

INWEPF WG2

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# TERRACED RICE FIELD AS AGRICULTURAL HERITAGE

다랑이논의 농업유산적 가치

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# Contents

**1**

**The Agricultural Heritage**

**2**

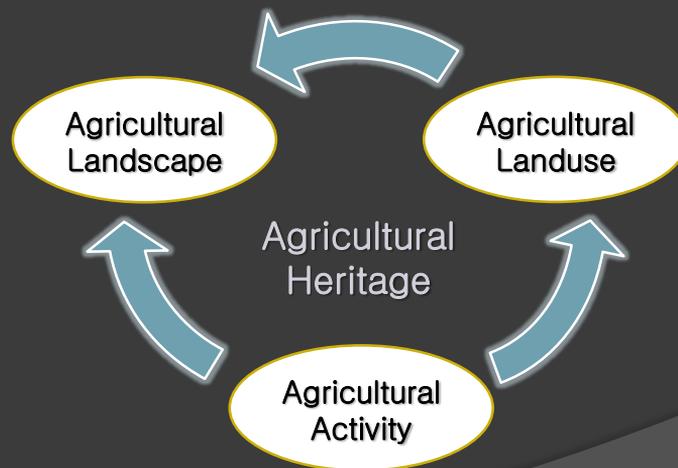
**The Status Quo of Terraced Rice Field**

- **Jiri Mountain area**
- **Cheongsando**

# THE AGRICULTURAL HERITAGE

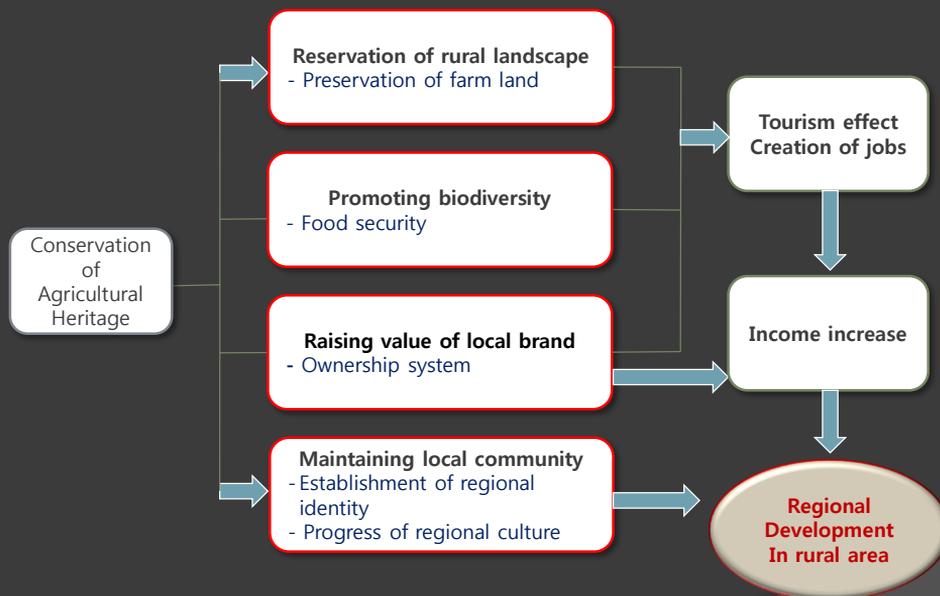
## Elements of Agricultural Heritage

- Traditional Agricultural Activity
- Agricultural Landuse
- Agricultural Landscape



Source : Park, Yun-ho, 2014, Understanding Agricultural Heritage and Regional Development

## Agricultural heritage and regional development



Source : Park, Yun-ho, 2014, Understanding Agricultural Heritage and Regional Development

