

# A Study on the Development of Management System for KIAHS (Korea's Important Agricultural Heritage Systems) Sites

Lee, Jeong-Hwan • Yoo, Hak-Yeol\* • Jeon, Young-Ok\*\* • Choi, Sik-In\*\*\* • Youn, Won-Keun\*\*\*

*Korea Rural Community Corporation, The Presidential Committee for Balanced National Development*

*\*Chungnam Institute*

*\*\*Urban Environment Research Institute*

*\*\*\*Dept. of Regional Development, Hyupsung University*

## 한국 국가중요농업유산지역 관리체계 개발 연구

이정환 • 유학열\* • 전영옥\*\* • 최식인\*\*\* • 윤원근\*\*\*

한국농어촌공사 농촌개발처, 국가균형발전위원회 농산어촌과 • \*충남연구원 • \*\*도시환경연구소

\*\*\*협성대학교 지역개발학과

**CDUVTCEV** : 한국의 농업유산 정책은 2002년 FAO가 도입한 GIAHS 제도를 바탕으로 2012년에 농림축산식품부가 도입하였다. 현재 한국 국가중요농업유산(KIAHS)지역으로 지정이 되면, 농림축산식품부의 다원적 자원 활용사업에 의해 3년간 보전 관리를 위한 예산지원을 받도록 제도화되어 있다. 그렇지만, 다원적 자원 활용사업 종료 이후 KIAHS 지역에 대한 실질적인 관리체계는 마련되어 있지 않은 상황으로, 이에 대한 연구가 시급한 상황이다. 따라서 본 연구는 KIAHS 지역에 대한 지속적 관찰 및 데이터 구축을 위한 모니터링 지표 개발을 통하여, 지속가능하고 효율적인 KIAHS 지역의 보전관리체계를 마련하는 것을 목적으로 한다. 이를 위해, 본 연구는 문헌고찰, 해외사례 조사, 전문가 그룹 인터뷰를 통한 지표의 검증 및 현장 적용의 연구방법을 통하여 모니터링 지표 및 관리체계를 도출하였다. 모니터링 지표는 단계별 검증절차를 거쳐서 총 17개의 공통지표와 각 지구의 특성을 반영하는 자율지표로 구성하여 제시하였다. 제시한 모니터링 지표들은 준비-지정-관리의 3단계로 구분하여 단계별로 적용가능한 지표를 제시하고, 측정시기와 방법, 측정주체 등 관리체계 구축에 필요한 항목들을 함께 제시하였다. 본 연구는 한국 국가중요농업유산의 보전과 관리를 위한 정책적 시사점을 제시하는 데 의의가 있다.

**Mgf<sup>l</sup> yqtfu** : Agricultural Heritage, Monitoring, Management System, KIAHS, GIAHS.

## I. Introduction

The Globally Important Agricultural Heritage Systems (GIAHS) program was introduced by the Food and Agriculture Organization (FAO) of the United Nations in 2002. FAO defines GIAHS as: "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" (Endo, 2016). The overall goal of the GIAHS program is to identify and safeguard GIAHS and their associated landscapes, agricultural biodiversity and knowledge systems through catalyzing and establishing a long-term program to support such systems and enhance global, national and local benefits derived through their dynamic conservation, sustainable management and enhanced viability (Berweck et al., 2013).

Referencing from FAO's GIAHS program, Korea's

Corresponding author : Youn Won-Keun

Tel : 82-31-299-0827

E-mail : younwk@uhs.ac.kr

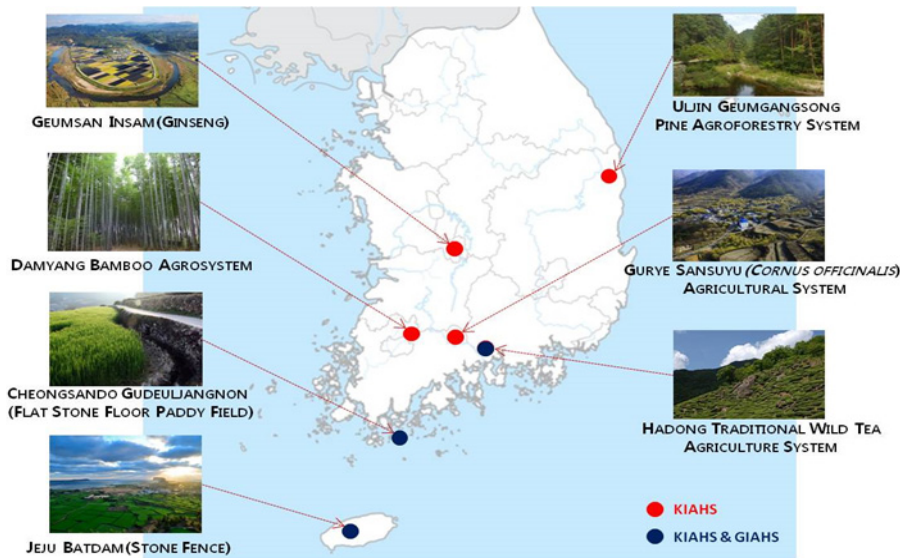


Figure 1. Designation status of KIAHS (as of 2017)

