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# A Closer Look at the Diffusion of ChinaGAP

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**Abstract**

To enhance Chinese agricultural production, improve food quality, build consumer trust, and encourage the export of agricultural products, the Chinese government designed the Chinese version of Good Agricultural Practice (ChinaGAP) based on the main principles of the GlobalGAP combining the current Chinese agricultural production situation. This paper studies the characteristics of the ChinaGAP and focusing on the diffusion of the standard using qualitative analysis. Relevant policy recommendations are given based on the Chinese agricultural production status. Previous studies mainly focused on the role of the government. However this paper makes specific suggestions to particular stakeholders in the standard making and diffusion process.

**Keywords:** ChinaGAP, government supports, policy diffusion, sustainable agricultural production

**JEL classification:** O38, Q18, Q01,

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**A Closer Look at the Diffusion of ChinaGAP**

*1. Introduction and history of ChinaGAP*

As globalization of the agricultural and food industry continues apace, the issue of food safety has garnered increasing attention from the Chinese government (Zhang, 2006; FAO, 2007; Zhao, Zhang and Qi, 2007; Jin, Zhou and Yang, 2014), in particular from the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China (AQSIQ) and Certification and Accreditation Administration of the People's Republic of China (CNCA). To enhance Chinese agricultural production, improve food quality, build consumer trust, and encourage the export of agricultural products, the Standardization Administration of the People's Republic of China (SAC) authorized the CNCA to design, manage, administer and authorize the country's certification process, which includes the training of inspectors, testing bodies and auditors, in order to achieve good agricultural practice in China (Zhang, 2006; FAO, 2007). In 2003, the CNCA organized experts on certification, agriculture and quality inspection to commence drafting the Chinese version of Good Agricultural Practice (GAP).

After several rounds of discussion and modification, the ChinaGAP codes, rules and training documents were finally approved and published on December 31, 2005 and were officially being implemented as of May 1, 2006. ChinaGAP follows the fundamental principles of the Food and Agricultural Organization (FAO) and was drafted by mainly referring to the relevant standards of GlobalGAP (EuropeanGAP at that time), while taking consideration of China's own situation, national laws and regulations. ChinaGAP is intended to coordinate various sectors of the supply chain of agricultural products; to improve food safety, environmental protection, worker health and safety as well as animal welfare; and to stimulate the development of international

good agricultural practices. In 2009, the ChinaGAP series standards and its general regulations were benchmarked to GlobalGAP.

ChinaGAP is a standard that covers the whole production process of major agricultural products, including crops, livestock and aquaculture. Processing, manufacturing and slaughtering, however, are not included. After several rounds of updates, the current GAP format consists of 26 standards (GB/T 20014.2-GB/T 20014.27) covering all the above sectors. Figure 1 shows the structure of its coverage, scope and lists the specific content in each sector. For all sectors covered, each standard in ChinaGAP includes general rules, control points, appropriate regulations, checklists and basic procedures.

## *2. Characteristics of ChinaGAP*

With the aim of standardizing the agricultural production processes in China and maintaining sustainable and balanced development of modern agriculture among different regions, ChinaGAP is different from the traditional methods of farming when addressing each target and shows innovation.

### *2.1 Food safety*

Food safety is significant not only because of concerns regarding public health, but because of its effect on the development of the Chinese market economy and the stability of the country. ChinaGAP manages and standardizes the entire food supply procedure from its origin and then effectively monitors every step in the production process. Specifically, it standardizes tasks such as how to 1) choose a reasonable amount and type of pesticide and fertilizer; 2) produce detailed fertilizer application records on the object, location, date, person in charge, amount, equipment, frequency and time difference between applications; 3) calibrate equipment to ensure the accuracy of

measured amounts; 4) dispose of any remaining chemicals; 5) inspect agricultural products regularly to ensure they meet the national standards; 6) store chemicals separately and assign specialized staff to manage them, and properly handle used chemicals and associated equipment. All these requirements, if properly met, should reduce food safety-related risks in the initial stages of agricultural production.

