منظمة الأغذية والزراعة للأمم المتحدة | 联合国粮食及农业组织 | Food and Agriculture Organization of the United Nations | Organisation des Nations Unies pour l'alimentation et l'agriculture | Продовольственная и сельскохозяйственная организация Объединенных Наций | Organización de las Naciones Unidas para la Alimentación y la Agricultura

ASIA AND PACIFIC COMMISSION ON AGRICULTURAL STATISTICS

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Agenda Item 8
Case study of Smart Farm Map Agricultural Policy in Korea

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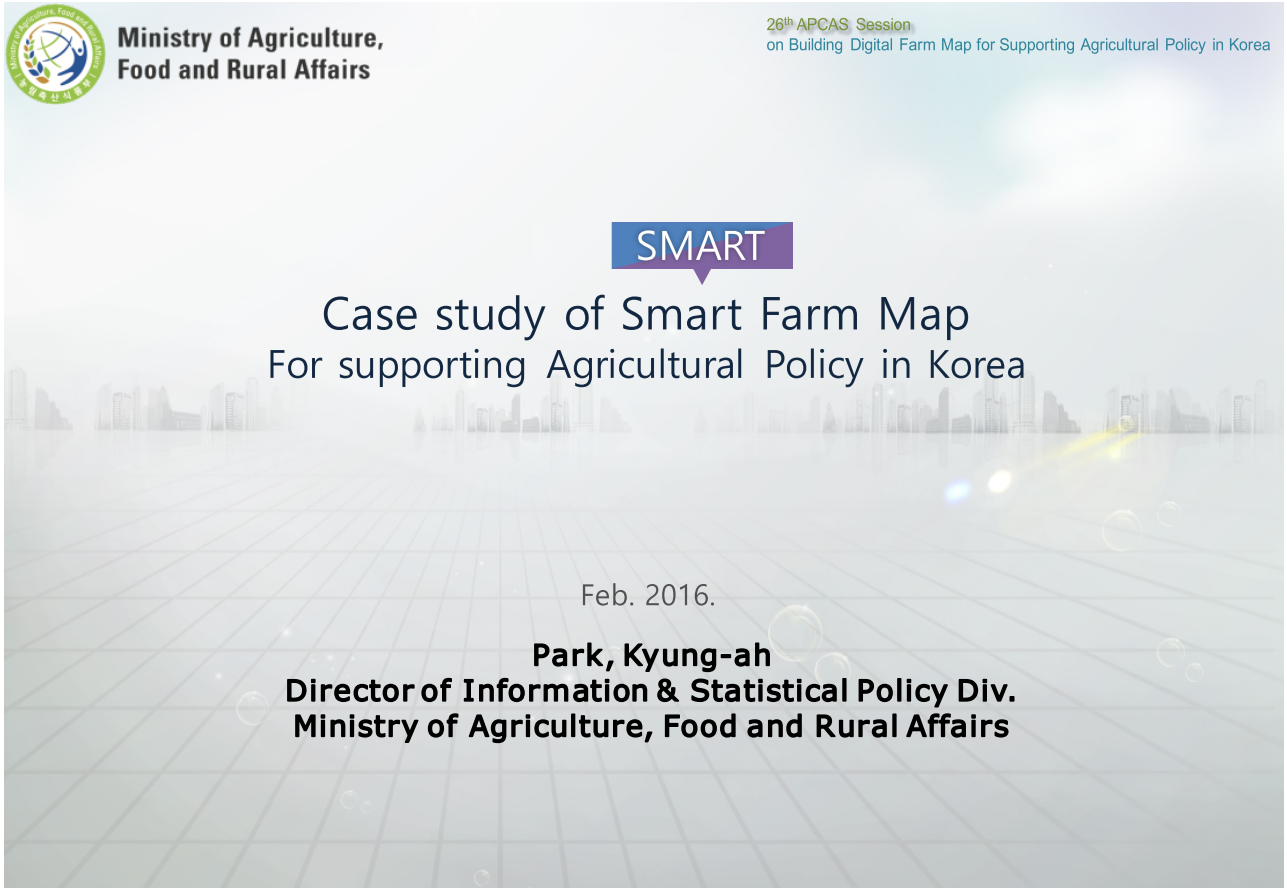

