	322 447	223.9	1 440.1	Beijing	33	0.0	–
Qinghai	317 336	142.4	2 228.5	Jilin	–	0.0	–
Zhejiang	257 666	120.1	2 145.4	Hainan	–	0.0	–
Xinjiang	81 267	29.8	2 727.1				

Data source: 2022 China Rural Statistics Yearbook.

2.4 National rape advantage characteristic industrial clusters The Ministry of Agriculture and Rural Affairs and the Ministry of Finance launched the construction of national advantage characteristic industrial clusters in 2020, and so far a total of 140 construction lists have been issued in three batches. Among them, the winter rape has rapeseed industrial cluster in Jiangnan Plain, Hubei Province, rapeseed industrial cluster in Hunan Province, rapeseed industrial cluster in Sichuan Province, and mountain winter idle rapeseed industrial cluster in Guizhou Province; the spring rape has rapeseed industrial cluster in Qinghai Province.

2.5 Rape germplasm resources According to the national crop germplasm resource sharing platform, China has 8 498 kinds of rape germplasm resources. Among them, there are 3 640 varieties of *B. napus*rape, 2 809 varieties of *B. campestris*, 1 871 varieties of leaf mustard (*Brassica juncea* var. *foliosa* Bailey), 159 varieties of Ethiopian mustard (*Brassica carinata* A. Braun), and 19 varieties of black mustard (*Brassica nigra* L.). In China, there are 7 national and regional rape breeding bases: Xishui County, and Gucheng County in Hubei Province, Changshun County in Guizhou Province, Hanzhong City in Shaanxi Province, Shandan County and Minle County in Gansu Province, and Huzhu County in Qinghai Province; 8 national-level rape planting counties: Hengyang County in Hunan Province, Hengfeng County in Jiangxi Province, Santai County, Luojiang District and Jingyang District of, Deyang City in Sichuan Province, Tongnan District in Chongqing

Municipality, Mian County and Nanzheng District in Hanzhong City in Shaanxi Province. There are 5 national seed industry enterprises in the oil industry: Anhui Guohao Agricultural Technology Co., Ltd., Qingdao Huashi Seedling Co., Ltd., Henan Jinwoye Agricultural Development Co., Ltd., Zhongken Jinxiu Huanong Wuhan Technology Co., Ltd., Shaanxi Ronghua Agricultural Technology Co., Ltd.

China has authorized 304 new varieties of *B. napus*rape agricultural plants, involving 16 provinces (Sichuan, Guizhou, Hubei, Jiangsu, Anhui, Hunan, Shaanxi, Zhejiang, Henan, Yunnan, Shanghai, Guangdong, Jiangxi, Qinghai, Chongqing, and Gansu), a total of 82 variety rights holders, involving 39 research institutions, 33 enterprises, 7 universities and 3 individuals. However, the application announcement only involves 15 *B. campestris* variety, one *B. juncea* variety, and has not authorized new varieties of agricultural plants to originate locally *B. campestris* and *B. juncea*. There are 26 rape varieties in the *National Catalogue of Promotion of Excellent Crop Varieties* (2023), all of which are *B. napus*. Among them, there are 2 special varieties for spring rape: Qingza 5 and Qingza 12; spring rape and winter rape have 5 varieties: Fengyou 737, Huayouza 50, Huayouza 62, Huayouza 62R (anti-clubroot rape), Qinyou 1618; there are 19 special varieties for winter rape: Baoyou 150, Dadi 199, Fengyou 320 (short reproductive period rape), Fengyou 730, Fengyou 777, Ganyouza 8, Kangyou 3 (yellow seed high oleic acid rape), Huayouza 9,

Huayou 2129 (high oleic acid rape), Qinyou 10, Qingyou 3, Ningza 182, Chuanyou 81, Yangguang 2009, Yangguang 131 (short reproductive period rape), Zhongshuang 11, Zhongyouza 19, Zhongyouza 501, and Zheyou 50.

