CERTIFICATION SYSTEM FOR FOOD SAFETY

Shunichi Matsui
Japan GAP Foundation
e-mail: matsui.jgap.jp

ABSTRACT

There are many food safety hazards that exist that make it difficult for experts to manage them perfectly. However, there are systematic methods of minimizing the occurrence of risks. One method is the third-party certification systems for food safety. This paper studies how the idea for HACCP—which was adopted by Codex, the only internationally recognized standard relating to food, and which is the representative method of controlling hazardous factors in food hygiene—has been introduced to agricultural sites as the starting point of the food chain, with a focus on ASIAGAP, a third-party certification system, as the example.

Importance of ensuring food safety

The necessity for such approach is more and more required due to the following circumstances. In the past, food safety initiatives were taken mainly from the perspective of securing quantity and quality under the concepts of Food Security and Food Safety. Since 9/11, there have been a number of synchronized terrorist attacks including the anthrax incident in the U.S.A. In 2001, however, initiatives began to be implemented under the concept of Food Defense, with the leading role played by the U.S. Food and Drug Administration (FDA), and a focus on a safer food supply and strong awareness of bioterrorism. In addition, partly because of the frequent occurrence of Food Fraud, it has become important to take a comprehensive approach from the four perspectives of Food Security, Food Safety, Food Defense and Food Fraud. Maintenance of food safety used to be a differentiating factor similar to quality (deliciousness and texture). It has now become a social responsibility of food business operators. In addition, the break with slash-and-burn farming, etc.

The world population began to increase rapidly because of the Industrial Revolution in the middle of the 18th century. It was 500 million in 1500 and eventually increased to 2.5 billion by 1950. In other words, it took 450 years for the population to quintuple. How long did it take for the population to double from 2.5 billion to 5.0 billion? Surprisingly, the answer is only 37 years. It is predicted that the world population will continue increasing to nearly 10.0 billion in 2050. Agricultural sites or farms serve as the foundation for securing a sufficient amount of food that is also safe to avoid hunger. It can be said that GAP contributes to securing Food Safety and solving the Food Security issues through sustainable, responsible production with a departure from food production with a high environmental impact such as slash-and-burn farming, while permitting the appropriate use of fertilizers and pesticides to ensure a sufficient harvest.

The Industrial Revolution not only triggered the population increase, but also contributed technologically to the development of transportation, thereby facilitating the transportation of people and goods. As the world becomes smaller, the risk increases that hazardous factors threatening food safety will spread beyond national boundaries and oceans. The global spread of infection must be avoided at any cost.

This paper does not touch on the issues of Food Defense and Food Fraud. Codex HACCP, which can be called the core element of food safety, is discussed at the onset mainly from the perspective of its relationship with certification systems.

Codex HACCP

The Codex Alimentarius Commission was jointly established by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO) in 1962. It was established to protect the health of consumers (food safety) and ensure fair practices in the food trade (quality and labeling). The Guidelines for the Application of the HACCP system was adopted in 1993. Hazard Analysis and Critical Control Points (HACCP) was originally established from 1959 to the 1960s by the Pillsbury Company to ensure the safety of food in space. This system is a method with which potential hazards are studied and analyzed in each step of the food manufacturing process and critical points for preventing the occurrence of the hazards and eliminating them are constantly monitored and recorded, thereby ensuring product safety in the entire manufacturing process and enabling the safety to be guaranteed. Hazardous factors include biological ones (bacteria, parasites and viruses), chemical ones (mycotoxins, paralytic shellfish toxins and residual pesticides) and physical ones (metallic pieces, glass pieces and hard foreign objects). Product safety can be secured without relying on finished product tests by identifying possible risks from the large number of hazards that have been identified and by properly controlling the identified risks in the manufacturing process. HACCP assumes that prior to its introduction, good hygienic conditions are established in accordance with the general principles of food hygiene. The HACCP system is applied to the food manufacturing process based on 12 tasks, that is, the five preparation tasks and the seven principles of HACCP.

As described above, the Codex HACCP focuses on hazardous factors that must be controlled. It is widely used worldwide because it is auditable. Codex is the only internationally recognized standard related to food, and while it permits 100% control of hazardous factors in a preventive manner, it does not guarantee 100% safety and does not eliminate risks completely.

Introduction of Codex HACCP in Europe, the U.S. and Japan

The status of application of the Codex HACCP in Europe, the U.S. and Japan is summarized below.

