

## **TRACEABILITY ON PORK IN JAPAN**

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### **ABSTRACT**

*In Japan, for traceability on pork persons involved with production, processing and sales of swine and pork created “Swine and pork traceability implementation guide” in 2009, and published the guide at the website of Food Marketing Research and Information Center. And then the affiliated operators ensured traceability on pork according to the guide in the scope of their own responsibility. There are “pork traceability (from meat processing to consumption)” and “swine traceability (= swine farm traceability)”, because livestock products vary from animal to meat. Besides responding to consumers’ request for implementation of traceability on pork, one of its purposes is to prevent the spread of swine diseases, and once serious diseases occurred, it helps investigate infection routes and cause of the diseases and collect contaminated products for the food safety improvement.*

*Pork traceability: in Japan the distribution of pork starts from swine producers and goes through slaughterhouse, processors and wholesalers and ends at retailers. This process is so complicated that to comprehend the transport stage of swine, pork and products (carcass, piece meat and dressed meat; chilled, frozen and thawed status) traceability firstly (1) determines the identification of unit (lot) (in cattle an individual identification is used), (2) grants identification number to the unit followed by its segregated management and (3) coordinates the unit at each stage of the procurement, processing and shipping, etc. To accomplish these activities (4) recording of the data and (5) transmission media (documents, tags, labels, DB, etc.) are required. Especially, meat standard logistics barcode (GS1-128 system) was developed for efficient recording, communication and storage of information and leveraged in traceability on pork.*

*Swine traceability: the domestic pork producers have been conducting the three-year plan on swine traceability since 2012, and tackling on a voluntary “establishment of swine farm traceability” and “identification of production farms on the product (pork) display (label)” to appeal consumers a fact that they are dealing with domestic pork. Its initiatives are (1) to announce information of swine farm where pork was obtained on the WEB site, (2) to sell pork with the label showing original farm number (product number); this was demonstrated as a model and (3) to collect SNPs information from distributed swine to improve swine for breeding.*

*Traceability consumes time, effort and money so much that the affiliated operators involved with swine and pork production should work based on situation and actual conditions of collection and distribution of products, consumers’ demand, disease and prevention of fabrication.*

**Keywords:** Swine, Traceability, Pork, Consumers, Japan, Food Safety

## INTRODUCTION

When foods are purchased or eaten, consumers can trust them if they have information such as when, how, and whom to produce them. However, distribution of products has changed; producers used to produce and sell products by themselves but recently distribution of products becomes so big that the distribution chain is prolonged. In the result, firstly display of characteristics of the products becomes necessary. In Japan display of products is mandated by law; for example, name and origin of the products and their shipping date, weight, trader name and contact information, etc. Secondly, prevention of disguised display sales, which become social problems, is needed, and once serious problems are detected with products, their traceability helps investigate causes of the problems and collect them for the food safety improvement. Thus, an implementation of food traceability is required, and it increases product reliability.

Also, in the first place for livestock animals, when animal disease occurs, traceability of animals prevents the spread of the disease and enables investigation of its infection route. Thus, individual identification of livestock animals from birth has been carried out and implementation of their traceability is required. Because of this, in Europe and America, etc. individual identification of livestock animals has been conducted through the ages.

## WHAT IS TRACEABILITY?

First of all, traceability can be defined as an ability to trace. However, animal products are processed from slaughtered animals to carcass, portion meats and meats with changing forms as commodities, increasing their number and mixing of them; in these aspects animal products are different from other fresh food. Animal food (pork in this study) traceability is a chain-traceability consisted of “Swine traceability” and “Pork traceability”.

There are various utilities for implementing traceability. For the food, utilities of traceability are to increase reliability of the display of products, clarify responsibility for products and enhance the efficiency of commodity management. For livestock animals, traceability can be used to improve efficiency of livestock management and improvement. However, inserting traceability on display of food will be rarely obligated, because it is labor, money and time consuming. When it is done as a package, it will cost more. Initial investment has to cover running and updating data cost, and will be endless. In Japan, in addition to U.S. inserting traceability on display of beef is only obligated. For other foods a voluntary display of producers is attached to them.

## THE STATUS OF FOOD TRACEABILITY IN JAPAN

Foods with a traceability obligated from production until consumption are only beef (cattle) and rice. For rice records storage is carried out by those involved. For beef (cattle), since the outbreak of BSE in 2001, for the first time laws on traceability were established in 2003, and all domestic cattle in Japan have been granted identification number and recorded in database. For other food such as vegetable, fresh food, sea food and animal food, guidelines for traceability are created in each industry under the support of national and local governments.

“Swine and pork traceability implementation guide” was created in 2009, and published at the website of Food Marketing Research and Information Center in Japan (FMRIC, 2009).

## SWINE AND PORK TRACEABILITY

The traceability of swine and pork consists of “Swine traceability” at the swine production farm and “Pork traceability” at pork processing and sales stages as a chain-traceability. With underlying assumption that there are generally lots of pork distributors making distribution chain long in Japan; specifically from Producers ⇒ Treatment and carcass ⇒ Fabricators ⇒ Wholesalers ⇒ Retailers ⇒ Consumption. Objective of traceability is swine to slaughter, and subsequent products (carcass, portion meats, cutting meats and meats (chilled and frozen meats are included)). Transfer of each swine and the products should be recorded and known by each

participator; purchase, processing, and shipping, etc. of them should be recorded. However, instead of consolidating to a centralized data base, all the information of all participators concerned should be kept by each participator.