3 Geographical indications

At present, China’s geographical indication protection system is not perfect. There are three systems: (i) geographical indication products of the China National Intellectual Property Administration; (ii) geographical indication trademarks of the Trademark Office of the China National Intellectual Property Administration; (iii) geographical indications of agricultural products of the Minis-

try of Agriculture and Rural Affairs.

3.1 Geographic indication products Regardless of the winter rape area or the spring rape area, there is no rapeseed or rapeseed as the main production purpose of rape geographical indication products. Rape, which takes vegetables as the main production purpose and mainly produces rapeseed, is *B. Campestris*, which belongs to winter rape, has 3 varieties (Table 2): Zengcheng Late Caixin (Choy sum), Hongshan Caitai (rape), Suizhou Paopaoqing (wrinkled leaf black oil cabbage).

Rapeseed oil has 2 kinds of geographical indication products: Wuxue rapeseed oil and Boshang rapeseed oil of *B. napus* produced in winter rape areas (Table 3).

Table 2 Geographical indication products of rape in China’s vegetable industry

Product	Announcement time	Protection scope of geographical indications
Zengcheng Chicaixin	2010 – 11 – 23	7 towns (residential districts) in Zengcheng City, Guangdong Province: Paitan Town, Xiaolou Town, Zhengguo Town, Zhongxin Town, Zhucun Residential District, Licheng Residential District, and Zengjiang Residential District
Hongshan Caitai	2005 – 12 – 31	3 townships in Wuhan City, Hubei Province: Hongshan Township, Jiufeng Township, Huashan Town in Hongshan District
Suizhou Paopaoqing	2014 – 07 – 09	28 towns (residential districts) in Suizhou City, Hubei Province: Dongcheng Residential District, Xicheng Residential District, Nanjiao Residential District, Beijiao Residential District, Wandian Town, Hedian Town, Xihe Town, Luoyang Town, Fuhe Town, Zengdu Residential District; Anju Town, Lishan Town, Xinjie Town, Huantan Town, Junchuan Town, Wanhe Town, Shangshi Town, Tangxian Town, Liulin Town, Wushan Town, Hongshan Town, Changgang Town, Sanligang Town, Wanfu Town, Yindian Town, Huaihe Town, Caodian Town, Xiaolin Town, and Gaocheng Town in Suixian County

Table 3 Geographical indication products of rapeseed oil in China

Rape region	Product	Announcement time	Protection scope of geographical indications
Winter rape region	Wuxue rapeseed oil	2014 – 07 – 09	12 townships (residential districts) in Wuxue City, Hubei Province: Wuxue Residential District, Zhanjiang Residential District, Tianzhen Residential District, Wanzhanghu Residential District, Meichuan Town, Yuchuan Town, Huaqiao Town, Dajin Town, Siwang Town, Shifosi Town, Dafasi Town, and Longping Town
	Boshangrapeseed oil	2017 – 11 – 15	Linxiang District in Lincang City, Yunnan Province

3.2 Geographical indication trademarks The rapeseed and rapeseed for production purposes have 6 geographical indication trademarks (Table 4), all of which are *B. napus*. Among them, there are 4 varieties of winter rape: Xiangyang rapeseed, Babao

rape, Chunmancheng Jinhua (registration No. 38068095), Chunmancheng Jinhua (registration No. 38074098); 2 varieties of spring rape: Xinlong rape, Mozhu Gongka small rapeseed.