The EU saw consecutive cases of the spread of contamination from one country to the entire region. They include the dioxin contamination of chicken and eggs (1999), the occurrence of bovine spongiform encephalopathy (BSE) on the European continent (2000), food poisoning caused by Enterohaemorrhagic Escherichia coli (EHEC) O104 (2011), and the horse meat scandal (2013). Among them, the BSE problem led to the adoption of the General Food Law (Regulation No.178/2002) in 2002, under which food safety administration began to be promoted based on risk analysis. Based on this law, it was decided that a food hygiene and safety control system would be built as a set of regulations under the Hygiene Package. This package makes it mandatory for all food business operators (including farmers and other primary producers) to fulfill general hygiene requirements. Further, it obliges food business operators other than primary producers to comply with the HACCP principles.

In the U.S., it was decided that the introduction of the Codex HACCP for fishery products would be mandatory in 1995, and it came into force in 1997. It was later made mandatory for meat products, fruit and vegetable juice products, and for retailing in 2005. In 2016, the introduction of the Food Safety Modernization Act (FSMA), which stipulates the Hazard Analysis and Risk Based Preventive Control (HARPC), was made mandatory for all products over which FDA holds jurisdiction, including imported products, with a transition period until September 2018.

In Japan, the institutionalization of the system was determined in 2018. The following is a detailed review of that process.The main laws on food safety in Japan are the Food Sanitation Act (which came into force in 1948) and the Food Safety Basic Act (2003).

The Food Sanitation Act was established soon after the Constitution of Japan following the end of World War II. It was established as an alternative to the food hygiene order and similar regulations that were effective before the war, with an aim to regulate and direct food hygiene as a kind of police laws and regulations, from the viewpoint of public hygiene. It is not too much to say that the objective

of this law is prevention of food poisoning. It is applied to monitor hygiene levels of food manufacturing and restaurant operations. It was later revised to permit imposition of administrative punishment on imported food as well (1953).

The Food Safety Basic Act was established in response to the occurrence of BSE in Japan in 2001. It stipulates the basic principles and direction for policy formulation. It can be said that BSE caused the food hygiene administration to greatly transform into the food safety administration.

In Japan, the system of approval of the Comprehensive Sanitation Management and Production Process was established as a sanitation control method based on the HACCP system in the 1995 revision of the Food Sanitation Act. Under the previous management method, conformity with the standards and safety would be confirmed through unannounced inspections (including bacterial tests, sensory tests and tests for foreign substances). On the other hand, with HACCP, the overall process is managed to prevent the occurrence of hazards themselves, which facilitates securing the safety of the products. In 1998, the Act on Temporary Measures concerning Sophistication of Management of Food Manufacturing Process (commonly known as the HACCP Support Act) was established, and measures including long-term, low-interest loans were taken under the initiative of the Ministry of Agriculture, Forestry and Fisheries. In April 2015, standards based on the introduction of HACCP were added to the management and operation standards under the Food Sanitation Act as an option that can be selected as an alternative to the existing standards. In June 2018, the Act on the Partial Revision of the Food Sanitation Act, etc., under which all business operators engaged in food manufacturing, processing, cooking, distribution and other food-related operations are required to introduce HACCP, was promulgated. This law will come into effect within two years after the promulgation, and a one-year period for transitional measures has been set for small business operators.
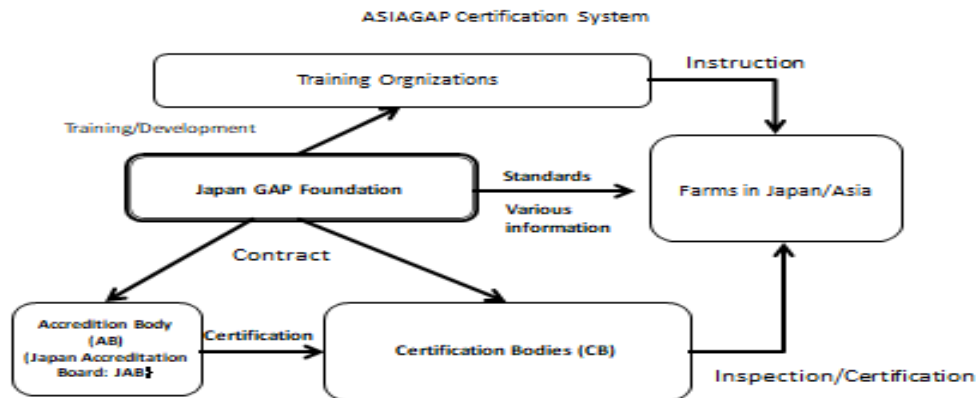
HACCP and certification system

While HACCP is positioned as an international standard for food sanitation control, HACCP as a Codex standard has not instituted a rigid certification system. There is an asymmetry of information (with more information held by sellers than by buyers) in transactions of products and services, and the effectiveness of the introduction of a certification system—a third-party certification system in particular—as a method for alleviating the asymmetry of information has been pointed out, especially for quality control.