agricultural heritage policy was launched by Ministry of Agriculture, Food and Rural Affairs (MAFRA) in 2012 to designate seven of Korea's Important Agricultural Heritage System (KIAHS) (Figure 1) (MAFRA, 2017). In the case of Korea, since it is at the early stage of the agricultural heritage policy, there has been a focus on the designation of the KIAHS and GIAHS. However, since the designation of the KIAHS sites will accumulate in the future, it will be more critical than ever to manage them effectively (Lee et al., 2016). Currently, issues related to the management of KIAHS sites are as follows.

Firstly, it is difficult to grasp the operational status of the designated KIAHS sites. Most of these problems are caused by the fact that a monitoring system for KIAHS is absent. MAFRA advocates conservation and management of KIAHS designated areas through the Utilization of Pluralist Resources of Rural Area Project (UPRP) with the budget of 1.5 billion KRW over three years (MAFRA, 2014). Local governments are establishing local-specific action plans after the designation of KIAHS by UPRP. The action plan includes short-term and medium-term plans for conservation and utilization of agricultural heritage. The short-term plan is executed within the project period and it is possible to execute the budget for the application of the plan. However, mid- and long-term plans for agricultural heritage management after the end of the UPRP proposed by the action plan show the nature of a declarative plan in

which the budget is not supported (Park et al., 2012). In other words, there is no government system for checking whether the action plan is well executed even after the end of UPRP (Lee et al., 2017)

Secondly, the existing database for KIAHS sites is insufficient. For systematic and efficient management of KIAHSs, data on each heritage site should be collected and organized, and the accumulated information should be inter-exchanged between the central government and local governments. But the action plan written by the local government is insufficient in terms of investigation subjects, items, methods, interval of database construction, and in terms of budget acquisition necessary for research after the end of UPRP (Park et al., 2012).

Lastly, the administrative guidance system for the integrated management of the KIAHS sites has not been established. Currently, the designation of KIAHS sites is relatively systematic, which are led by the central government. However, the role-sharing relationship among the subjects is unclear in the post-designation management phase (Yiu et al., 2018). Therefore, should post-project management measures fail to establish, hence systematic management of the agricultural heritage will fail to prevent damages to the heritage (Lee et al., 2016).

To solve the expected management issues, it is very critical to establish a conservation management model for KIAHS sites. This study aims to establish a sustainable

and efficient conservation management system for KIAHS sites through the development of monitoring indicators for systematic management of KIAHS sites.

## II. Materials and Method

The main subject, scope and contents of the monitoring KIAHS are presented through the literature review of the integrated agricultural heritage management system of the KIAHS. The main items are seemingly linked. These literature reviews were based on FAO's concept of agricultural heritage, the 2012 study (Park et al., 2012) which was undertaken to introduce the Korean agricultural heritage system and establish the concept of Korea agricultural heritage and management. Also, we reviewed designation criteria of KIAHS and GIAHS and present monitoring elements according to the agricultural heritage selection criteria. Then post management cases from overseas agricultural heritage monitoring were reviewed. In particular, China and Japan have a similar social and agricultural environment and have 51% of the total designated GIAHS. Furthermore, it has been confirmed that it is striving for the management of agricultural heritage through the 3rd ERAHS conference. Therefore, we analyzed cases of GIAHS in Japan (Sado-Shi, Usa-Shi) and cases of GIAHS region monitoring in China.

2004; Kim, 2014; Paola, 2015) related to the rural development and the indicators that do not meet the criteria were omitted. In the step two, indicators derived from step one are allocated to following three steps according to their characteristics: pre-designation step, designation step, and operation step. In step three, the model was applied to KIAHS site of Geumsan-Gun where is a county of South Chungcheong Province in Korea based on previously drawn indicators and supplemented into the final indicators. Furthermore, the type, timing, subject and method of monitoring required for each phase of the preparation, designation and operation of the agricultural heritage were clarified and the management system for effective conservation management of the KIAHS sites was suggested. The whole process of development and verification of the indicator and the development of the KIAHS management system is carried out by two groups. One is the field activists who have experience in establishing the action plan for conservation and management of the KIAHS area. Another one is the agricultural heritage experts who are belonging to Korea Agricultural Heritage Association or Korea Agricultural Heritage Advisory Committee.