Table 4 Geographical indication trademark of rapeseed industry in China

Category	Geographical indication trademark		Registration entity	Registration No.	Registration time
Winter rape	Xiangyang rapeseed	Rapeseed Planting and Processing Association, Xiangzhou District, Xiangyang City, Hubei Province		17011802	2016 – 11 – 06
	Baoba rape	Lusheng Specialty Industry Development Center, Songzi City, Hubei Province		17189441	2018 – 02 – 27
	Chunmancheng Jinhua	Yuzhuyuan Agricultural and Sideline Products Professional Cooperative, Gaochun County, Jiangsu Province		38068095	2020 – 03 – 06
	Chunmancheng Jinhua	The same above		38074098	
Spring rape	Xinlong rape	Rural Management Station of Xinlong County, Sichuan Province		16379664	2016 – 10 – 20
	Mozhu Gongka small rapeseed	Agricultural Technology Extension Station of Gongka County, Mozhu, Tibet		22705320	2018 – 09 – 20

The rape, which uses vegetables as the main production purpose and also for producing rapeseed, is *B. campestris*, belonging to winter rape, and there are 10 varieties (Table 5): Zengcheng Caixin, Maocao Red Caitai (registration No. 13833910), Maocao Red Caitai (registration No. 14229283), Ehongshan Caitai, Hongshan Caitai (registration No. 12861108), Hongshan Caitai (registration No. 49743971), Yizheng Purple Caitai, Suizhou Paopaoqing, Zhongxiang Paopaoqing, and Midu Daqingcai.

Table 5 Geographical indication trademark of rape in China’s vegetable industry

Geographical indication trademark		Registration entity	Registration No.	Registration time
Zengcheng Caixin	Guangdong Zengcheng Vegetable Industry Association		8107346	2011 – 11 – 13
Maocao Red Caitai	Hubei Ezhou Urban and Rural Famous and Special Products Association		13833910	2014 – 09 – 06
Maocao Red Caitai	The same above		14229283	2015 – 03 – 27
Ehongshan Caitai	Hongshan Purple Caitai Industry Association, Hongshan District, Wuhan City, Hubei Province		3958379	2008 – 04 – 06
Hongshan Caitai	The same above		12861108	2014 – 04 – 20
Hongshan Caitai	The same above		49743971	2023 – 02 – 20
Yizheng Purple Caitai	Jiangsu Yizheng Vegetable Industry Association		35344023	2020 – 11 – 13
Suizhou Paopaoqing	Paopaoqing Technology Research Center, Suizhou City, Hubei Province		9813083	2012 – 03 – 27
Zhongxiang Paopaoqing	Traditional Food Research and Promotion Center of Zhongxiang City, Hubei Province		33986481	2020 – 10 – 06
Midu Daqingcai	Yunnan Midu County Agricultural Product Brand Association		20899895	2018 – 07 – 20

Rapeseed oil has 12 geographical indication trademarks (Table 6). Among them, 4 trademarks of *B. napus* rape produced in the winter rape area: Xiangyang rapeseed oil, Zhongxiang rapeseed oil, Yiling rapeseed oil, and Luoping rapeseed oil; 8 trademarks of *B. napus* rape produced in the spring rape area: Guyang rapeseed oil, Guide rapeseed oil, Menyuan rapeseed oil, Luhuo rapeseed oil, Rangtang rapeseed oil, Bomi rapeseed oil, Nimu rapeseed oil, and Pulan rapeseed oil.