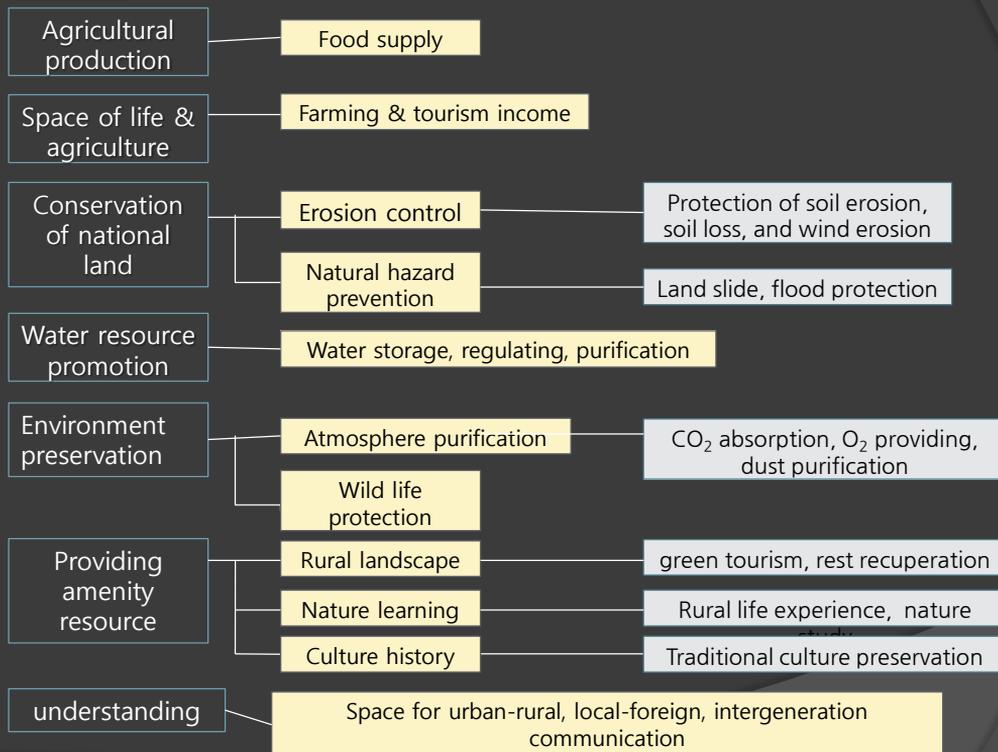
# STATUS QUO OF KOREAN TERRACED RICE FIELD

# I. Introduction

## Definition & function

- Definition of terraced rice field
    - a rice field located on slope land
    - There is, however, no standard gradient of the slope.
  - Multi-functionality of terraced rice field
    - agricultural production
    - space of life and agriculture
    - conservation of national land
    - water resource promotion
    - environment preservation
    - amenity resource
    - space for communication between urban-rural resident
- ❖ In Japan, it is defined as rice field on a hill above a gradient of 1 in 20(5%).

## Multi-functionality of TRF



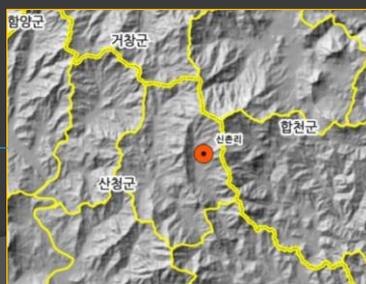
## The value of terraced rice field

- **Ecological value**
  - Multi-functionality
    - ※ in the case of Japan,  
area of TRF(223 thousand ha)×height of inner bank(30cm)=impounded water potential(660 million m<sup>3</sup>) – equivalent to volume of 4 dams in Japan
  - Abandonment of TRF → crack in surface → soil erosion by rain, snow, underground water
  - Do a role as biotic habitat for microorganism, fish, and birds
- **Culture-economic value**
  - Income generation by green tourism
  - Historical, cultural, traditional value
- **Food security**
  - Global crop production decrease due to climate change
  - Reduction of global crop planted area due to bio-energy development

## II. Case study - Jiri Mountain

## Case study

- Early stage of study on terraced rice field in Korea
  - Have not figured out the situation of TRF in Korea
  - 2 study area in mountain area(*Jiri* Mt. 1900 m)
    - *Shinchon-ri* in *Sancheong* Country
    - *Changwon-ri* in *Hamyang* Country



