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Articulation agriculture, public health and environment for the management of risks associated with the food production in the Americas: *Institutional experiences for ensuring food safety and nutritional quality*

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SUMMARY

This document on institutional experiences for ensuring food safety and nutritional quality has been prepared so Latin American countries may use it as a tool for analyses and studies that is useful in the modernization of their food control systems.

This document allows governments to think about the current situation of their food control systems, as well as take action keeping in mind that this topic has been so far treated from an international angle by FAO/WHO, and that governments have been making progress in the handling of food safety problems. It is clear that there are challenges in food safety that are tied to the evolution and transformation of the agricultural and food industry, international commerce and the demands of consumers, all which necessitate greater efforts to consolidate public policies and institutions that are trustworthy and credible in terms of risk prevention.

Countries must confront the problem of food safety as a public good based on State decisions and, as such, it needs investments on prevention to be made under a modern concept of risk analysis, which will in turn need changes and organizational strengthening of food control systems that may keep up with the improvements made on public health and the reduction of burdens on health systems, the needs of consumers and their epidemiological profiles, changes and customs of the productive sector, the challenges of international trade, among other emerging external factors such as changes in demographics, climate, society, and economic development.

In most Latin American countries, modernization of food control systems have emerged in response to international commerce, which has resulted in fragmented modernization processes which, in turn, create double standards and don't solve food safety problems. It is evident that processes need to be planned, organized, strategically oriented, and structured around national food control programs that tend to problems in food safety and do not conflict with the development of the agricultural food industry and commerce. This means, no matter what organizational structure model is used, that food control systems must be supported by institutions that can overcome conflicts caused by competitions, responsibilities, fragmentation of surveillance measures, and lack of coordination; as well as the gaps pertaining to specialized personnel, availability of resource, technological modernization, and responsibilities in public health protection.

Any process that modernizes food control systems must seek to satisfy goals in terms of improvements in food safety that has an impact on public health.

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BACKGROUND

Food control systems are responsible for guaranteeing the health and the quality of food, avoiding treachery towards the consumer, and guaranteeing the existence of a solid base for national and international food trade. Given the responsibilities of Food control systems, their basis is official, mandatory in nature, and their application does not discriminate any type of food, or systems for their production, processing, or sale.

Following international trends, Food control systems have as a strategic focus the development of activities based on: a) preventive focus, b) “farm-to-table,” c) scientific basis supported by risk analyses, and d) transparency.

In the last decade, International Organizations such as the United Nation’s Food and Agriculture Organization (FAO) and World Health Organization (WHO) have been preoccupied with the strengthening of food control systems, which has been shared and internalized by many governments that, motivated for the most part by problems in food safety and international trade, have made efforts to improve their institutional capacity and to give new orientations to their control systems.

The motivations for each country’s preoccupation for its institutions are diverse, but may be summarized as pertaining to: a) public health, b) international trade, c) food crises, d) new developments in the food industry, e) concerns of consumers, and f) contextual factors such as climate change, natural disasters, fraudulent practices, and smuggling, among others.

However, motivations for the need to strengthen systems of food control must be analyzed considering the institutions that support them, as this is the system’s motor. In this light, other questions appear that must be analyzed to guarantee that the institutions related to health and quality really do fulfill their role and that this manifests itself as improvements in public health.

The questions regarding the institutions are related to aspects such as:

- a) the efficacy, efficiency, and strategic focus of food control programs;
- b) their capacity to respond in case of emergency;
- c) trust and credibility before consumers;
- d) high fiscal costs;
- e) the roles, responsibilities, and duplication or absence of abilities;
- f) the existence of differentiated standards for local, national, and international foods, and;
- g) the availability of coordinated surveillance systems that allow the impact due to a reduction in food-transmitted diseases to be linked to the efficacy of food control systems.

It is necessary to acknowledge that, throughout history, the institutions dealing with food control systems have answered reactively to food crisis, and that up to a little over a decade ago, the focus of inspection obeyed schemes oriented towards verifying that requirements in terms of infrastructure and the quality of the final product had been met – which are not very dynamic, with heavy or more and more weak institutions, and poor results regarding the needs of public health, the consumer, the food industry, and international trade.

The institutional dynamics related to food safety has changed little by little in the focus of its strategic and institutional model, the expertise of international organizations such as FAO/WHO/WTO, and developed countries have set the pace for programs to migrated towards new integral schemes based on prevention, that involve the concept of risk, and take into account the entire food chain up to the final consumer, with solid technical, scientific, agile, efficient, and opportune structures.

However, not always has there been concern for strengthening food safety systems. Throughout history there have been periods when institutions saw their development paralyzed, to the point that in many countries there were budget and personnel cuts that coexisted with a tendency towards their dismantling, which eventually became losses in the institutions and in their priority in the agenda governments. It wasn't until the crises that affected international trade occurred that the matter was once again regarded as a priority.

Even though the United Nation's Food and Agriculture Organization (FAO) and the World Health Organization (WHO) promote the strengthening of food control systems, the decision of doing so remains in the hands of each country, and it depends on the importance with which the matter is assumed, on the political, economic, and regulatory commitment to move forth on the subject of food safety, factors that, when combined, allow institutions to evolve and be strengthening.

The first institutional changes obeyed reasons of efficiency, duplicity of functions, and fiscal reforms¹, the next changes were motivated by food crises, the one that took place in the United Kingdom in 1996 caused by BSE, in which consumers questioned their trust in the institutions responsible for food safety, thus making evident the existing deep problems related to its capacity for and focus on prevention, response opportunity, and efficacy of its actions.

However, even though public health's concern for foodborne illnesses² must be the main motivation, one observes that particularly in development countries, the thrust given to institutional strengthening is due to international trade.

In this sense, food crises have motivated the evaluation of governments to truly realize the need to have food control systems that are able to prevent and respond to any adverse situation.

Such events imply high costs due to diseases, deaths, work absenteeism, economic crises in productive sectors, loss of markets, and their high political costs for governments due legitimate discontent of affected consumers, entrepreneurs, and traders. Recent examples of this are those of intentional contamination of with melanin in China³, of Escherichia coli O104:H4 in soy sprouts in Germany, the well-known case of Bovine Spongiform Encephalopathy in the United Kingdom, among many others.

