

Introduction to Farm Map Project



1 Geographic Information System (GIS)

What is GIS?

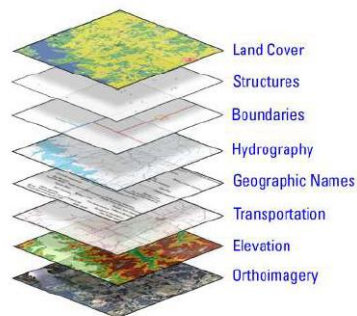
GIS(Geographic Information System) : a concept of the whole work system where geographic data, attribute data, software, hardware & human (5 elements) are input into the computer , designed, saved, analyzed and printed.

Spatial
info

Geographic information regarding natural or artificial objects located on/underground, under/surface of the water, etc., and other information relevant to these information and necessary for decision-making.



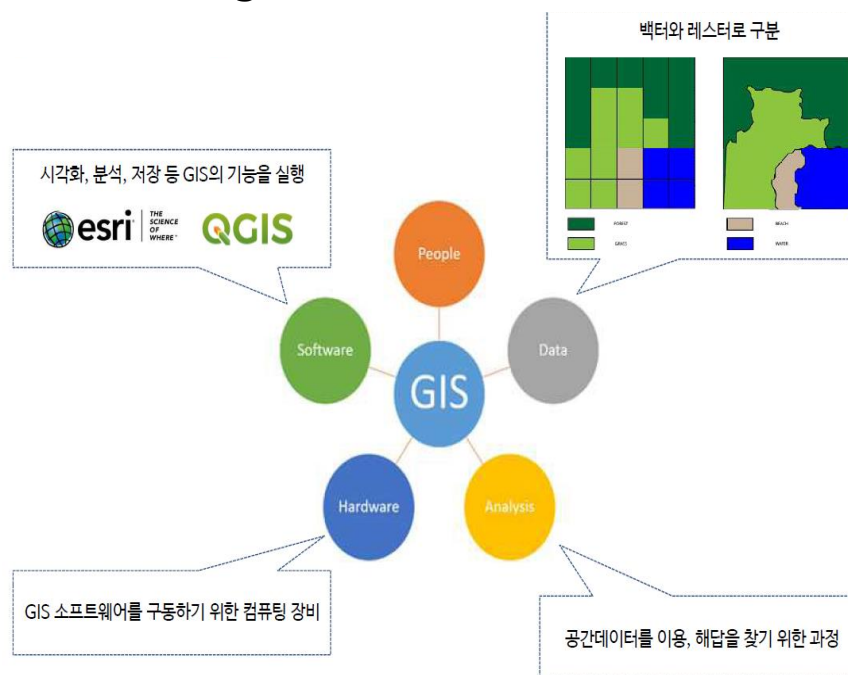
실세계



공간데이터 유형

- 홍수가 나면 어디까지 침수될까?
- 대전에서 천안까지 가장 빠른 길은?
- 소나무재선충 피해 예상 면적은?
- 공립어린이집은 어디에 지어야하나?
- 고등학교 배치는 어떤 순으로?
- 경쟁백화점이 생기면 매출은 얼마나 줄까?
- 지진 이후 안전점검대상 건물은?
- 범죄예방을 위한 순찰경로는?
- 태양광발전소의 입지전략은?
- 새로운 스타벅스 매장은 어디에?

공간적 의사결정 필요 사례



2 GSI Application to Agricultural Sector

GSI Technology and Future

무인 트랙터에 드론까지...농업도 '4차 혁명 시대'

입력 2017.05.31 (06:56) | 수정 2017.05.31 (07:21) | 425

뉴스광장

표준 화질

고화질

키보드 컨트롤



뉴스
광장

무인 자율주행 트랙터
오차범위 2cm 이내...사람보다 정확

강전호 농민

트랙터를 눈에 갖다 놓고 자율 주행시켜 놓고
다른 일을 하면 경제적인, 농가에 보탬이 될 것 같아요.

- Trend of 5 technologies in precision agriculture and futuristic agriculture:
High-precision GPS system, IoT, predictive analysis, drones, and robotics
 - * Farm map is expected to be used as a foundational information for spatial information-based predictive analysis or building a high-precision map



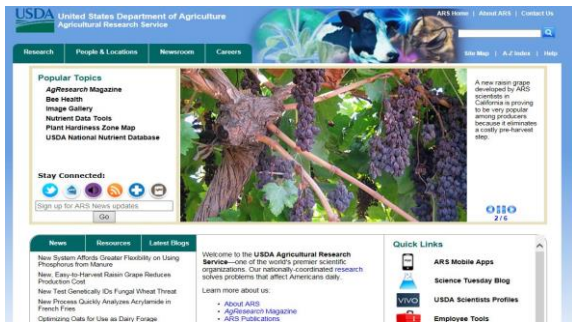
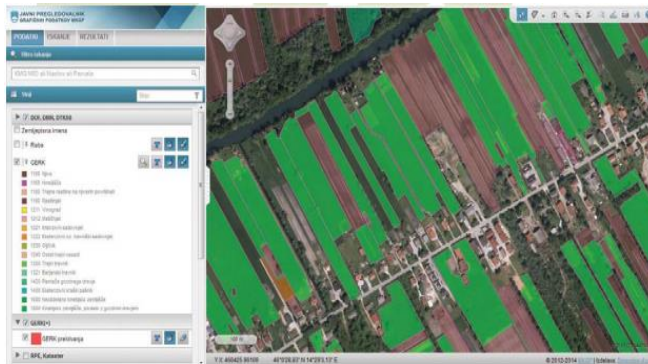

