A Plant and Animal Health Strategy for Canada - Draft for consultation purposes

The proposed Plant and Animal Health Strategy for Canada was drafted together by governments, industry and others who play a role in safeguarding plant and animal health, and facilitated by the CFIA.

Acknowledgements

Effective protection of plant and animal health depends on the combined and coordinated actions of numerous partners. The **Plant and Animal Health Strategy for Canada** was developed by partners, including industry associations and producers; processors; suppliers to the plant and animal sectors; provincial and federal governments; non-governmental organizations; academics and professionals in agricultural fields; and other stakeholders to chart a path for working better together to safeguard plant and animal health.

1. Introduction and Purpose

Protecting the health of plants and animals helps safeguard the food supply, the health of Canadians and the environment, and contributes to economic growth and prosperity. Canada's current approach to protection relies on the efforts of partners from all levels of government, industry and others, which undertake activities individually and together. The approach includes a diverse set of activities such as assessing and managing risks to plants and animal health; setting, implementing and enforcing standards and rules; controlling imports; detecting and monitoring pests, diseases and other health risks; preparing for emergencies; and taking action to minimize impacts and promote resilience when emergencies do occur.

Although Canada's current approach has a strong foundation, it also has vulnerabilities, increasing challenges, and opportunities for improvement.

Recent experience shows that although Canada can respond to plant and animal health emergencies and recover, this comes at a substantial cost and not without significant loss of productivity, income, and market access. This experience strongly argues for increasing the emphasis on preventing risks whenever possible, as a more desirable and sustainable approach.

In addition, although the current approach provides a level of protection from risks, changes in the external context have become more frequent and varied such that partners' activities must constantly evolve to keep pace. If it is to ensure protection of plant and animal health across all regions of the country, ongoing public trust, and sustained support to economic growth and international trade, Canada's approach will need to better integrate partners' efforts and be more proactive in adjusting to a range of increasingly complex and evolving challenges, for example in relation to:

- Increased volumes and changing patterns of movement of people and goods across borders;
- Industry consolidation, technology changes, and globalization of supply chains; and
- Impacts of climate change on plant and animal health.

There are also inherent challenges with Canada's current approach, for example:

- The large number of partners and diversity of activities, yet absence of overall coordinating structures—which make it difficult to integrate and coordinate efforts across all partners;
- The pressure to react quickly to address needs, which predisposes partners to act independently and miss out on the potential benefits of collaboration; and
- Unequal access to information, knowledge and effective practices across partners.

To address these present-day challenges and those of the future, Canada's approach must become more agile and forward-looking, and better structured and coordinated.

The purpose of the **Plant and Animal Health Strategy for Canada** is to:

- Galvanize partners around a shared vision and objectives for an integrated approach to safeguarding plant and animal health in Canada;
- Set the direction for essential sustained improvements to Canada's approach, through structures, processes and activities;
- Build upon and coordinate the efforts of all partners to achieve cohesion, maximize synergies, and minimize duplication, overlaps and gaps;
- Identify priorities and concrete actions for the near term, and directions for the longer term;
- Position partners' efforts to continuously improve and evolve in step with changing risks, needs, and capacities of partners.

Taking into account feedback heard through consultations, the draft Plant and Animal Health Strategy will be provided to federal-provincial-territorial ministers of agriculture in July 2017 for their endorsement. It is a key deliverable under the Emergency Management Framework for Agriculture in Canada that was established in July 2016. The Strategy, which was developed collaboratively by partners and stakeholders, sets out a collective vision, guiding principles, objectives and activities for improving Canada's ability to respond to changing needs, challenges and opportunities. The vision for plant and animal health is consistent with the One Health concept, in that it recognizes that safeguarding plant and animal health contributes to protecting the health of humans and the environment.

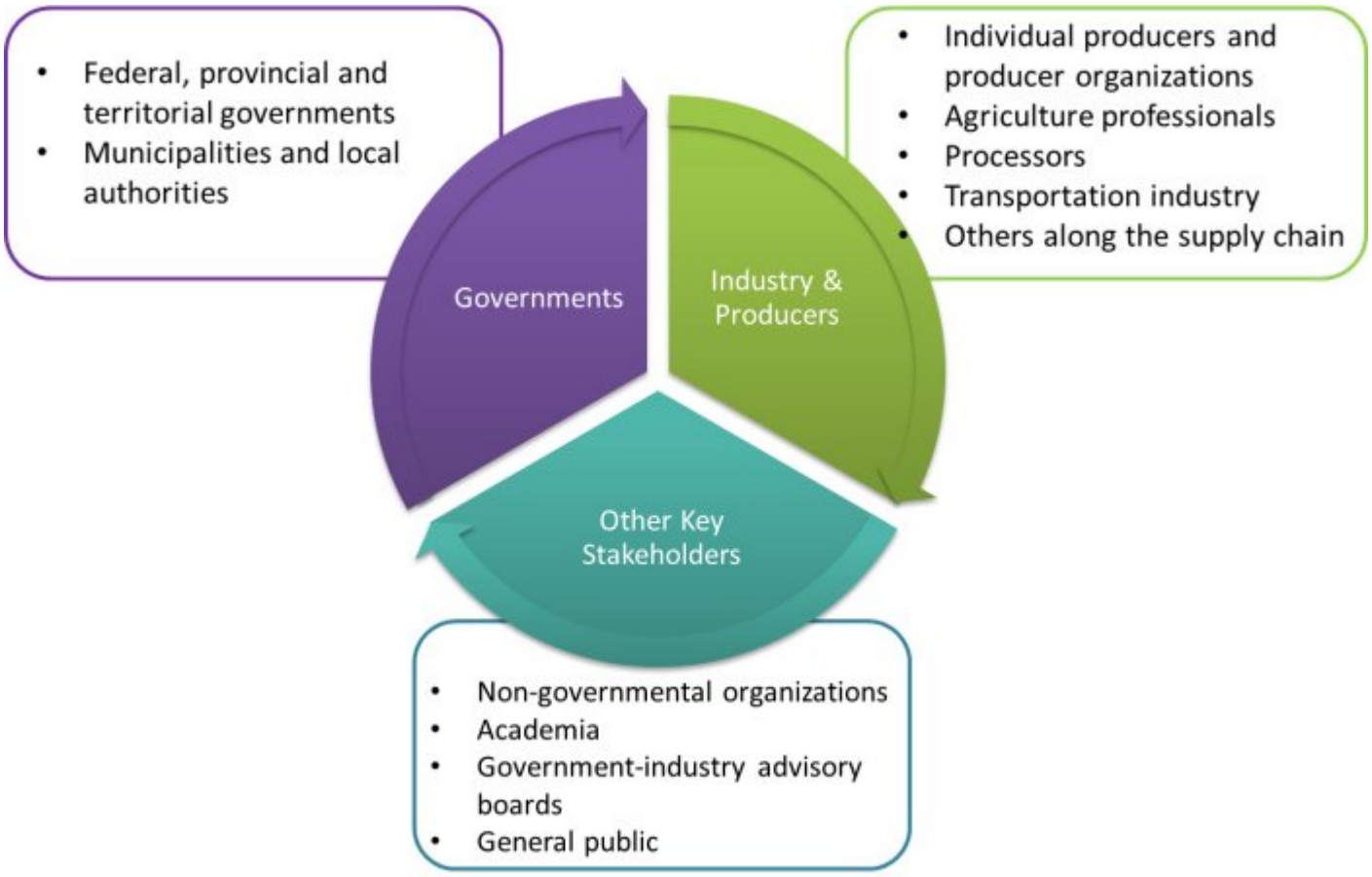
A description of how the Strategy was developed and other federal-provincial-territorial frameworks and strategies to consider during the Strategy's ongoing development and implementation is provided in Appendix 2.

2. The Need for Modernizing Canada's Current Approach to Safeguarding Plant and Animal Health

2.1 Partners and their Activities

Under Canada's current approach, multiple **partners** undertake **activities** to safeguard plant and animal health.

Public and private sector organizations and individuals have roles and responsibilities for safeguarding the health of plant and animal resources. Among the many partners that have a stake in plant and animal health are industry associations and producers, processors, the transportation industry, suppliers to the plant and animal sectors, various departments from all levels of government, non-governmental organizations, academics and professionals in agricultural fields, and the general public.



Description for photo - Partners Diagram

Whether working independently or in coordination with others, these partners undertake a broad range of activities that contribute to the overall level of protection for plant and animal health. Although specific activities focus on aspects of plant health or animal health, or both, the following four broad categories of activities can be used to describe the overall approach:

- Legislative control, legal tools, and preventive control programs;
- Data collection, research, and analysis;
- Preparedness, mitigation, response, and recovery;
- Communication, engagement, and collaboration.