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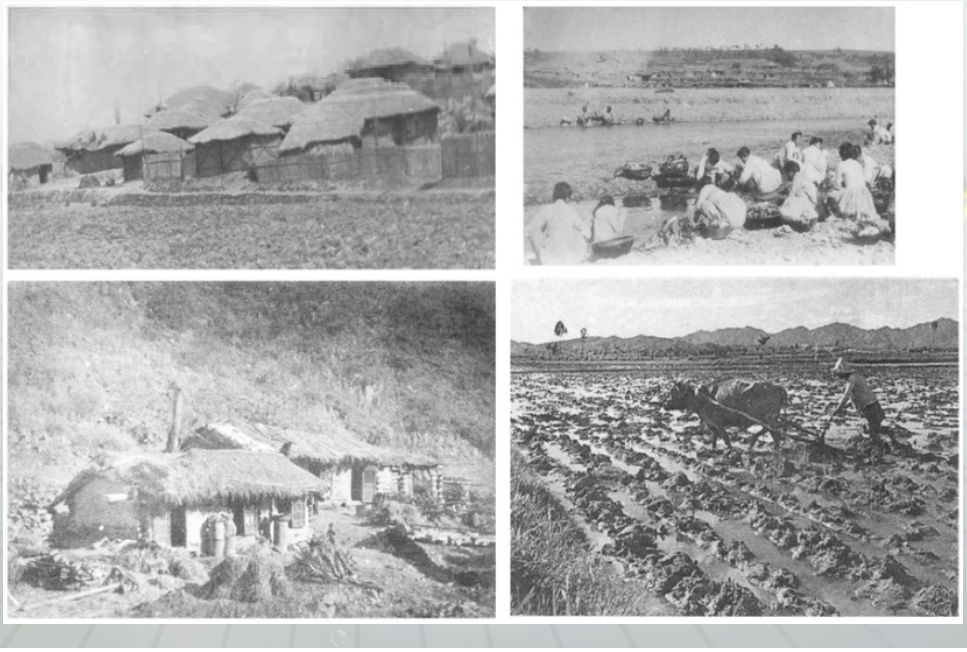
The Past of rural community



Introduction : *Changes in Korean Agriculture*

The Present of rural community

Introduction : *Changes in Korean Agriculture*

Pre-industrial Revolution Period 1945-1960

- Agrarian Society
- To resolve food shortage and landowner-tenant issue
- Agrarian reform

Rapid Economic Development Period 1961-1976

- 1960's 5 year economic development plan focused on light industries
- Food production increase to resolve chronic food shortages

Stable Economic Development Period 1977-1988

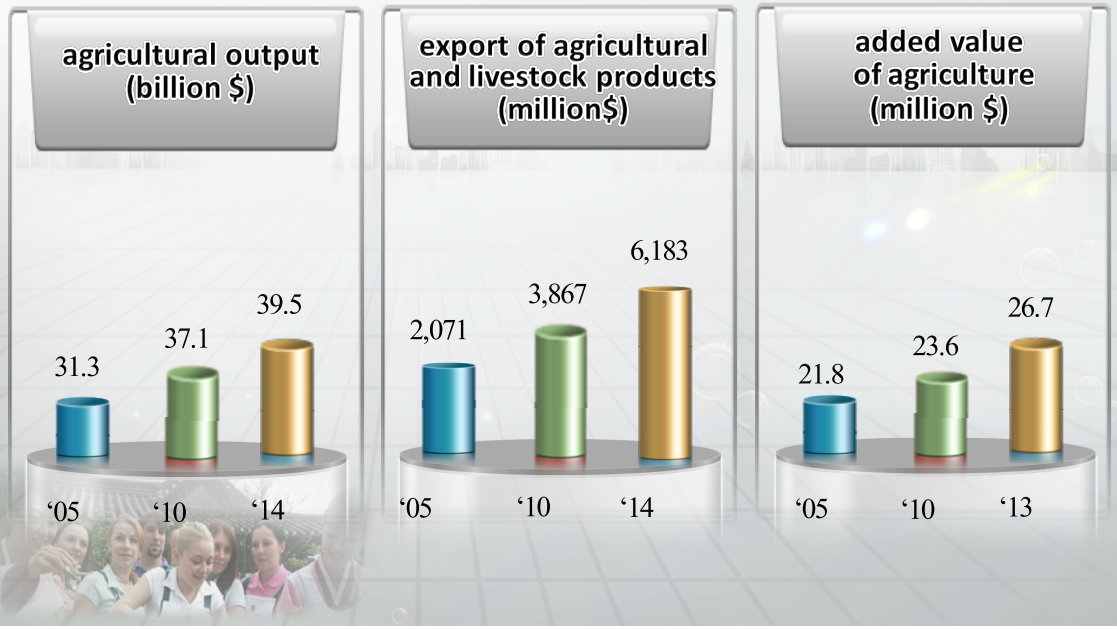
- GNP increased by 8.4% per year on average
  → The annual GNP for agricultural sector declined to 1.0%
- Focus of the policy shifted from self-sufficiency in major crops to market liberalization