Study area 1 – *Shinchon-ri*

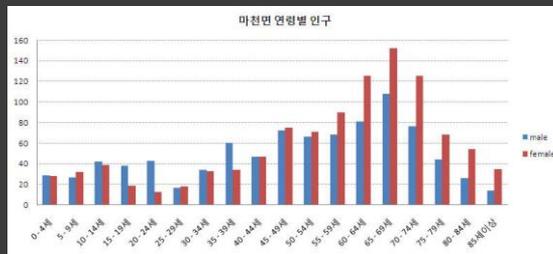


Study area 2 – *Changwon-ri*

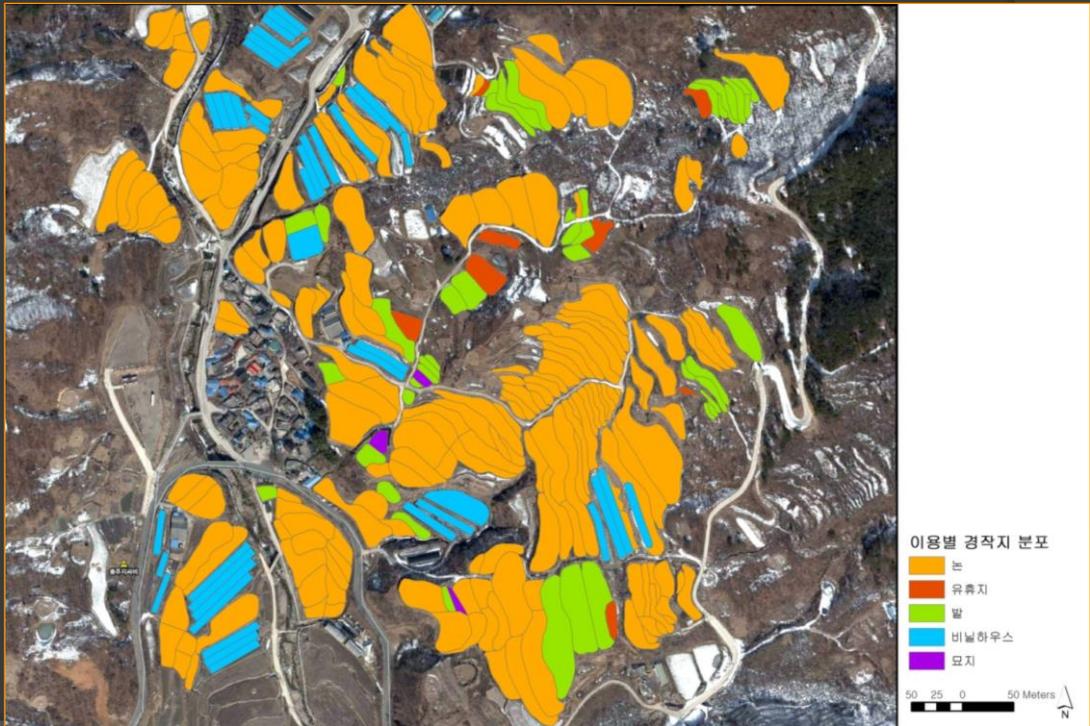


## Outline of study areas

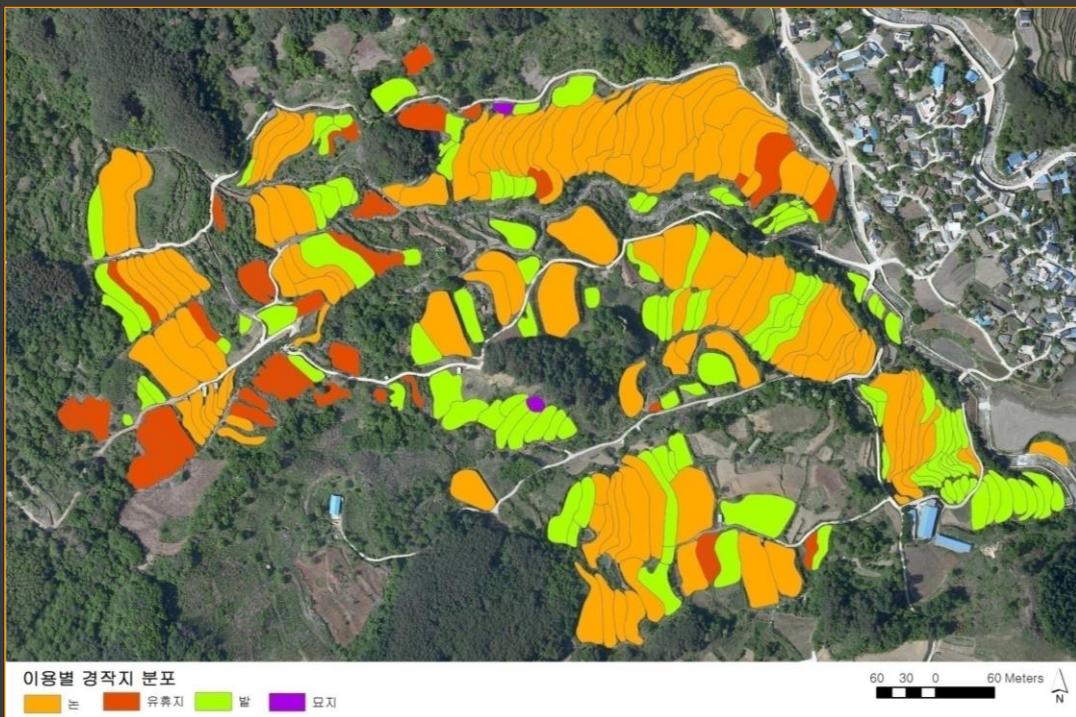
- Height
  - Shinchon-ri : 480~540 m
  - Changwon-ri : 400-500 m
- Aging community
  - More than half of residents are over 50s.
  - Women outnumber men in 60s and over.



## Land use – *Shinchon-ri*



Land use – *Shinchon-ri*



## Land use

- The location of terraced rice field
  - in the valley with mountain stream.
  - small size reservoirs at the top or at the lower part of TRF
- Land use
  - Most of TRFs are engaged in rice farming
  - Shinchon-Ri : 12% of the fields converted into dry-field farming and 11% into a plastic greenhouse area
  - Changwon-Ri : 29% into dry-field farming and 11% into unused land.