*2.2 Environmental protection*

Traditional ways of farming, coupled with a lack of environmental protection knowledge and an absence of relevant regulations and technical skills, have led to a series of environmental problems in China. To control the associated externalities of these problems when markets fail, the government needs to intervene and also take responsibility for promoting good agricultural practices.

In the ChinaGAP certification procedure, environmental issues are specifically addressed at each key control point. For example, in order to prevent land loss, the GAP requires rotational tillage, regular fertilization and grazing land maintenance, along with appropriate cultivation methods. It also instructs farmers on how best to increase organic matter in the soil so as to increase soil organisms and prevent soil loss.

*2.3 Worker welfare*

ChinaGAP seeks to standardize the welfare of workers in China and this has been emphasized throughout the standards. However, it is not only workers' health and benefits that ChinaGAP seeks to address, but also their education, training and skill development. For example, regulation GB/T 20014 specifies that all workers, either directly or indirectly involved in the production procedure, should follow sanitary standards. The producer is required to provide training to make sure that all workers follow sanitary standards and be aware of their importance. It specifically points out the importance of having bathroom and other cleansing facilities within farming and

production areas. These regulations are necessary as they have often been neglected within traditional agricultural production processes in China.

*2.4 Sustainable agriculture*

The aim of sustainable agriculture is to pursue an integrated system of plant and animal production practice that complies with the underlying tenets of ecology. In this regard, ChinaGAP closely follows international standards in combining traditional farming methods and modern technology to achieve sustainable development. This requires producers to follow environmental regulations, to create a good ecology, and to coordinate agricultural production and environmental protection. Traditional farming and agricultural production methods may either place too much emphasis on short-run yields and profit, thus neglecting long-run sustainability, or pay insufficient attention to the use of modern technology which will be at the cutting edge of agricultural production in the future.

In general, therefore, ChinaGAP introduces international regulations and standards to traditional Chinese farming and agricultural production methods. In turn, this should lead to the sustainable development of agriculture and help Chinese exports in this area become compliant, and therefore overcome, the sanitary and phytosanitary barriers found in international trade. If successful, China will become more competitive in the world market.

*3. Certification process*

ChinaGAP is a third-party voluntary standard that all farms or agricultural producers are able to apply for. Currently, there are 15 CNCA-accredited certification bodies (CBs) in China that receive and process applications. The CBs operate by following the *Rules of the Implementation of Good Agriculture Practice Certification*.

As such they are responsible for compiling contracts and checklists for the certification process, which is under the supervision of the CNCA. Certification staff must therefore have relevant educational backgrounds and work experience. They should also be well trained in order to master ChinaGAP knowledge requirements and certification skills. These CBs also conduct annual and unannounced inspections of the country's agricultural producers.

ChinaGAP is certified according to three categories that include 26 standards: farm base, variety and product model (see Figure 1) (CNCA). For example, in order to obtain pig certification a producer must follow three standards that cover the farm (farm base), livestock (variety) and pig breed (product model). For bee certification, a producer must follow the two standards of farm (farm base) and bee (variety). The 26 standards set up control points and compliance criteria for different product categories. These control points are divided into Grades1, 2, and 3.

ChinaGAP is also certified within a two-tier approach with two classes of certification (CNCA, CQC and ITC). To acquire a first class certification producers are required to comply with all Grade1 control points and 95% of Grade2 control points. Frist class certification is completely compatible and fully recognized by GlobalGAP. In contrast, second class certification requires that a producer meets only 95% of the Grade1 control points, with no requirement to meet Grade 3 control points. Due to limitations in capacity and farmers' educational backgrounds, however, it is not realistic to expect most Chinese agricultural enterprises to apply for the first tier and thus become compliant with associated international standards. As such, second class certification is specifically designed to lower the required threshold and serve as a transitional arrangement for later upgrading. The two classes of certification have

corresponding product labels to distinguish one from the other.

There are in fact two types of certification with separate requirements and certification procedures for individual producers and producer groups (CNCA and ITC). For example, a quality management system is required for producer group certification but not for individual producer certification..