In the case of Escherichia coli O104:H4, this outbreak took place in Germany and caused the death of 34 people⁴, 530 infected, and there were 1768 suspicious cases in countries in the European Union, the United Kingdom, the United States, that has been mistakenly known to the world as the outbreak of E.Coli in Spanish cucumbers, due to the investigations conducted by the European Union, it was found that the problem originated in imported soy sprouts. This problem cause the closing of the market for cucumbers and other vegetables in Spain and other European countries within the European Union, Russia, and Arab countries, leading to economic losses for Spanish producers of 200 million Euros a week, reason why the European Commission put in place some aids for vegetable producer in the region.

The case of BSE and the new variant of CJD (Creutzfeldt-Jakob Disease) is the best-known one at the international level due to its economic impact that brought along consequences to the internal sales of beef-based products and the loss of export markets. The price of beef was reduced by more than 25%, the crisis therefore ruined an industry with an estimated value of £3.2bn a year (0.5% of the United Kingdom's GDP), and that

¹ Canada and Denmark

² In the United States, for example, one in six inhabitants dies due to a foodborne disease, 28000 are hospitalized and 3000 die every year

³ According to the Chinese Ministry of Health, about 300,000 children got sick; about 40,000 received medical treatment related to the consumption of melamine contaminated infant formulas; about 12,900 were hospitalized; and at least sic died

⁴ 32 people died in Germany, 1 in Sweden, and 1 in France up to June 6th, 2011

employed 130,000 workers (0.5% of that employment)⁵. Total economic losses to the nation, due to the BSE in the year following the 1996/1997 crisis, are estimated at £ 740 million and £ 980 million, which is equivalent to between 0.1% and 0.2% of the United Kingdom's GDP⁶.

The second situation, and perhaps the one that gave the greatest impulse to evolution of institutions towards food control, has been international trade. Since the creation of the WTO in 1995, food trade has grown and its seasonality has disappeared, the diversification of products and flavors has been increased, for the benefit of the world economy.

In Latin America, it must be noted that institutional reforms have, for the most part, been motivated by the free trade agreements negotiated by countries, and the need to take on new markets, reason why improvements on control systems have oriented themselves towards generating an institutional infrastructure and meeting sanitary requirements for the market of destination, as well requirements in inspection systems specifically dedicated to international trade⁷.

This causes distortions in food safety systems, mainly because of the emergence of different standards for local, national and international producers, the strengthening of institutions exclusively in those areas required to respond to international trade.

On the other hand, there are other factors that concern WHO and individual countries, related to non-transmissible diseases⁸, where nutritional quality plays a very important role since, for the most part, their causes are related to unhealthy lifestyles.

Concern for non-transmissible diseases impact food control systems and, therefore, the nutritional aspects are part of the system, since they relate to a public health problem and of interest to consumers, who need to have healthier and more nutritious diets available to them.

What has been previously stated makes certain questions appear, such as: What is happening in the world of institutions responsible for guaranteeing food safety and nutritional quality? What type of Control System do these countries need? How have countries been preparing themselves to deal with this need?

CURRENT SITUATION: INSTITUTIONAL EXPERIENCES TO GUARANTEE FOOD SAFETY AND NUTRITIONAL QUALITY

Current situation of food control systems in LAC

Both FAO and WHO have pointed out that food control systems must take into account all foods, whether national or imported, and must have 5 basic components: a) Legislation; b) Management over food control; c) Inspection services; d) Laboratories and; e) Information, communication, education, and training. And respond

⁵ Study done by the private consulting firm DTZ Piedad, covering the first year of the crisis, between Mars 1996 and Mars 1997, ordered by the United Kingdom's Department of Agriculture and Treasury.

⁶ Between half and two-thirds of this expense is explained by the fall of added value in meat production. This cost would have been higher if wholesalers, producers, retailers, and consumers had not switched to alternative meat products, which increased production and employment in other parts of the United Kingdom. The rest of the national loss was the result of the operational costs of diverse public plans, costs associated with compliance to new legal requisites, and costs associated with adjustments to productions to new service markets.

⁷ Study done by the private consulting firm DTZ Piedad, covering the first year of the crisis, between Mars 1996 and Mars 1997, ordered by the United Kingdom's Department of Agriculture and Treasury.

⁸ Cardiovascular diseases, diabetes, cancer, and chronic respiratory diseases caused 35 million deaths in 2005. This number represents 60% of total deaths in the world. 80% of deaths caused by non-transmissible diseases are recorded in countries with low and medium income, and approximately 16 million correspond to people under 70 years old. It is projected that total deaths due to non-transmissible diseases will increase by an additional 17% in the next ten years.

to the basic principles of: integrated “farm-to-table” concept, risk analysis, transparency, and evaluation of regulatory effects.

The components and principles give countries the basic elements that must be taken into account to install a food control system that allows reducing and preventing risks, improving public health and, therefore, trade.

The challenge for countries is having food control systems that answer the given orientations, and that adapt to the reality of each industry, commerce, customs, population, government structure, and economic capacity, among other factors.

The application of changes in control systems related exclusively to trade issues⁹ causes the development of the system’s components in a fragmented fashion, without a strategic orientation, thus creating a double standard.

As such, when a food control system has been modernized with exports as its only objective, parallel regulations and institutions are created within the country, so that there are: inspection programs, adoption of preventive systems such as Good Agricultural Practices (GAP), Good Manufacturing Practices (GMP), and BPA, BPM, and Hazard Analysis and Critical Control Points (HACCP), pathogen control programs and residue control, laboratory capacity and personnel dedicated exclusively to exported products, thus leaving out the rest of national products.

It is clear that a scheme conceived with exports as its only aim only benefits a given group of enterprises, and although a change begins to be seen in the country and its institutions, it does not take into account food safety problems as a whole, leaving aside concerns of prevention and risk reduction at the national level and neglected public health problems.

