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# Reviewing the Progress in the Identification, Conservation and Management of China-Nationally Important Agricultural Heritage Systems (China-NIAHS)

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**Abstract:** Food and Agriculture Organization of the United Nations launched a global partnership initiative for the conservation and adaptive management of Globally Important Agricultural Heritage Systems (GIAHS) in 2002. China is one of the first countries that responded to the GIAHS initiative, witnessed by the designation of Qingtian Rice-Fish Culture by FAO in June 2005. It is also the first country that identifies and conserves agricultural heritage systems at the national level, demonstrated by the initiation of China-Nationally Important Agricultural Heritage Systems (China-NIAHS) by Chinese Ministry of Agriculture in March 2012. In the past five years, progress on the identification, conservation and management of China-NIAHS has been widely achieved in China; however, challenges such as lack of adequate mastery of potential agricultural heritage systems, lack of local popularization of their concept and connotations, and lack of endogenous motives for their conservation and development are also in front of China. This paper reviewed the progress and discussed the challenges, aiming to help formulate suggestions for the future conservation and management of agricultural heritage systems and also to provide an opportunity for other countries to understand the nation's efforts on the conservation and management of agricultural heritage systems.

**Keywords:** agricultural heritage systems; GIAHS; China-NIAHS; identification; dynamic conservation; management

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## 1. Introduction

Today, a major challenge facing humanity is how to achieve sustainable agriculture that provides sufficient food and ecosystem services for both present and future generations. Modern agricultural systems, which are based on high technological inputs and oriented to maximizing profits, have been criticized as often being detrimental and nonviable when considered from social and ecological perspectives [1–3]. This realization has led experts to reflect on modern agricultural systems and look for help from traditional ones that have been developed and maintained by local farmers for centuries with ingenious practices that often result in both community food security and the conservation of ecosystem services [4–6]. These traditional agricultural systems are now re-examined and cherished by the modern society and some of them share a new, common name: Globally Important Agricultural Heritage Systems (GIAHS).

The conservation and adaptive management of GIAHS is a global partnership initiative launched by Food and Agriculture Organization (FAO) of the United Nations in 2002, in response to the global trends that undermine small-scale family agriculture and traditional agricultural systems [7]. Defined by FAO, GIAHS are remarkable land use systems and landscapes which are rich in globally significant biological diversity evolving from the co-adaptation of a community with its environment and its needs and aspirations for sustainable development [8]. Unlike conventional heritages, GIAHS are living, evolving systems of human communities in an intricate relationship with their environment, agricultural landscape, biophysical and wider social system [9,10]. Human beings and their livelihood activities have continually adapted to the potentials and constraints of the environment and also shaped the landscape and the biological environment to different degrees. This has led to an accumulation of experiences over generations, an increasing range and depth of their knowledge systems and generally, but not necessarily, a complex and diverse range of livelihood activities, often closely integrated [11].

China is one of the first countries that responded to the GIAHS initiative. In June 2005, Rice-Fish Culture in Qingtian County, Zhejiang Province (Figure 1) was designated as one of the first six GIAHS pilot sites in the world [12,13]. In February 2009, the start-up meeting for the conservation and adaptive management of GIAHS China Rice-Fish Culture was held in Beijing. This marked that the FAO GIAHS project supported by Global Environment Facility (GEF) formally started up in China [11]. With the help of FAO, a national framework for the GIAHS conservation and management was formulated and established in China [13], which provided strong support not only for the conservation and management of Rice-Fish Culture but also for the exploration and identification of other agricultural heritage systems. The concept of Nationally Important Agricultural Heritage Systems (NIAHS) was first put forward in this framework. Specifically, a nationally accepted system for recognition of NIAHS was demonstrated; lessons and practices learned from the promotion of the effective management of pilot sites were required to be widely disseminated to support the expansion and up-scaling of NIAHS; and the creation of a NIAHS network was suggested in the framework [13].



**Figure 1.** Qingtian Rice-Fish Culture System. Note: The photo was provided by Qingtian Agriculture Bureau.

In addition to project requirements, the reason why NIAHS are needed in China also rests with the endangered situation that many of the agricultural heritage systems have fallen into. Diversified traditional farming systems have been formed during China's long history of agricultural production, adapting well to various natural conditions across its vast territory [14]. These ingenious systems exhibit a multitude of values that are embedded in ecological and environmental advantages, social and cultural merits, including economy and livelihood, research and education, demonstration and promotion [15].

It is only recently that the virtues of traditional agricultural systems have been recognized; nevertheless, many of them have been increasingly threatened by a set of socio-ecological changes caused by various sources such as rapid industrialization and urbanization [16]. Therefore, Chinese Ministry of Agriculture (MOA) initiated the identification and conservation of China-Nationally Important Agricultural Heritage Systems (China-NIAHS) in March 2012, to conserve and manage these valuable but endangered systems before they are lost to modernity.