Land use



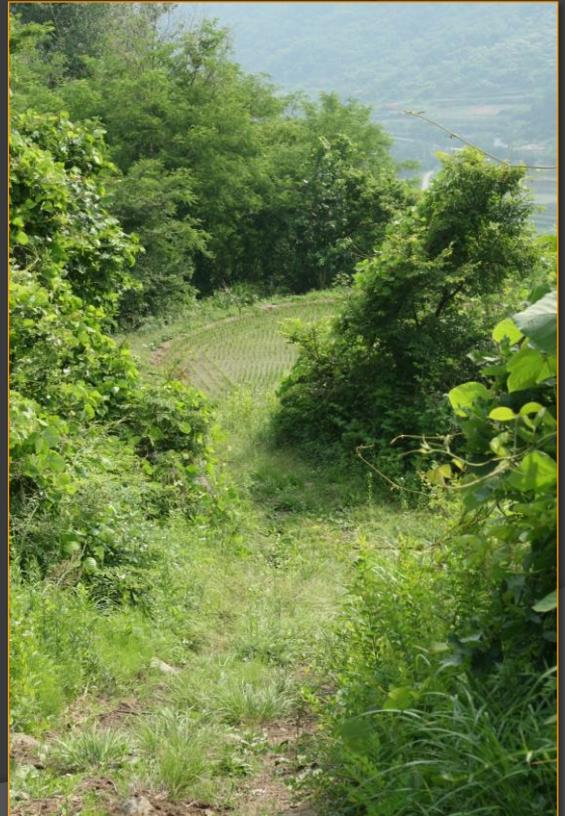
## Land use



Land use

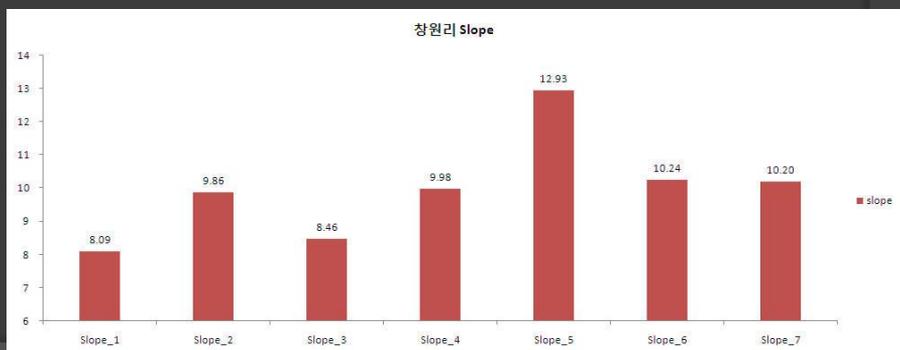


Land use



## Structure of TRF

- Slope
  - Shinchon-ri : gradient of 8%-14%
  - Changwon-ri : gradient of 8%-13%



Slope : *Shinchon-ri*

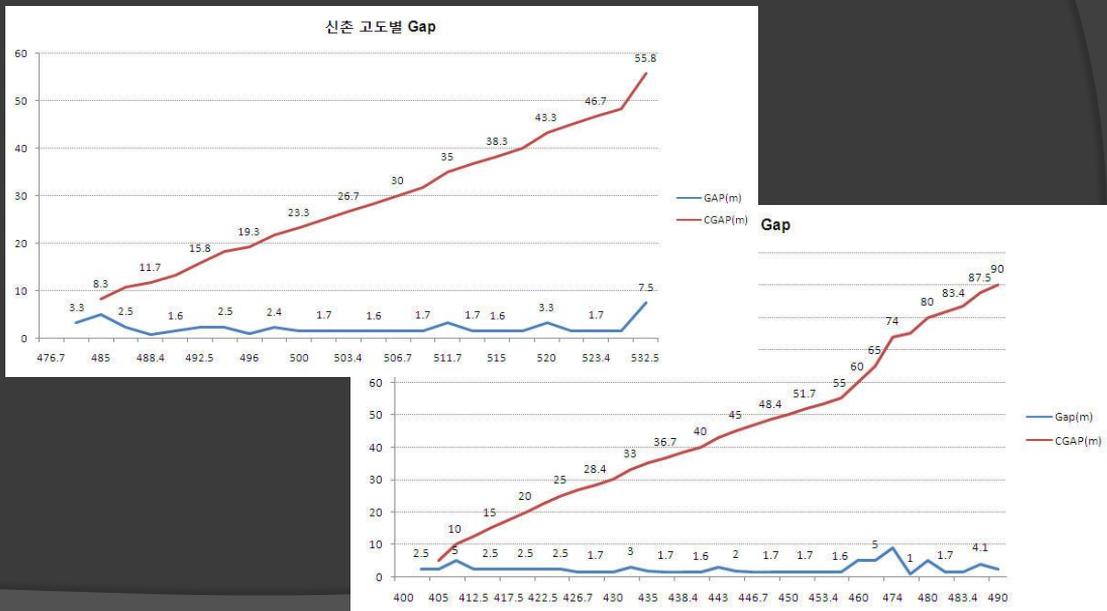


Slope : *Changwon-ri*



## Bank of TRF

- built of stones at their sites
- The heights
  - at the range of 50cm-7.5m. Most of the banks measure 1.7m.



Bank of TRF



Bank of TRF



Bank of TRF



## Irrigation



## Irrigation



## Land use change

- The crops cultivated at the dry-field and vinyl greenhouse
  - red pepper, green tea, barley, and oil seed rape
  - The major crop is red pepper
  - In greenhouse, wild edible greens and hub are cultivated.
  - In recent years, the cultivation area of oil seed rape have been increasing, for oil seed rape is used as the raw material for bio-diesel and has value of natural scenery.