While no complete inventory exists, the following table summarizes some of the types of activities partners currently undertake across the four categories.

Examples of Activities

Categories	Types of activities
Legislative control, legal tools, and preventive control programs	• Regulating imports • Conducting preclearance activities • Instituting risk mitigation at origin • Conducting audits of foreign countries • Certifying establishments • Giving permissions and conducting inspections for import, export and domestic movement • Implementing compliance measures and fees • Instituting on-farm biosecurity
Data collection, research, and analysis	• Providing surveillance and diagnostic laboratory services • Conducting foreign intelligence • Monitoring the marketplace • Conducting research • Transferring knowledge and technology • Conducting risk assessments and analyses • Collecting data from import inspections/monitoring
Preparedness, mitigation, response, and recovery	• Planning emergency response • Implementing traceability and identification systems • Conducting emergency exercises • Managing endemic pests and diseases • Providing compensation
Communication, engagement, and collaboration	• Establishing and maintaining national and international relationships • Contributing to international standards and bilateral and multilateral agreements for animal and plant-related risks e.g., zoning arrangements • Providing training and educational resources • Delivering awareness campaigns, exhibits, publications

2.2 Challenges and Opportunities

Canada's current approach provides protection of plant and animal resources, but at a significant cost to all partners. In order to strengthen the overall approach, partners must embrace opportunities to improve its affordability and its effectiveness in protecting plant and animal health. At the same time, Canada's approach must be able to anticipate and continuously adjust to changes in context that challenge its effectiveness. This section describes the key challenges, vulnerabilities and opportunities for improvement that are targeted by the Plant and Animal Health Strategy.

2.2.1 An increasingly complex and ever-changing external context

Canada's approach to protecting plant and animal health operates in a context of increasingly complex and continuously changing risks and challenges. The approach must be readily adjustable so that Canada can contend with challenges stemming from, for example:

- Increasing movement of people across our borders - citizens, tourists and workers—who may unintentionally bring in plant pests and animal diseases;
- Growing trade volumes, changing trade patterns and emerging markets, and changing consumer demand for international goods from new sources—which increase known risks or introduce unknown risks of pests and diseases entering Canada;
- Geographic integration of supply chains—which increases the complexity of risks as plants, animals and products traverse or are modified in multiple countries on their way to market;
- Changing production methods and consolidation of producers—which may increase known risks or introduce new risks;
- Changing climate—which may result in expanded ranges or populations of existing pests and diseases, and result in new biological and physiological risks; and,
- Technological changes and advancements—which may increase the ability to predict, detect and monitor risks, but may also challenge the ability of governments to revise regulations quickly enough to address potential new risks from these technologies.

2.2.2 A need to optimize the effectiveness of Canada's approach through prevention

In recent years, as recognized in the Emergency Management Framework, emergency events have grown in frequency and impact. In turn, Canada's approach to plant and animal health has often focused more on response and recovery than on prevention, mitigation and preparedness. While responding to emergencies is critical to a comprehensive approach for protecting plant and animal health, there is wide recognition that preventive actions and mitigation of risks provide the greatest returns on investment. Accordingly, partners acknowledge that in order to improve the overall approach there is a need to rebalance partners' efforts to emphasize prevention and preparedness.

2.2.3 A need to increase collaboration and coordination among partners

Challenges to the effectiveness of Canada's approach also originate from the number and diversity of partners and activities. Partners currently have no jointly defined vision and objectives for safeguarding plant and animal health, nor are there overall needs analyses, systematic approaches to program design and delivery, or assessments of the performance of activities to help unify partner efforts. As in any complex multi-partner approach, even when partners have common or

complementary goals, coordination across all partners is unlikely without structures and processes and enabling legislative frameworks to make it happen. Some partners acknowledge that they sometimes work independently on activities when synergies could be realized by working together with other partners. Furthermore, a scan of partners' collective efforts shows a lack of cohesion across activities, with some overlap and duplication of effort, as well as gaps. Although some partners have established governance mechanisms to align their efforts, limited coordination across all partners has diminished the overall effectiveness of Canada's approach to safeguarding plant and animal health.

The collection, analysis, and sharing of data—for example, surveillance data on pests and diseases—represents a specific and important example of limited coordination. Although some information sharing initiatives exist, individual organizations typically collect data according to their own needs and capacity, not sharing it among other partners who may spend resources collecting the same or similar data. A further example is the lack of means and opportunities for partners to share knowledge and effective practices and tools for motivating desired stakeholder behaviours.

3. Envisioning an Integrated System for Plant and Animal Health

For the purposes of the Plant and Animal Health Strategy, a "system" is defined as a regularly interacting or interdependent group of elements that forms a unified whole. This section envisions a single System that brings together the partners who undertake activities to safeguard plant and animal health.

Articulating a shared vision for safeguarding plant and animal health in Canada provides an important foundation to ensure partners have a common understanding of what the System aims to achieve. Throughout the implementation of the Strategy, the vision statement and results chain described below can be used to judge the level of success in improving the System.

3.1 Vision for Plant and Animal Health

Partners agreed upon the following vision for the Plant and Animal Health System:

Canada's plant and animal resources are safeguarded, contributing to economic growth and the protection of human health and the environment.

3.2 Expected Results of the Plant and Animal Health System

The activities carried out through the Plant and Animal Health System aim to achieve a cascade of results, as presented in the Results Chain Model in the next section. In the current System, however, not all partner activities are fully integrated, not all expected results are fully realized, and costs are not always sustainable for partners.

Expected results of the System include:

- Risks are controlled at critical points.

- Access to accurate and timely information to inform action.
- Preparedness to respond to plant- and animal-related emergencies.
- Actions are carried out in a coordinated and timely manner by all partners.

Leading to:

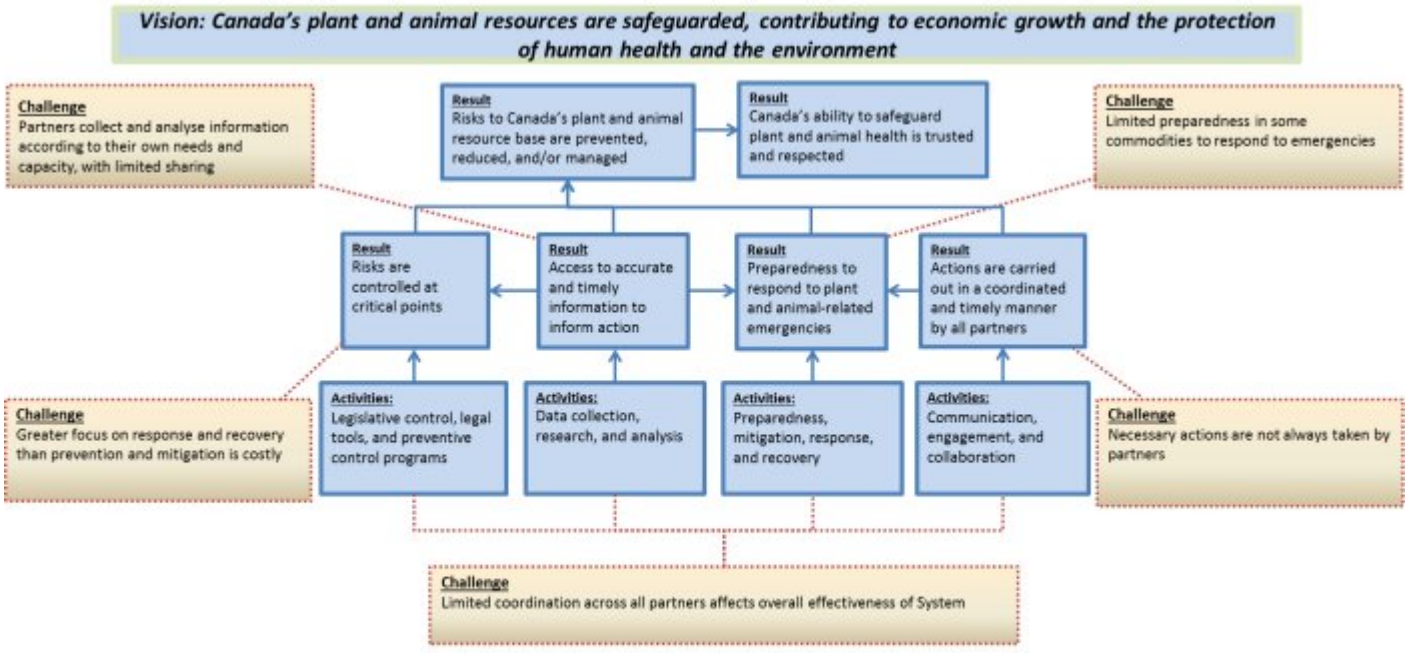
- Risks to Canada's plant and animal resource base are prevented, reduced, and/or managed.
- Canada's ability to safeguard plant and animal health is trusted and respected.