Figure 1. Main causes for the fragmentation and strategic orientation based on institutional, double standard schemes



Absence of “farm to table” focus in all food chains

It occurs mainly due to the absence of general policies to give this focus, both at level of food control systems and of the agricultural food industry, where individual responsibility within the chain still persists, thus making it more difficult for risk prevention to be carried out with a focus on the entire chain. The development of such policies in countries has evolved in the following manner:

⁹ As has been happening in the Food Control Systems of Latin America

- a. *Development of politics, regulation, and mandatory compliance exclusively for food groups meant for export.* It is in this manner that one may appreciate how only a few industries and sectors adopt food safety systems such as GAP, GMP, and the HACCP system. The best examples are in the fish and seafood sector, fruits, and export meats. Here one may appreciate that for the Fishing sector of Ecuador, Colombia, and Peru, export products¹⁰ have specific regulations that differ from those related to national products, in which the following processes are mandatory: official inspection based on risks, records, frequencies and responsible people, HACCP System, and Plans for Residues and Chemical Pollutants
- b. *Development of policies and regulation for the industry in general with voluntary applicability or mandatory of food safety preventive systems.* In these cases, the application of food safety preventive systems has not worked due to the official institutional capacity to enforce regulations and absence of strategies for the private sector to implement such systems. For example, it is possible for regulation making basic hygiene norms mandatory to exist, as is the case for Good Manufacturing Practices¹¹, yet the private sector has not put it in place nor are the authorities vigilant.
- c. There are for example regulations promoting the HACCP System so it is adopted in a voluntary fashion, but due to its “voluntary” nature is not applied by the industry nor is it promoted by public institutions, and is therefore a regulation without any positive impact in the improvement of food control systems or the reduction of food safety risks.
- d. Factors proper to productive sectors, such as the lack of integration of food chains, cultural aspects, education level, the lack of trustworthy information sources, technical assistance programs, and entrepreneurial informality, among others, make difficult the adoption of a “farm-to-table” focus.

Little application of the concept of risk analysis within food control systems

This concept has not yet been fully understood in its dimension within the institutions of LAC countries, since food control systems continue to operate under schemes where risk is not taken into account when putting in place official interventions and industry requirements.

- a. *Since there is no clarity with regards to risk focus, control systems have been working without carrying out an analysis on whether their policies and regulations are effective for: a) take care of, mitigate, and control risks, b) flexible and able to adapt to new risks, c) economically viable, or needed. The absence of change on this regard is even reflected on the way inspectors carry out their activities.*
- b. *It is clear that the basis for food control systems must be risk analysis. An example of this is that there are many successful cases where food control systems were modernized, incorporating the concept within their institutions in several ways, whether a single integrates activities such as evaluation, management, and communication risk, or making available independent institutions to carry out the evaluation, management, and communication activities.*
- c. *On this matter, the difficulties for adopting it start with the absence and commitment to decisions that should be taken by governments to establish how to deal with this issue? Who will be responsible? And How many and what type of resources are available? As well as guaranteeing the continuity of policies, beyond the government's period.*
- d. *Once the decisions have been adopted, the process of putting in place a risk evaluation starts out by taking advantage of resources that are readily available to the working groups, such as data from risk*

¹⁰ Mainly to Europe and the United States

¹¹ For example, in Colombia, this is established by Decree 3075 of 1997.

analyses made at the international level by the FAO/WHO mixed committee of experts on additives, veterinary medicines, pesticide residues, etc: organizing readily available data, the development of information systems to gather the data, the training of the staff on the subject, and the definition of strategic plans with defined goals to build the required minimal capacity in the country.

- e. *As for risk management, maybe the component for which countries are best suited, but also the least efficiency and efficacy of results, such as the adoption of HACCP systems, there is a decent level of knowledge, some skills developed in the training of staff, but it hasn't been possible to take the definitive step to make it a basic element to be met by the industry and for the authorities to fully put it in place with all of its workers.*
- f. *Some difficulties in the application of the concept of risk management may be summarized as follows:*
 - i. *Absence of a definition for risk-based policies, which doesn't permit having an inspection system based on risk, and keeping inspectors that act under traditional inspection schemes, frequently inspections without a definition for risk, among other.*
 - ii. *Deficient definition of attributions. In many countries there are not policies that are clear on the responsibilities, whether because it is presented as duplication or overlapping of attributions, or because responsibilities are not well defined, thus creating ambiguities.*

All of the above makes it difficult for the institutions responsible for food safety to coordinate with each other, be it because there is more than one institution dealing with a specific issue or, to the contrary, because nobody carries out the activity when the subject is brought up, creating conflicts on who should be working on the issue.

As so, since it is frequent to find a lack of clarity on the attributions for programs controlling food safety for fruits and vegetables between agriculture and health, or problems of overlapping attributions for animal slaughterhouses.

In this last case, in some countries, attributions are distributed in such that a way that export plants are under the jurisdiction of agriculture authorities, and plants for national consumption plants are overseen by health authorities, with the capacity, infrastructure, legislation, and staff that operates under different standards, without an orientation towards risk prevention of foodborne illnesses, which makes up the absence in the development of a definition of objectives for food safety, adequate levels of protection, strategic plans proactive and in prevention of food risks.

- ***Lack of coordination in the activities of food control systems between agriculture, health, and the environment***, which does not allow it to work under a “farm-to-table” focus, sharing information, define joint strategies, among others.

Coordination problems happen because of the absence of mechanisms that allow the creation of plans, interventions, and actions with defined goals. That is how, for example, it is not possible to establish whether the interventions of the inspection system are being effective in reducing foodborne illnesses, or whether the interventions of agricultural health authorities are enough to deal with the problems of food safety faced by health authorities.

Some examples of coordination problems occur even within the sector itself. For example, in the health sector one may frequently find a national organ and local authorities¹² that, lacking the institutional capacity, cannot enforce the policy regulations. Likewise, clear policies, goals, surveillance and evaluation systems, as well as feedback processes between institutional levels must be defined.

¹² In most Latin American and Caribbean countries, resources and prioritizing of actions regarding food control at the local level depends on local governments.

- ***Availability of resources and infrastructure.*** In the case of resources for operating food control systems, several situations have appeared that affect the capacity to operate. Some of these situations are:
 - i. Reduction of resources, to the point of generating a “dismantling” of institutions, due to budget cuts.
 - ii. Limited resources that force the giving of priority to activity development, leaving out important areas, usually related to epidemiological surveillance, scientific studies, control plans, and sampling are the most affected in terms of resources.
 - iii. Low investment in the strengthening of official references laboratories and absence of networks of laboratories.