Table 6 Geographical indication trademarks of rapeseed oil in China

Rape region	Geographical indication trademark		Registration entity	Registration No.	Registration time
Winter rape	Xiangyang rapeseed oil	Rapeseed Planting and Processing Association, Xiangzhou District, Xiangyang City, Hubei Province		17011803	2016 – 12 – 06
	Zhongxiang rapeseed oil	Hubei Zhongxiang Specialty Products Association		26327614	2019 – 02 – 20
	Yiling rapeseed oil	Yiling Rural Supply and Marketing Cooperative Economic Federation, Jiangdu District, Yangzhou City, Jiangsu Province		40520512	2021 – 08 – 13
	Luoping rapeseed oil	Yunnan Luoping County Oil Industry Association		7749427	2010 – 03 – 27
Spring rape	Guyang rapeseed oil	Specialty Products Industry Association of Guyang County, Baotou City, Inner Mongolia		22639850	2018 – 08 – 13
	Guide rapeseed oil	Agriculture and Animal Husbandry Comprehensive Service Center of Guide County, Qinghai		43975712	2022 – 02 – 20
	Menyuan rapeseed oil	Rapeseed Professional Association of Menyuan County, Qinghai		6217406	2009 – 12 – 13
	Luhuo rapeseed oil	Sichuan Luhuo County Agricultural Product Quality and Safety Center		33550709	2020 – 05 – 06
	Rangtang rapeseed oil	Agricultural, Animal and Aquatic Product Safety Monitoring Center, Bureau of Agriculture, Animal Husbandry and Water Affairs, Yutang County, Sichuan Province		28905717	2019 – 09 – 06
	Bomi rapeseed oil	Agricultural Technology Extension Service Station of Bomi County, Tibet		21869715	2018 – 01 – 27
	Nimu rapeseed oil	Agricultural Technology Extension Service Station of Nimu County, Tibet		22479959	2018 – 09 – 20
	Pulan rapeseed oil	Agricultural Technology Extension Service Station of Pulan County, Tibet		32665354	2020 – 10 – 06

3.3 Geographical indications of agricultural products For the rape with rape and rapeseed as the main production purposes, there are 7 geographical indications of agricultural products (Table 7). Among them, there are 3 geographical indications for winter rape type *B. napus*: Li County Shuangdi rapeseed, Jingmen rape, Wuxue shuangdi rape; there are 4 geographical indications for spring rape type *B. napus*: Hulunbuir rapeseed, Huzhu rapeseed, Menyuan small rapeseed, Zhaosu rape.

Rape, which uses vegetables as the main production purpose and also for producing rapeseed, is *B. campestris*, which belongs to winter rape, has 11 geographical indications of agricultural products (Table 8): Huarong Yellow and White Caitai, Hongshan Caitai, Jiuhua Red Caitai, Yizheng Purple Caitai, Lianzhou Caixin, Futian Caixin, Ningxia Caixin, Xingyi White Stem Qingcai, Wujiang Fragrant Qingcai, Baoying Hetao Wuqingcai, and Suizhou Paopaoqing.

Table 7 Geographical indications of agricultural products in China’s rapeseed industry

Type	Agricultural product	Registration entity	Protection scope of geographical indications	Registration year
Winter rape	Li County Shuangdi rapeseed	Li County Shuangdi rapeseed industry association	19 towns and subdistrict offices in Li County, Hunan Province: Ganxi Tanzhen Town, Huolianpo Town, Matoupu Town, Wangjiachang Town, Dayandang Town, Chengtoushan Town, Jinluo Town, Yanjing Town, Fuxing Town, Mengxi Town, Cennan Town, Linan Town, Guanyuan Town, Rudong Town, Xiaodukou Town, Liyang Subdistrict Office, Lidan Subdistrict Office, Lixi Subdistrict Office, and Lipu Subdistrict Office	2018
	Jingmen rape	Jingmen Agricultural Technology Extension Center	8 counties and districts in Jingmen City, Hubei Province: Dongbao District, High-tech Zone, Duodao District, Shayang County, Zhongxiang City, Jingshan County, Qujialing Management District, and Zhanghe New District, involving 53 towns and subdistrict offices	2020
	Wuxue shuangdi rape	Wuxue Agricultural Technology Extension Center	12 Shuangdi rape planting areas in Wuxue City, Hubei Province: Meichuan Town, Yuchuan Town, Dajin Town, Dafasi Town, Siwang Town, Shifosi Town, Huaqiao Town, Longping Town, Wuxue Subdistrict Office, Zhanjiang Subdistrict Subdistrict Office, Tianzhen Subdistrict Office, and Wanzhanghu Subdistrict Office	2015
Spring rape	Hulunbuir rapeseed	Hailar Agricultural and Ranching Administration	13 banners and districts in Hulunbuir City, Inner Mongolia: Hailar District, Manzhouli City, Zhalantun City, Yakeshi City, Genhe City, Erguna City, Arong Banner, Morin Dawa Daur Autonomous Banner, Oroqen Autonomous Banner, Ewenke Autonomous Banner, Xinbaerhu Left Banner, Xinbaerhu Right Banner, Chenbaerhu Banner, mainly 16 farms and ranches in Hailar Reclamation Area	2011
	Huzhu rapeseed	Huzhu Tu Autonomous County Agricultural Technology Extension Center	18 townships in Huzhu County, Qinghai: Wei yuan Town, Danma Town, Nanmenxia Town, Jiading Town, Wushi Town, Wufeng Town, Tangchuan Town, Hongyazigou Township, Hara Zhigou Township, Songdo Tibetan Township, Dongshan Township, Donghe Township, Donggou Township, Linchuan Township, Taizi Township, Xishan Township, Caijiabao Township, and Bazha Tibetan Township	2017
	Menyuan small rapeseed	Menyuan Autonomous County Agricultural Technology Extension Center	12 townships in Menyuan Autonomous County, Qinghai: Qingshizui Town, Haomen Town, Dongchuan Town, Quankou Town, Xitan Township, Beishan Township, Malian Township, Yintian Township, Huangcheng Township, Suji Township, Zhugu Township, and Xianmi Township	2015
	Zhaosu rape	Zhaosu County Agricultural Technology Extension Center	12 townships and ranches in Zhaosu County, Xinjiang: Zhaosu Town, Hongnahai Township, Akdala Township, Uzunbrak Township, Salkub Township, Kashagar Township, Kalasu Township, Chahan Wusu Mongolian Nationality Township, Shattkolgiz Nationality Township, Husongtuhal Mongolian Nationality Township, and Zhaosu Stud Farm, and Zhaosu Ranch, involving 73 villages	2013