It has been five years since the initiation of China-NIAHS, during which progress on their identification, conservation and management has been widely achieved. One of the most representative examples is the number of China-NIAHS having broken through ninety over such a short span of time. According to the original plan, the selection of China-NIAHS would be held every two years from 2013. However, due to the large number of the application from local governments, the nationwide selection has in effect been organized once a year from 2013 to 2015; it was not started every two years until 2017. Progress is not only limited to the number but is also represented in many other aspects, which has made China, though shortcomings also exist, become an example for other countries to learn from. This paper reviewed such progress aiming to help formulate suggestions for the future conservation and management of NIAHS in China as well as to provide an opportunity for other countries to understand China's efforts on NIAHS conservation and management.

## 2. The Application and Identification of China-NIAHS

China is the first country in the world that identifies and conserves agricultural heritage systems at the national level. Defined by MOA, China-NIAHS are “ingenious agricultural production systems created on the long-term co-adaptation of a rural community/population with its environment and inherited to now, that are rich in biological diversity, traditional knowledge and technologies, remarkable ecological and cultural landscape and are of important scientific and practical relevance to the inheritance, sustainability and multi-functionality of agriculture in China”.

Making reference to GIAHS and combining China's realities, MOA formulated the criteria and methods for the selection of China-NIAHS, standardized the procedures for their application and issued the *Guidelines for the Proposal of China-NIAHS* and the *Guidelines for the Conservation and Development Planning of China-NIAHS*.

### 2.1. Selection Criteria

The criteria set by FAO for the selection of GIAHS require them to be of global (or national) importance with outstanding features. Global (or national) importance is a composite criterion, which synthesizes the overall global “public good” value described under the five subsequent criteria. The outstanding features are summarized in the five criteria that represent the totality of functions, goods and services provided by the system. These criteria are food and livelihood security; agro-biodiversity; local and traditional knowledge systems; cultures, value systems and social organizations; and landscapes and seascapes features (<http://www.fao.org/giahs/become-a-giahs/selection-criteria-and-action-plan/en/> (accessed on 10 April 2017)).

China-NIAHS are described as living, adaptive, complex, strategic, multi-functional and endangered agricultural systems. The criteria for their selection are comprised of four basic measures (historic relevance, completeness, sustainability, and endangered situation) and two supplementary ones (demonstration effect and guarantee measures) ([http://www.gov.cn/gzdt/2012-03/13/content\\_2090758.htm](http://www.gov.cn/gzdt/2012-03/13/content_2090758.htm) (accessed on 10 April 2017)) (Table 1).

**Table 1.** Comparison between China-Nationally Important Agricultural Heritage Systems (China-NIAHS) and Globally Important Agricultural Heritage Systems (GIAHS) selection criteria.

	China-NIAHS Selection Criteria	GIAHS Selection Criteria
Basic measures	Historic relevance (origin, length of history); Completeness (materials and products, ecosystem services, knowledge and technological systems, landscape and aesthetics, spirit and culture); Sustainability (adaptation to the nature, human development); Endangered situation (variation tendency, stress factor);	Food and livelihood security; Agro-biodiversity; Local and traditional knowledge systems; Cultures, value systems and social organizations;
Supplementary measures	Demonstration effect (participation, accessibility, promotion); Guarantee measures (institution, policy, planning)	Landscapes and seascapes features.

Compared to the general criteria for GIAHS, the selection criteria of China-NIAHS are more practicable through setting basic requirements for each specific measure. For example, the measure of materials and products requires distinctive agricultural products with geographical features while that of ecosystem services demands the candidate system to provide at least two important ecological services such as biodiversity conservation, soil and water conservation, climate regulation, pest control and nutrient cycling. In general, China-NIAHS share the same criteria with GIAHS that requires the candidate system to have a relatively complete knowledge and technological system with theoretical and practical values, a remarkable landscape with relatively high aesthetics values and a rich cultural diversity besides providing livelihood security, rich biodiversity and ecosystem services.

Although it makes the selection of China-NIAHS more operable, the setting of basic requirements also makes the identification of China-NIAHS stricter than that of GIAHS. For example, the measure of origin requires that the candidate site be the origin of the main species or related technologies of the candidate system or where the main species or related technologies are greatly improved, while that of historic length asks the candidate system and its species, knowledge, technologies and landscape to have a history of at least 100 years. In contrast, there is no such requirement for the selection of GIAHS.

In addition to historic relevance, such criteria as sustainability, endangered situation, demonstration effect and guarantee measures are also set for the selection of China-NIAHS, which could not be found in the selection of GIAHS. Due to the large amount of potential China-NIAHS, the relatively strict standards for their selection are used to ensure that the identified agricultural heritage systems are the most valuable ones whose conservation is most urgently needed.