## III. The Case Studies of GIAHS Monitoring

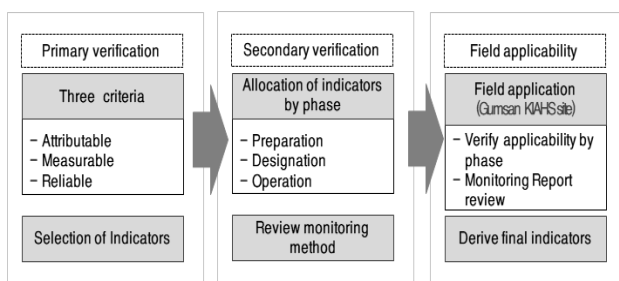


Figure 2. Monitoring Indicator Verification Procedure

Then, we set up a primary direction for the monitoring of KIAHS sites and presented 91 preliminary indicators and 17 final indicators derived from 3 different steps (Figure 2). In the first step, three criteria (indivisibility, measurability and reliability) for the indicator verification were set up in reference from preceding researches (Ko,

According to FAO's website, as of February 5, 2018, there are total of 47 GIAHS in 19 countries around the globe. GIAHS in Korea, China and Japan account for 57% of total GIAHS, counting at 27. Additionally, the three geographically adjacent countries co-organized ERAHS under agreement for regular academic exchanges related to agricultural heritages in 2014 (Yiu et al., 2018). In particular 3rd annual conference was held in Geumsan in 2016 with a special session for GIAHS monitoring where the importance of monitoring for management of agricultural heritage was shared and agreed. As a result, it was found that China and Japan have different monitoring methods (See 3.1 and 3.2), and Korea has been supporting the government budget through UPRP for first 3 years as mentioned above. It can be said that All China, Japan, and Korea recognize the importance of heritage management

Table 1. Key Indicators of GIAHS Monitoring in Sado-shi and Usa-shi GIAHS Areas

| Sado-shi GIAHS Area  | Usa-shi GIAHS area  |
|--|---|
| <ul style="list-style-type: none"> <li>- Trend of eco-friendly agriculture (ha)</li> <li>- Multifunctional Direct Debit System Covered Area (ha)</li> <li>- Certified agricultural embroidery (per)</li> <li>- New farmer (per)</li> <li>- Agricultural heritage certified product store (amount)</li> <li>- Certified agricultural products store in Sado (amount)</li> <li>- Participants in the Sado Children's Ecosystem Survey (per)</li> <li>- Plastic bag zero movement cooperation stores (amount)</li> <li>- Walking tour participants in agricultural heritage area (per)</li> <li>- Recognized as an exporter of agricultural heritage (per)</li> </ul> | <ul style="list-style-type: none"> <li>- GIAHS awareness of local residents (%)</li> <li>- Junior high student agriculture heritage major student (per)</li> <li>- High school student agriculture heritage survey participant (per)</li> <li>- New farmer (per)</li> <li>- Area certified agricultural product cultivation area (ha)</li> <li>- Local environment, beautification group (amount)</li> <li>- Area of closed land (ha)</li> <li>- Ecological environment investigation, conservation activity group (amount)</li> <li>- Agricultural culture succession-related activity group (amount)</li> <li>- GIAHS local brand certification cases (amount)</li> </ul> |

and efforts are exerted, but all have different approaches toward it (Jiao et al., 2017). FAO, through the GIAHS international forum (Ishikawa, Japan, 29 May - 1 June, 2013) and 3th ERAHS Conference (Geumsan, Korea, 13 - 16 June, 2016), also emphasized the importance of GIAHS designated areas' monitoring and management (Lee et al., 2016). In September 2016, FAO also requested a survey of agricultural heritage countries with a vision of establishing a monitoring and management system for GIAHS areas (Lee et al. 2016).

### 3.1. GIAHS Monitoring in Japan

Japan's Ministry of Agriculture, Forestry and Fisheries has set up a 'National Steering Committee (NSC)' in March 2015 to identify agricultural heritage resources and monitor agricultural heritage designated areas. The monitoring method is divided into self-evaluation of the self-assessment table and on-site inspection in the agricultural heritage area. These self-evaluation schedules must be submitted to the

Ministry of Agriculture, Forestry and Fisheries every five years (Kentaro, 2016).

