South Korea Case Study: Digital Agriculture and its Practice

Livestock Products Traceability System in Korea

We add value and trust to Animal Products
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1. Introduction of KAPE
Introduction of KAPE

Why KAPE was established?

Article No. 36 of The Livestock Industry Act states
“Establish KAPE to conduct grading, quality evaluation and distribution of livestock products efficiently”

Established in 1989

Grading livestock Products

Enhance quality

Facilitate distribution

Stimulate animal improvement

Increase competitiveness of domestic livestock Products
The system determines the **quality** of livestock products or the **amount of yield** according to scientific standard recognized by government.

- It protects the producers, distributors and consumers by providing purchase/sales index.

The system **records and manages** the data of livestock products from their birth to slaughter, processing, and sale.

- It ensures the safety of animal products and predict the supply and demand.

- **We investigate livestock products’ distribution costs and channels.**

- It is to support the government's policy of rationalizing distribution by collecting and providing more objective and reliable distribution statistics.
Introduction of KAPE

Organization & Personnel

❖ Headquarter
- 1 Audit, 5 Departments, 17 teams

❖ Branches
- 10 Provincial and 38 regional offices

❖ Number of Employees : 453 persons

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<tr>
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<th>Total</th>
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<tr>
<td>Headquarter</td>
<td>156</td>
<td></td>
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<tr>
<td>Regional offices</td>
<td>297</td>
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* graders: 350
Introduction of KAPE

International Cooperation

Operating Invited Training Program from 2014

- **Target**: government officers of livestock dept. or inst. in Central & South-Eastern Asia
- **Topics**: how to establish traceability and grading system of livestock products (by comparing the case of Korea)

**Current Status**: The Korean govt. has conducted consulting to establish a pig grading system in the Philippines in 2020 (MAFRA) and is now carrying out a loan assistance F/S for the introduction of a livestock product traceability system (MOEF).
Traceability is Key Enabler for animal health, identification and meat quality enhancement integrated and it should be accompanied with other components.
2. Understanding of Livestock Products Traceability System
Concept of Livestock Products Traceability

What is Traceability System?

**Definition**

- It means the management of moving route of livestock and livestock products by recording and managing information at each stage,
- from the birth and import of livestock and the production and import of livestock products to sales.

* (Article 2 of the Livestock and Livestock Products Traceability Management Act)

**Purpose**

- Beef and Pork Traceability is a “consumer protection system” that tracks distribution channels to minimize consumer damage
- by quickly identifying the cause and recalling contaminated products in the event of disease or hygiene problems.
Concept of Livestock Products Traceability

A case of Finding a Lost Cow

- Last summer, there was a record heavy rain in South Korea. Some cows drifted 80km, 90km (50 miles to 55 miles) away. Nevertheless, the cow was able to find its owner.

- As of cows in Korea, their traceability is managed individually. Thus, it is possible to check the information of the owner of a cow and where it is raised by looking up the traceability number on the ear-tag.
Background of Livestock Products Traceability

What has driven traceability system in South Korea?

Imports Liberalization of pork(1997) and beef(2001)
- The need to stable management of supply & demand of domestic livestock products
- The need to prevent counterfeiting the origin of imported food

Outbreaks of Animal Disease:
- The need for systematic quarantine management

Food Safety Issue: Insecticide Eggs(2017)
- Increasing public demand for food safety

Build Trust, Strengthen Safety
The drive for traceability in South Korea can be summarized as follows:

1. Consumer Demand for Food safety and Hygiene
2. Effective Control of Animal Disease
3. Secure Competitiveness of Domestic Livestock Industry
4. Increase Farm Income
History of Livestock Products Traceability

How is the traceability expanded?

- **2007**: Enactment of『The Cattle and Beef Traceability Act』
- **2008**: Start by Applying to Production Stage
- **2009**: Expand to Distribution Stage
- **2013**: Amend to『The Livestock and Livestock Products Traceability Act』
- **2014**: Implementation of Pork Traceability System
- **2020**: Implementation of Chicken, Duck and Egg Traceability System
How Traceability Acquires Confidence?