Insufficient staffing, due to the absence of generational relay programs and cuts in the size of staff. It also happens that there are technical and scientific areas that do not have experts, be it because they are not available in the country, or because salaries are not attractive, making it difficult to have a critical mass with a high level of specialization.

In the same sense, in many countries or in some institutional sectors, one may frequently find a high rotation of personnel, which causes problems of training and continuity for the development and implementation of policies and programs

- ***Deficiency or absence of information systems.*** The absence of or deficient information systems makes it difficult to have available information ready to be analyzed, a characterization of existing situations, or predicting the behavior or the tendency of matters related to food safety, making opportune and efficient decision making difficult.

As for the communication of risk, it is the component that needs the greatest strengthening in LAC, since there is a frequent lack of a definition of the responsibilities and communication strategies targeted at all the partners of the chain and the consumer.

Frequently there are no official sources for consumers would allow them to know and appraise the truth of the risks, the way to handle them, and their implications on public health. Usually during a crisis communication systems are activated, but it is not a permanent practice of food control systems.

When risk communication strategies are not well established, the tasks of control systems become more complex because the work of informing and educating on how to prevent them is not being done, nor in the understanding of the solutions, on how and why it is important to handle risk in one way or another.

Lack of adoption of national strategic plans

Countries do not have objectives for food safety and therefore lack strategies that would allow the food control system to move forth in a well defined direction, making it difficult to measure the effectiveness of the actions and interventions, and may even be causing a lower effectiveness in the results of prevention and control of foodborne illnesses and generating costs without effective results.

For this it is necessary to analyze the main problems associated to food safety and the specific reality of each country and its production systems, in order to establish the appropriated interventions, the investment levels, and the definition of global and partial objectives that allow them to make progress in improvements towards safe production systems.

It is similarly relevant to define a baseline supported by information on problems for food safety, measurement mechanisms, and impact evaluation of interventions.

Lack of definition of responsibilities of the private sector and of public-private strategies

The private sector has a key role in the control and reduction of risks, and as long as it is not conscious of its responsibility in the adoption of risk management actions in its production and sales systems, the task of controlling will be more difficult. In many countries the role of the private sector as the first responsible for food safety is established in public policies, which makes it easier for food control systems to do their work and carry out interventions, as well as collaboration between the public and private sectors to reach public health goals.

When such interaction and cooperation exists between the public and private sectors, it is possible to determine the needs in terms of knowledge, resources, and requirements that ease the adoption of regulations to create joint actions oriented towards a participative compliance. Public-private interaction that respects the roles of each one permits its strengthening and putting the focus of public capacity towards actions that are more specific and more efficient in their development, and for the industry to move forth in an agile and efficient manner in the development of their responsibility in food safety.

This concept is not well established in many countries of LAC, and the role of public institutions is still seen as a control system that is coercive, imposing, and distant from the purposes of the industry, instead of collaborative and with common goals.

According to the socio economic and the culture of the region, for the most part food companies are medium to small scale, reason why it is more necessary to carry out a work that is performed jointly between the public and private sectors to understand sanitary and food safety requirements that allow them to move forward in meeting and managing risks, attending prevention and mitigation schemes through gradual mechanisms and strategies.

In facing such situations, the public-private alliance is responsible for creating strategies to move forwards in the implementation of food safety programs, through technical assistance programs, training, financing, publications, videos or by preparing any material that contributes in orienting productive sectors in such a way that conditions for food safety continue to improve.

Some initiatives where such teamwork between the public and private sectors has evolved from voluntary schemes until turning into public of great impact in systems for food safety, such as: a) systems to recall products from the market, b) traceability systems, c) supplier qualification programs, d) consumer information campaigns, e) private certifications, and f) accreditations or authorization of private parties to support public institutions with specific tasks.

CASE STUDY OF SUCCESSFUL FOOD CONTROL SYSTEMS

There are many institutional models that have been successfully implemented over the last decade in many countries, where it has been possible for the components of the food control system to coordinate with each other, be strengthened and integrally improved to respond to the needs in terms of prevention, risk reduction, response capacity, and trade.

Some of these cases show that the strengthening processes that have taken place in developed countries generated the coordination of the food control system around a single institution, as is the case of Spain and Canada.

The new institutions in the case of Spain and Canada, though developed by linking itself to a body responsible for the food control system, show differences in their organizational models, the way they deal with its components and principles of the system.

In the case of Canada, the Canadian Food Inspection Agency (CFIA), acts under an organizational scheme based on having a single body responsible for food control, according to the FAO/WHO classification.

In this case, the principles of agricultural food chain, risk analysis, and preventive focus have been integrated, reason why it is the CFIA who executes the evaluation, management, and communication of risks, and has the capacity to intervene in all of the links of the food chain, not only in food safety, but also on animal and plant health. It has the scientific and operational capacity, as well as carrying out the tasks of inspection, surveillance, and control, and it is guided by the policies established by Health Canada.

On the other hand, the AESAN, although it is the only body responsible for guaranteeing food safety and for guaranteeing informing the consumer, its organizational scheme obeys an integrated system according to the FAO/WHO classification, as its role is that of coordinating the entire food control system, being the liaison between public administrations¹³, consumers, and the food sector to carry out risk management tasks. It similarly carries out risk evaluations and actions directed at communicating the risk, and it acts as the link between the European Food Security Agency (EFSA) and the different national authorities for food safety, research institutions, consumers, and other stakeholders. The work is similarly oriented under the scheme of prevention and the food chain (“farm to table”).

What follows is an analysis of each one of the processes of organizational modernization in Canada and Spain, keeping in mind the principles and components of the food control system and comparative analysis of the ensuing benefits.

¹³ The operative part of inspection and compliance are carried out by public administrations (autonomous communities) within the food control system.