<Unmanned tractor – follows programmed route set by the farmer,
Trace and modify route with Tablet PC>



<Crop dusting using drone based on calculated amount of
spray and route through farm map>
<https://www.digitaltrends.com/cool-tech/automated-agriculture-can-robots-drones-ai-save-us-from-starvation/>

2 GSI Application to Agricultural Sector

International Cases of AGIS

System Name	Agricultural System	LPIS (Land Parcel Identification System)	Akisai
Managing Institution	Agricultural Research Service (ARS)	European Commission	Toyota, Aichi Prefecture, Japan
Services Available	<ul style="list-style-type: none"> Provide GPS data of the soil analysis data based on satellite images 	<ul style="list-style-type: none"> Utilize aerial/satellite images to record farming land. 	<ul style="list-style-type: none"> Make automated farming plan and manage progress
Data Renewal	<ul style="list-style-type: none"> Main principle is to stay current through a continuous renewal. Renew voluntarily by federal, local, private entities rather than regular renewal. 	<ul style="list-style-type: none"> Carry out regular renewal (5-year basis) and set up priority (residential, agricultural, parking, historical sites in order) and renew them progressively to update landmarks. 	<ul style="list-style-type: none"> Farmers send progress information to central database using smart phone/tablet PC and administrators manage overall cultivation condition
Characteristics	<ul style="list-style-type: none"> To be used for farming land inspection, agriculture crop insurance, yield management, and greenhouse gasses, etc. 	<ul style="list-style-type: none"> Under 2014-2020 CPA, execute eco-friendly agriculture monitoring through LPIS. Check farming land, pay and maintain direct payment on agricultural income . Farmers are to examine each map to identify errors in the program such as buildings, arable land, roads, etc. thereby eliminate incorrect information. 	<ul style="list-style-type: none"> Apply automobile manufacturing management technique to farming and send real-time work progress and plan to workers spread out in large-scale farm via smartphone Inform farmers of the best timing for weeding or harvest based on collected and analyzed data
System			

3 Farm Map Building Data

What is the Farm map?

Map consisting of whole agricultural land in the country that reflects agricultural area through aerial and satellite image, site visits.