## 2.2. Application Materials

As required by MOA, the local government at/above the county level should assume the role of the applicant and subsequently will be the administrator if the candidate system gets certified. For application, the local government should submit the following materials: a government commitment letter (signed by the main leader), a proposal (formulated on a scientific basis), a conservation and development plan (that is practicable and can be inspected), a document of management measures (approved by relevant departments), an advertising video and other related data. To guide the local government to prepare these materials, MOA issued the *Guidelines for the Proposal of China-NIAHS* and the *Guidelines for the Conservation and Development Planning of China-NIAHS* in July 2013 ([http://www.moa.gov.cn/zwllm/tzgg/tfw/201307/t20130708\\_3516003.htm](http://www.moa.gov.cn/zwllm/tzgg/tfw/201307/t20130708_3516003.htm) (accessed on 10 April 2017)).

As asked by the guidelines, the proposal of China-NIAHS must first define the boundary of the candidate site, the name of the candidate system and the subject of its application, conservation and management. Then, the proposal needs to describe the physical and socio-economic conditions of the candidate site, introduce the origin and evolution, the creativeness and uniqueness of the candidate system and its features in agricultural production, eco-cultural landscape, knowledge and technology system, evaluate its functions in material and product supply, ecosystem services, cultural inheritance and multi-functionality, analyze problems, challenges, opportunities for the candidate system and finally formulate measures for its conservation and development.

To draw up a plan for the conservation and development of China-NIAHS, the local government needs first to make a full analysis of the strengths, weaknesses, opportunities and threats of the candidate system, and then to formulate an overall strategy for its conservation and development, consisting of main objectives and principles and the function zoning of the candidate site. After that, planning targeted at conservation, development and capacity building must be drawn up systematically and comprehensively with specific contents, measures and actions for each objective. At last, an analysis of risks and benefits is needed and guarantee measures in institutional building, technical support and capital investment must also be established.

### 2.3. Application Procedures

MOA standardized the procedures for the application of China-NIAHS by establishing a state, provincial and local three-levelled application system and an expert review mechanism (Figure 2). In most cases, the local government at the county level firstly submits the application materials to the provincial agricultural department, which then reports the materials to MOA after an examination of their legitimacy and completeness. MOA will provide a longlist for the China-NIAHS scientific committee based on a brief review of the candidates while experts of the committee will offer MOA a shortlist of candidates after a thorough review and anonymous scoring of the longlist candidates. The shortlist candidates are finally designated as China-NIAHS by MOA after being publicized for a period.



**Figure 2.** Application procedures of China-NIAHS.

The scientific committee comprised of 27 experts from different disciplines such as ecology, history, culture and economy was established in March 2014, to ensure China-NIAHS are selected in an equitable and transparent way and also to improve the scientific rationality of their conservation and management. In the process of expert review, each member usually reviews two or three proposals and then expresses his/her opinions about the candidate systems while other members can make a further check of the proposals and related materials when they have different opinions. Guided by the selection criteria, the members will give scores to the candidates anonymously and finally determine the shortlist candidates based on the scores. Table 2 demonstrates that only about half of the candidates have passed the expert review and received the China-NIAHS designations in the end.