Leading to:

- Canada's plant and animal resources are safeguarded, contributing to economic growth and the protection of human health and the environment.

3.3 Results Chain of the Plant and Animal Health System and its Current Challenges

The model below depicts the theoretical connections between the activities undertaken by partners and the expected results of the System. However current partner activities are not fully integrated and expected results are not fully realized. The challenges that were highlighted in section 2 are shown interacting with the System to lessen its effectiveness or produce other negative impacts (e.g., unsustainable costs).



Description for photo - Results Chain of the Plant and Animal Health System and its Current Challenges

4. The Basis for the Plant and Animal Health Strategy: Objectives, Guiding Principles and Scope

Partners developed the Plant and Animal Health Strategy to set the direction for sustained improvements to the operation of the System; to build upon and coordinate the efforts of all partners to maximize synergies while minimizing overlaps and gaps; to evolve in step with changing risks, needs, and capacities of partners; and to identify priorities and concrete actions.

As a starting point, partners identified the following three objectives of the Strategy:

Objective 1

Canada has the necessary information and awareness needed to support forward-looking risk management and evidence-based decisions

Objective 2

Canada has a comprehensive, effective and integrated system that prevents and proactively addresses plant and animal health risks

Objective 3

Canada has a robust and responsive plant and animal health system that supports economic growth and market competitiveness for Canadian products

To complement these objectives, partners agreed upon a series of principles to guide the development of the Strategy, and ultimately its implementation. The guiding principles include the following:

Guiding Principles

Prevention-Focused

Efficiency and Continuous Improvement

Adaptive, Evidence- and Risk-Based Approach

Shared Accountability

Collaboration, Sharing, and Transparency

Early in the development of the Strategy partners were consulted about the types of risks, sectors, and activities that it should include.

As a result of the consultations, the Strategy focuses on prevention in high-risk areas including plant pests and animal diseases, and risks to plant and animal health that originate from agricultural inputs (such as contaminated feed or seed). Because risks from plant pests and animal diseases are not limited to one or several sectors, the Strategy includes a wide breadth of managed sectors. It also considers pests and diseases of unmanaged plant and animal populations, but only in situations in which they may impact managed populations.[Footnote 1] It also considers how pests and diseases of managed populations impact the environment. Four categories of activities are considered in the Strategy, including prevention and mitigation, preparedness, response and recovery.

The scope of the Strategy recognizes that, for some areas of risk, there is little potential for control over pathways, and that preparedness and response capacity for such risks will remain vital.

The Strategy aims to complement, not duplicate, the efforts of other existing strategies or policies. For example, this Strategy recognizes the value of a range of existing strategies and initiatives (Appendix 2), and is intended to build on the successes and strengths of these and help bring about a cohesive approach. In addition, the Strategy is intended to build on the strengths of existing related federal and provincial programs relating to crop and animal production inputs such as fertilizer safety, seed standards and integrity, feeds, and plant biosafety. As the Strategy is implemented and its activities evolve with the changing needs of the System, it will be important to ensure ongoing consistency with other strategies and support to complementary activities. Appendix 2 provides information on related frameworks and strategies to consider during the ongoing development and implementation of the Plant and Animal Health Strategy.

Footnotes

Footnote 1

This limitation recognizes the broader scope of "An Invasive Alien Species Strategy for Canada" for unmanaged populations of plants and animals.

Summary Table of the Strategy's Scope

Scope Category	What's Included	Examples
Risks to the Health of Plant and Animal Resources	• Plant pests and diseases • Animal diseases • Animal welfare • Vectors • Inputs to the sectors • Impacts of climate change on the ability of pests, diseases and vectors to establish and spread	• Pests includes pathogens, insects, and weeds • Endemic and emerging pests and diseases • Contamination of inputs (e.g.feed, seed)
Sectors	• Agriculture • Aquaculture • Interface between managed and unmanaged populations • Forestry • Apiculture • Technologies used for pest and disease control • Services provided to primary	• Crops, horticulture, traditional livestock • Managed and unmanaged forests • Transporters

Summary Table of the Strategy's Scope

Scope Category	What's Included	Examples
	producers	
Activities	• Prevention and mitigation • Preparedness • Response • Recovery	• Surveillance • Foresighting • Awareness and outreach • Emergency exercises

5. Strategy Components: Areas for Action to Achieve System Results

In the face of the challenges and vulnerabilities described in section 2, the Plant and Animal Health Strategy introduces actions that aim to improve the system's activities, and ultimately their effectiveness in achieving the expected system results. Based on the extensive consultation-based input from partners and stakeholders, four priority areas emerged for action under the Strategy. These four areas for action establish the foundation for a new and lasting partner engagement in the Strategy.

The Strategy provides direction and concrete actions for the near term that build towards prospective activities for the longer term. At the same time, by creating a mechanism for partners to regularly discuss progress and potential adjustments to the Strategy, there is a built-in expectation for its activities to be evergreen and to evolve in tune with risks, needs and capacities.

The following sections (5.1 through 5.4) describe the four areas of action. Activities are specified more concretely over the first five years of the Strategy's implementation, while longer-term activities provide guideposts to achieving the ultimate expected results. In adopting the Strategy, partners recognize that further work will need to be done to refine the activities and to ensure implementation will be flexible so that partners can adapt them to suit their specific needs, realities and capacities (for example, when regional variations are needed.)

Each of the next four sections was developed by a dedicated multi-partner working group that articulated a set of expected results for the Strategy to achieve. Subsequently, each group proposed possible activities to achieve the expected results. Activities were selected after assessing their strategic fit with the vision for plant and animal health, their feasibility to implement, their affordability, acceptability and adaptability across partners, and potential impacts.

Sections 5.1 through 5.4 present the expected results and activities along with considerations for their implementation. In particular, the implementation of activities or their timing will depend on the

capacities of partners. Some activities may require an assessment of existing capacity across all partners and needs for supplemental resources.

5.1 Coordination through Partnerships

Given its many partners and diverse activities, Canada's Plant and Animal Health System reflects the complexity of the risks it is designed to protect against. By coordinating their various efforts to improve the effectiveness of the System, partners make the most efficient use of their limited resources. Building partners' collective awareness of best practices and lessons learned from past experiences enhances their ability to deliver effective interventions.

Link to the Emergency Management Framework

Establishing clear roles and responsibilities is critical for successful partnerships. For example, testing roles and responsibilities and identifying gaps is an established practice for emergency exercises. As part of the **Emergency Management Framework for Agriculture in Canada**, there are ongoing efforts to coordinate emergency exercises nationally. There is an opportunity for the Strategy to feed into and build on these ongoing efforts by informing and validating roles and responsibilities for plant and animal health.

To enable shared accountability, partnerships must be designed with clear roles and responsibilities that can be adapted to emerging needs when necessary, collaborative priority setting and open communication, and be based on transparent decision making that reflects the interests of all partners. These elements are critical for developing the trust needed for successful partnerships and ultimately for achieving the common objectives of partners. There are several ways to enable shared accountability, long-term commitment and continuity of efforts, for example by establishing formal agreements.

Collaboration of partners is needed across the overall System. Furthermore, individual elements of the System can be improved by increasing coordination among partners, such as through the formation of networks for knowledge sharing and collective risk management. To maximize the effectiveness of partnerships, partners across the entire supply chain must be engaged, including academia and other key stakeholders.

In addition, Canada's System can be strengthened through deeper international collaboration. Maintaining and enhancing international relationships can improve sharing of information, resources to address outbreaks, and resources for training, and can also enable joint efforts on risk mitigation to reduce risks on a global scale (for example, by establishing and promoting effective international standards). Encouraging greater harmonization of standards among international partners can also lead to a more predictable trading environment.