Cadastral map



Digital map

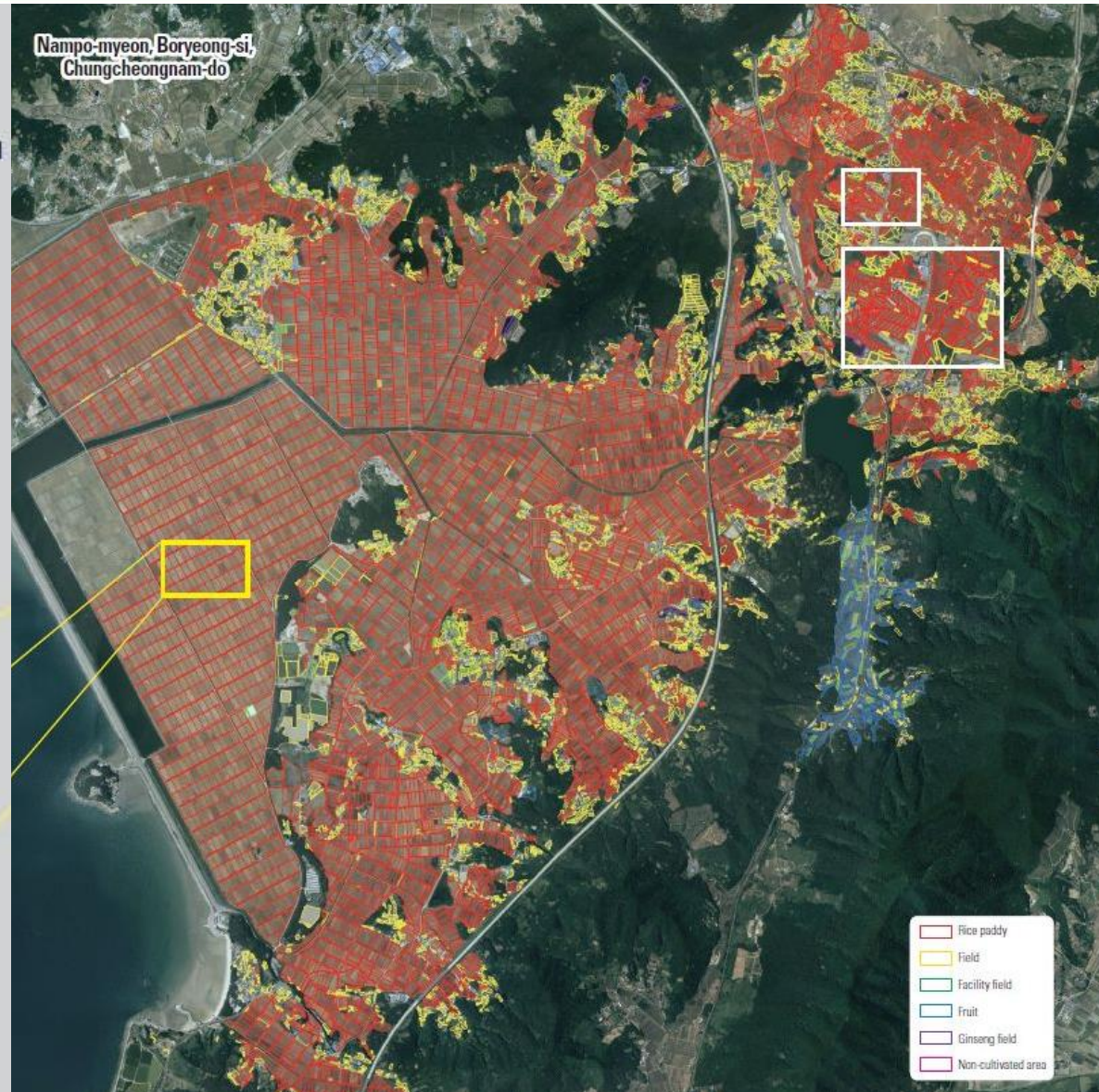


Farm map can be obtained more accurately on agricultural land than cadastral map or digital map.

Farm map

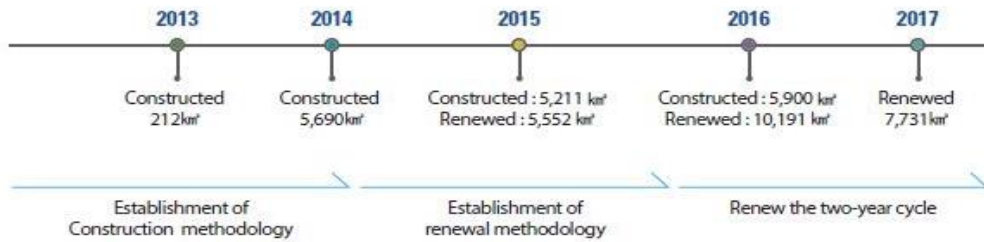


Interpretation factor	Field
Area	1017.18 m ²
JIBUN	409-8
Source	Aerial
FlightDate	2016. 09. 30
WorkDate	2017. 11. 30

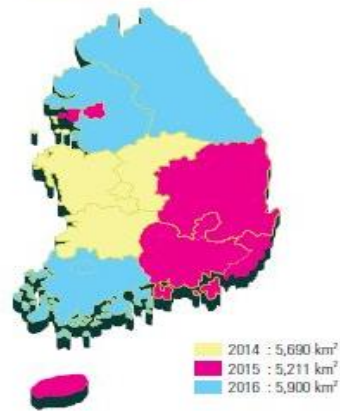


4 Progress & Procedures

Progress



The nationwide stage will be completed in 2016

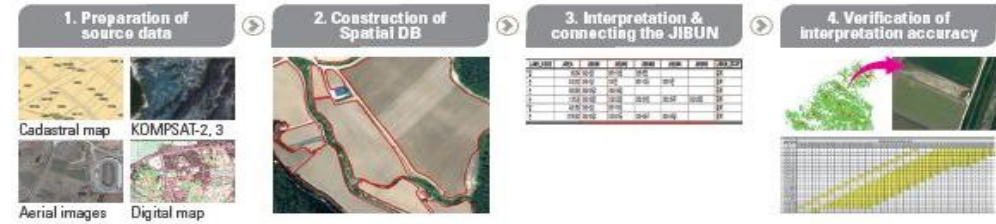


The area for renewal in 2017



Construction procedure And Guide

Construction procedure



Criterion and Guide for interpretation factor

Example of general interpretation factor

- Guide based on the image examples

Rice paddy	Non-cultivation rice paddy	Facility rice paddy
Facility field	Ginseng field	Mulching field
Field	Fruit	Fruit

Example of false-interpretation

- Rice paddy / Field interpretation error
Picture displaying no vegetation and soft surface may result misinterpretation as the area used for rice paddy production
- Cultivated / Non-cultivated area error
Misinterpret non-cultivated area as cultivated area
- Just interpretation / Writing down error
Error in the selection of code