Three types of certification exist—self-certification, second-party certification and third-party certification. Self-certification is based on the Self Declaration of Conformity. While the highly transparent disclosure of information is required, it is difficult to check the authenticity of the information externally. Even if cancellation of a contract or payment of a penal charge is set forth as the penalty for violation, it is difficult to prove that the reason for the violation is attributable to the violating party, leaving the trading partner concerned. In the second-party certification, trading partners mutually confirm the conformity with standards or specifications. It is applied to a Private Brand, for example, but the scope of its functions is limited to the trading partners. Third-party certification is more appropriate and fairer than these two systems. The reliability of the assessment and its results is much greater because an independent person or institution is requested to check the conformity.

ASIAGAP, an international standard as a third-party certification system

As mentioned above, the Codex HACCP is not a certification system, but produces a greater effect when incorporated into a third-party certification system. GAP, which introduced the HACCP system to the production management process for farm products, is prevalent among farms that are located upstream of the food chain. This paper introduces ASIAGAP. Among many GAP systems, ASIAGAP boasts effectiveness that is recognized internationally. The mechanism of the ASIAGAP certification system is as follows.

ASIAGAP Certification System

Training Orgnizations

Instruction

Training/Development

Japan GAP Foundation

Standards

Various information

Farms in Japan/Asia

Contract

Accredition Body (AB) (Japan Accreditation Board: JAB)

Certification

Certification Bodies (CB)

Inspection/Certification

GFSI approval of ASIAGAP

ASIAGAP is a certification program that was developed by the Japan GAP Foundation. It was recognized to conform to the benchmarks of the Global Food Safety Initiative (GFSI) and became GFSI approved on October 31, 2018. GFSI is an organization that promotes food safety, affiliated with The Consumer Goods Forum (TCGF). It was founded in 2000 and its head office is located in Paris. TCGF is a global network of food distributors and manufacturers. It carries out activities focusing on five strategic priorities—Emerging Trends, Sustainability, Safety and Health (Health and Wellness), Operational Excellence, and Knowledge Sharing and People Development. GFSI takes initiatives as an expert committee in the field of food safety in Safety and Health. Participants in GFSI are retailers, manufacturers, food service providers, accreditation/certification bodies and international organizations related to food safety. They implement the following activities:

a) Reduce food safety risks by delivering equivalence and convergence between effective food safety management systems;
b) Manage cost in the global food system by eliminating redundancy and improving operational efficiency;
c) Develop competencies and capacity building in food safety to create consistent and effective global food systems; and
d) Provide a unique international stakeholder platform for collaboration, knowledge exchange and networking

ASIAGAP has achieved and maintains conformity with the GFSI benchmark focused on food safety and has become a certification system with food safety initiatives added as new control points. Those initiatives include the Codex HACCP international food safety standard, Food Defense, Food Fraud, allergen labelling, countermeasures against cross-contamination with allergens and similar issues, confirmation of hygiene control in water storage and unannounced audits chosen by farms.

Affinity with SDGs

A major feature of ASIAGAP is that it covers the protection of human rights, safety of workers and environmental protection, which are advocated in the Sustainable Development Goals (SGDs) adopted by the United Nations member states in 2015, in addition to farm management and food safety.

A sustainable society, which is a global concern, is greatly emphasized in the sourcing code of the Tokyo 2020 Olympic and Paralympic Games. For the 2012 London Olympic Games, a Food Vision was formulated and GAP certification was largely needed for the food ingredient procurement standard that was stipulated in the Food Vision. With regard to agricultural products, the Food Vision required conformity with Red Tractor, which is a GAP from the U.K., or a similar standard as a benchmark standard (which applies to all products produced in the U.K.), as well as achievement of the GLOBALG.A.P., Fairtrade Certification and others as aspirational standards. This Food Vision was positioned as a legacy to create a stronger, more sustainable food sector, instead of only delivering safe food to competition sites and the Olympic Village, and was expected to indirectly influence restaurants in general and similar facilities. Therefore, the food ingredient procurement standards set forth in the Food Vision influenced not only agriculture but also society.