Modernization of the Canadian Food Control System

Analysis of the Canadian Food Control System	Canadian Food Inspection Agency (CFIA)
Responsibilities	Food safety in Canada is a shared responsibility between the Federal Government (Health Ministry and the Canadian Food Inspection Agency – CFIA), provincial/territorial governments, the food industry, and consumers.
Domain of Applicability	Food safety; health of animals, products and byproducts or animal origin; biologic and veterinary products or any other aspect related to animal health; sanitation of plants and their products and seeds.
Responsibilities	<p>The CFIA enforces the policies and norms established by Health Canada, food safety and nutritional quality of all food sold in Canada.</p> <p>The CFIA verifies the compliance of the industry to federal laws and regulations through activities that include the registration and inspection of slaughterhouses and food processing plants, and the testing of the products.</p>
Main Objective	<p>Stand out as a regulator based on science, trust, and respect for Canadians and the international community.</p> <p>Dedicated to the protection of foods, animals, and plants, which improves the health and well-being of people in Canada, the environment, and the economy.</p> <p>In performing its mandate, and supporting the priorities of the Canadian Government, the CFIA strives to:</p> <ul style="list-style-type: none"> • Protect Canadians from preventable health risks • Protect consumers through a regulatory regime towards food, animals, and plants that is fair and that supports competitiveness, national, and international markets. • Keeping reserves of animal and natural resources • Contributing to food security and the safeguarding of Canada’s agricultural resources • Providing proper management as an Agency
Links of the Chain	<ul style="list-style-type: none"> • Certifies food, plants, and animals and derived products that are exported throughout the world • Carries out activities to ensure the enforcement and the application of norms: <ul style="list-style-type: none"> ○ With Canada’s commercial partners, ○ At or near the Canadian border, ○ In the compounds of food processing plants and of animal-based foods, at the national level, ○ At distribution and retail points, or ○ At food service locations.

Analysis of the Canadian Food Control System	Canadian Food Inspection Agency (CFIA)
Coordination with other entities	<p>Collaborates with public health authorities at the federal, province, and municipal level to control and analyze foods related to outbreaks, potential perils to food supply.</p> <p>In base of health risk evaluations, it works with partners having a vested interest such as consumer protection groups to put in practice food security measures that protect Canadians.</p> <p>May count on the collaboration of stakeholders such as producers, processors, distributors, and retailers in actions such as quarantines for disease control and the recall of food items if necessary.</p> <p>In collaboration with universities and special interest groups, the CFIA promotes research and development to improve and perfect food safety and systems for disease control.</p> <p>Through this structure for cooperation, it helps keep the excellent reputation of Canada of having a safe, high quality agriculture, aquaculture, fishing, and agricultural food products.</p>
Legislation	<p>The CFIA is responsible for managing and enforcing the laws that regulate the following spheres: monetary and administrative sanctions in agriculture and agricultural food, agricultural products, food inspection, fodder, fertilizers, fish inspection, animal health, meat inspection, plant and seed protection.</p> <p>The CFIA also takes care of enforcing the dispositions of the Law on packaging and labeling to protect consumers and the Law on food and medicines, as these are related to food.</p>
Focus of the inspection	<p>Uses a risk-based focus to verify that national and imported products meet Canadian norms and regulations. Risk management is carried out by establishing and applying legislative and regulatory requirements, as well as the application of non-regulatory options, such as directives, consulting, and education, and promoting voluntary compliance by the private sector.</p>
Capacity to enforce the law	<p>Has the authority to apply the necessary tools in case of non-compliance, among which one may find monetary and administrative sanctions, product recall, cancelling of licenses, besides recommending to the Public Ministry the actions to be taken regarding on the level of non-compliance.</p>
Information Systems	<p>Informs Canadians on the safe handling of food and the practices of several types of risks to food safety through its website, data sheets on food safety, and the Canadian Association for the Education on Consumer Food Safety (www.canfightbac.org)</p> <p>Among the information given to the consumer one may find: the causes for foodborne illnesses, food allergies, product recalls, advise on food safety, restaurant and foodservice inspections.</p> <p>Provides the industry the following information, among other: guides to distributors, importers, manufacturers, and retailers.</p>

Analysis of the Canadian Food Control System	Canadian Food Inspection Agency (CFIA)
Response capacity to emergencies	If a food security emergency appears, the CFIA, in collaboration with Health Canada, province organisms, and the food industry, sets in motion a response system to emergencies that works 24 hours a day with the objective of carrying the recall of the affect food.
Alert Systems	The CFIA, has a Product recall program and emergency response, once it receives a report of a suspicion, it carries out the necessary investigation and does the interventions required for each particular case.
Programs for Food Control and Safety	<ul style="list-style-type: none"> • The Food Safety Enhancement Program (FESP) is the approach of the CFIA to encourage and support the development, implementation, and maintenance of Hazard Analysis Critical Control Points (HACCP) in all establishments registered at the federal level. • The General Principles of Food Hygiene, Composition and Labeling (GPFHCL) are designed to serve as a guideline for food manufacturers in Canada, and includes key areas necessary for controlling the security, labeling, and composition of food during their manufacturing, processing, storage, or distribution. • The Guide on Food Safety offers a more detailed orientation on the development of a preventive control system for food safety through a systematic approach based on science and provides directives to evaluate the risks to food security and establish preventive control measures. • Programs to control residues and chemical contaminants • Programs to control pathogens • The food monitoring program includes the random selection and analysis of samples from a great variety of national and imported products. Examples of tests carried out each year to control the microbiological contamination levels in food. • Import and export programs • Specific programs for beef, chicken and their byproducts, eggs and its byproducts, fruits and vegetables and its byproducts, milk and its byproducts, fish and seafood, honey, processed products, and food sales.
Relationship with consumers and businesses	<p>There are several mechanisms to ease cooperation between governments, the private sector, the academic world, consumers, and NGOs. Through an approach based on Integrated inspection systems, the CFIA collaborates with manufacturers and importers to elaborate and maintain an HACCP system.</p> <p>The objective of the observation and enforcement activities of the CFIS is substituting the dependency of government inspections for a greater use of public audits of the sector's activities. These are audits based on risks, supported by strong observation and application instruments. The degree of supervision and government intervention depends on the history of compliance of each company and the risk associated to its product.</p>