The characteristics of the Japanese GIAHS regional monitoring index are that they are set up autonomously by taking advantage of the characteristics of the designated agricultural heritage area. In particular, many indicators emphasize the economic effects of GIAHS conservation activities of local youth, environmental conservation activities of local residents and agricultural heritage. Table 1 have key indicators of GIAHS monitoring in Sado-shi located in Niigata Prefecture and Usa-shi located in Oita Prefecture in Japan (Sado-shi, 2015, Usa-shi, 2015)

### 3.2. GIAHS Monitoring in China

China, which has the most agricultural heritage and GIAHS in the world (Jiao et al, 2017), several studies were carried out for the conservation and management of agricultural heritage such as economic evaluation of agricultural heritage sites (Berweck et al., 2013) and

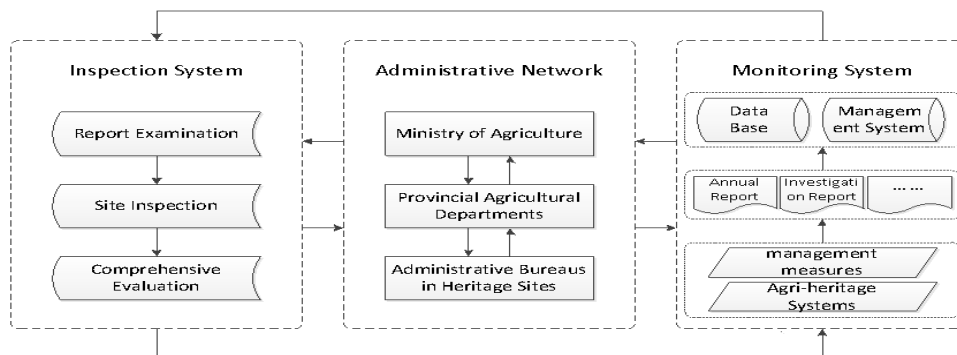


Figure 3. GIAHS Regional Monitoring Basic Structure in China

research on scope, subjects and methods of agricultural heritage conservation management (Min et al., 2016). China's approximate monitoring and management system presented at the 2016 ERAHS conference is as follows. GIAHS regional monitoring indicators are divided into agricultural heritage systems and management. In the agricultural heritage system sector, indicators are set in terms of ecological, economic, social and cultural aspects. On the other hand, in the management section, it consists of specific indicators related to strengthening capacity of local residents and administrations and publicity of agricultural heritage (Jiao, 2016).

GIAHS regional monitoring in China is divided into three categories: document inspection, field inspection and comprehensive evaluation (Figure 3). Document inspections are conducted by the Ministry of Agriculture, field inspections are conducted by the GIAHS local agricultural department in GIAHS and the comprehensive evaluation is carried out by the GIAHS local department. The monitoring target is the agricultural heritage system and management system and the monitoring cycle is divided into annual monitoring every year and survey reports conducted every three to five years (Jiao, 2016).

#### IV. Concept of Management and Monitoring for KIAHS

##### 4.1. KIAHS Management

The concept of traditional management is strongly reflected in the will of management. In other words, the general concept of management is defined as the function or application of guiding and coordinating the operation of various factors including human and physical factors, to realize a specific purpose efficiently (Kim, 1969). Establishing the concept of agricultural heritage only in terms of traditional management may overstate the purpose of management to be the control of the management subject, by the controlling body, and limit the reflection of individual characteristics of management subjects. Therefore, it is more appropriate to determine management models that complement these shortcomings have been introduced (Lee, 2005; UNDP, 2009; UNDP 2011) such as United

Nations Development Program (UNDP)'s Results-Based Management. The contents include the involvement of implementation personnel and the circulation of management body. Since agricultural heritage is not rigidly preservation centered but aims utilization through conservation (Yoon et al., 2012; Lee et al., 2014), it can be used to establish the concept of agricultural heritage management by adding conceptual elements such as stakeholder participation, interaction and feedback from the management process.

A system is generally defined as an organization or body in which individual bodies are interactively combined according to particular principle to form the whole (Kim, 1969). Additionally, the management system is mostly dispersed into a behavioral approach and an ecological approach. An explanatory comment based on the behavioral approach of the management system is a method of analyzing the interaction of each element by focusing on a critical organization or an individual subject. On the other hand, the ecological approach is to recognize the organization as an organism and to study the interactions between the external ecological factors (Kim, 1969).