Table 8 Geographical Indications of rape agricultural products in China’s vegetable industry

Agricultural product	Registration entity	Protection scope of geographical indications	Registration year
Huarong Yellow and White Caitai	Huarong County Vegetable Professional Cooperative	13 townships in Huarong County, Hunan Province: Hucheng Town, Xinhe Township, Shengfeng Township, Zhongnan Township, Nanshan Township, Caojun Town, Wanyu Town, Dongshan Town, Beijinggang Town, Sanfengsi Town, Zhihedu Town, Nianyuxu Town, and Songjiazui Town	2009
Hongshan Caitai	Hongshan Caitai Industry Association, Hongshan District, Wuhan City	7 residential districts (townships) in Hongshan District, Wuhan City, Hubei Province: Hongshan Residential District, Jiufeng Residential District, Qingling Residential District, Huashan Residential District, Bajifu Residential District, Zuoling Residential District, and Tianxing Township, involving 59 villages	2018
Jiuhua Red Caitai	Xiangtan Vegetable Association	8 townships in Xiangtan City, Hunan Province: Xiangshui Township, Yisuhe Town, Heling Town, Jiangshe Town, Shebu Town, Yangjiaqiao Town, Yintian Town, Shaoshan Township, involving 222 villages	2017
Yizheng Purple Caitai	Yizheng Vegetable Industry Association	11 towns (residential districts) in Yizheng City, Jiangsu Province: Zhenzhou Town, Xincheng Town, Xinji Town, Maji Town, Liuji Town, Chenji Town, Qingshan Town, Yuetang Town, Dayi Town, Tongshan Residential District, Shierwei Residential District, involving 136 villages	2020

(Continued)