Producers essentially follow four or five steps in applying for ChinaGAP (CNCA, CQC and ITC) certification. They are required to first file an application, with all required documents, to an accredited CB, sign a contract and obtain a registration number. Before the initial inspections against the complete checklist of all relevant crops and registered areas are carried out, an internal assessment will be conducted at least annually. Once the full checklist process is completed, relevant documentation must be available on site for review at any time. In the third step for individual producers, which involves external assessments, there will be at least one scheduled inspection per year that covers all control points. For producer groups, there will be at least one scheduled inspection and one unannounced audit; the scheduled inspection should cover the at least the square root of the number of producers in the group. In the next step, which applies when non-compliance is detected by inspectors, the producer is given a warning upon completion of the assessment process. Any corrective actions must be completed within 28 days and verified by the CB to ensure certification can be granted. The final step rests with CBs regarding their certification decision. Once certificated, a label can be placed on products to show they meet the required standards.

The cost of acquiring ChinaGAP certification varies depending on what kind of certification is applied for and also the type of products and the size of its production base. For medium-sized enterprises the average cost is approximately 20,000 CNY

(about 3,000 USD) per year, which is relatively cheaper than GlobalGAP and other international standards. However, it should be noted that enterprises themselves are responsible for meeting the travel and accommodation expenses of staff from CBs. As such, this may constitute a significant burden for some remotely-located enterprises.

*4. Diffusion of ChinaGAP*

Since being published in 2005, the Chinese government has been promoting ChinaGAP from two perspectives: bringing it closer to the international standard (reaching mutual recognition with GlobalGAP) and encouraging its diffusion domestically.

In order to increase agricultural exports and gain worldwide recognition, the CNCA has been coordinating its efforts with GlobalGAP since 2005. A memorandum of understanding on technical cooperation and benchmark comparison documents were signed in 2005 and 2006, respectively. With these efforts, between two GAPs, a series of procedures such as regulations and standards assessments, field checkups and peer reviews in terms of mutual consistency and effectiveness have been completed. First class certification gained full recognition from GlobalGAP in 2009. This means that CNCA-approved GAP certificates issued by ChinaGAP will be fully recognized by GlobalGAP, and that information on enterprises holding ChinaGAP certificates will be available on the GlobalGAP website for access by global retailers. These Chinese enterprises will therefore have the full access to the world market.

In terms of the diffusion, the government has now added the ChinaGAP to its Eleventh Five-Year Plan within the following chapters: food and medicine safety, agricultural and rural development, agricultural products exportation, quality control

and inspection plan, and standardization chapters. In 2007, it was officially included in the No. 1 Central Document for agriculture. The government also paid due attention to the certification training work. The CNCA published the *Rules of the Implementation of Good Agriculture Practice Certification* and checked that the training of certification staff met the required standards. The government has also provided financial support to relevant bodies throughout the process of implementing ChinaGAP.

Specifically, the CNCA carried out a series of demonstrations on ChinaGAP standardization processes and initiated a pilot program, covering 24 jurisdictions (provinces, districts and cities) to disseminate the ChinaGAP certification model. Local government authorities, usually in the form of the Entry-Exit Inspection and Quarantine Bureau of the province, district, or city, were in charge of the implementation and promotion of ChinaGAP within their regions. The bureau identified local leading agricultural enterprises in different sectors and encouraged them to apply for ChinaGAP certification. An introduction to the certification process, training sessions and assistance with various techniques were provided. Depending on the available budget, some provinces also provided money awards or other subsidies to leading firms that successfully achieve certification. For example, Shanxi Province started its pilot program in 2009 and selected nine agricultural enterprises that are competitive in exports, including fruit and vegetables, dairy and grain crop sectors (Wang and Peng, 2009). Jiangxi Province also encouraged local agricultural enterprises to apply for ChinaGAP certification thought training events and promotions with the help of local government (Zhang, Li and Chen, 2009). Together with the China Quality Certification Center (CQC), the local government organized training sessions and classes for certification on site in order to familiarize those enterprises with the certification

process so that they could participate in it.