What steps have been considered to create pork traceability? How pork traceability has been considered in Japan? First of all, participators held a meeting. However, it was held to perform traceability as a method and measures to ensure the safety of food. To establish perfect traceability too much effort, money and time will be needed. How to do it easily with good results is important. Producers, slaughterhouse participators, processors, wholesalers, retailers attended the meeting to share information such as how to conduct traceability. Guidelines for traceability discussed and concluded at the meeting were announced at the website mentioned above, and then the affiliated operators ensured traceability on pork according to the guide in the scope of their own responsibility; however, its implementation is not done en masse.

What are configuration and mechanism of pork traceability? The implementation of traceability needs following five points as components;

- 1) Determine the distinguished units (lots) in the logistics of each stage. Products may reach consumers using a single lot number, but in the middle of the distribution, multiple products are often combined as one product (unit) granted one lot number.
- 2) Grant identification number to the unit followed by its segregated management. Meats, boxes and trays are managed separately.
- 3) Coordinate the unit at each stage of the procurement, processing and shipping, etc. Meat parts from the carcass or meat cuts from meat parts, or combining them as one unit to coordinate.
- 4) Record their segregated managements.
- 5) Transmission medium used for identification of products in logistics should be documents put on the products, tags and labels and data base, etc.

What is the "Information about traceability" to be recorded and transmitted? They are such as follows; Identification number, breeds, place of origin, dates of slaughter, shipments and sales, weight, names of dealers, contact information, etc. Some of them are the same as shown on product display created according to the law, and others are different. In Japan, what should be displayed, based on the Act on commodity display, are names of products and their sites (refer to refrigeration or frozen-thawed), expiration date, seller's names and contact information, etc.

How to check traceability? If traceability of products is conducted at each company, etc., there is usually no monitoring of the whole chain of those. Usually the internal check system in each company, shop, etc., is established to conduct. Whether traceability can appeal to consumers or not depends on their decision and, if necessary, traceability can be provided to them as information.

In the case of implementing traceability on pork, participators had better use common identification number and display attachment. Therefore, it was decided to use bar code which has been already established at another meeting. In detail, "meat standard logistics barcode (GS1-128 system)" has been established specifically for the transfer and storage of records of identification information, and it is in common use throughout Japan. Meat distribution standard system Councils (Secretariat: Japan meat trading center) was held, and it was decided to use this GS1-128 system for pork traceability.

## **TRACEABILITY OF SWINE AT PRODUCTION STAGE AND SWINE FARM TRACEABILITY**

In particular swine farms individual identification is carried out using earmarks and ever-changing ear identification and also lot management of swine is conducted. However, the whole investigation for implement of traceability is just beginning. Primarily, in Japan after disease spread in 1980s the piglet transactions decreased sharply, and then management to consistently make piglet production and fattening become the majority of swine farming. Also self-sufficiency in pork has been decreasing from 87% in 1980, 57% in 2000 and to 53% in 2010.

Based on premise of these facts, Japan Pork Producers Association (JPPA) launched project utilizing the concept of traceability to appeal "domestically produced pork" to consumers from 2012. Contents of this project are "On-farm traceability introduction and popularization" and "Showing production farm on display of products" etc. It has 3 years planning period. The project began with consideration of content and planning of

implementation from zero to the full content of the plan. At the very beginning, producers should understand traceability. They should understand what traceability is, and should know what to do for it. Thus, in the project descriptions of traceability were distributed to all the members of JPPA requesting for sending back information on traceability to JPPA. In the first year 2013, JPPA received the information from 1/5 of JPPA members (5,000 farms). From 2014 forward, JPPA plans to increase the number of farms announcing the farm information, and to improve the constantly updated information. Also JPPA urges distributors and consumers to know “Swine farm information” web site, and ask them to have a link to the site.

Contents of JPPA project are as follows;

- 1) On domestic swine producers (farms) information web site farm numbers are published; all the farms in Japan were granted with farm numbers and regional names and farm names can be navigated by the farm numbers, and "Domestically produced pork and swine farm traceability system (Swine-Tre) was published.
- 2) As an awareness campaign for the farms, they are promoted to establish thorough information management within a farm. In detail, swine shipping records must be kept thorough, feeding and hygiene managements must be coordinated as information, and the display of pork sales place, etc., must be done.
- 3) Model verification of Chain-traceability: Swine Traceability and Pork Traceability. Farm numbers and product numbers are granted to swine or products (pork) at the each production stage, and they were displayed on the products, and then the products are delivered to the consumer.
- 4) Single Nucleotide Polymorphisms (SNPs) are obtained from swine at the farm providing swine breeders and pork of their offspring, and used to verify the improving methods for swine.

From now on, it will be expected to coordinate links between the leading pork traceability and swine farm traceability.

## **CONCLUSION**

Implementation of traceability requires considerable time, effort and money. It takes time to get stakeholders' understanding of traceability before its implementation. A huge amount of information is needed. And who will manage the information and create data base is one of challenges. Unless traceability is legislated, it can't be implemented thoroughly. Traceability is effective when the situation, such as the spread of the disease and corruption, occurs. About pork traceability, voluntary implementation of traceability begins with consideration of its manual by gathering participants. Along its manual participants implement voluntary traceability respectively. Individual countries should plan and implement traceability according to their logistics. In Japan, while watching the ideals and reality of traceability, we continue to establish pork traceability.

## **REFERENCES**

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