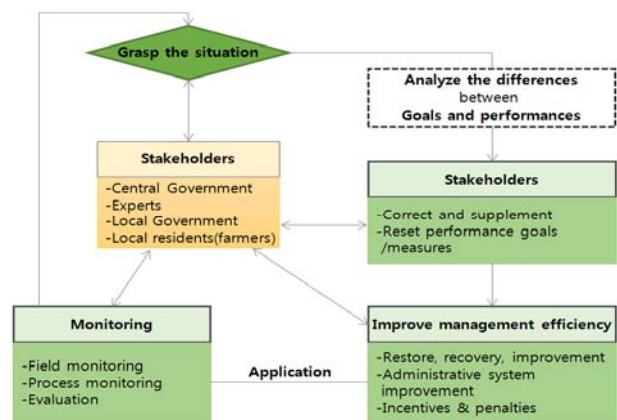


Figure 4. The Concept of Integrated KIAHS Management

In establishing the management system of KIAHS sites, we should consider that the management of agricultural heritage is different from that of the administrative management centered on the regulation or the management of the enterprise that emphasizes the efficiency. The agricultural heritage should establish the management system in the direction of putting more value on

conservation through utilization, guidance and consensus, ensuring community's identity and security (Lee et al., 2016). Furthermore, the concept of agricultural heritage management should be in accordance with current pending issues in Korea as to how effectively manage KIAHS sites distributed throughout the country. Therefore, the KIAHS management system is a system in which governments and related entities manage and plan the operation of the KIAHS sites in order to ensure that the KIAHS sites designated by the government can be effectively conserved and utilized in response to external environmental changes. This system refers to the organizations those are organically involved in the monitoring process. Figure 4 shows the concept of intergrated KIAHS management.

#### 4.2. Monitoring for KIAHS Management

Many existing definitions that treat monitoring as merely reviewing progress made in implementing actions or activities (Lee et al., 2016). However, monitoring of agricultural heritage is primarily required for effective management of the KIAHS. In order to efficiently manage the agricultural heritage, it is necessary to grasp the overall operational status of the operation of the KIAHS. Therefore, monitoring is not regarded as separate from management, but it can be viewed as a kind of management tool to achieve the goal of efficient management of KIAHS. UNDP has a similar view and broadly defines monitoring as: "The ongoing process by which stakeholders obtains regular feedback on the progress being made towards achieving their goals and objectives" (UNDP, 2009). In this sense, in order to develop a useful monitoring technique, it is necessary to examine the concept of monitoring from the viewpoint of subject, scope, content and technique.

If the monitoring of KIAHS is defined in a lexicological sense, the information necessary for the operation of the agricultural heritage can be collected through the investigation and supervision of the specific matters related to the conservation status, operational status and it can be defined as a series of activities that collects and analyzes the information and takes actions such as warning, advice and guidance for the subject of operation. Therefore, the monitoring of KIAHS sites in Korea can be operationally defined as an activity which is based on the development

of indicators for the efficient management of KIAHS and by checking the actual state of the management plan, organization and operation status of KIAHS sites and using the results to improve the efficiency to manage them.

Since the monitoring of agricultural heritage is related to the management of agricultural heritage, the management body of the agricultural heritage is simultaneously the subject of monitoring. As for the management of agricultural heritage, the central government, local governments, related private organizations and residents all should participate in the management as the subjects. For the same reason, monitoring requires a way for these stakeholders to participate jointly through collaborative relationships. However, for effective monitoring, it is necessary to clarify the role of each of these subjects.

The central government is the pivotal component in the monitoring system to collectively monitor and supervise the KIAHS sites all around the country. In other words, the central government needs to adequately supervise the appropriateness of local government's heritage management and self-monitoring. Local governments are to establish and execute individual, local friendly monitoring plans as they are the actual subjects of management and monitoring under central government's supervision. Furthermore, private organizations with expertise can also be the subject of monitoring, as the central and local governments in Korea lack the expertise to carry out monitoring directly. Residents can also participate in the system as well. Although it may be difficult in the short term, in the end, it is necessary to induce the local participation into heritage conservation and utilization.

The spatial extent of the monitoring target can be an essential element to agricultural heritage of all countries, which can be called integrated agricultural heritage management and monitoring. In this case, the central government becomes the subject of management and monitoring. On the other hand, if the scope of monitoring is limited to individual agricultural heritage sites, the scope of management can be divided into core areas and surrounding areas within individual agricultural heritage areas. When monitoring agricultural heritage with vast area, priority can be given to these areas to select and include them in the monitoring scope.