Agricultural product	Registration entity	Protection scope of geographical indications	Registration year
Lianzhou Caixin	Lianzhou Crop Technology Extension Station	12 townships in Lianzhou City, Guangdong; Dalubian, Xingzi, Longping, Xijiang, Jiubei, Lianzhou, Xi'an, Dongpei, Fengyang, Bao'an, Yaoan, and Sanshui townships	2014
Futian Caixin	Futian Town Agricultural Technology Extension Station, Boluo County	17 villages in Futian Town, Boluo County, Guangdong Province; Xu Futian, Aoling, Shanxia, Lizhidun, Hengxitou, Yigang, Futian, Yingpanxia, Matian, Zhouyuan, Jigongkeng, Weiling, Lianhe, Liantanggang, Shixiang, Shishuxia, and Daogutian	2016
Ningxia Caixin	Ningxia Vegetable Production and Marketing Association	18 counties (districts) in Yinchuan City, Ningxia; Jinfeng District, Xixia District, Helan County, Yongning County in Lingwu City; Huinong District, Dawukou District, Pingluo County in Shizuishan City; Litong District, Qingtongxia City, Yanchi County in Wuzhong City; Shapotou District, Zhongning County, Haiyuan County in Zhongwei City; Yuanzhou District, Pengyang County, Xiji County, Longde County in Guyuan City	2018
Xingyi White Stem Qingcai	Xingyi Fruit Tree and Vegetable Technology Extension Station	22 townships (residential districts) in Xingyi City, Guizhou Province: Jushan Residential District, Fengdu Residential District, Mujia Residential District, Xiaiwutun Residential District, Wanfenglin Residential District, Pingdong Residential District, Maling Town, Weishe Town, Qingshuihe Town, Wusha Town, Baiwanyao Town, Qishe Town, Pengzha Town, Jingnan Town, Lubug Town, Xiongwu Township, Zhuchangping Township, Zerong Township, Dingxiao Town, Lutun Town, Zhengtun Town, and Wantun Town, involving 171 villages (communities)	2020
Wujiang Fragrant Qingcai	Wujiang Vegetable Association	4 towns (Qidu Town, Zhenze Town, Hengshan Town, and Taoyuan Town) and parts of 3 towns (Pingwang Town, Shengze Town, and Songling Town) in Wujiang City, Jiangsu Province.	2009
Baoying Hetao Wuqingcai	Baoying County Agricultural Technology Extension Center	The whole county of Baoying County, Jiangsu	2012
Suizhou Paopaoqing	Suizhou City Paopaoqing Farmers Professional Cooperative	16 townships in Zengdu District, Suizhou City, Hubei Province; Dongcheng, Xicheng, Nanjiao, Beijiao, Wandian, Hedian, Xihe, and Anju, Lishan, Xinjie, Huantan, Junchuan, Wanhe, Shangshi, Tangzhen, and Liulin in Suixian County	2010

4 Main problems in developing geographical indications and regional public brands

4.1 Inadequate protection of geographical indications for rape, rapeseed, and rapeseed oil

China has a long history of rape, rapeseed oil, and rapeseed oil production, and has rich cultural heritage and diverse humanistic factors. The rape and rapeseed production areas are widely distributed, environment and germplasm resources are diverse, and natural factors are also rich. However, the investigation and analysis of humanistic and natural factors of rape, rapeseed oil, and rapeseed oil geographical indications in the whole country are not enough, and not many geographical indications are protected.

4.2 Lag in the formulation of standards related to geographical indications The rapeseed industry in China has 5 kinds of geographical indication products, 28 kinds of geographical indication trademarks, and 18 kinds of geographical indications for agricultural products, involving rape, rapeseed, and rapeseed oil. However, there are no corresponding national standards for these geographical indication products, geographical indication trademarks, and geographical indications of agricultural products, and the formulation of relevant geographical indication standards for rape, rapeseed, and rapeseed oil is lagging behind.

4.3 Few special signs for geographical indications Geographical indication products, geographical indication trademarks, and geographical indications of agricultural products all have corre-

sponding special signs for geographical indications. Among the 5 kinds of geographical indication products and 28 geographical indication trademarks of China's rapeseed industry, only 4 enterprises use special geographical indication marks, which only involve Xiangyang rapeseed oil, Luhuo rapeseed oil, and Luoping rapeseed oil. Among them, Xiangyang rapeseed oil has Hubei Yuanda Grain and Oil Technology Co., Ltd., Hubei Yuanda Bio-energy Balance Technology Co., Ltd., Luhuo rapeseed oil has Luhuo County Modern Plateau Agricultural Development Co., Ltd., and Luoping rapeseed oil has Yunnan Wanxinglong Biological Technology Group Co., Ltd.