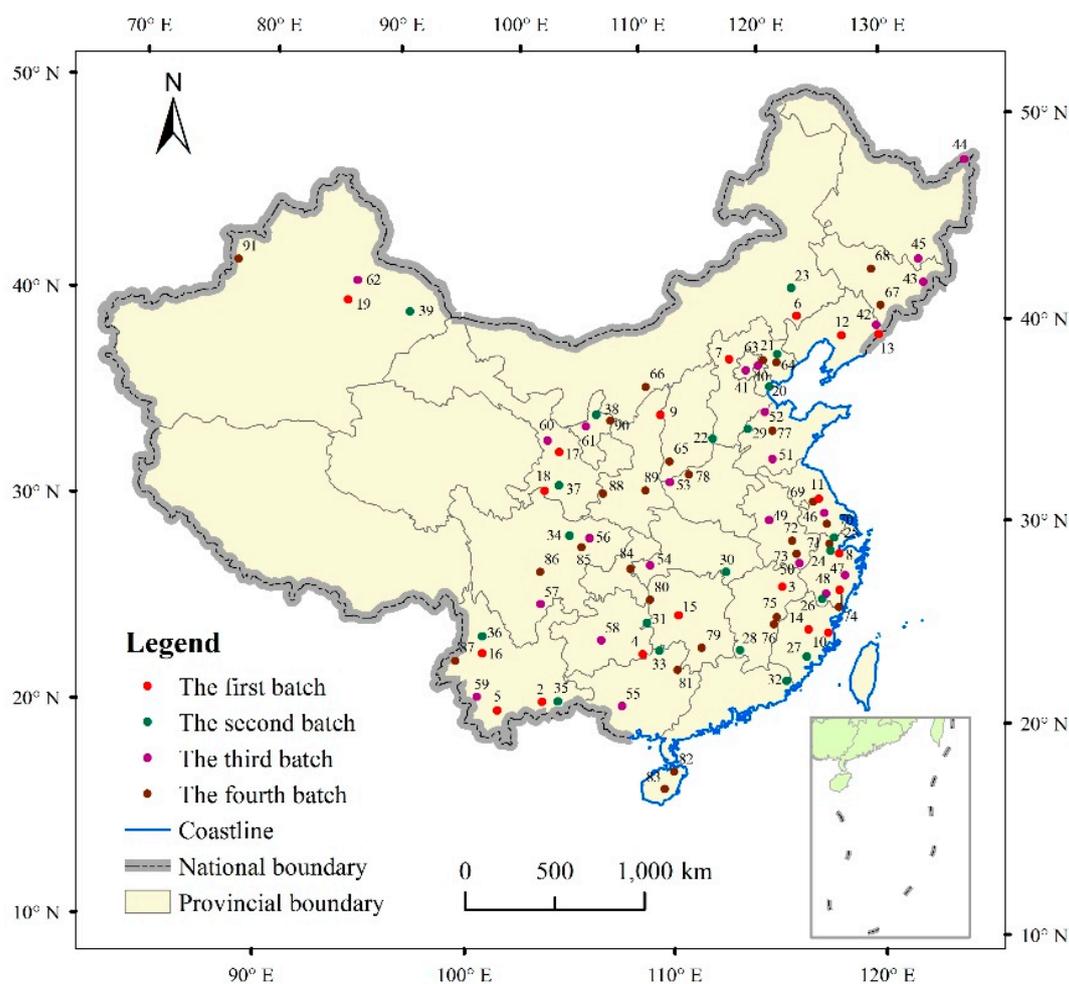
**Table 2.** Comparison between the number of candidates and that of designations.

	Number of Candidates	Number of Designations
First batch (2013) *	43	19
Second batch (2014)	42	20
Third batch (2015)	42	23
Fourth batch (2017)	63	29
Total	190	91

\* The review of China-NIAHS in 2013 was conducted by a group of experts who are members of the China-NIAHS Scientific Committee established in the following year.

#### 2.4. Designations

The first batch of China-NIAHS was published in May 2013, comprising 19 traditional agricultural systems; the second batch was published in the same month of the following year, consisting of 20 traditional agricultural systems; another 23 traditional farming systems were designated as China-NIAHS in November of 2015; and the fourth batch of 29 China-NIAHS was published in June 2017 (Table 2). Therefore, the number of China-NIAHS totaled 91 by the end of July 2017, distributed in 29 provinces, municipalities and autonomous regions (Figure 3).



**Figure 3.** Distribution of China-NIAHS. Note: Refer to Appendix A for the names of agricultural heritage systems represented by numbers.

The largest number of designations is observed in Zhejiang Province, where eight traditional agricultural systems have been certified as China-NIAHS, while the second largest one is found in Yunnan Province, where seven traditional agricultural systems have been included in the China-NIAHS list. However, there are three provinces, municipalities and autonomous regions in Mainland China where no traditional agricultural system is designated as China-NIAHS: Shanghai Municipality, Qinghai Province, and Tibet Autonomous Region.

### 3. The Conservation and Management of China-NIAHS

Witnessed by the large number of designations, the application and identification of China-NIAHS has received a highly positive response from traditional agricultural areas across the country. Out of the total number of 91, there are eleven China-NIAHS that have been designated as GIAHS by FAO, accounting for about one third of the total allotment (that was 38 by the end of July 2017) in the world.

However, the designation of agricultural heritage systems is just the beginning, while their conservation and management after designation is the key question. As mentioned before, many of agricultural heritage systems have been increasingly threatened by a set of socio-ecological changes caused by various sources that derive from modernization, such as the massive outflow of young labor force, the difficulty in the maintenance of traditional knowledge systems and the one-sided pursuit of economic interests. In an era of spectacular pressure for change, whether these systems are able to survive such threats and challenges has caught wide attention of the society and depends largely upon the effectiveness of their conservation and management.

#### 3.1. Full Recognition of Values

Agricultural heritage systems are considered as representatives of sustainability as they have survived for many hundreds of years and endured the depredations of droughts, famines, plagues, floods and wars. Their exceptional ecological, social, cultural, scientific and demonstration values are of great importance for contemporary society [17].