As a result of these initiatives, the number of ChinaGAP certifications has maintained an increasing trend, as shown in Figure 2. More and more agricultural enterprises obtained ChinaGAP certifications from 2006 to 2014. During this period, most certificates were issued in 2011, which is to be expected as the pilot program was introduced in 2007 and 2008. The government's financial support and technical assistance were the main drivers that encouraged agricultural enterprises to participate. Increasing numbers of applications were submitted during that time, culminating in a peak during 2011. Following this, however, the number of applications has dropped and this may be due to the increasing cost of acquiring ChinaGAP certification and the discontinuation of some local pilot programs. In spite of these issues, the number of certificates was nonetheless around 500 and showed an increasing trend. Up to July 2014, according to the latest report, 615 valid certificates have been issued.

According to Huang et al. (2015), the diffusion of ChinaGAP formed a particular pattern in terms of its speed of growth, sector structure, composition of products, regional distribution and characteristics of participating entities.

Regional distribution of ChinaGAP certificates largely follows local economic development characteristics. The middle-east[1] part of China has been the leading region in obtaining ChinaGAP certifications, followed by the middle-south, middle-north, and southwest regions. The northeast and northwest regions of China have relatively lower numbers. The middle-east, middle-south, southwest and northeast regions probably represent the average level of certifications for the country as a whole. Recently, the southwest region has surpassed the middle-south to become the second from top, following immediately after the middle-east region. This implies a greater development

potential of that particular region. The middle-north and northwest regions have grown at a relatively slow but steady rate. The northwest region, in some contrast, has acquired less than 40 ChinaGAP certificates in recent years.

In general, the diffusion of ChinaGAP has enjoyed a better performance in eastern China. This pattern is consistent with the diffusion of organic certification, green food certification and pollution-free agricultural product certification (Zhong, 2012; Huang et al., 2015). This is largely due to high economic development and technology levels associated with those regions. The western part of China, in contrast, has traditionally lagged behind the eastern part in these areas. To achieve better diffusion of ChinaGAP in these areas, the government should consider developing plans that capitalize on the specific characteristics of their local economies, businesses and social factors.

Since the ChinaGAP's standards were published in 2005, more and more products have been included into the standard and the number of categories has increased from 12 to 14 with the addition of floriculture and tobacco. The number of product types has also increased from the initial 265 to 724, a figure that includes almost all of the produced, sold and exported agricultural products of China. In terms of the type of products obtaining ChinaGAP, crops, livestock and aquaculture are the three major industries acquiring certification, with a ratio of about 7:2:1. This might be due to the different requirements of technology, management and financial conditions within the production processes of these categories. The crop industry is relatively easier to enter due to its less demanding production profile. Consequently, crop enterprises find it easier to become certificated. In contrast, the aquaculture industry is the most challenging one for producers to engage in and therefore has the slowest growth rate and lowest proportion of certifications. The proportion of certificates for the three

industries is therefore getting closer to their actual industry share while the further diffusion of ChinaGAP continues. In general, the products with highest profits, the most developed production technology and lowest risks are the ones that have been effectively diffused. These products are usually more profitable and exhibit better performance in the market. As such, the enterprises that are more willing to apply the ChinaGAP increase the value added of their products and make higher profits.

As mentioned in the previous section, ChinaGAP can certify both individual producers and producer groups. In terms of certification, this can be classified more specifically into 1) enterprises, including firms and farms; 2) state-owned enterprises, which are mainly agricultural technical centers; 3) cooperative organizations, including farmers' cooperatives and farmers' associations; 4) administrative bodies, including the Agricultural Bureau and town/village governments; and 5) other entities such as research institutions.

On the issue of proportions of certificates for different industries it is apparent that enterprises are the main entities that are acquiring ChinaGAP certifications in all three areas. This is because enterprises have advantages in financial and technological prospects. In addition, they have better control of the production process so that it is easier for them to become standardized. The farmers' cooperatives are the second highest entities achieving certification among the three industries. This is a result of support to the farmers' cooperatives in recent years as the government has provided both financial and technical assistance to them. This has been the major target of the recent Chinese No. 1 Central Document on agriculture. State-owned enterprises, administrative bodies and others, in contrast, have much lower numbers of certifications. According to available data, lower proportions of shares are in evidence in western

China where market entities are not very well developed. Therefore, government institutes or state-owned entities in those regions take a leading role in diffusing ChinaGAP towards market entities.