Globalization Period 1989 ~

- Rapid market liberalization process due to the Uruguay round
- The focus point of the policy was enhancing competitiveness in the international market and undertaking structural reform

Introduction : *Changes in Korean Agriculture*

Stable increase of the economic index



Introduction : *Changes in Korean Agriculture*

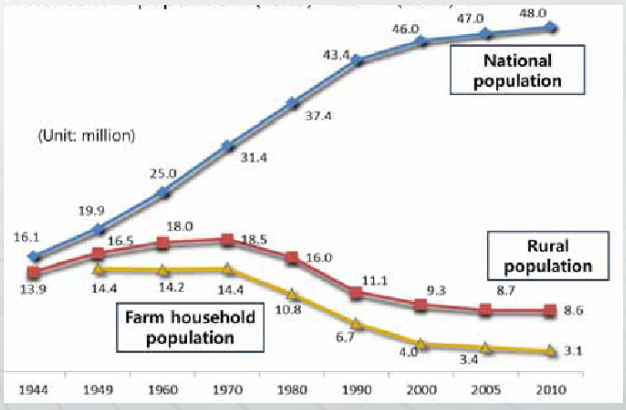
The population of rural areas

But, the population in rural areas has continuously decreased.

◆ Proportion in the national population (%)
- Rural population : 82.9 ('49) → 17.9 ('10)
- Farm household population : 72.4('49) → 6.5('10)

unit : million, %

Year	1949	2001	2010
National population	19.9	46.0	48.0
	100.0	100.0	100.0
Rural population	16.5	9.3	8.6
	82.9	20.2	17.9
Farm household	14.4	4.0	3.1
	72.4	8.7	6.5



The population is aging at a fast pace, with more and more young people leaving villages.

Introduction : *Changes in Korean Agriculture*

Local Economy

And, the income gap between urban and rural areas expands and polarization among farmhouses intensified.

Rural Household Incomes

Share of Agricultural Income Decreased and Non-Agricultural Income and Transfer Income Increased

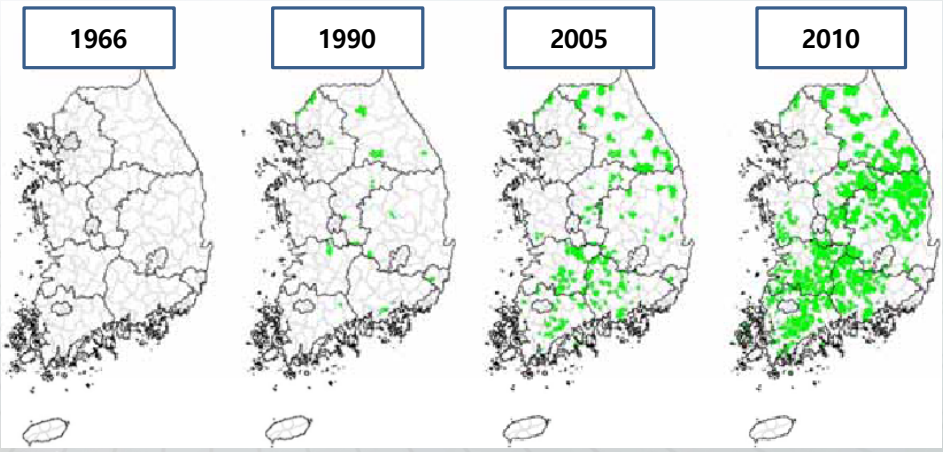
Income of farm households(Compared to laboring households) : KRW 23million(80.5%,'00) → 35million(62.5%,'13)