## Land use change



## Land use change



Land use change

oil seed rape flower



## Land use change

- Abandoned TRF have been converted into farm tourism site.  
(*Kyeongnam-Province Geoje*)



## Land use change

- cattle shed., cemetery



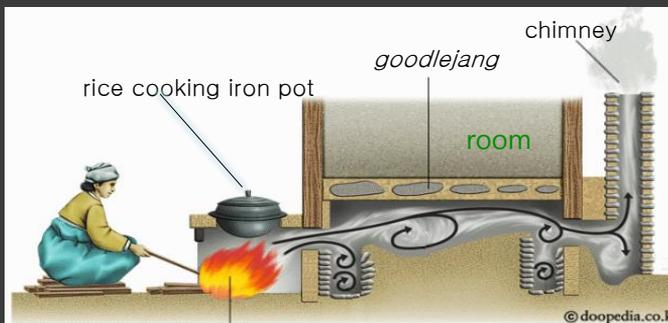
### III. Case Study 2

#### – Goodlejang-non in Cheongsando

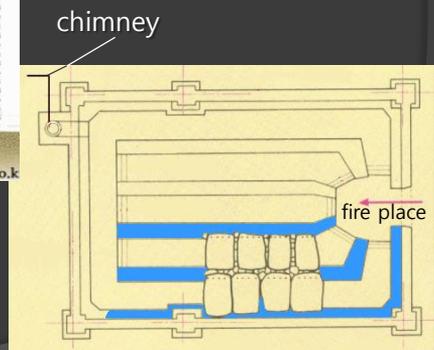
Source: Hwang, Kil-Sik 2014. A study on the value as agricultural heritage and preservation of Goodlejang-non in Cheongsan Island

## Understanding *Goodlejang-Non*

- What is '*Goodlejang-non*' ?
  - *Goodlejang*: flat stone used for Korean floor heating system
  - *Non*: means rice field



Korean floor heating system



## Understanding *Goodlejang-Non*

- What is '*Goodlejang-non*' ?
  - Terraced rice fields applying 'Ondol system(Korean floor heating system)' to make farming land.
  - Which prevents water leak and supply with water to lower rice fields.
- Since 17C, farmers in Cheongsando have made *Goodlejang-non* system and use them as farming land until the present time.
  - And this creative and unique system which adapt themselves to topology, soil, water shortage in the region.



## Structure

- Composed of '*witboggel*', '*mitboggel*', irrigation canal, lower stone wall, and '*Sattol*'.
  - *Witboggel* : crop growing surface (20~30cm)
  - *Mitboggel* : soil stratum mixed with small stones and soil (20~30cm) preventing water leak
  - Irrigation canal : diameter 30~50 cm, depth 5~10m, 2~3 units a lot
  - Lower stone wall : stones of 20~5cm diameter, height 1~1.5m
  - *Sattol* : control water influx

### 윗복글 higher surface

· 작물이 생육하는 토층  
· 두께는 평균 20~30cm

### 밑복글 lower surface

· 직산돌과 흙의 혼합토층  
· 물수의 침투 방지(물받기)  
· 두께는 평균 20~30cm

### 통수로 water conveyer hole

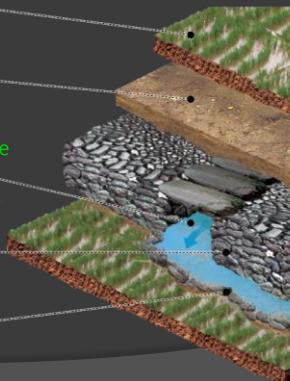
· 크기는 직경 30~50cm의 정방형 알짜  
· 길이는 5~10m  
· 설치된 평균 2~3개 존재

### 하부석축 lower stone wall

· 직경 20~50cm 크기의 돌을 쌓아 올림  
· 쌓이는 보폭 1~1.5m(최고 3m이상 용대 쌓기)