Analysis of the Canadian Food Control System	Canadian Food Inspection Agency (CFIA)
Laboratories	<p>They carry out specialized laboratory tests, research, and scientific consulting by experts.</p> <p>A network of laboratories throughout the country helps in researching the concerns of the consumers, plague and disease analysis. More than 869,000 tests and analyses are carried out in the laboratories of the CFIA every year to verify food, animal, and plant health and quality norms. 113,000 additional tests are carried out under contract by credited private laboratories.</p>
Staff and education	<p>Approximately 7,500 employees for the work of the CFIA in a wide array of scientists, technical posts, operatives, and administrative staff.</p>
National Food Control Strategy	<p>The Food Safety Action Plan is a five-year action plan (2008-2013) whose objective is to increase collaboration and information Exchange between government associates, the industry, and Canadians that will allow having better tools to mitigate the risks, control the imports, and have emphasis in the identification and prevention of potential problems before they occur.</p>
Resources	<p>Through a Cost Recovery Policy, the Canadian Food Inspection Agency establishes that it will charge a fee to the user for the services that give direct benefits beyond those received by the general public.</p>
Evaluation Indicators	<p>As a regulating body, the main means through which the CFIA carries out its mandate is through the measuring of rates of compliance to Canada's legislative requirements for food, animals, and vegetables. The compliance rates are an indicator of the measure to which the regulated parts have adhered to federal acts and rules.</p>
Transparency	<p>Under the Access to Information Law, any corporation or person in Canada may present an official request to the Government for Canada's records.</p> <p>Public consultations are carried out, which are directed at consumers and stakeholders of specific policies and programs.</p> <p>Public warnings, information on recalls, and communications related to compliance and execution activities are published on the Agency's website.</p> <p>Successful trials and expedited monetary sanctions are also published, besides the notice of coercive actions by the CFIA.</p>
Surveillance systems for foodborne illnesses	<p>"Canada's Foodborne Illness Outbreak Response Protocol (FIORP) 2010: To guide a multi-jurisdictional response", contains the procedures to be followed related to foodborne illnesses, if it is determined after a notice and evaluation of existing information that a foodborne illness exists, the Outbreak Investigation Coordinating Committee (OICC).</p> <p>The OICC shall evaluate the available evidence describing the progress of the epidemic to determine when the investigation on the outbreak may be concluded.</p>

Modernization of Spain’s Food Control System

ASPECT	SPANISH AGENCY FOR FOOD SAFETY AND NUTRITION
Role	Autonomous organism linked to the Ministry of Health and Social Services and Equality
Sphere of Applicability	Safety of foods within the food chain destined for human consumption, including nutrition and prevention of obesity and aspects of quality that have an incidence on health. Aspects of animal and plant health that have direct or indirect incidence on food safety.
Responsibilities	<ul style="list-style-type: none"> • Coordinate the actions related to food safety and nutrition; • Encourage executive and normative actions from the competent authorities, especially in situations of crisis or emergency; • Coordinate the functioning of alert networks; Give technical assistance; • Act as a reference laboratory, • Represent Spain before the EU and international organisms • Act as the contact point between the European Food Safety Authority (EFSA) and the other interested parts and institutions.
Main objective	Guarantee food safety, promote healthy eating, and prevent obesity.
Links of the chain	Consider the food chain as a whole, from farm to table. That includes agriculture, cattle-raising, and fishing, distribution, industry, retailing, bars and restaurants, and consumers.
Coordination with other entities	AESAN counts with a series of coordinating and advisory organs through which, on the one hand, it coordinates with the different ministerial department in the sphere of their respective attributions and, on the other hand, with the rest of Public administrations and interested sectors, including consumer and user associations, besides receiving scientific consulting. These coordinating and advisory organisms are the Institutional Commission, the Consultative Council, and the Scientific Committee.
Legislation	Spain, as a member state, is forced to guarantee the compliance of the Union’s legislation, and for this purpose, the CE Ruling N°882/2004 has established, which gives a harmonized framework for organizing Official Controls. This Ruling obliges member States to design and apply a Multiannual Control Plan. Spain developed the “National Plan for the Official Control of the Food Chain 2011-2015”, which provides a framework for carrying out the official control over food and fodder where public administrations, economic operators, and consumers may find a reference for its obligations and guarantees.
Approach of the Inspection	Following the guidelines of the White Book on Food Safety, the approach of the inspection is “Risk Analysis”
Capacity to enforce the law	The “National Plan for the Official Control of the Food Chain 2011 – 2015”, as it relates to legal capacity, adheres to what is established by the Royal Decree 1945 of 1983, where the inspector is given authority and attributes to levy acts, adopt additional efforts in case of real or foreseeable risk to public health; sampling; among others to guarantee the prevention or potential risks to consumers.

ASPECT	SPANISH AGENCY FOR FOOD SAFETY AND NUTRITION
<p>Information systems</p>	<p>It has the following information systems with public access through its website:</p> <ul style="list-style-type: none"> • List of European Reference Laboratories (EU-RL) and National Reference Laboratories (LNR) • Coordinated Rapid Information Exchange System (SCIRI), AESAN is the contact point both for the European Union’s Rapid Alert System for Food and Feed (RASFF), as the centralizer and coordinator between the SCIRI and other international alert systems such as the INFOSAN. • General Health Registry of Food Companies and Foods
<p>Response capacity to emergencies</p>	<p>The “National Plan for Official Control over the Food Chain 2011-2015” establishes that operational emergency plans are made up of three types of systems:</p> <ul style="list-style-type: none"> • Rapid exchange of information /alert networks • Management of food crises • Communication of risks
<p>Alert systems</p>	<p>The Coordinated System for Rapid Exchange of Information (SCIRI) is a system designed in the form of a network that allows keeping constant vigilance and management when facing any risk or incidence that may affect the health of consumers, allowing the rapid localizing of implied products and the adoption of adequate measures for their immediate recall. It seeks to guaranteed consumers that the products found on the market are safe and do not present risks to their health and its primordial basis is the rapid exchange of information between the different competent authorities. This system coordinates with the RASFF and INFOSAN.</p>
<p>Food Control and Safety Programs</p>	<p>Its basic principle is that the Food Safety System Works with a “farm to table” approach, the private operator is responsible for complying with health legislation. Official controls are carried out to guarantee the verification of compliance to legislation in terms of fodder and food, and the norms on animal health and wellbeing.</p> <p>Official controls to verify compliance to norms oriented towards: a) prevent, eliminate, or reduce acceptable to acceptable levels the risks that threaten, either directly or through the environment, people and animals; b) guarantee loyal and fair practices in the sales of food and fodder, protect the interests of consumers, including information.</p> <p>The “National Plan for Official Control of the Food Chain 2011-2015,” gives the framework to carry out the official control of food and fodder where public administrations, economic operators, and consumers may find a referent for obligations and guarantees. It describes, under the principle of transparency of public administrations, the activities of official control to be carried throughout the entire food chain, from primary production to the sales points to the final consumer.</p> <p>The competent authorities for the development of activities of the Plan are: the State’s General Administration, the Autonomic Administrations, and Local Administrations.</p> <p>There are 28 official control programs that are grouped according to the competent organism for its control and coordination. Therefore:</p> <ul style="list-style-type: none"> • Control programs for foreign trade, executed and coordinated by the State’s General Authority through the Ministry of the Environment, Rural and Sea Mean, and the Ministry of Health, Social Policy, and Equality: Programs of official control of imports of animals, animal-based products not for human consumption, and products destined for animal feeding and the official control of imports of food products destined for human consumption.