In this context, for the Tokyo 2020 Olympic and Paralympic Games (hereinafter, the "Tokyo 2020 Games"), the Tokyo Organizing Committee of the Olympic and Paralympic Games (hereinafter, "Tokyo 2020") has set procurement standards highlighting sustainability.

Those standards were set as the Sustainable Sourcing Code in March 2018. Specifically, it determines the criteria and operating methods by which all products and services are procured by Tokyo 2020. The structure of this code shows standards for sustainability that are common to the overall code, such as standards on compliance with laws and regulations, one on the environment including energy savings, one on human rights and labor such as the ban on discrimination and the ban on child labor, and one on the economy such as the invigoration of regional economies. Individual Codes for Core Products/Services are set as subordinate standards for important products, services and their ingredients. The individual code, which applies to the procurement of agricultural products, is included among the appendixes to the Sustainable Sourcing Code.

The Sustainable Sourcing Code for Agricultural Products requires that appropriate measures be taken: (1) to ensure the safety of products, (2) to ensure a harmonious balance between the agricultural production activity and the surrounding environment and ecosystem and (3) to ensure the safety of workers. This is based on the idea that factors including not only food safety but also environmental protection, safety of farm workers themselves engaging in production activities and respect for the welfare and human rights of people working on farms are essential for sustainable agriculture.

ASIAGAP, JGAP, GLOBALG.A.P. and SQF are accepted as schemes that Tokyo 2020 recognizes as ones that satisfy the above requirements. This is because their contents were deemed compatible with the policy of the sourcing code and they were highly evaluated for their objective third-party certification systems. The requirements also include the fulfillment of GAP, which follows guidelines formulated by the Ministry of Agriculture, Forestry and Fisheries of Japan and has a system for third-party verification by a public organization, such as a prefectural government.

Food chain and traceability

For securing food safety, it is ideal that a state is maintained in which a variety of risks can be addressed, with GAP or HACCP introduced in each step from farm to table— from primary food producers to processors, (wholesalers), (restaurant industry), retailers and then to final consumers. However, zero risk is difficult to achieve. In the event of an accident, the most urgent task is to investigate the cause and recall the food from the market to prevent the accident from spreading. Therefore, it is necessary to ensure the traceability of food for tracking the food chain in the final consumption stage. In 2004, the Codex Alimentarius Commission defined sustainability as: "The ability to follow the movement of a food through specified stage(s) of production, processing and distribution."

Securing traceability in each of the above-mentioned steps must be incorporated into the program. For example, control points are listed in "10. Product identification and Traceability" in the ASIAGAP Control Points and Compliance Criteria (CPCC) (for Farms)—Fruits and Vegetables Ver. 2.1. Those control points include: Product display, Appropriate labelling, Shipping records, Harvesting records, and Responsible personnel for fertilizer management. In each control point, Compliance Criteria are described in detail. For example, in the compliance criteria for the Shipping records, the third control point mentioned above, are as follows: There are records that connect the shipped product and its harvest information. The records contain the following information: (1) Shipping/sales destination; (2)

Shipping date; (3) Product name; (4) Shipped quantity; and (5) Harvest lot or storage lot that is linked to the harvest lot

The above are control points and compliance criteria for traceability, which are shown as examples. Farms certified under ASIAGAP, a third-party certification system, contribute to realizing sustainable agriculture—including worker safety, environment and labor management as well as food safety—by receiving regular checks by the Certification Body, which are conducted to see if the tasks conform to the above compliance criteria.

Finally, on the day when ASIAGAP, which is GAP for farms as the starting point of the food chain, was approved by GFSI in the production of fruits and vegetables, grains and tea, the JFS-C Standard that is operated by the Japan Food Safety Management Association (JFSM) obtained GFSI approval in the food processing and manufacturing sector. As the Certificate Program Owner (CPO) of ASIAGAP, the Japan GAP Foundation intends to continue contributing to food safety, which will form the foundation for a sustainable society, while working with related organizations.

CONCLUSION

The population increase and development of transportation on a global scale has resulted in a serious issue—the risk of the rapid spread of hazardous factors, such as plagues, over a wide area. This has led to a growing need to achieve food safety and efforts are being made to minimize risk by incorporating and instilling appropriate safety standards into control points and compliance criteria of third-party certification programs. It is desirable that these efforts should be made in all steps of the food chain, from farm to table, instead of only a part of it. Even if this has been achieved, it is impossible to completely eliminate the risk of hazards. Complete traceability covering the overall food chain should be established to ensure that countermeasures against the risk work effectively.

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