## 5. *Conclusions and policy implications*

Based on the analysis results described above, this paper has summarized the challenges associated with the diffusion of ChinaGAP with regard to the following aspects. Although the number of certifications granted is high in China for specific agricultural products such organic crops, green foods and pollution-free agricultural products, the overall ChinaGAP certification level remains limited. This might be due to the discontinuation or reduction in government support after the initial stages of implementation. Most agricultural enterprises in China are small and medium-sized and may find it difficult to achieve standardization and be granted certification. A lack of capacity in terms of production levels has also hindered the standardization process. In addition, labor in the agricultural sector comprises mostly less-educated workers who lack basic knowledge regarding food safety and good sanitation.

With regard to ChinaGAP regulations themselves, it should be borne in mind that there is a great deal of jargon and terminology involved—which is translated from English in international standards—that are difficult for workers to understand and then implement. The ChinaGAP certification process, therefore, is still in its infancy and systems are not well developed and evenly distributed across the country. To overcome these problems, more investment is needed to build up production capacity and provide training opportunities for workers. While increasing the level of government support, a point to note is that there are some enterprises that apply for ChinaGAP certifications in

order to acquire awards and other subsidies provided by the government. Alternatively, they may simply wish to maintain a good relationship with the local government, as revealed in some leading firms' behavior identified in the ChinaGAP's pilot program. In the long run, therefore, the government needs to distinguish between these types of enterprises such that they can either encourage them to continue with the standardization process, or redistribute their support and investment in a more efficient and productive way.

The work on regional distribution analysis shows ChinaGAP diffusion is not balanced among regions. Although the western part of China is abundant in various agricultural resources and has many unique agricultural products, it is the least certificated region. However, ChinaGAP has been well diffused within the middle part of China, but evidence shows that the majority of certificated entities lack the ability to maintain the required standards. Due to a limited capacity in basic facilities, management and logistics, many certificated entities discontinue with accreditation or drop out during inspections. In contrast, due to economic and social advantages, ChinaGAP has been well diffused in the eastern region of China. However, compared with other voluntary certifications, the ChinaGAP certification model still has a long way to go to build up its brand name and to become more popular. Without these developments, it may be difficult for ChinaGAP to continue to expand in the long run.

More cooperative organizations should be encouraged to become certificated. According to Wang, Bao and Xu (2008), Chinese featured cooperative organizations, such as farmers' cooperatives, have advantages in helping ChinaGAP to be further diffused through the government assistance they receive regarding cooperative property. Based on current statistics, there is considerable room for more cooperative

organizations to apply for ChinaGAP certifications and this would be helpful in achieving further diffusion across the country.

The target markets of GAP certification are developed countries in Europe and North America. In the case of ChinaGAP, however, demand from the domestic market is quite limited. The fundamental reason for this is a lack of knowledge of ChinaGAP among consumers. As indicated previously, compared with ChinaGAP products, organic, green food and other certificated products are much more popular and well-known. These can be clearly and simply promoted in a way that is easy for most consumers to understand. As for ChinaGAP and GloablGAP, most government promotion campaigns have targeted producers rather than consumers. Few Chinese consumers have heard of good agricultural practices, and even fewer care about it. This limited consumer recognition results in a lower demand and less stringent requirements from retailers, distributors and other stakeholders in the supply chain. Without direct incentives and obvious profit potential, producers are reluctant to invest in ChinaGAP certification.

With regard to the international market, although ChinaGAP has been mutually recognized by GlobalGAP, it is still not particularly well known with regard to exports. Most agricultural product exporters in China would be willing to apply for GlobalGAP or other relevant certifications that are either directly required or more recognizable to foreign markets in order to increase their exports. These export-oriented enterprises have enough capacity to apply for international standards and are also able to afford the more expensive certifications. In fact, being certificated with these international standards may well lead them to larger markets and bring them more profit. ChinaGAP, therefore, must make more effort in building up its international reputation to counter this alternative approach of gaining certifications.