The ratio of farm households(above 3ha/under 0.5ha) : 6.25%/32.8%('00) → 8.6%/42.2%('12)

Introduction : *Changes in Korean Agriculture*

A number of towns and townships with less then 2,000 residents is increasing

Conditions For settlement



*** Villages with under 20 household units in rural areas (proportion) : 2,048 household units (5.7%, 2005) → 3,091(8.7%, 2010)**

Introduction : *Response*

Response to Changing environment

Agriculture
(Agricultural products)

60~70 Primary Industry

2000~ Convergence and Integration

70~80 Secondary Industry

Manufacturing Industry
(Specialty)

The sixth industry

IT ⊕ ⊕ BT

80~90 Tertiary Industry

Service Industry
(Tourist Industry)

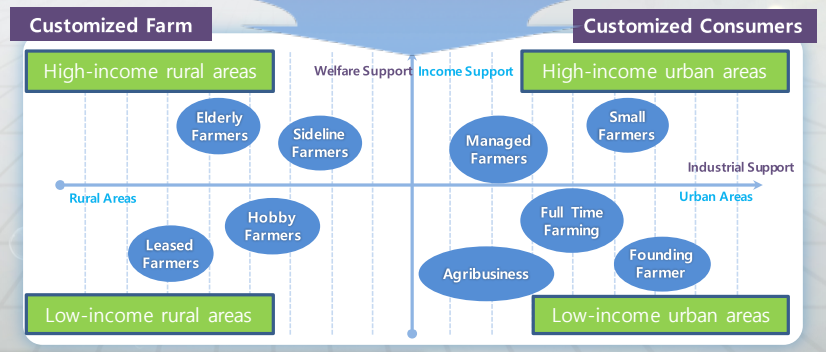
• **The sixth industry of agricultural sector** is where farmers not only produce agricultural commodities but also **manufacture, process and market them, and where they also engage in services such as agri-tourism**

Introduction : *Needs*

Complex needs of the public

Farmers and consumers form a community

Scale of business Indicator | Business outcome Indicator | Ability of Management Indicator | Residence Area | Income Level



They want the policy to meet the needs.

Need the customized policy based on data

Introduction : *the basis of policy*

The basis of policy is a statistics

Accurate field information is required to develop, implement and evaluate such policies

Late cadastral renewal

Mismatch of parcel boundary

Omission of current farm land

The basis of agricultural statistics, It is the farm land statistics

Requires accurate information reflecting spatial information on the farmland

About Smart Farm Map

Smart Farm Map ??

A Digital Farm Map for Supporting Agricultural Policy in Korea

Technological Conditions

- Able to use high-resolution aerial image and satellite image (KOMPSAT-2,3)
- Increase in demand of smart policy based on objective farming information and the needs of basic partial data
- Increase in practical policy
- Establishment of scientific agricultural policy based on field data
- Establishment of basic infrastructure to manage administrative data and statistics of agri-food

Economic/social conditions

Changes in administration

It enables the integration of the correct attribute information and spatial information

About Smart Farm Map

Promotion status

Measures to establish research services('13)

- Analysis, construction manual development, inter-agency cooperation deriving
- Pilot projects carried out
- Established detailed plans to build nationwide

Smart Farm Map Step 1('14), Step 2('15)

- Aerial images and satellite images utilized by the national arable land boundary DB
- ID, Area, pointed (paddy, garden, fruit trees, facilities, etc.), enter basic property information
- After the sampling data, and then verify the accuracy calculation
- Smart Farm Map agri-food statistics and administrative data linked

The final step, Nationwide building completion ('16)

