# Dissemination of Smart Farming

A. Necessity and Task of Smart Farming
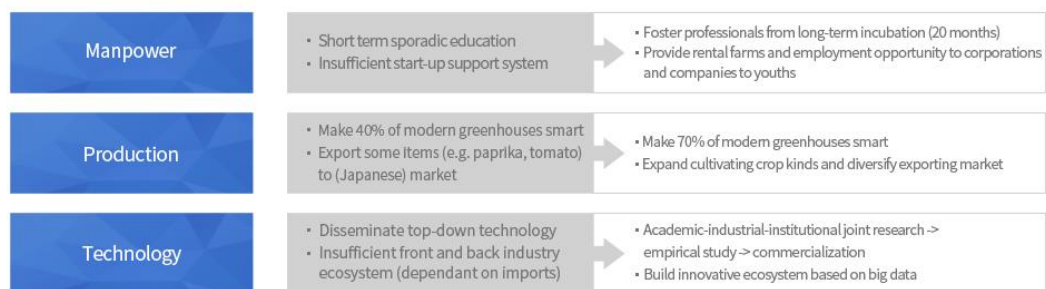
- Smart farming is an optimum solution to meet market demand in terms of safety and consistent quality, etc.

o A system for increased productivity through precise environmental control and growth management based on data and stable supply and exporting of high quality, safe agricultural goods

o Combine excellent cultivation technology with information communication technology (ICT), which is one of our strengths to make agriculture a promising industry that competes with the world

- The distribution area of smart farms is increasing, but most smart farms are simple or convenient types except some leading farms, and the technological gap with advanced countries (4.5 years) persists

o Weak basic industrial infrastructure such as professional manpower, big data, and academic-industrial-institutional network, etc.

o Need to create an industrial ecosystem for fostering professional manpower mainly from smart farm innovative valley* and growing agriculture related front and back industries
* Basis for generating synergy between farmers, companies and research institutions based on intensive smart farms (production complexes), youth start-ups (incubation centers, rental smart farms), technological innovation (empirical complexes) and sales channel discovering functions

- Smart Farm Innovative Model

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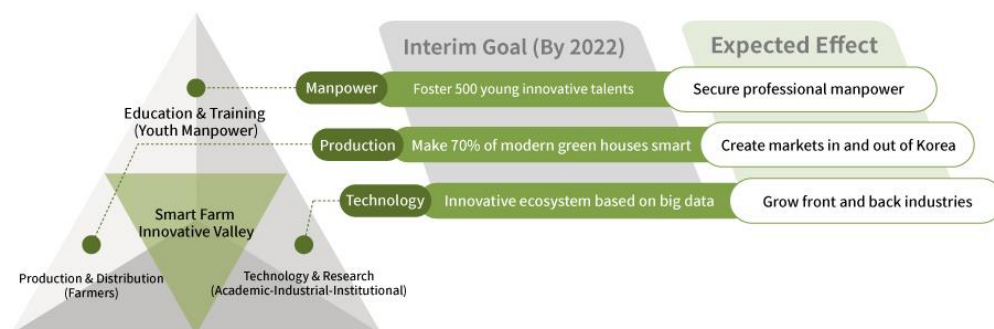
B. Implementation Plan

- Implement smart farm innovative valley according to plan to modernize facility horticulture farming
* Timeline: (2018) Select 2 → (2019) Select additional 2 → (2022) Complete 4 farms

- Combine agriculture and ICT to discover new market and generate added values

Manpower	· Short term sporadic education · Insufficient start-up support system	· Foster professionals from long-term incubation (20 months) · Provide rental farms and employment opportunity to corporations and companies to youths
Production	· Make 40% of modern greenhouses smart · Export some items (e.g. paprika, tomato) to (Japanese) market	· Make 70% of modern greenhouses smart · Expand cultivating crop kinds and diversify exporting market
Technology	· Disseminate top-down technology · Insufficient front and back industry ecosystem (dependant on imports)	· Academic-industrial-institutional joint research -> empirical study -> commercialization · Build innovative ecosystem based on big data

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[Innovative Valley → Create Innovative Ecosystem → Create New Market]

- The 1st sites (Gimje and Sangju) for smart farm innovative valley started creating the basis in the first half of 2019, and the additional 2nd sites will be selected (Early 2019, 2 sites)

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o For the 1st sites, key facilities such as incubation center, rental smart farms and empirical complex will be completed by 2020

Jeonbuk Innovative Valley (Gimje)	Gyeongbuk Innovative Valley (Sangju)
Development of new varieties & health supplements based on agricultural bio R&D infrastructure (Rural Development Administration - Seed Center - Food Cluster) · Convert old greenhouses into smart farms and disseminate IT	· Centralize exports of key items from smart farms and introduce robots and automation · Build one-stop supportive model for youth inflow-growth-settlement by building residential facilities and cultural themed streets

- Set up professional education programs on smart farm and foster 500 young professionals by 2022

o Select young start-up trainees for smart farms (2019: 100 trainees) and provide professional education, and build rental smart farms for youths without basis (2019 - 2021, 24 ha)

- Identify new promising exporting items from smart farms and diversify exporting markets from Japan to ASEAN countries (2019: Hold K-Food Fair in Thailand and Vietnam, etc.)

- Build empirical complexes to promote new product and technology development jointly between front and back industries (apparatus, food and bio), farmers and research institutions

- o Form an empirical consultative group (early 2019) between enterprises and research institutions to test growing functional or tropical crops, localizing key equipment and developing exporting plants

- Build an open platform for sharing and trading big data on growth and cultivation data from smart farms (2019 - 2021)

- o Provide collection standards to ensure collection of credible big data in innovative valleys (2019), and expand big data collection from farms (2018: 243 farms → 2019: 373 farms)

- o Enact national standards for apparatus in order to ensure compatibility between smart farm devices and maintenance efficiency (2018: 22 facility horticulture devices → 2019: 11 livestock devices)

[Make Overall Agro-Food Industry Smart]

- Expand smart farming from facility horticulture to livestock and field farming

- o Expand smart livestock farms that automatically control temperature and humidity and feed (2018: 600 farms → 2019: 800), and build 'demonstrative smart livestock ICT complexes' (2019: 3 complexes)

- o Disseminate field farming model that automatically performs farming based on data (2018: 5 farms → 2019: 10)
  * (Existing) Automatic watering model → Expand to disease control using drones and video analysis devices

- Make overall agro-food value chains such as distribution and export smart

- o Upgrade supply and demand estimation of vegetables such as Chinese cabbage by using big data and drones, and introduce livestock traceability demonstrative project by using block chain (from January 2019)

- o Support traceability system throughout processes from production to exporting of agricultural goods (2019: 157 exporting complexes)

- Build demonstrative comprehensive & utilization system for agricultural data for farmland and items, etc. and electronic map (farm map) (2019)