Considerations

A number of challenges will need to be addressed for partners to successfully work together to coordinate design and delivery, maximize efficiency, and collaborate with other countries to address global risks:

- Partners must see the value of partnerships to ensure their commitment

- There are many different initiatives, structures and strategies already in place as well as differences in the systems, approaches and standards of regions and sectors. Gaining a complete understanding of these will be a complex undertaking, but is critical for developing an efficient overall System and achieving partner commitment
- Establishing formal partnership agreements may require legislative changes and will have many legal considerations. The establishment of roles and responsibilities within these is likely to be a difficult undertaking that may require lengthy negotiations
- Partnerships are important, but leadership is still required within the partnerships
- International partnerships for risk management should carefully consider issues such as capacity, resources, predictability and control, as well as potential legal limitations and trade implications

Expected Results

Through partners working together to coordinate design and delivery of the System, and to collaborate with other countries to address global risks, the following results are expected:

- Roles, responsibilities and accountabilities across the Plant and Animal Health System are inclusive, predictable and adaptable and align with public/private benefits
- Partner efforts across the System are coordinated, harmonized, and transparent
- Canada's interests are reflected in global risk reduction efforts

Activities

In order to achieve these results, the following activities will be undertaken:

Possible Future Activities

Future opportunities include development of partnership models that allow for joint priority setting, shared accountability and decision making in relation to responses to pests and diseases, possibly through formalized agreements that pre-determine actions and hold partners accountable.

- Establish processes, agreements, tools, communications plans and governance to support coordination within the System
- Pursue opportunities to engage internationally to collaborate on risk reduction
- Develop a collaborative process for prioritizing Canada's participation and increasing Canada's influence in international standard setting

5.2 A System Founded on Prevention

Partners recognize that preventive and proactive actions provide the greatest return on investment for plant and animal health. The Plant and Animal Health Strategy will reorient Canada's Plant and Animal Health System so that preventive and proactive actions are prioritized.

Link to the Emergency Management Framework

Work on integrated risk management has already begun under the **Emergency Management Framework for Agriculture in Canada** (Risk Analysis Sub-Group). The Strategy builds on these efforts.

This can only be achieved if partners jointly determine program priorities using an integrated risk management process and by considering the whole risk continuum, including emerging diseases and pests.

Partners will have different interests, but prioritization should be seen through a One Health lens and consider economic, social, and environmental concerns.

A System Defended through Effective Response and Recovery

While prevention is ideal, not all risks can be prevented, and there will continue to be emergency events. Canada's ability to respond to and recover from such emergencies must be sustained even as we shift our focus to prevention. The impacts of emergency events can be minimized by continuing to improve and coordinate early detection and rapid response.

Considerations

A number of challenges will need to be addressed to reorient the System such that preventive and proactive actions are prioritized, including:

- Partners will vary in their capacities to implement joint priorities
- Regional/geographical differences need to be recognized (e.g., weather, commodities, industries, pests)
- Balancing efforts between protecting our resource base and accessing foreign markets for Canadian products
- It is difficult to assess the effectiveness of preventive measures in reducing risks

Expected Results

By taking an approach that reorients the System so that preventive and proactive actions are prioritized, the following results are expected:

- Program priority setting is integrated across the interests of partners and across disciplines
- Partners have a common understanding of each other's contribution to managing risk across the biosecurity continuum
- System activities are carried out by partners best positioned to implement them
- Risks, including emerging threats, are rapidly identified and analyzed
- An agile System that reacts to evolving and emerging risks
- Partners are ready and able to respond rapidly to emergencies

Activities

In order to achieve these results, the following activities will be undertaken:

Possible Future Activities

Future opportunities include implementation of a dedicated national centre for preventive science activities, including epidemiology, disease modelling, economic modelling, risk identification, and risk assessment.

- Develop and maintain an integrated risk management process for determining program priorities
- Evaluate and address capacity of partners to mitigate biosecurity risks at critical points
- Establish a collaborative and coordinated process for planning, prioritizing and implementing surveillance activities, including diagnostic laboratory testing
- Develop a research strategy for plant and animal health that supports prevention and mitigation
- Develop and/or regularly update plans and processes for responding to and recovering from emergencies

5.3 Collection, Analysis, and Sharing of Information

Link to the Emergency Management Framework

Work on information sharing has already begun under the **Emergency Management Framework for Agriculture in Canada**. An inventory of existing federal-provincial-territorial agreements is being developed. Through the Strategy, we will continue to build on these efforts.

Timely access to accurate information is essential for making rapid, evidence-based decisions, developing and delivering robust programs, and communicating effectively. Information is generated throughout the plant and animal System, from activities such as surveillance and monitoring, diagnostics, traceability and identification programs, intelligence gathering, and research. This information needs to be collected, analyzed and shared by partners across the System. Information on endemic risks must be prioritized alongside the identification of emerging risks.

The above requires coordination of information collection efforts, built on a clear understanding of information needs across the System. Quality controls and data standardization can ensure accuracy and enable sharing. The availability of common analysis methods will support partner communications and lead to more transparent decision making.

Advancements in information technologies provide an opportunity to facilitate and accelerate the collection, analysis, and sharing of information, freeing up valuable resources for more important work. Solutions that are automated, open source and scalable will increase the adaptability and transparency of the System. Similarly, innovative collection and analysis methods can provide access to a wealth of information that will position Canada to meet emerging challenges.

To measure the effectiveness of the System and support risk-based decision-making, economic data is needed to quantify the risks to plant and animal resources and the extent to which Canada's Plant and Animal Health System reduces those risks.

Considerations

A number of challenges will need to be addressed to successfully take a systematic approach to the collection, analysis, and sharing of information, including:

- Partners must be willing to share information, which means building trust and demonstrating the value of their participation
- Integration of data will have to overcome many hurdles, including system compatibility, standardization and oversight of data quality
- Available expertise in Canada to undertake complex analyses is limited
- Confidentiality must be respected. The extent to which information is shared must be considered in view of legal and legislative boundaries. The system should be designed such that appropriate levels of access to the information are provided

Expected Results

By taking a systematic approach to the collection, analysis, and sharing of information, the following results are expected:

- All partners contribute to the collection and sharing of information
- Comprehensive, accurate, and timely information is available
- Information is accessible and amenable to analysis and interpretation by all partners

Activities

In order to achieve these results, the following activities will be undertaken:

Possible Future Activities

Future plans could include implementation of a single, standardized information collection system, supported by a fully integrated, scalable, open source and automated ITsolution with built-in analysis and reporting tools.

- Develop and deliver an approach to coordinate the collection and sharing of information across the System
- Incorporate innovative methods developed globally for information collection and analysis
- Develop automated information technology (IT) solutions to support collection, analysis, and sharing of information
- Expand national capacity for analysis
- Establish processes for reporting

5.4 Enabling Desired Behaviours

The behaviours of all partners can have an impact on the health of plant and animal resources. Desired behaviours support the effectiveness of the overall Plant and Animal Health System—for example, promoting the health of plants and animals, supporting biosecurity efforts, and helping to prevent disease—whereas undesired behaviours hamper the effectiveness of the System.

While various partners possess knowledge regarding the importance and impacts of various behaviours on plant and animal health, as well as expertise and tools for influencing behaviours, this knowledge and expertise does not extend to all partners. Further, knowledge of desired behaviours does not

always translate into action, as not all partners are confident and motivated to adopt desired behaviours.

A systematic approach is needed for consolidating and sharing knowledge, expertise and tools that help influence behaviours, and for enabling desired behaviours across all partners and stakeholders.

Considerations

A number of challenges will need to be addressed to establish a systematic approach to enabling desired behaviours, including:

- Capacity and specialized skills will be needed to integrate existing information and tools, and to develop new approaches for promoting desired behaviours and discouraging undesired ones
- Capacity and engagement will be needed to build relationships and processes for sharing information and tools among partners
- Partners must be willing to share knowledge and expertise about motivating desired behaviours and discouraging undesired behaviours, which means building trust among partners and demonstrating the value of their participation

Expected Results

By taking a systematic approach to identifying desired behaviours, and by consolidating knowledge, expertise and tools for performing, enabling, and promoting desired behaviours, the following results are expected:

- Partners know the desired behaviours and how to perform them
- Partners are motivated to adopt desired behaviours and avoid undesired behaviours
- Partners know how to promote and enable the adoption of desired behaviours by others

Activities

In order to achieve these results, the following activities will be undertaken:

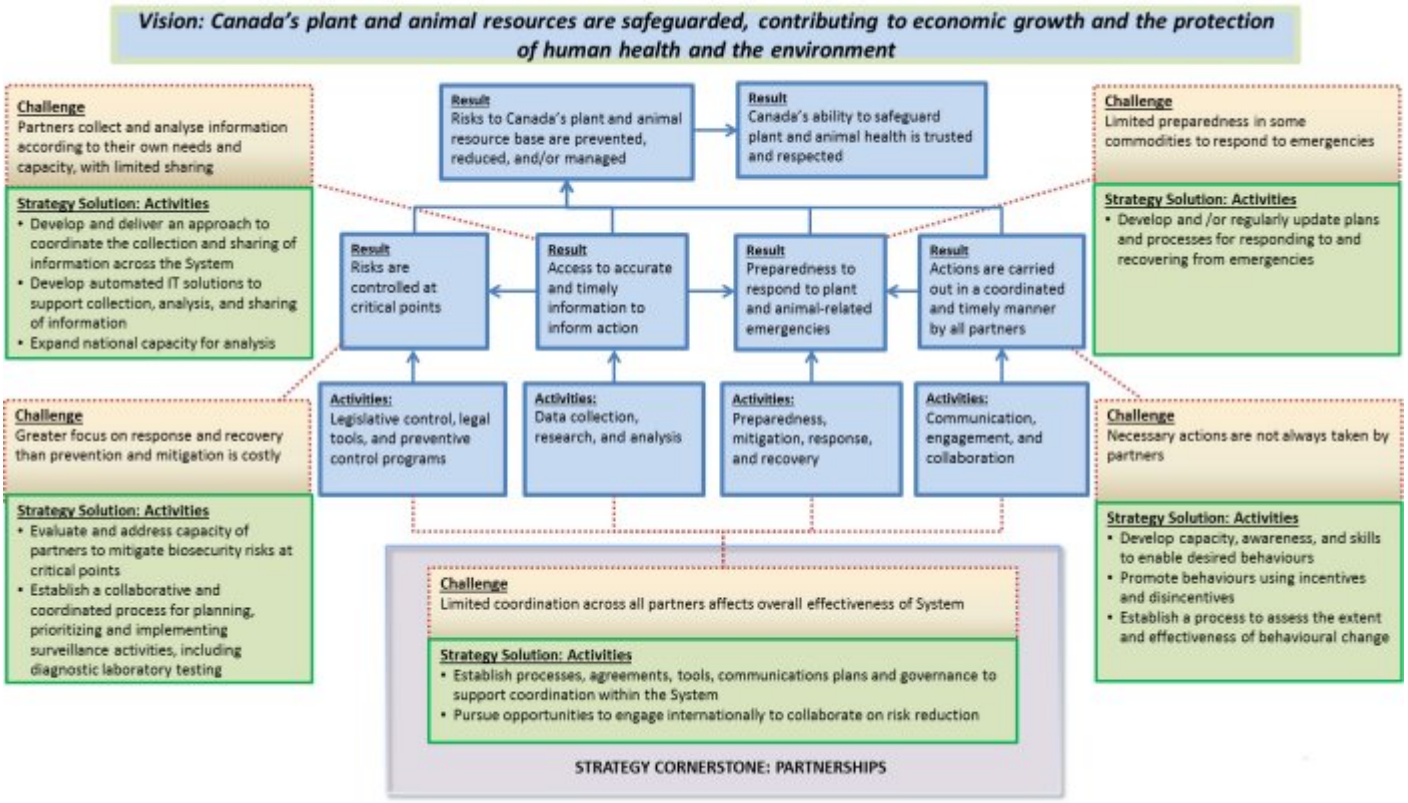
Possible Future Activities

Future implementation of a National Centre of Expertise in Knowledge Translation to assess, proactively share, and maintain a repository of best practices and tools for motivating positive behavioural change would strengthen the preventive approach for plant and animal health in Canada.

- Develop capacity, awareness, and skills to enable desired behaviours
- Promote behaviours using incentives and disincentives
- Establish a process to assess approaches to motivating desired behaviour
- Establish a process to assess the extent and effectiveness of behavioural change

5.5 Illustrating How the Strategy Addresses Challenges to the System

The illustration below provides an overview of how the activities of the Plant and Animal Health Strategy (as described in sections 5.1 to 5.4) address the challenges being faced by the current Plant and Animal Health System. The illustration underscores the primacy of effective partnerships to coordinate and enable partners' activities across the System. The illustrated model also provides a basis for performance measurement.



Description for photo - Strategy Logic Model

6. Implementing the Strategy and Measuring Results

Implementing the Strategy is a shared responsibility and a shared commitment among partners. Partners will need to reflect on their required level of investment and work together to target their investments towards activities that will do the most good.

Reflecting on the Investments Needed

All partners will need to consider their respective level s of contribution and potential new investment to implement the foundational activities and those needed to address critical gaps or provide key enhancements, which are outlined in the Implementation Plan in Appendix 3.
Successful implementation requires strong collaboration and coordination among all partners. In order to track and communicate progress, partners will measure and regularly report on the results of the Strategy throughout its implementation.

The expected results and activities outlined under the four areas of action of the Strategy are further defined in the Implementation Plan (see Appendix 3). As several of the activities are foundational, in

that other activities build upon them, implementation of the Strategy is progressive. The Implementation Plan focuses on the first five years of implementation and shows the activities and supporting sub-activities.

As specific activities are developed, focused consultation may be needed prior to their implementation. These consultations could be broad in scope, or limited to specific groups, such as individual industry sectors, regional stakeholders or indigenous communities.

In keeping with the need for implementation of the Strategy to evolve in step with the System's changing needs, increasing complexity of risks, and the capacities of partners to carry out activities, the Implementation Plan will remain evergreen. An essential aspect of the Strategy is establishing a means to ensure that activities are revisited periodically and when required. Accordingly, an early implementation step will be establishing an ongoing systematic means for partners to assess and consider whether activities should be adjusted to achieve better results and to plan activities on an ongoing, phased approach.

Appendix 1: Glossary of Terms

Animal (terrestrial)

Means a mammal, reptile, bird or bee. **(World Organisation for Animal Health [OIE], Terrestrial Animal Health Code, 2016)**

Animal (aquatic)

Means all life stages (including eggs and gametes) of fish, molluscs, crustaceans and amphibians originating from aquaculture establishments or removed from the wild, for farming purposes, for release into the environment, for human consumption or for ornamental purposes. **(OIE, Aquatic Animal Health Code, 2016)**

Animal Welfare

How an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if it is healthy, comfortable, well-nourished, safe, able to express innate behaviour, and if it is not suffering from unpleasant states such as pain, fear and distress. Good animal welfare requires disease prevention and veterinary treatment, appropriate shelter, management, nutrition, humane handling and humane slaughter/killing. Animal welfare refers to the state of the animal; the treatment that an animal receives is covered by other terms such as animal care, animal husbandry, and humane treatment **(OIE, Terrestrial Animal Health Code, 2010)**

Apiculture

The keeping of bees **(adapted from Merriam Webster)**

Aquaculture

The breeding, rearing, and harvesting of plants and animals in all types of water environments including ponds, rivers, lakes, and the ocean. **(SOR, Aquaculture Activities Regulations, 2015)**

Biosecurity

A set of practices used to minimize the transmission of pathogens and pests in animal and plant populations including their introduction (bioexclusion), spread within the populations (bio-management), and release (biocontainment) (CFIA)

Climate Change

Change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer **(IEHIAS)**

Data

Factual information used as a basis for reasoning, discussion, or calculation

Disease (Animal)

Clinical or pathological manifestation of infection or infestation (FMD/AI) **(OIE, Terrestrial Animal Health Code, 2016)**

Ecosystem

A dynamic complex of plant, animal and micro-organism communities and their abiotic environment interacting as a functional unit **(International Plant Protection Convention [IPPC], Glossary of Phytosanitary Terms, 2016)**

Eradication

The elimination of a pathogenic agent from a country or zone. **(OIE, Terrestrial Animal Health Code, 2016)**

Hazard

A biological, chemical or physical agent in, or a condition of, an animal (terrestrial or aquatic) or animal product with the potential to cause an adverse health effect **(OIE, Terrestrial Animal Health Code, 2016)**

Infection

The entry and development or multiplication of an infectious agent in the body of humans or animals **(OIE, Terrestrial Animal Health Code, 2016)**

Information

Knowledge obtained from investigation, study, or instruction and the communication of that knowledge or intelligence **(Adapted from Merriam Webster)**

Infestation

Presence in a commodity of a living pest of the plant or plant product concerned. Infestation includes infection **(IPPC, Glossary of Phytosanitary Terms, 2016)**

Integration

The incorporation and development of an instance or program into an organization

Invasive Species

Invasive species are plants, animals and micro-organisms in an area where they have never been before. They can adapt, spread quickly, and don't have natural predators in the new environment (CFIA)

Laboratory Capacity

The capacity of laboratory operations based on equipment availability, workspace availability, and available laboratory personnel