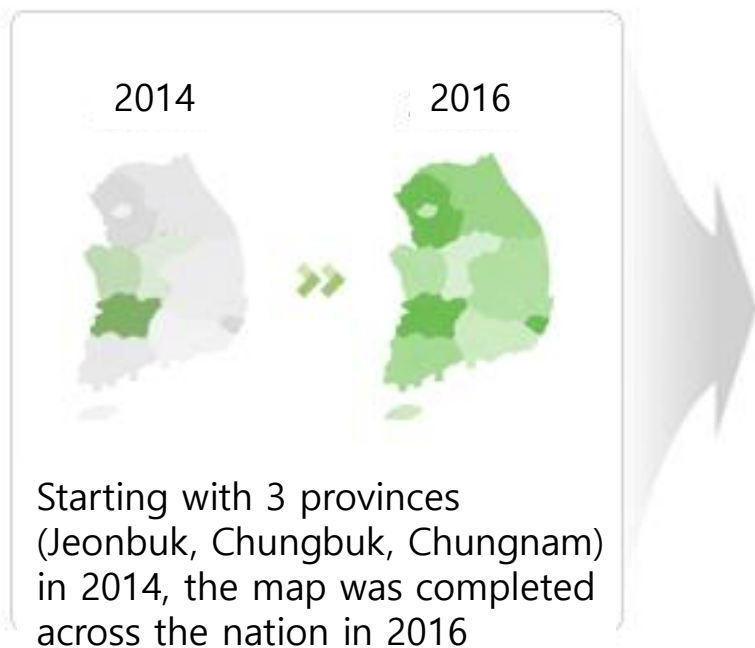
Interpretation Guide

Content	Rice-paddy			Field				
	rice paddy in growth	Irrigation time	After harvest	field	Mulching field	Ginseng field	fruit	facility
Status	rice paddy in growth			field				
Color	blue line	dark brown black line	light brown line	blue line (vegetation) brown line (no vegetation)	white, grey, black	grey, black	blue line	white, grey, black
Texture	smooth	smooth	grained vertically	grained	grained	grained	embossed	smooth
shape	-	-	radiation pattern in the end of cultivated area	continuous column	-	-	line patterned with the same interval of circular type	continuous column

5 Farm Map Use Summary

Use Summary

Nationally Configured in 2014~2016
Carried forward to use Farm Map in earnest in 2017

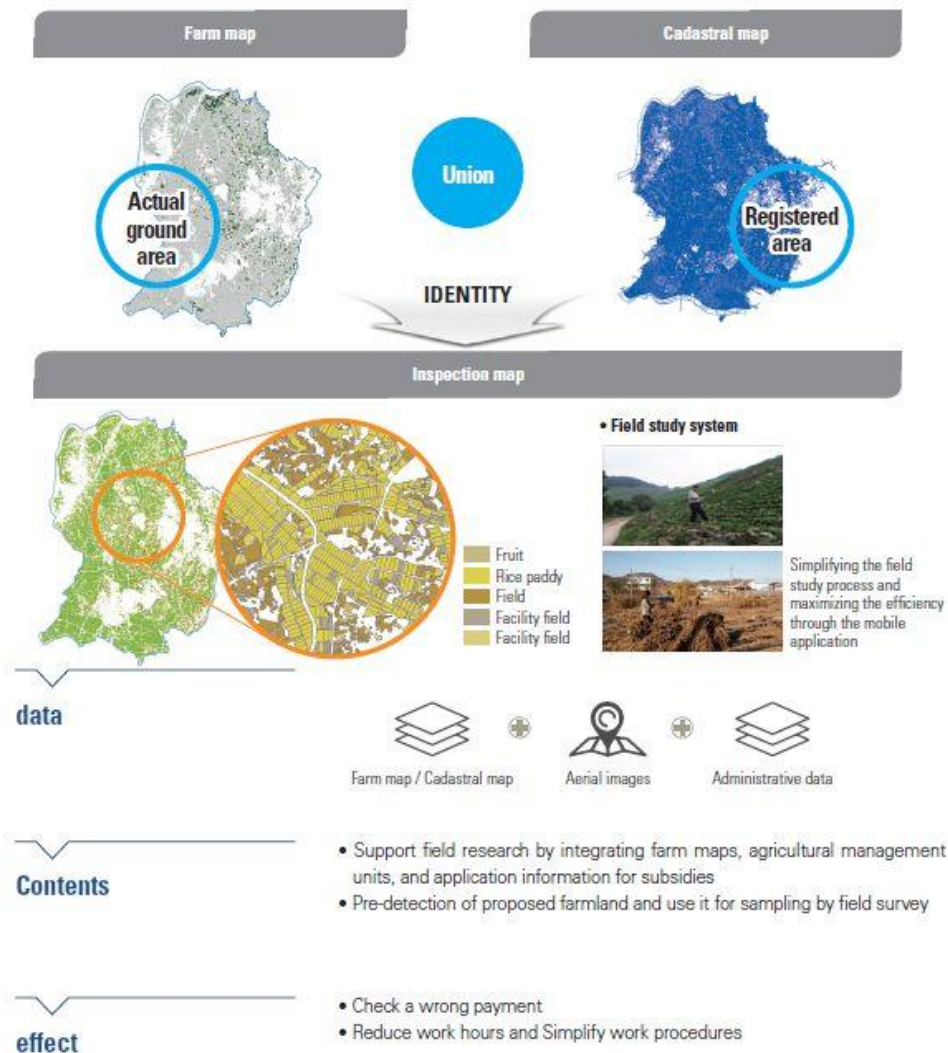


Converging administrative, statistical and GIS data to assist agricultural administration & create new values