ASPECT	SPANISH AGENCY FOR FOOD SAFETY AND NUTRITION
<p>Food Control and Safety Programs (continuation)</p>	<ul style="list-style-type: none"> • Official control programs in agriculture, cattle-raising, fishing, and feeding, executed by the Autonomous Communities and coordinated by the Ministry of the Environment, and Rural and Marine Means, among which are found official control programs for hygiene and health of primary production of extractive fishing, official hygiene control for production of aquaculture; of official control of hygiene and primary control in cattle-raising; of official control and identification and registration of animals, of official control in animal feeding; of official control of animal wellbeing in livestock production site and during the transport of animals, of official control of the rational use of veterinary medicines; of official control of the hygiene and health conditions in the production of raw cow, sheep, and goat milk; of official control of animal byproducts not destined for human consumption (SANDACH) in establishments and transports, of official control of plant health, of official control of the quality of food sales, the program of official control of differentiated quality tied to a geographic origin and guaranteed traditional specialties, before being sold, and the program of official control of ecologic production. • Official control programs in eating establishments, executed by the Autonomous Communities and coordinated by the Spanish Agency for Food Security and Nutrition, where may be found the programs of general control of eating establishments, of control of the food industry’s self-control, the control of pollutants in food, of control of pesticide residues in the market, of control of technological ingredients in the market, of control materials in contact with food, of control of medicine residues, of control of radiated food, of control of allergens and substances that cause intolerance to food, of control of genetically-modified organisms in foods, and control of animal wellbeing at the slaughterhouse.
<p>Relationship with consumers and businesses</p>	<p>Within national legislation of the AESAN, these are contemplated in relation with Consumer Defense and the protection of their rights, besides the sanctions applied in case they are being broken</p>
<p>Laboratories</p>	<p>The analytical support to the different official control programs in Spain is structured as:</p> <ul style="list-style-type: none"> • Laboratories for official control designed by the competent authorities to carry out the analysis of samples taken in official controls and function according to European norms; • National reference laboratories that encompass all of the spheres of the legislation on fodder and food and animal and plant health, particularly those that need precise results for their analysis and diagnoses, and • EU reference laboratories.
<p>Staff and education</p>	<p>Is made up of a multidisciplinary team that Works under the direction of the Directive Team. The European Commission possess the Better Training Better Food initiative, destined for the staff in charge of carrying out the tasks of official control in all of its member States through the offer of training courses on the Union’s norms on the subject of food and fodder, public health, and animal health and wellbeing. These courses are fully paid by the European Commission and are given to assure that the controls are carried in a uniform, objective, and adequate manner.</p> <p>Additionally, there are mandatory mechanisms for training both within the Autonomous Regions and at the local level (city halls, provincial deputations, etc) establishing their own training programs, so that the staff that carries out the official controls may have the necessary training, skills, and attributions to carry them out effectively, and there also are the initiatives of training at the state-level, where every year are approved the programs of training courses, both general and specific in scope, organized by each Ministry.</p>

ASPECT	SPANISH AGENCY FOR FOOD SAFETY AND NUTRITION
National Food Control Strategy	The “National Plan of Official Control of the Food Chain 2011-2015”, where are described, under a principle of transparency of public administrations, the activities of official control to be carried out throughout the entire food chain, from primary production to sales points to the end consumer.
Resources	Available at the national and local spheres.
Evaluation Indicators	Annual compliance reports to the “National Plan of Official Control of the Food Chain 2011-2015”, where strategic objectives are established.
Transparency	The rules that frame food safety acknowledges the importance of creating trust on behalf of consumers through transparency in the legislation and public consultation, tied to the communication of aspects related to food safety and transparency in scientific rulings.
Surveillance systems for foodborne illnesses	European legislation establishes specific measure of surveillance of zoonoses and zoonotic agents transmitted by food, as well as the due epidemiologic investigation of outbreaks of diseases transmitted by food. This is carried out through the National Center for Epidemiology and the Health Institute Carlos III.

Analysis of the Modernization Processes of Food Control Systems of Canada and Spain

As observed in cases of modernization in the Food Control Systems of Canada and Spain, it has been able to improve the communication with consumers and the coherence in the inspection actions in spite of having different organizational models, through a clear definition of responsibilities and general policies for the entire industry with the aim to increase food safety.

The definition of policies based on prevention, the “farm to table” approach, and the adoption of an approach based on risk analysis, in both cases it is reflected upon the Food Control System, although it is developed in a different way, since in the case of Canada it is carried out by the same agency, whereas in the case of Spain the activities of risk analysis are coordinated by the AESAN, which is a permanent challenge not to lose the goal in the process of inter-institutional coordination, while for Canada it is to keep its character of technical and scientific independence.

In the matter of cost efficiency it is not possible to fully dimension whether there was a cost reduction in the case of Spain, whereas it is possible to observe it in the case of Canada where all activities were concentrated in a single agency, although both systems have a risk approach to their inspection systems, making them more efficient in their interventions within the food chain.

It is important to highlight that in both cases, there are plans and strategies for food safety in the mid-term, which meet all the purposes each country has established in terms of food safety, and that with the support and the defined responsibility of the private sector, the purposes of the plans are easier to accomplish.