Outbreak

A recently detected pest population, including an incursion **(IPPC, Glossary of Phytosanitary Terms, 2016)**; an occurrence of one or more cases in an epidemiological unit **(Terrestrial Animal Health Code, 2016)**

Partnerships

A relationship among several partners involving close cooperation and having joint responsibilities and interests working to attain a mutual goal

Pathogen

A micro-organism that causes disease **(IPPC, Glossary of Phytosanitary Terms, 2016)**

Pest

Any species, strain, plant biotype, animal, or pathogenic agent injurious to plants or plant products. Note: In the IPPC, plant pest is sometimes used for the term "pest" **(IPPC, Glossary of Phytosanitary Terms, 2016)**

Response Capacity

The ability to effectively manage risks and their consequences

Risk

The likelihood of the occurrence and the likely magnitude of the biological and economic consequences of an adverse event or effect to animal or human health. **(OIE, Terrestrial Animal Health Code, 2016)**

Risk Analysis

The process composed of hazard identification , risk assessment, risk management and risk communication **(OIE, Terrestrial Animal Health Code, 2016)**

Risk Assessment

The evaluation of the likelihood and the biological and economic consequences of entry, establishment and spread of a hazard **(OIE, Terrestrial Animal Health Code, 2016)**

Shared Accountability

The condition of being mutually accountable for the implementation and/or governance of a specific activity

Stakeholders

System Partners with a stake in the development of the Plant and Animal Health Strategy; federal-provincial-territorial governments, municipalities, local authorities, producers, processors, suppliers, non-governmental organizations, agriculture professionals, academia, government-industry advisory boards, and the general public

Standardization

To bring into conformity with a standard or norm. To normalize a certain practice or system

Surveillance

Systematic ongoing collection, collation, and analysis of information related to plant and animal health and the timely dissemination of information so that action can be taken **(Adapted from OIE, Terrestrial Animal Health Code, 2016)**

Survey

An official procedure conducted over a defined period of time to determine the characteristics of a pest population affecting plant and animal health alike **(Adapted from IPPC, Glossary of Phytosanitary Terms, 2016)**

Systems Approach

A pest risk management option that integrates different measures, at least two of which act independently, with cumulative effect **(IPPC, Glossary of Phytosanitary Terms, 2016)**

Vector

An insect or any living carrier that transports an infectious agent from an infected individual to a susceptible individual or its food or immediate surroundings. The organism may or may not pass through a development cycle within the vector **(OIE, Terrestrial Animal Health Code, 2016)**; Any living organism that transports a pathogenic agent to a susceptible aquatic animal or its food or immediate surroundings. The pathogenic agent may or may not pass through a development cycle within the vector. **(OIE, Aquatic Animal Health Code, 2016)**

Zoonosis/Zoonotic

Any disease or infection which is naturally transmissible from animals to humans **(OIE, Terrestrial Animal Health Code, 2016)**

References

Aquaculture Activities Regulations SOR/2015-177

National Oceanic and Atmospheric Administration

The World Organisation for Animal Health (OIE): Glossary – PDF (137 kb)

International Plant Protection Convention: Glossary of phytosanitary terms

List of Acts and Regulations

Appendix 2: How the Strategy was Developed and Related Strategies

The Plant and Animal Health Strategy is one of the deliverables under the Emergency Management Framework for Agriculture in Canada that was endorsed by federal-provincial-territorial (FPT) ministers of agriculture in July 2016. FPTministers called for partners to jointly develop the Strategy

to achieve an integrated approach to the prevention and mitigation of risks to plant and animal resources. The Strategy, and its associated activities and implementation plans, aim to build upon ongoing work in some areas and to identify new activities to pursue.

The Strategy is founded on input from partners and stakeholders, collected through a series of consultations and engagements, including:

- Stakeholder consultations on the Emergency Management Framework for Agriculture in Canada (January to March 2016)
- In-person engagement in all provinces (September to November 2016)
- Online consultation on a discussion document regarding the development of the Strategy (September to December 2016)
- In-person Planning Forum Footnote 2 in Ottawa (December 6 and 7, 2016)
- Engagement of stakeholders via social media
- Multi-stakeholder working groups, steering committee and leaders
- Online consultation on the draft Strategy (April 2017)

In developing the Plant and Animal Health Strategy, and throughout its implementation, partners aim to take into account related frameworks and strategies, with a view to minimizing duplication and overlap, and to maximizing the complementarity of the Strategy with ongoing work. The listing below of frameworks and strategies may not be exhaustive.

Other Frameworks and Strategies to Consider during Strategy Development and Implementation

Framework or Strategy

Emergency Management Framework for Agriculture in Canada
2016
Federal, Provincial and Territorial Emergency Management Framework Task Team

Livestock Market Interruption Strategy (LMIS): Final Report
2016
Livestock Market Interruption Strategy Steering Committee

National Farmed Animal Health and Welfare Strategy (NFAHWS)- PDF (2,769 kb)
2009
Council of Chief Veterinary Officers / Farmed Animal Industry Joint Working Group

An Invasive Alien Species Strategy for Canada - PDF (569 kb)
2004
Federal and provincial governments

Antimicrobial Resistance and Use in Canada: A Federal Framework for Action
2014
Government of Canada

National Forest Pest Strategy (NFPS)
2007
Canadian Council of Forest Ministers

Pan-Canadian Framework on Climate Change
2017
Climate Action Network Canada

Healthy Animals | Healthy Future 2025 - PDF (12 MB)
2011
Fore-CAN: Foresight for Canadian Animal Health

North American Plant Protection Organization Strategic Plan for 2016-2020 - PDF (379 kb)
2016
North American Plant Protection Organization

Final Report: Plant Pest Response Project - PDF (2,264 kb)
2012
Potato and Greenhouse Working Groups, Canadian Horticultural Council

British Columbia Plant Health Strategy for Agriculture - PDF (2,178 kb)
2013-2018
Plant Health Unit, Plant and Animal Health Branch, Ministry of Agriculture

Invasive Plant Strategy for British Columbia - PDF (934 kb)
2003
Invasive Plant Council of British Columbia

Ontario Invasive Species Strategic Plan - PDF (3,031 kb)
2012
Government of Ontario

Ontario's Climate Change Strategy - PDF (1,519 kb)
2015
Government of Ontario

Quebec Animal Health and Welfare Strategy - PDF (1000 kb)
2010
Government of Quebec, Ministry of Agriculture, Fisheries and Food

Industry government Advisory Committee (IGAC) on National Agriculture and Food Traceability System (NAFTS)
2006
Government of Canada

IPPC Strategic Framework for 2020-2030
2016
International Plant Protection Convention

The Sixth Strategic Plan (2016 - 2020)
2015
OIE

One Health Initiative

Footnotes

Footnote 2

Participants to the Forum included, among others, representatives from 10 federal departments; 9 provincial governments; 33 national and 13 provincial industry associations; 5 universities; and representatives from Australia, the European Union, and the United States

Return to footnote 2 referrer

Appendix 3: Implementation Plan

Under each of the areas for action, the multi-partner working groups further elaborated the activities that should be carried out through the Strategy. From among these activities, those that are critical to initiate implementation and lay the foundation for the proposed changes are presented here with associated time frames. Time frames have also been elaborated for additional activities that are recognized to address critical gaps in the plant and animal health system or provide a key enhancement. A key initial task will be prioritization of the remaining activities identified by the working groups to further elaborate the implementation plan.

It is recognized that implementation will, in most cases, be either resource reallocation- or investment-dependent. Therefore, the implementation plan will require review and adjustment based on this.

Based on input received from partners during development of the Strategy, the majority of the planned activities are proposed for both the plant and animal sectors, unless indicated within the description. However, it is envisaged that activities would be implemented separately under the oversight of the dedicated coordinating bodies for plant health and animal health. Therefore, the specific time frames for implementation of the activities may differ between the plant and animal sectors based on their needs, priorities and capacities.

During the development of the Strategy, several longer term activities were identified, extending potentially as far as 20-25 years into the future. However, as it is intended that the activities for each five year cycle would be prioritized and planned on an ongoing basis (sections 5 and 6), the current implementation plan is limited to five years' duration only.