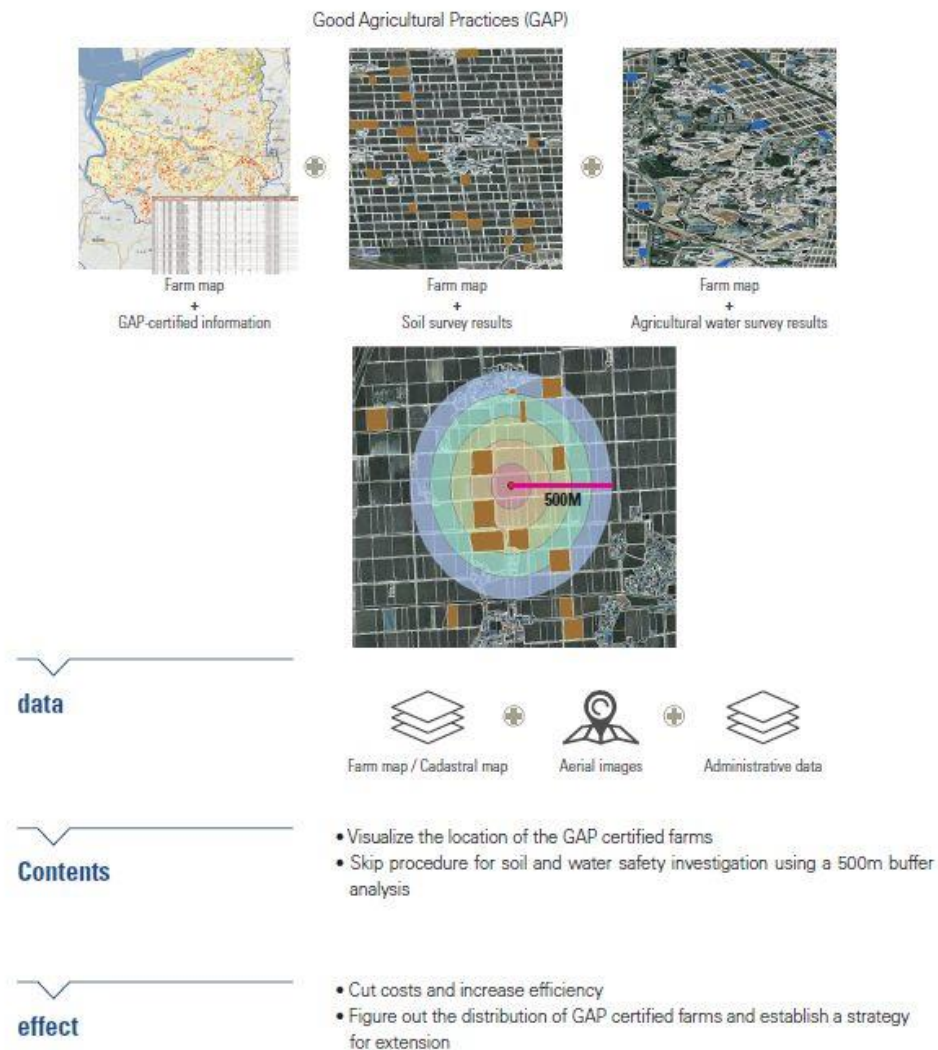
6 Expand Farm Map Base (3-D Farming Land Data)

7 Farm Map Use Models

Agricultural Subsidies Inspection using Farm map



Support for GAP-certified work using Farm map



7 Farm Map Use Models (Continued)

Counterplan for climate change utilizing Farm map

"Establish LULUCF Matrices in Cropland Category"

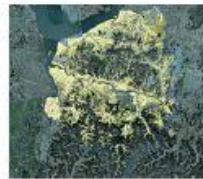
Land Use, Land Use Change and Forestry (LULUCF)

- Forest Land, Cropland, Grassland, Wetlands, Settlements, Other Land

Land Use Overlapping Analysis



2007 Asan 6 categories (Land Cover Map)



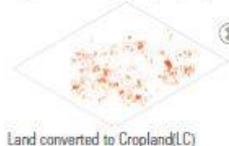
2014 Asan Cropland (Farm Map)



Cropland converted to other land



Cropland remaining Cropland(CC)

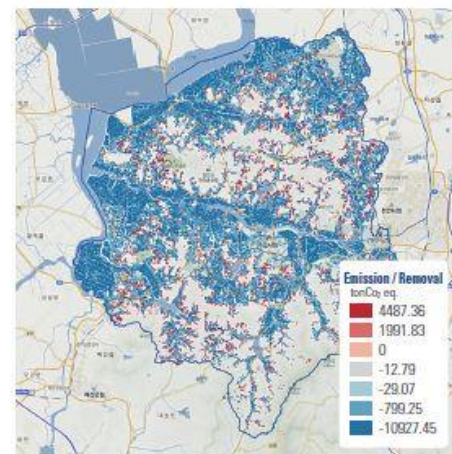


Land converted to Cropland(LC)

2014 Asan CC



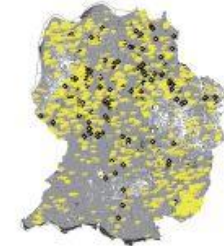
2014 Asan LC



GHG Emission / Removal Thematic Map of Cropland

Support of Animal Disease Control and Management of licensed targets for livestock farming business