## V. Conservation Management System for KIAHS

### 5.1. Development of Monitoring Indicators

The monitoring indicators of agricultural heritage are actually derived from the designation criteria of the agricultural heritage. The designation criteria correspond to qualifications required to be designated as a KIAHS, so the designation criteria and monitoring indicators for follow-up management are closely related to each other. The criteria for designation of agricultural heritage are divided mainly into heritage value, partnership and effectiveness. First of all, there are five designation criteria related to the value of heritage. These are the key indicators related to the field survey of the heritage. Additionally, the criteria of the partnership are related to the management of the heritage, including the management plan of the heritage, the budget allocation and the role of the organization. Lastly, the criteria for effectiveness are indicators related to utilization of the heritage, including economic, socio-cultural and environmental aspects (Table 2). From the above, the

monitoring index of agricultural heritage is mostly divided into indicators related to operating system and indicators related to conservation (value) and utilization (effect) (Figure. 5).

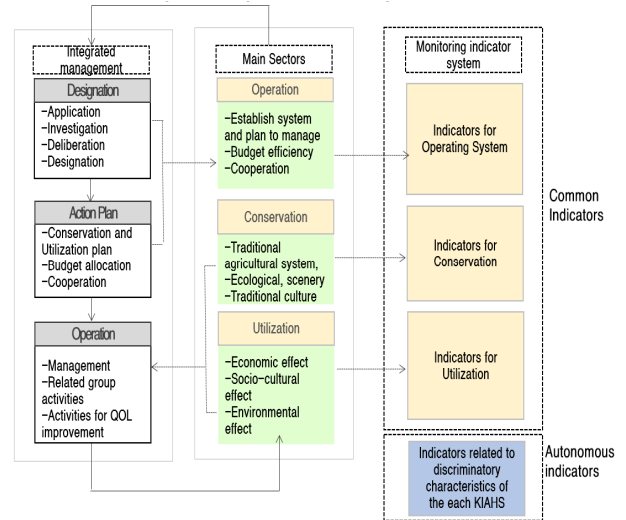


Figure 5. Integrated Management and Monitoring System of KIAHS

In order to specify the basic direction of monitoring

Table 2. The Monitoring Factors According to the Selection Criteria of Agricultural Heritage

| Division          | Selection Criteria  | Monitoring factors  |
|-------------------|---|---|
| 1. Heritage value | Food supply function of heritage<br>Knowledge and technology system for the management of heritage<br>Community culture value system and organization<br>Presence of rare biodiversity<br>Beautiful scenery | Indicators related to production activity   |
|                   |   | Land and water resource utilization knowledge and skills index  |
|                   |   | Traditional cultural activities and related activity indicators   |
|                   |   | Activity indicators for promoting and investigating biodiversity  |
|                   |   | Scenery conservation related indicators   |
| 2. Partnership    | Partnership of government and related organizations   | Relevant indicators of feasibility evaluation of local government management plan (related to planning and budget allocation)   |
|                   |   | Cooperation index with related groups such as expert group  |
|                   | Resident Participation Rate   | Indicators of voluntary participation by local residents (including NGOs)   |
| 3. Effects        | Social and cultural effects   | Indicators of residents' activities to promote traditional culture  |
|                   | Economic effect   | Indicators related to revitalization of local economy, such as agricultural activities, tourism, improvement of local brand value, improvement of employment and income |
|                   | Environmental effect  | Indicators related to improving the living environment of residents   |

Note: Partially edited based on FAO's GIAHS, KIAHS and Korea Important Fishery Heritage Systems selection criteria before October 2012

indicator system based on the above mentioned operational concept definitions, review of selection criteria and major cases for the development of the monitoring indicators and management system is as follows. First, KIAHS focuses on the conservation of a broad sense of value, such as securing the safety and identity of the community through utilization, guidance and agreement, unlike preservation-oriented institutions such as cultural properties. Second, the monitoring indicators are structured in line with the monitoring factors according to the integrated management step of the KIAHS (preparation → designation and action planning → operation phase). The development of indicators is divided into three approaches: 1) operating system related indicators, 2) conservation (value of heritage) and 3) utilization (effect) related indicators. Third, it consists of a common monitoring index corresponding to the entire agricultural heritage and an autonomous index that can reflect individual cases according to designated KIAHS sites (Figure 5).

Table 3 shows the finalized monitoring indicators for KIAHS sites and step-by-step monitoring indicator system

from the primary direction we discussed above. Moreover, table 3 shows that the number of indicators applied to each step-by-step monitoring is different. In the preparation step of designation, we measure six indicators of conservation (5 indicators), operation (1 indicators) and in the designation step, the six indicators of the preparation step are measured by adding four managing (4 indicators) indicators and the autonomous indicators of each agricultural heritage. In the subsequent step of operation, all 17 common indicators and autonomic indicators are measured continuously to observe changes in the period.