Many research studies have demonstrated that agricultural heritage systems have important genetic resources and are rich in agricultural biodiversity [18–21]. These diversified biological resources therefore bring about an abundance of agricultural products for local residents and communities [22,23], demonstrating considerable economic value. Agricultural heritage systems also provide other important ecosystem services, such as control of diseases, pests and weeds [24–26], resilience to extreme climate [27,28], improvement in soil fertility [29,30], reduction in non-point pollution [31] and greenhouse gas emission [32].

In terms of social values, they are able to engage a large number of people [33] due to their labor-intensive production and management activities [34] as well as the feature of multi-functionality [35], thus reducing the pressure brought about by surplus labor in rural areas. Their cultural values are embodied in their farming culture and its related rules and regulations [28,36], religious rituals, customs and habits, traditional knowledge and adapted technologies [37–39], which are able to promote and sustain the harmony between humanity and nature [40].

In summary, agricultural heritage systems exhibit a multitude of values that are embodied in a variety of aspects. These values not only mattered in the past, but are also important at present and will play a role in the future: an important role in food security, food safety, the growth of economy, the maintenance of social stability and the inheritance of traditional culture at both the local and national levels. Therefore, a full and correct understanding of these values constitutes the premise of their conservation and management.

#### 3.2. Dynamic Conservation Approaches

As living systems, agricultural heritage systems are dynamic and adaptive, exhibiting strategic values of multi-functionality and sustainability [41]. Therefore, their conservation cannot be fulfilled by adopting conventional measures that were used on conventional heritages like ancient architecture [10]

which is basically static. On the contrary, it must be conducted in a dynamic way. As a result, local farmers can benefit from the continuance of the traditional agricultural production, while the heritage site can seek development under the premise of ecological functions being conserved and traditional culture being inherited [7].

One of the dynamic approaches is to establish a mechanism of payment for ecosystem services (PES) as an incentive to encourage local residents to continue practicing traditional agricultural production methods [15]. Research has been conducted on the PES standards for farmers who are willing to adopt environmentally friendly practices in the maintenance of agricultural heritage systems [42,43]. Local governments have also provided subsidies for the conservation of biological resources and agroecosystem in the agricultural heritage sites. For example, Qingtian County provided subsidies on fry hatching for farmers who are engaged in the Rice-Fish Culture.

Another important approach to enhance dynamic conservation is to establish a mechanism of eco-cultural industrial promotion [15]. More and more farmers in the agricultural heritage sites have begun to utilize local biological resources and ecological conditions to produce high-quality agricultural products with cultural connotations, which in turn promotes the conservation of agricultural heritage systems [44]. Rural tourism developed on agricultural heritage systems has brought positive effects on the conservation of Rice-Fish Culture of Qingtian County, where labor shortage and land abandonment caused by urbanization has threatened the sustainability of the rice-fish system [45–47]. In recent years, museums, restaurants and cultural activities with the theme of agricultural heritage systems have appeared across agricultural heritage sites.

For a more effective conservation, a multi-stakeholder process has been established involving governments of different levels, multi-disciplinary scientists, communities and farmers, and business enterprises as well as social organizations. It can be traced back to the period of 2005 to 2008 when FAO/GEF-GIAHS-China Rice-Fish Culture project was under preparation [16]. After ten years of trial and improvement, a “Five-in-One” multi-stakeholder process has been gradually established, which is led by governments, promoted by scientists and driven by enterprises with active participation of communities and farmers and cooperation from social organizations.

### 3.3. Standardized Management Measures

Before the year of 2013, when MOA announced the first batch of China-NIAHS, the selection and declaration of GIAHS in China was primarily conducted by the FAO-GIAHS China Office. Potential GIAHS were recommended by the office firstly to MOA and then to FAO. In July 2013, MOA issued the notification that GIAHS candidates would be selected from China-NIAHS, which demonstrated that any traditional agricultural system to be recommended as a GIAHS must first get the China-NIAHS designation. To increase the equity, fairness and transparency of the selection process, the China-GIAHS scientific committee was established in January 2014, being responsible for the recommendation of GIAHS candidates to MOA. However, since the number of China-NIAHS was quite limited at that time, the whole mechanism from China-NIAHS to GIAHS candidates has not been completely established until the year of 2015. In October of 2015, MOA started the first-round selection of GIAHS candidates and built a tentative list of GIAHS candidates after the examination by the committee. Then, several agricultural heritage systems on the list were defined as key projects and would be recommended to FAO in the following two years after competitive on-site presentation and necessary on-the-spot investigation.