0. Foundational Activities

	Activities	Plant, Animal or Both	2017-18	2018-19	2019-20	2020-21	2021-22

0. Foundational Activities

	Activities	Plant, Animal or Both	2017-18	2018-19	2019-20	2020-21	2021-22
0.1	**Strategy: Management of implementation** Establish and maintain a coordinating structure(s) to manage collaborative efforts and implementation of the Strategy, including prioritization of activities.	both	**x**	**x**	**x**	**x**	**x**
0.2	**Strategy: Maintenance of Comprehensive Canadian Context** Further analyze, determine relevancy and catalogue all supporting Canadian strategies and initiatives that currently exist and determine how best to build on their collective strengths	both	**x**	**x**	**x**	**x**	**x**
0.3	**Strategy: Communication and Transparency** Create a web platform and accompanying social media strategy to support implementation of the Strategy and engagement of partners; functions can include: • Reporting on implementation progress • Development of a tool to assist in creation of inventories	both	**x**	**x**	**x**	**x**	**x**
0.4	**Strategy: Continuous Planning and Review** Hold recurring all-partner forums to review changing external environment, challenges, and performance and to further plan and prioritize Strategy implementation	both				**x**	

0. Foundational Activities

	Activities	Plant, Animal or Both	2017-18	2018-19	2019-20	2020-21	2021-22
0.5	**Strategy: Elaborate System Description** Further inventory and analyze elements of the plant and animal health system to assess their effectiveness, characterize gaps and identify involved partners, including: • Networks • Partnership-based arrangements/agreements • Current partner roles and responsibilities • Current partner expertise and capacity • Legislative mandates and operational span • Import/export programs and points of entry processes and procedures • Existing surveillance mechanisms • Data/information collection, analysis, and sharing • Communication channels across the system	both	**x**	**x**	**x**	**x**	**x**

Activities that Address Critical Gaps or Provide Key Enhancements

1. Coordination through Partnership

	Activities	Plant, Animal or Both	2017-18	2018-19	2019-20	2020-21	2021-22

1. Coordination through Partnership

	Activities	Plant, Animal or Both	2017-18	2018-19	2019-20	2020-21	2021-22
1.1.2	Establish national plant-based industry representative body, building on experience of the former Canadian Plant Protection Advisory Committee (CPPAC); explore options for establishing a similar body for animal health	both		**x**	**x**	**x**	**x**
1.1.10	Establish national chief plant health officer network between federal and provincial governments	Plant			**x**	**x**	**x**
1.1.12	Establish partnerships to facilitate research and biosecurity approaches to adapt to increased risks stemming from, e.g., climate change, selection pressure, and policy changes made elsewhere	both				**x**	**x**
1.1.13	Further develop and improve effectiveness and plant and animal health focus of partnership approach between the Canadian Food Inspection Agency and the Canada Border Services Agency for comprehensive and improved border security	both					**x**
1.2.4	Work to align the development of networks with similar international initiatives to facilitate information sharing (e.g., OIE World Animal Health Information System (WAHIS),	both				**x**	**x**

1. Coordination through Partnership

	Activities	Plant, Animal or Both	2017-18	2018-19	2019-20	2020-21	2021-22
	antimicrobial usage monitoring and resistance)						
1.3.1	Increase federal government engagement with provincial government and industry stakeholders to determine priorities for international standard setting	both	**x**	**x**	**x**	**x**	**x**

2. A System Founded on Prevention

	Activities	Plant, Animal or Both	2017-18	2018-19	2019-20	2020-21	2021-22
2.1.1	Develop an approach for applying the risk-based priority setting tool developed for the Emergency Management Framework for Agriculture in Canada to determine priorities	both	**x**	**x**	**x**	**x**	**x**
2.2.1	Develop and implement an effective national surveillance system(s) that reflects different partner priorities and needs	both	**x**	**x**			
2.3.2	Evaluate and strengthen import/export programs and points of entry processes and procedures	both	**x**	**x**	**x**	**x**	**x**

2. A System Founded on Prevention

	Activities	Plant, Animal or Both	2017-18	2018-19	2019-20	2020-21	2021-22
2.4.3	Incorporate industry as signatory to Foreign Animal Disease Emergency Support Plan (FADES)	Animal	**x**	**x**	**x**	**x**	**x**
2.5.3	Develop a national research strategy that establishes dedicated funding, promotes cooperation, facilitates knowledge transfer and balances research on prevention and mitigation with that for preparedness, response and recovery	both				**x**	

3. Collection, Analysis, and Sharing of Information

	Activities	Plant, Animal or Both	2017-18	2018-19	2019-20	2020-21	2021-22
3.1.2	Develop a conceptual model for the collection, storage and distribution of data/information	both	**x**	**x**			
3.1.3	Develop a data/information integration strategy to help ensure the heterogeneous data/information can be consolidated for analysis, along with minimum data standards and data dictionaries to ensure some level of standardization	both	**x**	**x**			

3. Collection, Analysis, and Sharing of Information

	Activities	Plant, Animal or Both	2017-18	2018-19	2019-20	2020-21	2021-22
3.2.1	Develop an intelligence generating network similar to the Community for Emerging and Zoonotic Disease for identifying emerging plant health risks	Plant	**x**				
3.3.2	Use the conceptual data/information model to identify cross linkages and opportunities where automated data/information collection can be implemented	both			**x**	**x**	

4. Enabling Desired Behaviours

	Activities	Plant, Animal or Both	2017-18	2018-19	2019-20	2020-21	2021-22
4.1.3	Build on and support uptake of tools, products and partnerships for outreach aimed at motivating individuals to adopt specific behaviours	both		**x**	**x**	**x**	**x**
4.3.2	Deliver targeted communications to areas with greatest risk	both	**x**	**x**	**x**	**x**	**x**
4.4.2	Develop processes to encourage or ensure a suite of evidence (social, biological, economic, environmental) are incorporated into planning for influencing desired	both		**x**	**x**	**x**	

4. Enabling Desired Behaviours

	Activities	Plant, Animal or Both	2017-18	2018-19	2019-20	2020-21	2021-22
	behaviours						

Detailed List of Activities Identified by Multi-Partner Working Groups

1. Coordination through Partnerships

1.1 Establish processes, agreements, tools, communication plans and governance to support coordination within the system

	Activities	Plant, Animal or Both
1.1.1	Establish independent advisory panel for ongoing strategic development	both
1.1.2	Establish national plant-based industry representative body, building on experience of the former Canadian Plant Protection Advisory Committee (CPPAC); explore options for establishing a similar body for animal health	both
1.1.3	Assess other countries' approaches for domestic partnerships for feasibility in the Canadian context	both
1.1.4	Formalize the Plant and Animal Health strategic collaboration framework through an agreement to ensure commitment and continuity	both
1.1.5	Develop partnership approaches beyond the core industry-provincial-federal	both

1.1 Establish processes, agreements, tools, communication plans and governance to support coordination within the system

	Activities	Plant, Animal or Both
	partners, e.g., with academia	
1.1.6	Develop a communications strategy for partners that establishes guidelines and procedures and a network diagram for communication pathways; integrate use of the web platform in 0.3	both
1.1.7	Create liaison officer positions to link between the federal and provincial governments	both
1.1.8	Expand partnerships between animal health and public health bodies on zoonotic diseases to include multiple partners	Animal
1.1.9	Foster partnerships for the development of Canadian plant health networks of experts (including clean plant network, surveillance, diagnostics, etc.)	Plant
1.1.10	Establish national chief plant health officer network between federal and provincial governments	Plant
1.1.11	Develop a process for enabling targeted partnerships for carrying out activities	both
1.1.12	Establish partnerships to facilitate research and biosecurity approaches to adapt to increased risks stemming from, e.g., climate change, selection pressure, and policy changes made elsewhere	both
1.1.13	Further develop and improve effectiveness and plant and animal health focus of partnership approach between the Canadian Food Inspection Agency and the	both

1.1 Establish processes, agreements, tools, communication plans and governance to support coordination within the system

	Activities	Plant, Animal or Both
	Canada Border Services Agency for comprehensive and improved border security	

1.2 Pursue opportunities to engage internationally to collaborate on risk reduction

	Activities	Plant, Animal or Both
1.2.1	Maintain or enhance cooperative and collaborative approach with the U.S.	both
1.2.2	Link with similar plant/animal health strategic and/or coordinating bodies internationally to allow for timely information exchange, shared training opportunities, etc.	both
1.2.3	Establish international partnerships to facilitate activities intended to mitigate risk at point of origin similar to successful Canada-U.S. model used with Korea, China, Japan and Russia for Asian Gypsy Moth (AGM)	both
1.2.4	Work to align the development of networks with similar international initiatives to facilitate information sharing (e.g., OIE World Animal Health Information System (WAHIS), antimicrobial usage monitoring and resistance)	both

1.3 Develop a collaborative process for prioritizing Canada's participation and increasing Canada's influence in international standard setting