DNA Identification test for Livestock Products

Graders collect samples from every carcass of cows at the slaughterhouse, and those are analyzed genetically and compared with the samples collected from packaging company and sales stores afterwards to test identification.
3. Application of Livestock Products Traceability Data
Application of Livestock Products Traceability Data

Support for Government Decision-Making: Quarantine Management

- We supported the government's quarantine of ASF (African Swine Fever) last year, which had a 100% mortality rate and was prevalent around the world.
- We provided statistics for government such as breeding status of area that ASF occurred and surrounding area, slaughterhouse shipment status, etc.
- We made a manual in case of livestock disease and harmful livestock products.

If livestock disease occurs or there are harmful livestock products...

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**Traceability system**

- Breeding(Production)
  - Standstill
    - Disinfection/quarantine
- Slaughter
  - Suspension of Slaughter
    - Inspection/disposal
- Processing(Packaging)
  - Suspension of Processing
    - Recall/disposal
- Sales
  - Suspension of Sales
    - Recall/disposal

**Harmful livestock products warning system**

Reporting results of dealing with harmful products
Application of Livestock Products Traceability Data

Delivering useful information for farmers by App

- By analyzing traceability and grading data, we provide useful information for farmers by the smart phone app so that farmers utilize and access easily.
- Farmers can compare various information such as grade, carcass weight, price and etc. of their cows with the national average and that of excellent farmers.
- By this comparison, farmers will be able to diagnose more precisely and objectively their cows, which will eventually contribute to improving farm income.
Application of Livestock Products Traceability Data

Use of Big Data & AI: A Feedback Model for Farmers

- We are developing and providing feedback model for farmers by merging traceability and grading data and using AI (machine learning).

Step 1 (2019)
Providing the result of farm performance

Step 2 (2020)
Visualization, Comparison with top farms

Step 3 (2021)
Algorithm of solution recommendation using AI (machine learning)

- Analyze data
- Visualization of information
- Developing breeding solutions
- Evaluation of genetic ability
- Analyzing excellent farms’ status

KAPE

Antler Inc.

GeneApps

The Best Genetic Applications
Application of Livestock Products Traceability Data

Mobile app for choosing cows at cattle markets

- The **Traceability App** provides information for farmers to choose good cow at cattle market.
- They can enter the cow’s traceability number in the app to identify who the family cows are, and also to check each cow’s genetic ability, and paternity information.
We are opening data of grading and traceability system through public data portal operated by MOIS, so anybody who needs data can utilize it.

'Woosijang Plus' is an application for supporting farmers to purchase cows in the cattle market using grading and traceability, distribution data of KAPE.

What Woosijang Plus is trying to: the change of process for purchasing calves
Integrated Transaction Certificates for Livestock Products

Integrating 11 Certificates of 9 organizations

- The integrated transaction certificate is an online issued document integrating various livestock related certificates needed for transacting livestock products.
- Since there are too many certifications needed for distributing livestock products, we communicate and cooperate constantly with central&local govts and public institution to integrate those certifications.
- Therefore, we could achieve innovation that is providing livestock certifications of food safety and quality in the form of one-page certificate at the online site. We are now preparing a mobile version of this service.

What is expected?
- ✓ Reduce the administrative costs incurred for verifying documents between parties in distribution transactions. (e.g. required goods, manpower, and management costs)
- ✓ Improve the satisfaction of the public by simplifying work through information linkage between organizations.
- ✓ Enhance the confidence in livestock consumption through real-time information provision.
eKAPEpia: provides distribution information of products

An website providing distribution information to the public

Price Comparison Service

Price Disclosure

Competition

Rational consumption

Promote consumption

Activate Livestock industry
Thank you