The mechanism of the selection of GIAHS candidates from China-NIAHS has been written into the *Procedures on the Administration of Important Agricultural Heritage Systems* ([http://www.moa.gov.cn/zwllm/zcfg/nybgz/201509/t20150907\\_4818823.htm](http://www.moa.gov.cn/zwllm/zcfg/nybgz/201509/t20150907_4818823.htm) (accessed on 10 April 2017)), the first legal document on the management of agricultural heritage systems in the world. In effect, as early as August 2013, MOA drafted a document on the administration of China-NIAHS, and began to put it into trial use in May 2014. At the same time, another document on the administration of GIAHS in China was also under deliberation. Considering the similarities between the management of China-NIAHS

and that of GIAHS, the Ministry finally decided to combine the two highly related documents into one and began to solicit opinions from the general public in April 2015. Then in August, the combined, improved document was formally issued and implemented. Thus, 2015 is considered a milestone year in the history of agricultural heritage systems of China.

This important document is formulated based on China's exploratory experiences in the past ten years and is introduced for guiding related activities to be conducted in the future. It is comprised of four parts: application and identification, conservation and management, utilization and development, supervision and inspection, providing specific requirements for the implementation of these procedures. With the establishment of this document, the guidelines of "conservation in exploration, inheritance through utilization" and the principles of "dynamic conservation, sustainable development, multi-stakeholder participation, benefit sharing" have been built up for the management of agricultural heritage systems in China [17]. Besides, an annual working conference has been established, which provides a platform for different agricultural heritage sites to make exchanges and learn from each other. In the annual conference, local administrative staff are asked to submit the annual working report that usually summarizes the activities they conducted in the past year and also put forward the actions they are going to take in the coming year to address the conservation and management of agricultural heritage systems.

The annual reporting system is built upon the dynamic monitoring system, which was initiated by MOA as early as 2014, and also written into the legal document of 2015. Although it has not been formally put into practice, the dynamic monitoring system is designed to monitor both the actions that have been taken and the changes that have happened to the agricultural heritage systems under such actions. To standardize the data collection, a database and management system has also been developed to realize the online filling-in of the annual reports. Correspondingly, a supervision and inspection system, guided by the legal document, has also been preliminary established. Organized by MOA in 2015, a working group mainly comprised of experts from the scientific committee evaluated the effectiveness of conservation and management actions of four agricultural heritages systems. The experts made the evaluation from the five aspects of ecological conservation, economic development, social maintenance, cultural inheritance and capacity building, based on the review of their working reports since the year of designation and combined with the site inspection.

#### 4. Conclusions

The concept of agricultural heritage systems is new compared to the World Heritage of the United Nations Educational, Scientific and Cultural Organization. The *Convention Concerning the Protection of the World Cultural and Natural Heritage* (<http://whc.unesco.org/en/conventiontext/> (accessed on 10 April 2017)) was passed in 1972, more than 40 years ago, while the history of GIAHS is only fifteen years long from the initiation of the concept, let alone the China-NIAHS that was first proposed only five years ago. However, a common consent has been shared in both international and domestic communities that the conservation and management of agricultural heritage systems is of great importance and urgency. Therefore, the initiation of the China-NIAHS in effect opened up an avenue for China to explore effective conservation and management approaches for agricultural heritage systems.

China is one of the earliest responders to the GIAHS initiative, demonstrated by the designation of Qingtian Rice-Fish Culture by FAO in June 2005. It is also one of the best practitioners and one of the most active promoters of the conservation of agricultural heritage systems. In the past ten years, especially the past five years, China has made great achievements in the identification, conservation and management of agricultural heritage systems. It is the first country that identifies and conserves agricultural heritage systems at the national level; it released the first legal document on the management of agricultural heritage systems; it has the largest number of NIAHS (that was 91 by the end of July 2017) and the largest number of GIAHS in the world (that was 11 out of the total of 38 by the end of July 2017).

Despite the progress, China is also faced with many challenges such as lack of adequate mastery of potential agricultural heritage systems and their endangered situation. Having a vast territory with

various natural conditions and being comprised of different ethnic groups with distinctive cultural characteristics, China has created an abundance of traditional agricultural systems with diversified forms and multiple functions. How many potential agricultural heritage systems does China have? This is one of the most frequently asked questions and is also a bottleneck facing China's exploration on their conservation and management. Although the question is not easy to answer, it is critical for the evaluation and categorization of agricultural heritage systems, which relates closely to the reasonableness and effectiveness of their conservation and management. In 2016, MOA carried out the first nationwide census on potential agricultural heritage systems, supported by agricultural administrative departments of different levels and experts from China-NIAHS scientific committee. In the case of incomplete statistics, the census has discovered a total of 408 potential agricultural heritage systems ([http://www.moa.gov.cn/govpublic/XZQYJ/201612/t20161219\\_5410778.htm](http://www.moa.gov.cn/govpublic/XZQYJ/201612/t20161219_5410778.htm) (accessed on 10 April 2017)), which demonstrates both the huge number of potential systems and the large amount of work on their conservation in China.