	Activities	Plant, Animal or Both
1.3.1	Increase federal government engagement with provincial government and industry stakeholders to determine priorities for international standard setting	both
1.3.2	Promote commodity- and pest-specific international standards that reduce risks on a global scale	both

2. A System Founded on Prevention

2.1 Develop and maintain an integrated risk management process for determining program priorities

	Activities	Plant, Animal or Both
2.1.1	Develop an approach for applying the risk-based priority setting tool developed for the Emergency Management Framework for Agriculture in Canada to determine program priorities	both

2.2 Establish a collaborative and coordinated process for planning, prioritizing and implementing surveillance activities, including diagnostic laboratory testing

	Activities	Plant, Animal or Both
2.2.1	Develop and implement an effective national surveillance system(s) that reflects different partner priorities and needs	both
2.2.2	Create and implement a process for annual planning and prioritizing of	both

2.2 Establish a collaborative and coordinated process for planning, prioritizing and implementing surveillance activities, including diagnostic laboratory testing

	Activities	Plant, Animal or Both
	surveillance activities	

2.3 Evaluate and address capacity of partners to mitigate biosecurity risks at critical points

	Activities	Plant, Animal or Both
2.3.1	Evaluate and address federal and provincial regulatory capacity for risk mitigation at critical points and industry's ability to meet regulations	both
2.3.2	Evaluate and strengthen import/export programs and points of entry processes and procedures	both
2.3.3	Explore options for increasing system efficiency, e.g., alternative service delivery	both
2.3.4	Analyze value and feasibility of developing a continental, common perimeter-based approach to plant and animal health	both
2.3.5	Scan existing international options for dedicated national centers for preventive science activities, including epidemiology, disease and pest modelling, economic modelling, risk identification, and risk assessment, and assess feasibility for Canada	both
2.3.6	Develop standards where gaps exist and continue to update existing standards to address current risks	both

2.4 Develop and/or regularly update plans and processes for responding to and recovering from emergencies

	Activities	Plant, Animal or Both
2.4.1	Develop and regularly update plans in case of an emergency or outbreak with a list of experts and organizations to call on for support	both
2.4.2	Develop a standardized process for conducting and sharing reviews and lessons-learned assessments following events	both
2.4.3	Incorporate industry as signatory to Foreign Animal Disease Emergency Support Plan (FADES)	Animal
2.4.4	Evaluate and address the capacity nationally to identify and respond effectively to emerging hazards, including vector-borne diseases and pests and changes in risk resulting from climate change	both
2.4.5	Develop mutual resource sharing agreements, including those for surge capacity, between key partners	both

2.5 Develop a research strategy for plant and animal health that supports prevention and mitigation

	Activities	Plant, Animal or Both
2.5.1	Create a process to facilitate collaboration in research	both
2.5.2	Create a prioritization process for research projects that support prevention and	both

2.5 Develop a research strategy for plant and animal health that supports prevention and mitigation

	Activities	Plant, Animal or Both
	mitigation	
2.5.3	Develop a national research strategy that establishes dedicated funding, promotes cooperation, facilitates knowledge transfer and balances research on prevention and mitigation with that for preparedness, response and recovery	both
2.5.4	Develop expertise and innovative tools to quickly predict, prevent and control both vector-borne disease outbreaks and the vectors themselves	both

3. Collection, Analysis, and Sharing of Information

3.1 Develop and deliver an approach to coordinate the collection and sharing of information across the System

	Activities	Plant, Animal or Both
3.1.1	Identify data/information requirements for the plant and animal health system; links in part to 2.2.1 and 2.5.3	both
3.1.2	Develop a conceptual model for the collection, storage and distribution of data/information	both
3.1.3	Develop a data/information integration strategy to help ensure the heterogeneous data/information can be consolidated for analysis, along with minimum data	both

3.1 Develop and deliver an approach to coordinate the collection and sharing of information across the System

	Activities	Plant, Animal or Both
	standards and data dictionaries to ensure some level of standardization	
3.1.4	Develop processes to integrate and coordinate data/information collection based on the model identified in 3.1.2	both
3.1.5	Consolidate the existing data/information and knowledge to enable analysis	both
3.1.6	Establish mechanisms for quality assurances and controls	both
3.1.7	Using the inventory and gap analysis of data/information sharing agreements developed as part of the Emergency Management Framework for Agriculture in Canada to determine where there are gaps for plant and animal health, revise existing agreements or develop new agreements as needed	both
3.1.8	Assess benefits/achievability of multi-stakeholder agreements or a single master agreement	both
3.1.9	Conduct a privacy impact assessment once the data to be collected has been determined	both
3.1.10	Evaluate the legislative and regulatory impediments to information sharing; initiate legislative changes to enable Strategy	both

3.2 Incorporate innovative methods developed globally for information collection and analysis

	Activities	Plant, Animal or Both
3.2.1	Develop an intelligence generating network similar to the Community for Emerging and Zoonotic Disease for identifying emerging plant health risks	Plant
3.2.2	Identify other innovative data/information collection systems being used globally that could be adopted in Canada	both

3.3 Develop automated information technology (IT) solutions to support collection, analysis, and sharing of information

	Activities	Plant, Animal or Both
3.3.1	Analyze existing infrastructure to determine whether it is sufficient and develop a plan to increase capacity as needed, including costing estimates; this may include purchasing new infrastructure including storage and backup systems to protect against system failure and information/data loss	both
3.3.2	Use the conceptual data/information model to identify cross linkages and opportunities where automated data/information collection can be implemented	both
3.3.3	Develop infrastructure/IT solutions and accompanying software standards to guide development; solution should be open source, scalable and automated where possible	both
3.3.4	Develop an international information exchange system that can interface with existing international systems	both

3.4 Expand national capacity for analysis

	Activities	Plant, Animal or Both
3.4.1	Evaluate existing analysis methodologies and analytics and develop new standardized analysis methodologies and analytics where needed	both
3.4.2	Identify expertise needed to conduct the analyses, and determine where this expertise resides nationally and possibly internationally	both
3.4.3	Create a new collaborative process and tools to analyze emerging and re-emerging risks at the national level	both
3.4.4	Identify which types of analysis can be automated and are required by all sectors	both

3.5 Establish processes for reporting

	Activities	Plant, Animal or Both
3.5.1	Develop user-focused outputs that entice partners to share information (e.g., customized dashboards for each user's profile that suits their sector, region, risk intelligence requirements)	both
3.5.2	Develop a protocol to guide the reporting process, which includes minimum standards for reporting timelines as well as considerations for ensuring that data/information is reported in a manner that respects confidentiality	both
3.5.3	Integrate existing reporting structures or build new as required; this will be informed by the communications strategy developed in 1.1.12	both

4. Enabling Desired Behaviours

4.1 Develop capacity, awareness, and skills to enable identified desired behaviours

	Activities	Plant, Animal or Both
4.1.1	Build on and support tools, products and partnerships that support extension services (government, academia, associations or industry and professional continuing education)	both
4.1.2	Ensure that supporting resources are consistent, reliable and sustainable	both
4.1.3	Build on and support uptake of tools, products and partnerships for outreach aimed at motivating individuals to adopt specific behaviours	both
4.1.4	Facilitate the implementation of existing tools (e.g. food safety programs, biosecurity standards, animal welfare codes etc.)	both
4.1.5	Develop process to enable assessment and demonstration of economic and epidemiological value of proposed behaviour changes	both

4.2 Promote behaviours using incentives and disincentives

	Activities	Plant, Animal or Both
4.2.1	Leverage existing incentive and disincentive programs assessing current effectiveness	both
4.2.2	Support process to enable creation of shared expectations of peers and communities	both

4.3 Establish a process to assess approaches to motivating desired behaviour

	Activities	Plant, Animal or Both
4.3.1	Facilitate regular stakeholder dialogues to identify priority needs and opportunities for change.	both
4.3.2	Deliver targeted communications to areas with greatest risk	both
4.3.3	Provide communication tools and strategies for multi-directional information sharing	both
4.3.4	Enable sector specific communities of practice	both

4.4 Establish a process to assess the extent and effectiveness of behavioural change

	Activities	Plant, Animal or Both
4.4.1	Provide leadership and expertise in evidence-informed knowledge translation (include the mechanisms for providing this leadership)	both
4.4.2	Develop processes to encourage or ensure a suite of evidence (social, biological, economic, environmental) are incorporated into planning for influencing desired behaviours	both
4.4.3	Develop and assess expertise in knowledge translation evaluation	both
4.4.4	Develop and assess mechanisms and processes to identify, prevent, and mitigate unintended or negative consequences of behaviour change	both