- Managing Authority decision
- Updates Development Plan

About Smart Farm Map

Promotion status

List of Available Basic Data

Spatial and administrative data

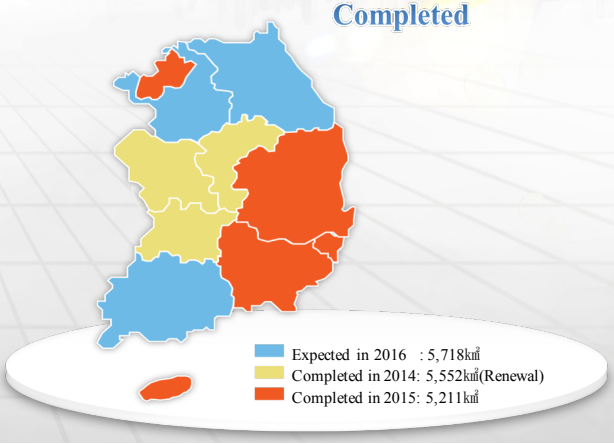
Division	Spatial and administrative data	Purpose
Land information	Serial cadastral map	Reference for parcel division and lot number
	Digital map	Reference to check geographical boundary
Administrative data and system related to farm land	Farmland use map	Connecting to exiting DB of geographic information system for rural areas
	Farm registration data	Analyzing data to use in connection with agri-food statistics and administrative data
	Various payment system	Analyzing data to use in connection with agri-food statistics and administrative data

Basic image data

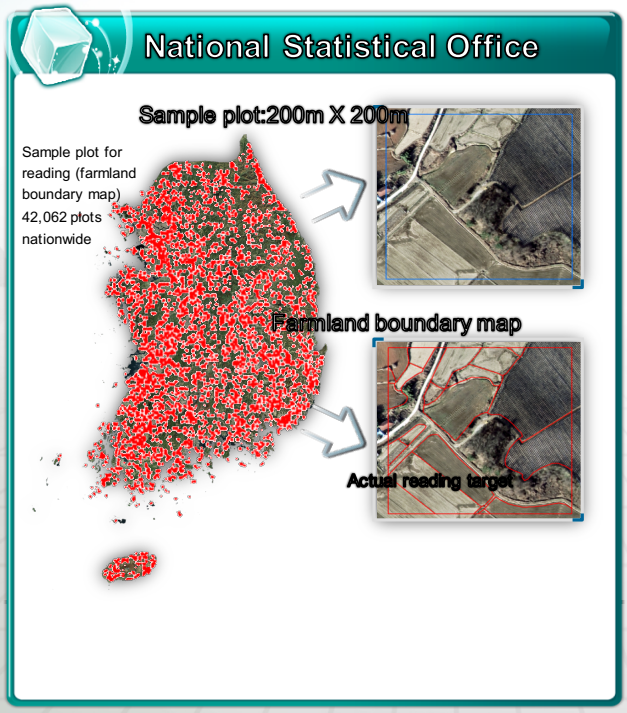
Image data	Source	Spatial Resolution	Remark
Aerial data	National Geographic Information Institute	0.25m	Using aerial images nationwide

Current Status('15)