The challenges facing China also include lack of local popularization of the concept and connotations of agricultural heritage systems and lack of endogenous motives for their conservation and development. Agricultural heritage systems have attracted the attention of different kinds of media and, thanks to them, the knowledge of agricultural heritage systems has been disseminated quickly across the country. However, in some cases, it seems that outsiders know better of agricultural heritage systems than the local people. The local people have little knowledge of how to conserve agricultural heritage systems. Therefore, more efforts should be put into education to raise the awareness of local farmers, local entrepreneurs and local administrators. They are, after all, among the most important multi-stakeholders. Correspondingly, building up an endogenous development mechanism for agricultural heritage sites should also be put efforts into. Due to the top-down promotion mechanism, the conservation of agricultural heritage systems has become an important part of China's agricultural policies. However, to realize the sustainable development of agricultural heritage sites, endogenous motives, site-specific approaches, and innovative paths are urgently needed in today's China, and must be established in the near future, that China should learn from other countries.

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## Appendix A

**Table A1.** The list of GIAHS and China-NIAHS in China.

No.	Batch	Designation Year (China-NIAHS/GIAHS)	Name
1	1	2013/2005	Qingtian Rice-Fish Culture, Zhejiang Province
2	1	2013/2010	Honghe Hani Rice Terraces, Yunnan Province
3	1	2013/2010	Wannian Traditional Rice Culture, Jiangxi Province
4	1	2013/2011	Congjiang Dong's Rice-Fish-Duck System, Guizhou Province
5	1	2013/2012	Pu'er Traditional Tea Agrosystem, Yunnan Province
6	1	2013/2012	Aohan Dryland Farming System, Inner Mongolia Autonomous Region
7	1	2013/2013	Xuanhua Traditional Vineyards, Hebei Province
8	1	2013/2013	Shaoxing Kuaijishan Ancient Chinese <i>Torreya</i> , Zhejiang Province
9	1	2013/2014	Jiaxian Traditional Chinese Date Gardens, Shaanxi Province
10	1	2013/2014	Fuzhou Jasmine and Tea Culture System, Fujian Province

Table A1. Cont.

No.	Batch	Designation Year (China-NIAHS/GIAHS)	Name
11	1	2013/2014	Xinghua Duotian Agrosystem, Jiangsu Province
12	1	2013	Anshan Nanguo Pear Planting System, Liaoning Province
13	1	2013	Kuandian Traditional Shizhu Ginseng Cultivation System, Liaoning Province
14	1	2013	Youxi Lianhe Rice Terraces, Fujian Province
15	1	2013	Xinhua Ziquejie Rice Terraces, Hunan Province
16	1	2013	Yangbi <i>Juglans Sigillata Dode</i> and Crops Composite System, Yunnan Province
17	1	2013	Shichuan Traditional Pear Gardens, Gansu Province
18	1	2013	Zhagana Agriculture, Forestry and Husbandry Compound System, Gansu Province
19	1	2013	Turfan Karez Agrosystem, Xinjiang Uygur Autonomous Region
20	2	2014	Cuizhuang Ancient Winter Jujube Gardens, Tianjin Municipality
21	2	2014	Kuancheng Traditional Chinese Chestnut Planting System, Hebei Province
22	2	2014	Shexian Dryland Terraces, Hebei Province
23	2	2014	Arhorchin Grassland Nomadic System, Inner Mongolia Autonomous Region
24	2	2014	Hangzhou West Lake Longjing Tea Culture System, Zhejiang Province
25	2	2014	Huzhou Mulberry-Dyke-Fish-Pond System, Zhejiang Province
26	2	2014	Qingyuan Mushroom Cultivation System, Zhejiang Province
27	2	2014	Anxi Tieguanyin Tea Culture System, Fujian Province
28	2	2014	Chongyi Hakka Rice Terraces, Jiangxi Province
29	2	2014	Xiajin Ancient Mulberry Groves in Old Yellow River Course, Shandong Province
30	2	2014	Yangludong Brick Tea Culture System, Hubei Province
31	2	2014	Xinhuang Dong-Treasured-Red-Rice Culture System, Hunan Province
32	2	2014	Chao'an <i>Camellia sinensis</i> Tea Culture System, Guangdong Province
33	2	2014	Lonhsheng Longji Rice Terraces, Guangxi Zhuang Autonomous Region
34	2	2014	Jiangyou Traditional Magnolia Flower Planting System, Sichuan Province
35	2	2014	Guangnan Babao Rice Culture System, Yunnan Province
36	2	2014	Jianchuan Rice-Wheat Rotation Farming System, Yunnan Province
37	2	2014	Minxian <i>Angelica Sinensis</i> Cropping System, Gansu Province
38	2	2014	Lingwu Long Jujube Cropping System, Ningxia Hui Autonomous Region
39	2	2014	Hami Melon Cultivation System, Xinjiang Uygur Autonomous Region
40	3	2015	Pinggu Sizuolou <i>Juglans hopeiensis</i> Planting System, Beijing Municipality
41	3	2015	Jing-Xi-Rice Culture System, Beijing Municipality
42	3	2015	Huanren Jingzu Rice Culture System, Liaoning Province
43	3	2015	Yanbian Apple Pear Planting System, Jilin Province
44	3	2015	Fuyuan Fish Culture System of Hezhe Nationality, Heilongjiang Province
45	3	2015	Ning'an Xiangshui Rice Culture System, Heilongjiang Province
46	3	2015	Taixing Gingko Planting System, Jiangsu Province
47	3	2015	Xianju Waxberry Planting System, Zhejiang Province
48	3	2015	Yunhe Rice Terraces, Zhejiang Province
49	3	2015	Shouxian Quebei Irrigation Project (Anfeng Reservoir) and Irrigated Farming System, Anhui Province
50	3	2015	Xiuning Fishery System with Flowing Mountain Spring, Anhui Province
51	3	2015	Zaozhuang Ancient Jujube Forests, Shandong Province
52	3	2015	Laoling Jujube-crop Eco-farming System, Shandong Province
53	3	2015	Lingbao Ancient Valley-and-Plain Jujube Forest, Henan Province
54	3	2015	Enshi Gyokuro Tea Culture System, Hubei Province
55	3	2015	Longan "Na" Rice Culture System of Zhuang Nationality, Guangxi Zhuang Autonomous Region
56	3	2015	Cangxi Snow Pear Planting System, Sichuan Province
57	3	2015	Meigu Tartary Buckwheat Farming System, Sichuan Province
58	3	2015	Huaxi Ancient Tea and Culture System, Guizhou province