Some of the relevant aspects in the improvement of food control systems are presented below:

ANALYSIS OF FOOD CONTROL SYSTEMS	CANADA (CFIA)	SPAIN (AESAN)
Type of organization structure	Single-body system	Integrated system
Is there coordination between the entities involved in the actions related to food safety?	Yes, it is the only responsible body	Yes, it is its main function
The inspection system is based on risk?	Yes, it levers all components: Evaluation, management, and communication of risks	Yes, it develops shared actions of Risk evaluation with AESA, who is directly responsible as well for communicating the risk, and coordinates the actions of risk management and executes some of them directly.
Is service delivery improved, giving a single contact point for consumers and clients of the industry?	Yes	Yes
Is there a more efficient communication between the authorities and other official agencies?	Yes	Yes, at all levels: national, regional, and local
Are there defined responsibilities in the policies?	Yes, including producers	Yes, including producers
Are surveillance deficiencies reproduced?	Yes, they are all under the responsibility of the CFIA	Yes, establishing the functions of each institutional level
Is there a “farm to table” approach?	Yes	Yes
Is the concept of prevention involved in the Food Control System?	Yes	Yes
Have the information systems been improved?	Yes	Yes
Have accountability and transparency been improved?	Yes	Yes
Has commerce been improved to have a unified position before international organizations and commercial partners?	Yes	Yes

CONCLUSIONS AND RECOMMENDATIONS

The chosen case studies (Canada and Spain) carried out a modernization process in the Food control systems with an approach based on risk, prevention, and the food chain managing to improve the safety of their products, the credibility of consumers, and the efficiency in control processes, with differing organizational models.

The definition of policies in the roles, including those of the private sector, are fundamental for the modernization of Food control systems, since they give the possibility to establish the responsibilities, improve the coordination, and reduce the overlapping of functions that generate uncertainty and inefficiency in the actors of the chain, whether they are public or private.

The modernization of Food control systems based on objectives and purposes of food safety is the basis of the definition of programs and plans that allow the improvement of the general conditions in production systems and the health of consumers.

The coordination through a leading institution within the food safety system is necessary to generate a “farm to table” approach and risk analysis, and is the only mechanism to establish policies, plans, and strategies for food safety in the country, which is, independent of the organizational structure defined, if the responsibilities are established in a clear and specific way, and the resources are available.

There are several institutional models that allow to achieve these purposes, for which are established the Food safety control systems, which depend on the characteristics of each country and the adoption of the system’s basic components and elements.

The processes of modernization of food control systems whose exclusive objective is to lever international trade do not improve food safety, nor do they reflect the investments made on the system as impacts on public health. Besides, they create relationships and alliances between few actors of the chain and do not allow the consolidation of trust in the system by the actors of the system and by consumers and trading partners.

The implementation of food control systems must be a mid-term policy that obeys a State policy, as countries do not have the capacity to carry out a complete modernization in a short time, and must therefore have systems for planning and follow-up, as well as clearly-established goals.

Public-private coordination is necessary to lever the official institutional capacity, improve its efficiency, and move forward in food safety.

RECOMMENDATIONS

1. LAC must take advantage of the experiences of other countries with successful cases of institutional modernization.
2. Successful models and cases must not be copied exactly; these require an adaptation to each country’s reality.
3. Countries must define plans and strategies for food safety considering the conditions characteristic of their production systems.
4. State policies must be levered, not of a specific government, for the purposes of modernizing Food control systems.
5. It is necessary, before modernizing Food Control Systems, to define clear policies on the roles and responsibilities of public and private actors.

6. The relationship between the public and private sectors must move towards schemes of collaboration and cooperation to define joint strategies that allow promoting the adoption of good agricultural and manufacturing practices, as well as the HACCP System.
7. It is necessary to gain consumers' trust in the Food control system
8. Any modernization process of Food control systems must seek purposes of improvements in food safety that have an impact on public health.
9. Some reflections governments must carry out when developing modernizing processes in the Food control systems in LAC are presented below:
 - Why don't countries adopt decisions to strengthen the institutions related to food safety?
 - Are roles and responsibilities defined?
 - Where is the role of the private sector if there is no responsibility, conscious, and education for each actor of the supply chain? The responsibilities lie only upon the State?
 - The absence of or deficient coordination between institutions in LAC: local, regional, and national, and the jealousy of several sectors such as health, agriculture, commerce, and environment how do they interfere in the development of Food control systems?
 - Traceability systems are costly? Necessary? Viable? Are there simpler mechanisms in the private sector?
 - Most of the food industry in LAC is made up of small- and medium-sized companies. What happens to food safety? Are there no risks? Shall they keep on without complying regulations and policies because they are small?
 - Is there clarity in the attributions and functions, institutional responsibilities, and a clearly defined leader of the Food control system?
 - Are there indicators of efficiency and efficacy of the institutions? Are actions and interventions the right ones? Do they reduce foodborne illnesses? Do they impact public health? Do they prevent?
 - How is the response capacity of authorities in LAC?
 - Is there coordination between information systems?
 - Health cannot continue to see the food industry and food safety problems within the System for prevention and promotion.
 - What has happened to basic hygiene practices and GMP? Why are they not met in LAC? How do we evolve towards HACCP?
 - The records are of products, not of establishments, there are no censuses of establishments, nor characterization of their health conditions. How are measures to be taken?
 - Are there goals at the short, mid, and long term to improve food health and reduce foodborne diseases?
 - Why is the consumer in LAC unaware of food health?
 - What is the relationship between the Institutions, the industry, and the consumer like? Are they still enemies?
 - What happens to the staff of the Food control system? Do high rotation, work instability, and absence of training persist? The profiles must go only up the professional level, not to the level of a Master's or doctorate degree?
 - What happens with laboratories? Are there networks? Are they credited? Do they have the capacity to use tools of the latest generation?
 - Are there systems to alert and respond to emergencies?
 - The resources with which the Food control system operates are sufficient for them to carry out their responsibilities?

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GLOSSARY

LAC:	Latin America and the Caribbean
WHO:	World Health Organization
FAO:	United Nation's Food and Agriculture Organization
HACCP:	Hazard Analysis and Critical Control Points
GAP:	Good Agricultural Practices
GMP:	Good Manufacturing Practices
BSE:	Bovine Spongiform Encephalitis
WTO:	World Trade Organization