### 5.2 Management System through Monitoring

In carrying out the conservation management tasks of the agricultural heritage, the target should be the designated KIAHS, and establish the conservation management system in such way to restore the value of the agricultural resources according to the KIAHS designation criteria.

The main subjects related to Korea's important agricultural heritage are the MAFRA, local governments, related private organizations and residents. Firstly, the central government, the MAFRA, collectively grasps and

Table 3. Derived Indicators and 3-step Monitoring for KIAHS

| Item        | Middle item  | Indicators                           | Application step  |             |           |   |
|-------------|--|--------------------------------------|---|-------------|-----------|---|
|             |  |                                      | Preparation   | Designation | Operation |   |
| Common (17) | Conservation(5)  | Traditional agriculture              | Number of farms & output  | O           | O         | O |
|             |  |                                      | Traditional agricultural system (Technology)                                    | O           | O         | O |
|             |  | Ecology                              | Biodiversity  | O           | O         | O |
|             |  | Scenery                              | Change in scenery   | O           | O         | O |
|             |  | Traditional culture                  | Finding & fostering (recommended) traditional culture                           | O           | O         | O |
|             | Operating System (6)   | Formation of management authority    | Organization & activities of the Agricultural Heritage Administration Committee | O           | O         | O |
|             |  |                                      | Dedicated personnel in the local government                                     |             | O         | O |
|             |  | Establishment of management planning | Establish mid & long-term management plan and secure budget                     |             | O         | O |
|             |  |                                      | Expansion of institutional framework  |             | O         | O |
|             |  | Management system                    | DB construction   |             | O         | O |
|             | Feedback of monitoring results   |                                      |   |             | O         |   |
|             | Utilization (6)  | Economic effect                      | Related product development   |             |           | O |
|             |  |                                      | Improvement of farm income  |             |           | O |
|             |  |                                      | Tourist growth rate   |             |           | O |
|             |  | Socio-cultural effect                | Promote local image by public relations activities                              |             |           | O |
|             |  |                                      | Activities of resident organization related to agricultural heritage            |             |           | O |
|             |  | Environmental effect                 | Facility maintenance related to agricultural heritage                           |             |           | O |
| Auto-nomous | Once designated as KIAHS sites, then local governments develop autonomous indicators according to the heritage they are subject to and record them in action plan of conservation and management, to be followed by periodic monitoring to set as the conservation and management standards. |                                      |   | O           | O         |   |



supervises the actual state of KIAHS sites distributed throughout the country for the integrated management of KIAHS sites and it provides guidelines or indicators for monitoring. In addition, it is necessary to manage and supervise important changes in the status of important agricultural heritage and surrounding areas and if necessary, establish policies such as research and research projects on KIAHS sites and carry out the role of leading and supervising local governments. Secondly, the city government, which is a local government, establishes a master plan regarding on conservation management for the KIAHS site based on policies related to the agricultural heritage, also establish and implement action plans for conservation, management and utilization. In addition, in accordance with the monitoring guidelines provided by the MAFRA and obtain opinions of local residents related to KIAHS site. Thirdly, residents or residents' associations residing in the agricultural heritage area are also an important subject of agricultural heritage management. In particular, farmers who continue agricultural activities in the KIAHS area should try not to undermine the traditional farming techniques and the traditional structure and style of the site. Lastly, the Committee on Agricultural Heritage Management is a private organization of local governments and it can be an important subject of monitoring because it includes public officials and experts as well as residents' councils.

Figure 6 shows conservation management system through monitoring of KIAHS sites. In the process of being designated as a KIAHS, there are 3 steps, the part directly

required for monitoring is the preparation step (preparation of KIAHS application form and agricultural resource manual), designation step (establishing a master plan for conservation management after designated as a KIAHS) and management step (management and utilization of KIAHS in accordance with "management standards for designated heritage of agriculture").

Since the agricultural resource manual is prepared at the step of designing the designated application, the central government needs to include the monitoring index which is necessary for the preparation step in the guidelines for the preparation of the agricultural resource manual, so that it can set up a standard for selecting the KIAHS. At the designation step, the central government will obtain support from the central government and establish an action plan for conservation management. At this phase, it is necessary to include monitoring indicators (common index and autonomous index) necessary for operation management. In addition, detailed information on the monitoring index should be included in the maintenance plan, and it should be used as the baseline data for periodic monitoring in the future. More detailed monitoring activities such as periodic monitoring, integrated monitoring, technical monitoring and policy monitoring are required at the operational stage after designation.