To address the existing problems, increasing government support is needed to promote ChinaGAP both domestically and internationally. Most consumers already have an awareness of food safety, traceability in production and the benefits of sustainable agricultural development. What the government should focus on is the difference between ChinaGAP and other certifications such as those for organic and green food, along with the features of ChinaGAP itself and why it is important to China. The promotion of ChinaGAP among retailers is also important. Considering China's overall market environment, the government should identify some leading retailers who are influential in the industry to set ChinaGAP as a criterion for entering their markets as this would encourage smaller retailers to follow.

With regard to producers, the pilot programs clearly need to continue with the support of local governments; not only limited to leading firms, but also to other growing enterprises. Education, training and technical support are also significant, and universities, research institutes and relevant stakeholders could be involved in promotion campaigns. Continuing support for the eastern part of China and increasing support for the western region are important in equalizing the distribution of ChinaGAP. The local government in western China should also focus on their products and production characteristics and ensure these features stand out in building up brand awareness and quality standards. In all regions, the government should encourage cooperation between farmers, producers, enterprises, research institutions, distributors and retailers. This strategy will facilitate ChinaGAP diffusion in the cooperative organizations that exhibit the most potential for further diffusion.

Modifications on the ChinaGAP side are also necessary. Taking into consideration the education level of most Chinese agricultural workers, the language

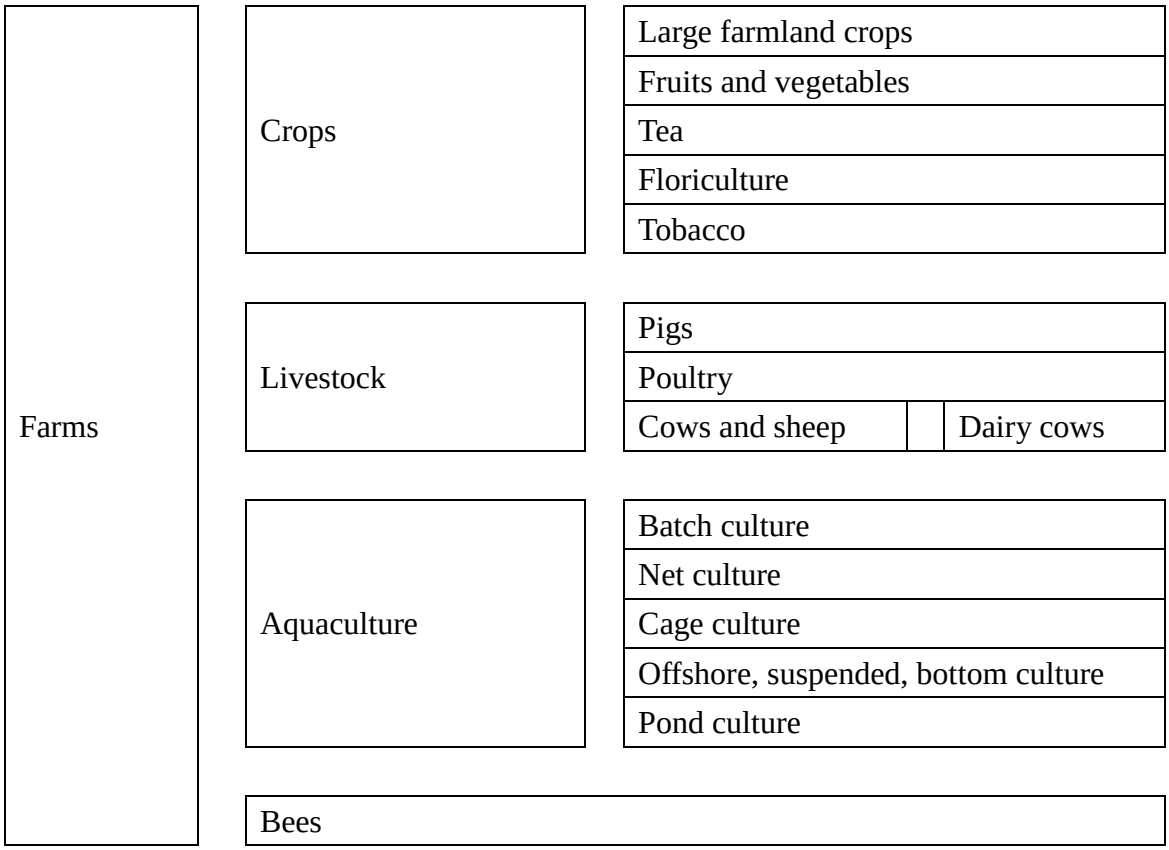
used in ChinaGAP should be made easier to understand and remember; producing brochures with pictures and slogans may help in this regard. Some regulations in ChinaGAP should also be updated in order to integrate traditional ways of Chinese farming.