Farm map



River



Road



Spatial analysis of burial sites



Unfit for burial sites Within 30m of the river



Unfit for burial sites Within 30m of the road

Prevention Zone Settings

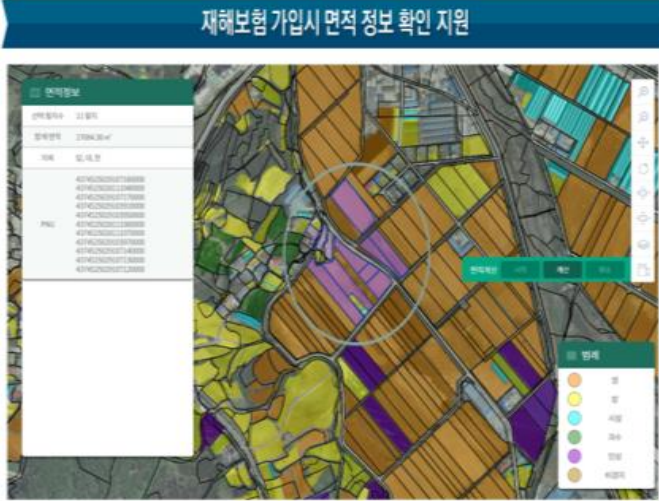







Licensed targets for livestock farming business



Facility area over 50 square meters (Cattle, pigs, chickens, ducks, and so on.)

7 Farm Map Use Models (Continued)

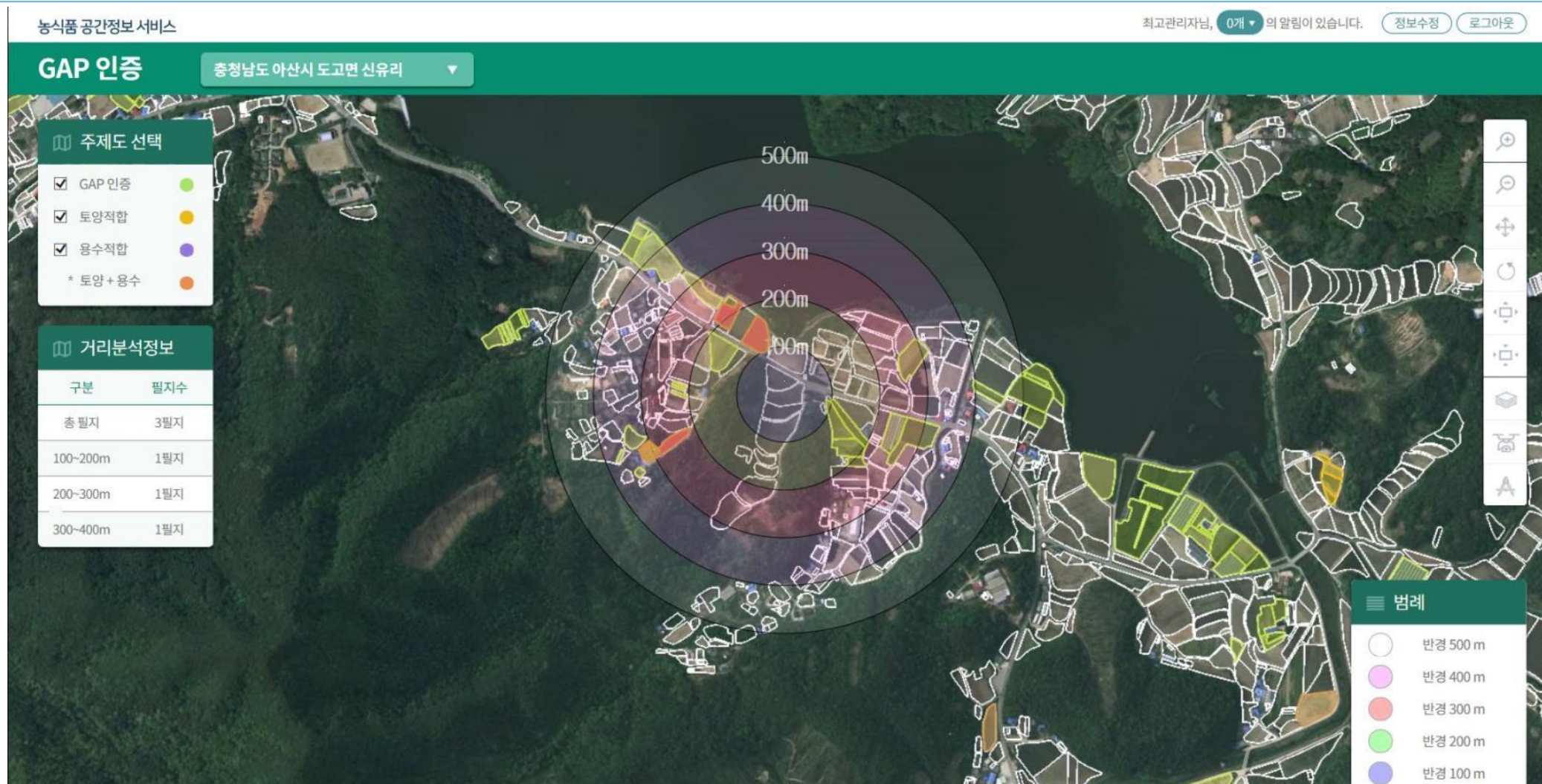
Use Cases	Supporting Disaster Insurance Tasks	Planning Rural Space	Supporting Decision Making to Return Home/Farming
Use			
Converged Data	 <p>Farm Map 2.0/Cadaster Orthoimage Subscription on Disaster Insurance</p>	 <p>Farm Map Zoning Map Land Cover Map</p>	 <p>Farm Map/Cadaster Orthoimage Life and Agriculture Information</p>
Details	<ul style="list-style-type: none"> Converge disaster information with farm map to provide service for current condition evaluation based on spatial information of agricultural disaster hit area. 	<ul style="list-style-type: none"> Understand farmland information by region by providing farm map area information of a given administrative district. Visualize planned vs. actual land use for project suitability study 	<ul style="list-style-type: none"> One-stop information provision on agriculture and rural area by converging data on schools, hospitals, government offices, empty houses, and farmlands with Farm Map.
Effect	<ul style="list-style-type: none"> Farm Map 2.0 supports pre-inspection for insurance policy and management of insurance policy subscription. 	<ul style="list-style-type: none"> Study feasibility for agricultural infrastructure and common facilities Establish regional plan reflecting local agricultural characteristics in based on comparison analysis of planned and actual land use with the project area 	<ul style="list-style-type: none"> Support location-related decision making for people who want to enter agriculture or move to rural area by providing living and administrative information in a map format