Table A1. Cont.

No.	Batch	Designation Year (China-NIAHS/GIAHS)	Name
59	3	2015	Shuangjiang Mengku Ancient Tea and Culture System, Yunnan Province
60	3	2015	Yongdeng Kushui Rose Farming System, Gansu Province
61	3	2015	Zhongning Chinese Wolfberry Cultivation System, Ningxia Hui Autonomous Region
62	3	2015	Qitai Dryland Farming Landscape, Xinjiang Uygur Autonomous Region
63	4	2017	Qianxi Chinese Chestnut Compound Cultivation System, Hebei Province
64	4	2017	Xinglong Traditional Hawthorn Cultivation System, Hebei Province
65	4	2017	Jishan Jujube Production System, Shanxi Province
66	4	2017	Yijinhuoluo Agriculture and Husbandry Production System, Inner Mongolia Autonomous Region
67	4	2017	Liuhe Grape Cultivation System, Jilin Province
68	4	2017	Jiutai Wuguantun Tribute Rice Cultivation System, Jilin Province
69	4	2017	Gaoyou Lake and Wetland Agrosystem, Jiangsu Province
70	4	2017	Yangshan Honey Peach Cultivation System, Jiangsu Province
71	4	2017	Deqing Freshwater Pearl Traditional Cultivation and Utilization System, Zhejiang Province
72	4	2017	Tongling Ginger Cultivation System, Anhui Province
73	4	2017	Taiping Houkui Tea Culture in Mountain Huang, Anhui Province
74	4	2017	Fuding White Tea Culture, Fujian Province
75	4	2017	Nanfeng <i>Citrus reticulata</i> Blanco Cultivation System, Jiangxi Province
76	4	2017	Guangchang Lotus Cultivation System, Jiangxi Province
77	4	2017	Zhangqiu Green Onion Cultivation System, Shandong Province
78	4	2017	Xinan Traditional Cherry Planting System, Henan Province
79	4	2017	Xintian Sanwei Chili Planting System, Hunan Province
80	4	2017	Huayuan Zila Tribute Rice Compound Cultivation System, Hunan Province
81	4	2017	Gongcheng Persimmon Cultivation System, Guangxi Zhuang Autonomous Region
82	4	2017	Haikou Litchi Planting System in Yangshan Region, Hainan Province
83	4	2017	Shanlan Rice Culture, Hainan Province
84	4	2017	Shizhu <i>Coptis chinensis</i> Production System, Chongqing Municipality
85	4	2017	Yanting Leizu Sericulture System, Sichuan Province
86	4	2017	Mingshan Tea Culture in Mountain Mengding, Sichuan Province
87	4	2017	Tengchong Buffalo Breeding System in River Binlang, Yunnan Province
88	4	2017	Fengxian Dahongpao Pepper Cultivation System, Shaanxi Province
89	4	2017	Lantian Apricot Planting System, Shaanxi Province
90	4	2017	Yanchi Sheep Breeding System, Ningxia Hui Autonomous Region
91	4	2017	ChabuChaerbuha Agrosystem, Xinjiang Uygur Autonomous Region

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