65% of Smart Farm Map Completed



About Smart Farm Map _ Utilize

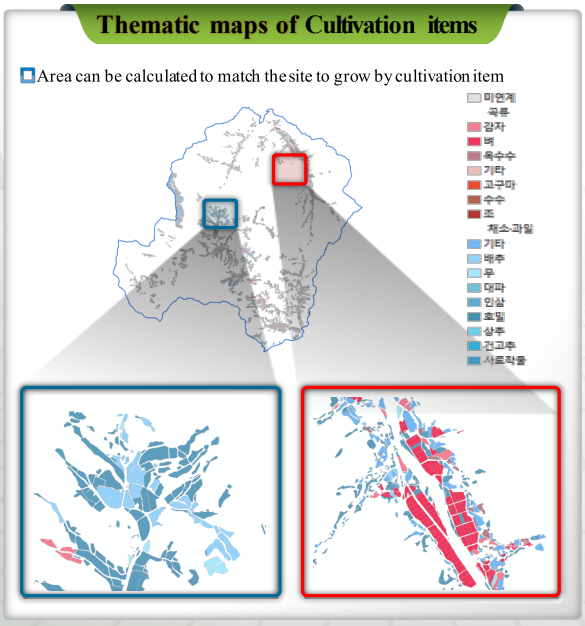


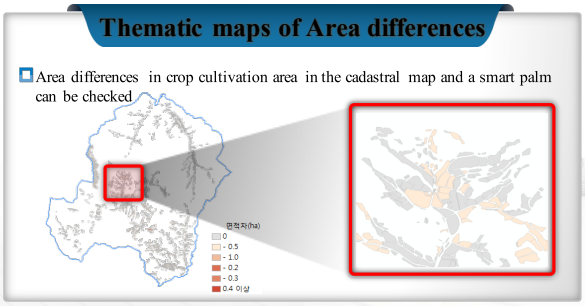
Utilize for scientific sample selection

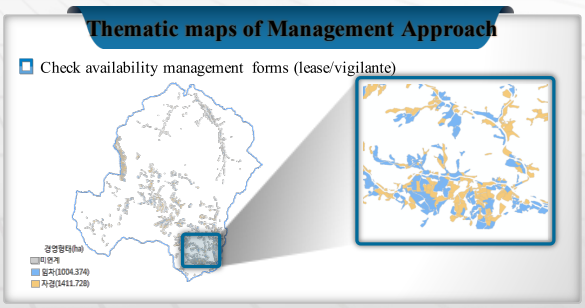
- Calculating farmland area by reading satellite images
- Developing farmland boundary map for just sample plots
- Utilization for selecting sample plots

About Smart Farm Map _ Utilize

Thematic maps are Linked administrative data

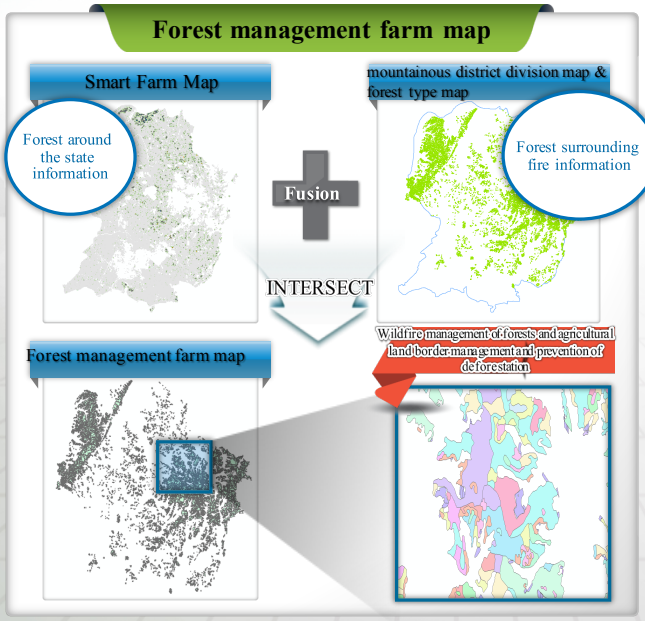






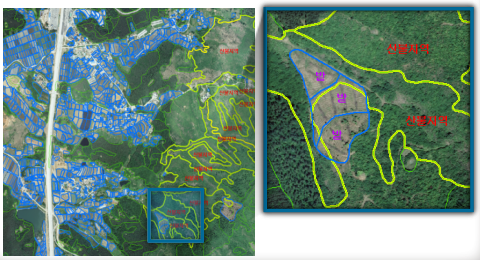
About Smart Farm Map _ Utilize

Cropland management and checking illegal use, wildfire prevention utilization



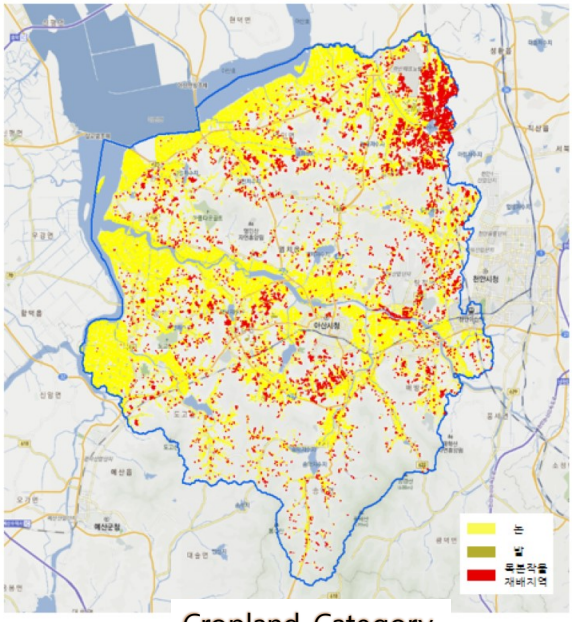
Forest management farm map Illegal cropland management Best Practice(fusion of mountainous district division map)