8 Agriculture Geospatial Information Service



* 바로e맵: 국토지리정보원에서 국가기본도를 기반으로 공신력 있는 공공행정정보를 융복합하여 제작한 국가인터넷지도

8 Agriculture Geospatial Information Service



8 Agriculture Geospatial Information Service



8 Agriculture Geospatial Information Service

농식품 공간정보 서비스

최고관리자님, 0개 의 알림이 있습니다. 정보수정 로그아웃

가축 매몰지

경기도 이천시 설성면 상봉리

가축 매몰지 현황

구분 전체 검토순위 전체

주소 전체 전체 전체

기간 ~

PNU

필지 수: 3863 필지

조회

주제도 선택

- ☒ 구제역
- ☒ 조류독감
- ☒ 도로
- ☒ 하천

- 구제역 매몰지 1순위 총 매몰지수:1 총 매몰두수:12
강원도 강릉시 구정면 어단리 1489
- 구제역 매몰지 1순위 총 매몰지수:1 총 매몰두수:18
강원도 강릉시 구정면 어단리 489-72
- 구제역 매몰지 1순위 총 매몰지수:1 총 매몰두수:58
강원도 양구군 양구읍 월명리 245-1
- 구제역 매몰지 1순위 총 매몰지수:1 총 매몰두수:250
강원도 원주시 문막읍 휘병리 708
- 구제역 매몰지 1순위 총 매몰지수:1 총 매몰두수:464
강원도 원주시 문막읍 휘병리 산113
- 구제역 매몰지 1순위 총 매몰지수:1 총 매몰두수:1
강원도 원주시 부론면 손곡리 1206-3
- 구제역 매몰지 1순위 총 매몰지수:1 총 매몰두수:670
강원도 원주시 지정면 판대리 248-1

8 Agriculture Geospatial Information Service

농식품 공간정보 서비스

최고관리자님, 0개 의 알림이 있습니다. [정보수정](#) [로그아웃](#)

연계 서비스 세종특별자치시 연서면


주제도 선택

• 농업진흥지역도
• 영농여건불리농지도
• 농림지역

주제도 목록

☒ 영농여건불리농지도

☒ 농업진흥지역도



9 Farm Map Information Opening to Support Agriculture

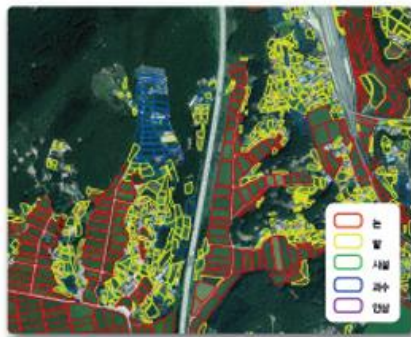
Opens Farm Map and Farm Map-based Convergence Data to be used in private sector

Farm Map

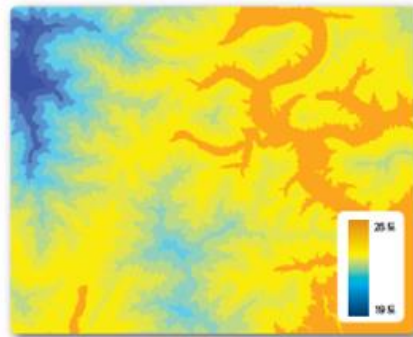


Farm Map-based Agricultural Meteorology

농업 기상 정보 서비스



Farm Map



Monthly Avg.Temp.