4.4 Few foreign exchanges of geographical indications In accordance with *EU-China Agreement on Cooperation on and Protection of Geographical Indications*, 275 Chinese geographical indication products will be protected in the EU, but not including rape, rapeseed, and rapeseed oil.

4.5 Weak rapeseed and oil rape regional public brand building In the *Collection and Registration Information System for National Famous and Excellent New Agricultural Products List*, dual-use rape for oil and vegetables (*B. campestris*) are: Zengcheng Late Caixin, Futian Caixin, Lianzhou Caixin, Yexian Caixin, Xingyang Caixin, Huaiji Caixin, Jian'an Caixin, Haifeng Caixin, Mengjin Caixin, Jiexi Caixin, Yicheng Caixin, Likou Xiaqingcai, and Wujiang Xiangqingcai. Rapeseed oils include Horqin Right Wing Front Banner rapeseed oil, Chahar Right Middle Banner

rapeseed oil, Baofeng rapeseed oil, Laolonghe rapeseed oil, Zhao-suhe rapeseed oil, Quanjiao rapeseed oil, Guyang rapeseed oil, and Nelek rapeseed oil. However, there are rapeseed, and rape for oil (*B. napus* and *B. juncea*), which are not included into *National Famous and Excellent New Agricultural Products List*, the rapeseed and oil rape regional public brand building is weak.

5 Strategies for strengthening geographical indications and regional public brands

5.1 Increasing members for the protection of geographical indications It is necessary to investigate the resources of rape, rapeseed, and rapeseed oil, analyze the humanistic and natural factors of their geographical indications, apply to the National Intellectual Property Administration for the protection of geographical indication products, register geographical indication trademarks (certification trademarks or collective trademarks) with the Trademark Office of the National Intellectual Property Administration, register agricultural product geographical indications with the Ministry of Agriculture and Rural Affairs, and increase the number of geographical indication protection members, especially the national famous and excellent new agricultural products, China's good rapeseed oil, provincial-level good rapeseed oil, national rapeseed production protected areas, rape national dominant characteristic industrial clusters, *etc.*

5.2 Formulating corresponding national standards for geographical indications It is recommended to refer to other specialty products to formulate corresponding national standards for various geographical indication products, geographical indication trademarks, and geographical indications of various agricultural products of rapeseed industry across the country, and strengthen the standardization and development of characteristic industries of geographical indications.

5.3 Encouraging the use of special signs for geographical indications The related government and organizations should encourage new agricultural business entities (large professional households, family farms, farmers' cooperatives, agricultural enterprises), small farmers, and national trustworthy enterprise grain and oil demonstration enterprises to use various geographical indication products, various geographical indication trademarks, and corresponding special signs for various agricultural product geographical indications within the scope of protection of geographical indications.

5.4 Creating public brands of geographical indications It is recommended to explore the humanistic factors and cultural heritage of geographical indications, enhance the cultural connotation of products, explore the natural factors of geographical indications, and give full play to the advantages of germplasm resources and the environment. Based on geographical indications, it is recommended to integrate the regional public brands of the main production areas of rape, rapeseed, and rapeseed oil, strengthen product certification and brand marketing, and create a common brand of geographical indications for the whole rape industry.

5.5 Expanding foreign exchanges of geographical indications

In accordance with *EU-China Agreement on Cooperation on and Protection of Geographical Indications*, *Sino-French Agreement on Cooperation in Geographical Indications*, and *Sino-Thai Geographical Indication Protection Agreement*, it is necessary to actively expand the foreign exchanges of rape, rapeseed, and rapeseed oil geographical indications, hold overseas-oriented promotion and display activities of China's geographical indications products, and strengthen international exchanges and cooperation of geographical indications to serve the "going global" of geographical indications products.

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