Periodic monitoring during operational phase refers to monitoring process which should be conducted regularly by local government once a year by adding self-indicators to the 17 selected common indicators. The mayor records monitoring results and submit the results to the Food and

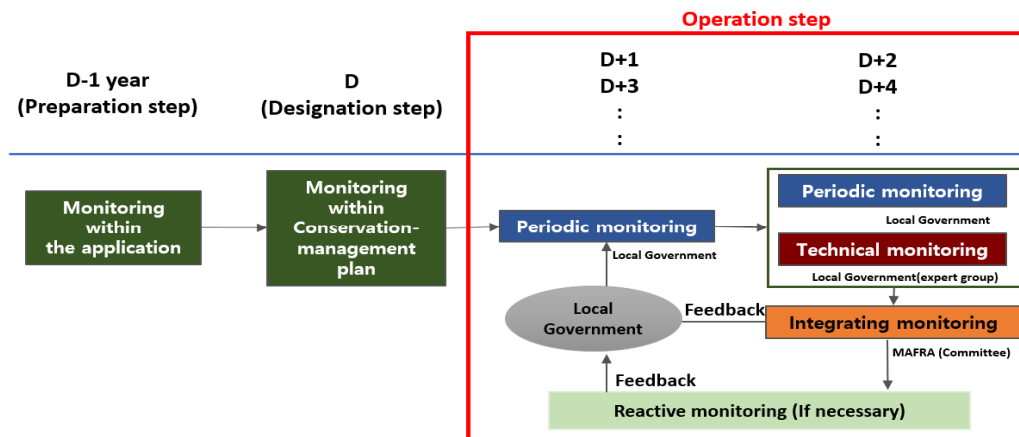


Figure 6. Conservation Management System through Monitoring of KIAHS sites.

Agriculture Department every two years. Technical Monitoring requires professional knowledge and expertise since this step evaluates 'DB structure' and 'biodiversity'. Experts in the field are entrusted by the mayor's clerks once every two years and these results are reflected in the periodic monitoring report. Integrated monitoring is conducted once every two years at the national level, and consolidate periodic monitoring reports that have been conducted for each heritage to decide the future policy and assess the changes in agricultural heritage and conservation management among the following two years. Rather than conducting separate surveys, they integrated analysis of periodic monitoring results produced every year. Policy monitoring should be carried out in cases when significant changes are predicted in the country's important agricultural heritage and surrounding areas (areas where various activities are taking place by utilizing agricultural heritage) or when serious damage has occurred due to natural disasters or in urgent situations.

## VI. Conclusions & Implications

In case of the Korea, there is no integrated monitoring system for the KIAHS sites for now. It is difficult to maintain and utilize the KIAHS due to frequent replacement of public officials and lack of awareness of the agricultural heritage of residents. It is urgent to establish a management system for KIAHS. Of course, if the area were designated as a KIAHS, it will be able to receive 1.5 billion KRW for three years as UPRP from the MAFRA, but most of the agricultural heritage sites do not have a practical conservation management plan after UPRP.

In this paper, we propose a management system through the monitoring of Korea's important agricultural heritages. But there are limitations for such a system to operate smoothly in the current condition. First of all, revision of related standards should be prioritized according to introduction of monitoring and management system. Currently, the designated management standards for agricultural heritage are enacted at the time of introducing the agricultural heritage system and the monitoring provisions for the management of the agricultural heritage are unclear and confusing. Secondly, incentive policies for agricultural heritage sites will be needed. By introducing a

public interest type direct payment system that converts the current agricultural direct payment system into a multi-functional center of agriculture and rural areas, it will be able to pay direct payments for activities such as inheritance of traditional culture, biodiversity and beautiful scenery conservation. Furthermore, it will be possible to pay direct payments as organizational units such as the Agricultural Heritage Administration Committee or the Residents' Council. Lastly, MAFRA, as the central government, should secure restoration budget for KIAHS as insurance to cope with various changes in the agricultural heritage and promptly deal with unexpected damages.

This study is currently being carried out in the absence of institutionalized cases or prior research in relation to the conservation and management of GIAHS or KIAHS, so it has several limitations. However, the monitoring and management system of the agricultural heritage proposed in this study is essential and urgent for the purposeful operation based on the value of the agricultural heritage. It is meaningful that this study could be utilized as policy implications for introducing the system to the MAFRA of Korea, GIAHS countries and FAO.

This research was financially supported by Rural Development Testing Research Project of Korea Ministry of Agriculture, Food and Rural Affairs(MAFRA) in 2016.

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- Received 10 May 2018
  - First Revised 18 June 2018
  - Accepted 19 June 2018