- Linking Farm Map and agricultural meteorological information
- Daily/weekly/monthly temp. & humidity

Farm Map-based Soil Information



Soil Map

- Linking Farm Map and soil information
- Visualize topsoil, drainage class, land suitability by crop variety, suitability grade of dry-field

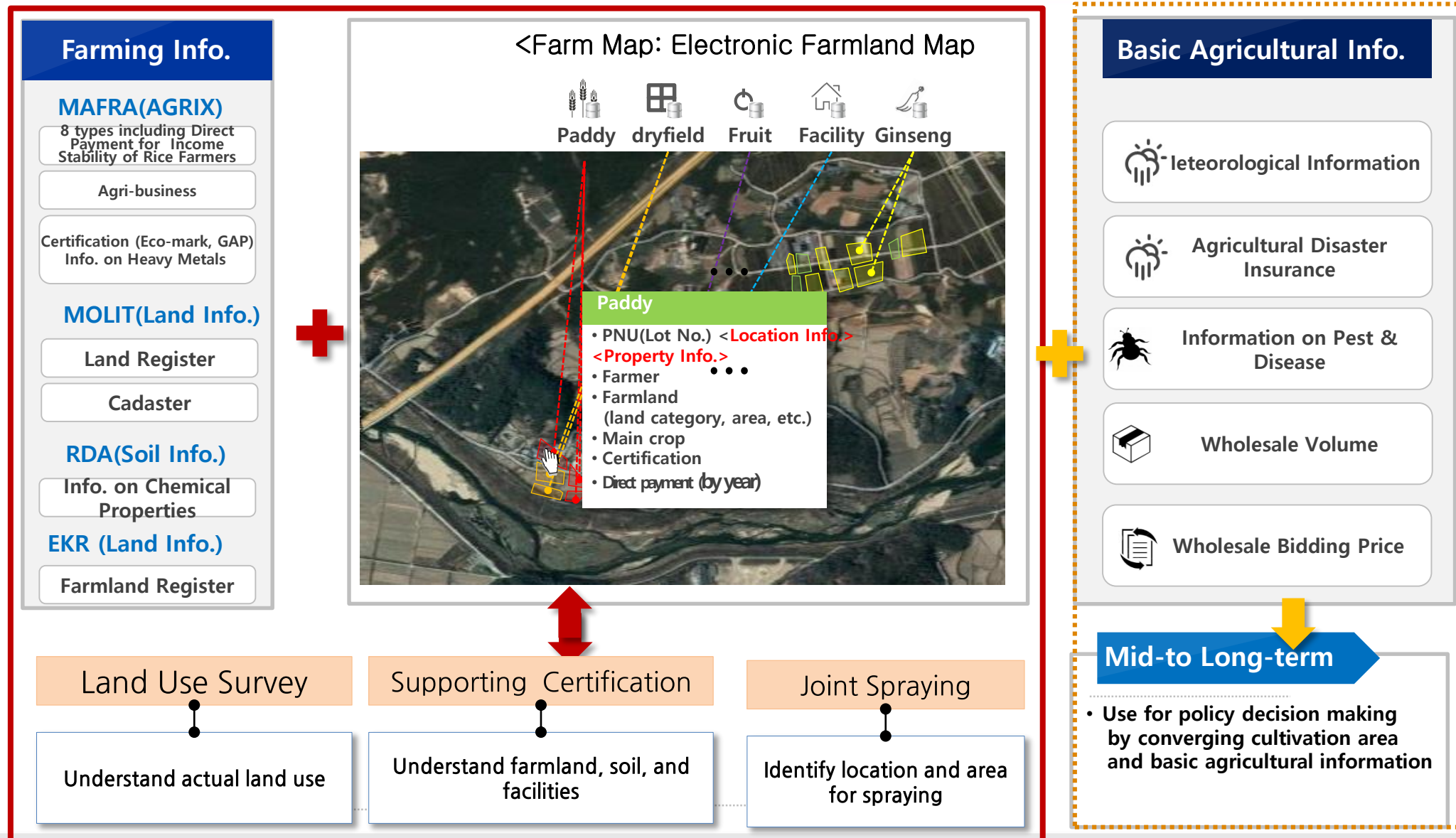
Farm Map-based Pest and Disease Information



Stock Map

- Linking Farm Map and pest & disease information
- Supporting policy decision making

10 GIS(Geographic Information System)-based Service to Support Agricultural Administration



8 Agriculture Geospatial Information Service

The screenshot displays the EPIS (Agriculture Geospatial Information Service) web application. The interface includes a top navigation bar with the EPIS logo and the text '농식품 공간정보 서비스'. Below this, there are several menu items: '활용모델', '팜 맵2.0', '주제도 조회', '연계 서비스', '통계 정보', '팜 맵 관리', '서비스 관리', and '이용 안내'. The main area shows an aerial map of a rural area with various agricultural plots outlined in white. Several plots are highlighted with yellow circles containing numbers (e.g., 4, 6, 8, 14). A legend on the left side of the map shows two categories: '전체' (All) with a green checkmark and '지급대상' (Designated for payment) with a purple checkmark. A vertical toolbar on the right side of the map contains icons for zooming, panning, and other map navigation functions. At the bottom of the screen, there are three main panels with navigation arrows between them. The left panel is titled '작황 안반데기 고령지배추' (Crop status of Anbandedgi and Goryeong-gaibae) and '2016년 기준' (Based on 2016). The middle panel is titled '쌀소득직불제 지급대상농지 현황' (Status of rice income direct payment designated agricultural land) and '2016년 기준' (Based on 2016). The right panel is titled '업경영체 농지명세 재배품목' (Crop types of agricultural land by management body) and '2016년 기준' (Based on 2016). Below these panels are buttons for '상세보기' (View details) and '삭제' (Delete).