In conclusion, the diffusion of ChinaGAP in is still in its early stages. More effort is needed to promote its popularity by the government, producers, consumers and other stakeholders in the agricultural industry. The wider implementation of good agricultural practices will help in realizing safe food, sound workers' health, animal welfare, and sustainable development of the Chinese agricultural industry. In terms of promoting exports, this paper has shown that there is still a long way to go before ChinaGAP can bring Chinese agricultural exports to the world.

*End Notes*

[1] The middle-north region includes Beijing, Tianjin, Hebei, Shanxi and Neimenggu; the northeast region includes Liaoning, Jilin and Heilongjiang; the middle-east region includes Shanghai, Jiangsu, Zhejiang, Anhui, Fujian, Jiangxi and Shandong; Middle-south region includes Henan, Hubei, Hunan, Guangdong, Guangxi and Hainan; Southwest region includes Chongqing, Sichuan, Guizhou, Yunnan and Tibet; the northwest region includes Shaanxi, Gansu, Qinghai, Ningxia and Xinjiang.

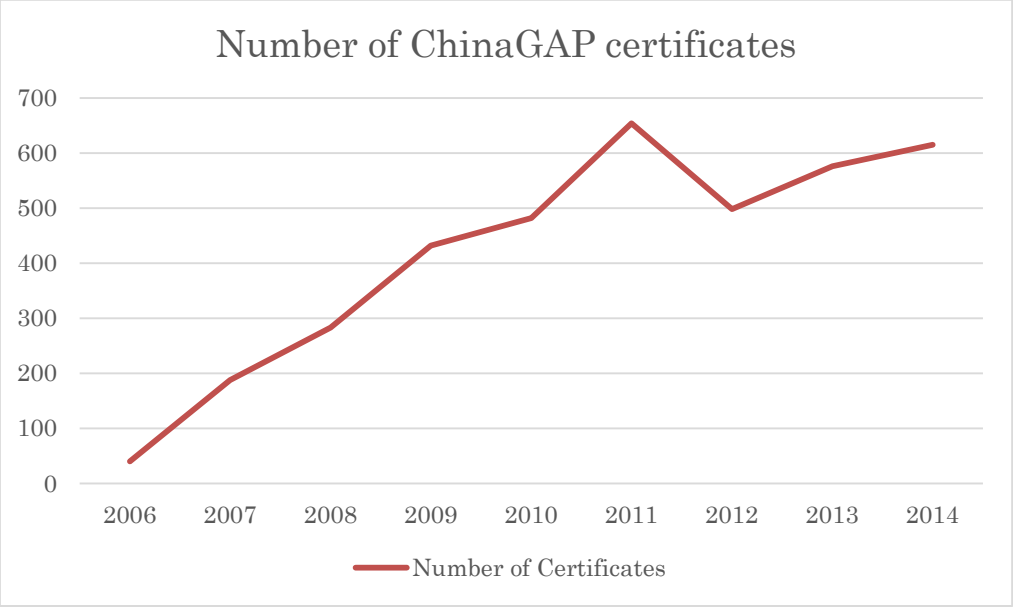
Figure 1. ChinaGAP coverage, scope and structure




Note: Basic control points and appropriate regulations

Source: The series national standards of good agricultural practices, translated by the author with reference to the FAO glossary http://www.fao.org/glossary/

Figure 2




Data source: ITC Standards Map

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