Forest management farm map forest fire management best practice(fusion of forest type map)

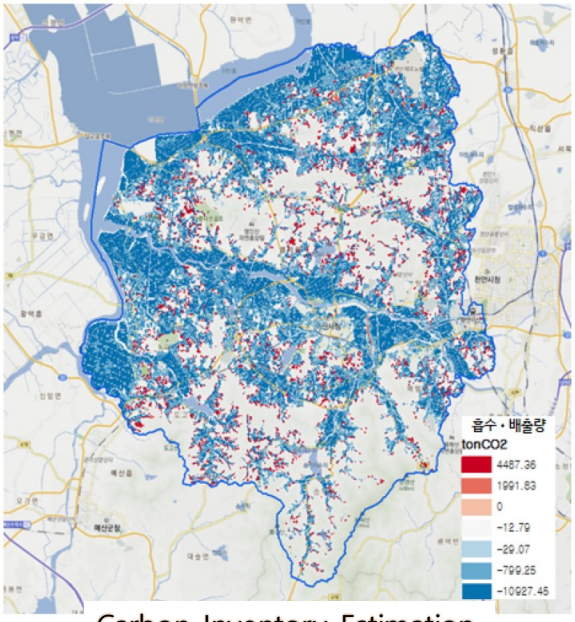


About Smart Farm Map _ Utilize

Carbon Inventory Estimation : Case study of Asan city



Cropland Category



Carbon Inventory Estimation

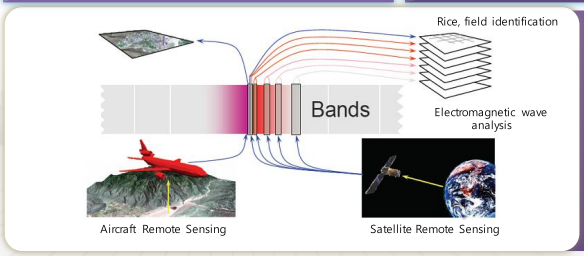
Remote Sensing Technologies

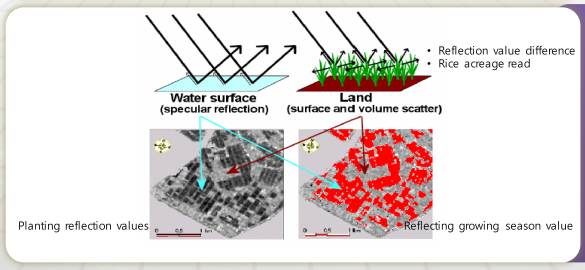
Increase administrative efficiency by utilizing remote sensing technology

Expectation

- Promotion policy quickly by aerial and satellite images without visiting sites

Remote Sensing





Technical Applications

Object identification sensors to analyze remote sensing electromagnetic waves

Utilize remote sensing technologies to ensure the rice cultivation area to the reflectance value differences

Subsidies, farm registration, crop insurance and statistical research Etc..

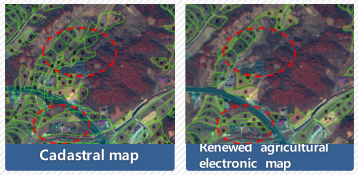
Next Project

Future Challenges

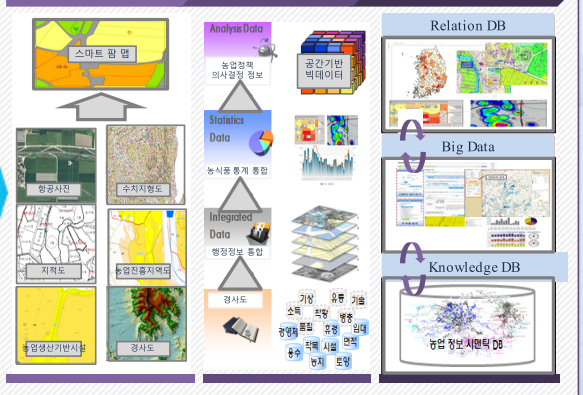
Expectation

- Increase the efficiency of agri-food production statistics system using ICT technologies
- To express spatial information and administrative data based on the smart farm map

Smart Farm Map



Useful Application & update



More useful, More effective
How to update
with a reasonable budget

Thank You !!!