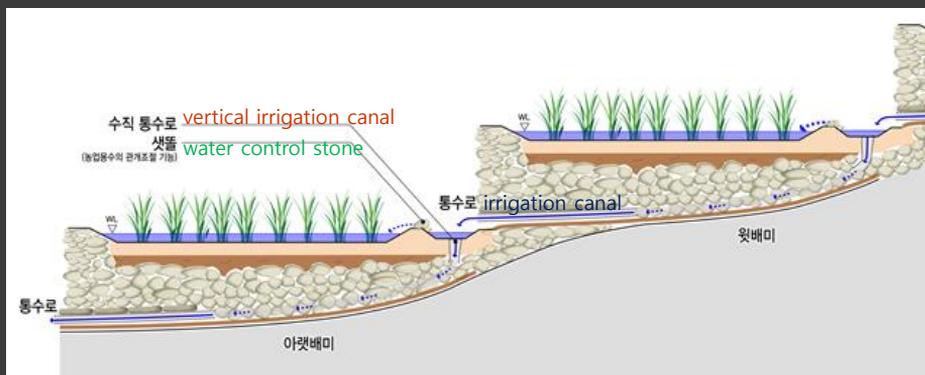
### 삿돌 water control stone

· 논의 물수위 조절  
· 농작물의 생육양지  
· 수직수주 및 보외 연결

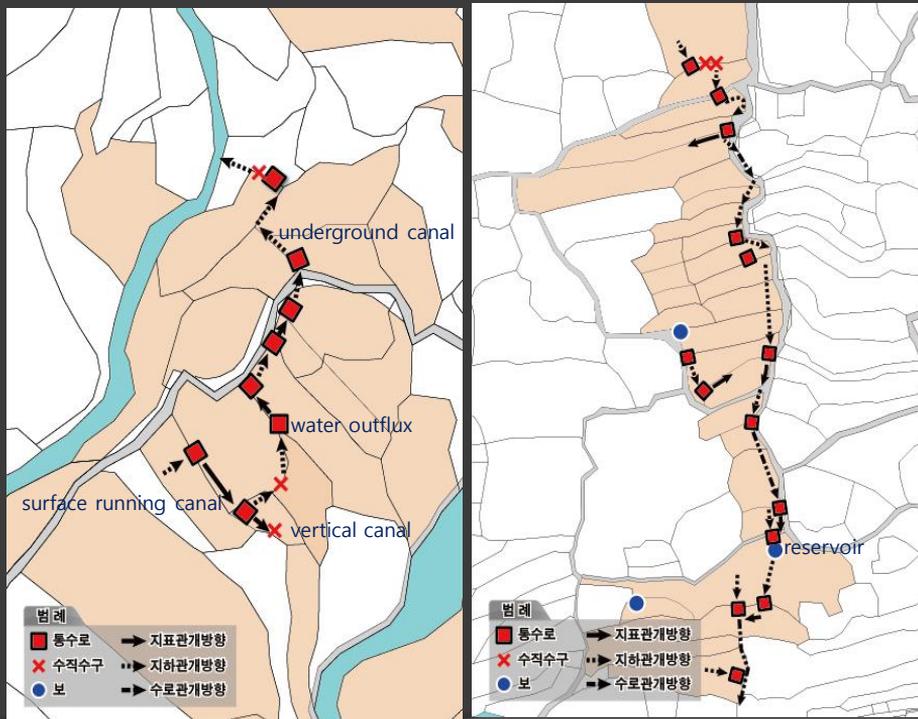


## Irrigation system – key map

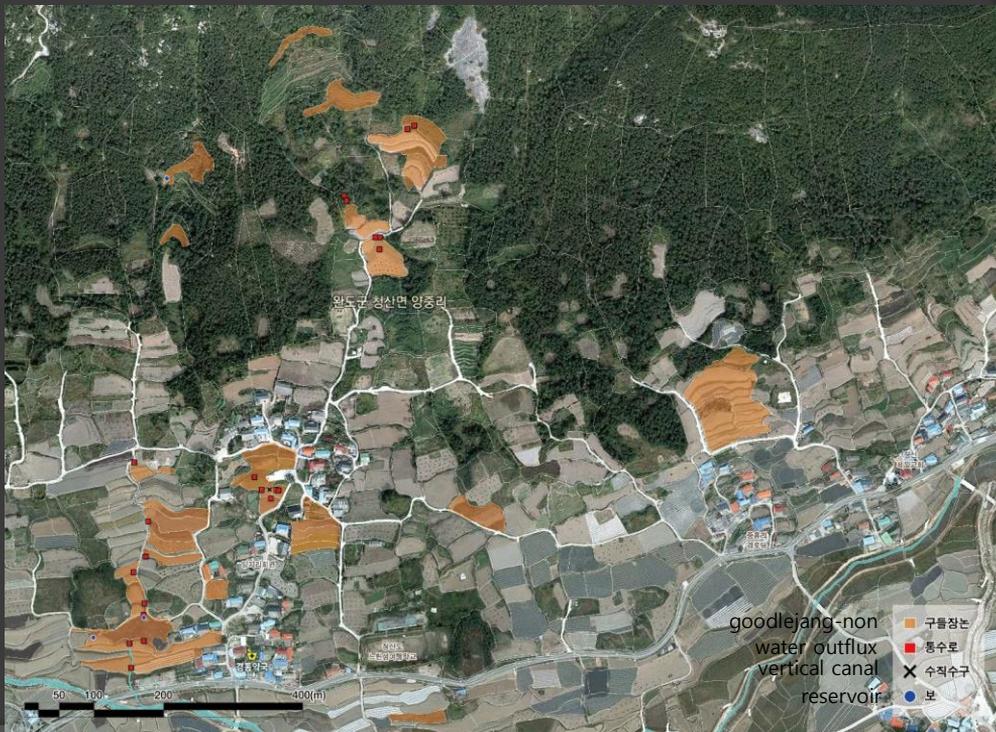
- composed of irrigation canal underground, vertical irrigation canal running water to lower rice field, and water control stone.



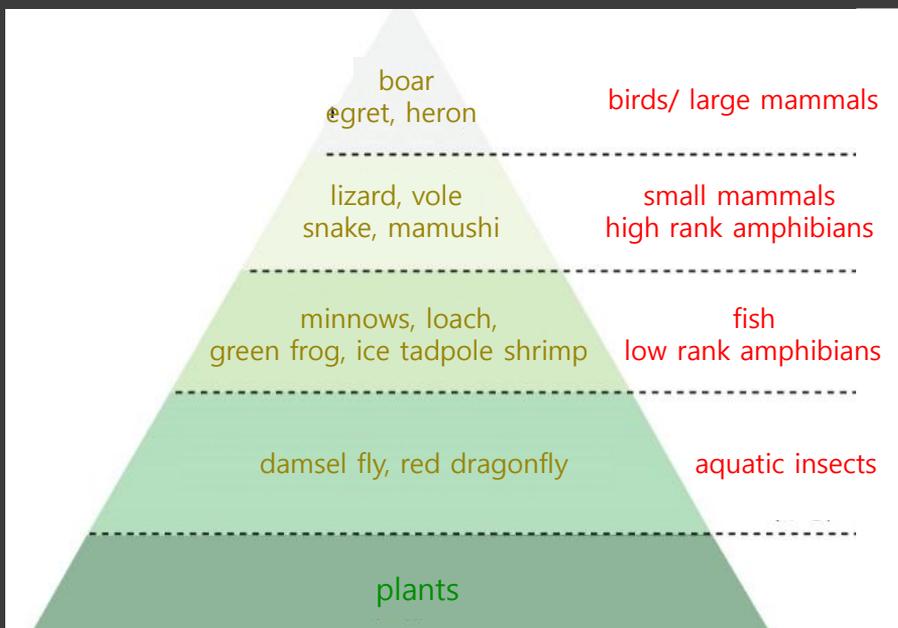
## Irrigation system in *Goodlejang-non*



## Distribution



## Ecology



## IV. Further study

## Subjects for further study in Korea

- The study on terraced rice field in Korea is at an early stage.
- The subjects of study on Korean terraced rice field are as follows:
  - First, it is necessary to research the actual condition of terraced rice field in national scale. Digital land registration map, with the help of GIS and remote sensing data, can be used to investigate the condition.
  - Second, the studies to get a proof of the multi-functionality of terraced rice field are needed.
  - Third, the study for making terraced rice field a tourist attraction. The selection of terraced rice fields which have scenic value and link between the fields and existing regional tourism courses are good illustration of the study.
  - Fourth, it is necessary to set up measures for the preservation of terraced rice field. Giving government subsidies to terraced rice field farmer is one of possible means.

Thank you.

감사합니다.