Canadian Food Inspection Agency | Agence canadienne d'inspection des aliments

2024/25 Annual Report

National Microbiological Monitoring Program

Canada

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Summary

The Canadian Food Inspection Agency (CFIA) develops and delivers programs and services designed to protect Canadians from preventable food safety hazards. The CFIA works to ensure that food safety emergencies are effectively managed, that the public is aware of and contributes to food safety and that consumers and the marketplace are protected from unfair practices. Canada's food safety requirements apply equally to the domestic and imported food sectors.

The National Microbiological Monitoring Program (NMMP) is a food surveillance program managed by the CFIA to support CFIA verification of industry compliance with food safety standards, provide information on the effectiveness of food safety control measures and interventions, facilitate access of Canadian food products to international markets, and maintain consumer confidence in the safety of the food supply. Under the NMMP, a broad range of domestic and imported food products are sampled by CFIA inspectors. These food products are frequently sampled at Safe Food for Canadians (SFC) licence holding establishments (i.e., those that produce food products that are exported or traded inter-provincially or those that import food products), but samples may also be collected at other establishment types, such as warehouses, distribution centres, and wholesalers.

Food products of the following commodities were tested under the NMMP in the 2024/25 sampling year (April 1, 2024 to March 31, 2025): red meat and poultry products, egg products, dairy products, fresh fruits and vegetables, processed fruit and vegetable products, and fish and seafood products. Known food-hazard combinations, i.e., specific microorganisms in specific foods that are recognized to occur and whose presence indicates a food safety concern, and historical levels of compliance were taken into consideration when selecting foods for testing under NMMP monitoring sampling plans. Environmental sampling was also performed at SFC licence holding establishments to support CFIA verification that domestic producers were able to control the presence of pathogens within the processing environments and that domestic food products were produced under sanitary conditions.

All product and environmental samples collected under the NMMP were tested at CFIA laboratories. All samples were subject to follow-up actions by both industry and the CFIA. Such follow-up actions could include follow-up inspections, additional sampling, product disposal, corrective action requests, food safety investigations, product recalls, etc.

In the 2024/25 sampling year, 12,641 tests were performed on 5,305 domestic and imported food products collected under the NMMP to verify compliance with food safety standards. Specifically, 8,833 tests were performed on 4,047 domestic products and 3,808 tests were performed on 1,258 imported products. Results indicated that domestic products were 99.0 % satisfactory and imported products were 98.9 % satisfactory. Overall, a 98.9 % satisfactory rate was observed for combined

domestic and imported products. In addition, there were 1,735 tests performed on 1,496 environmental samples, which were assessed as 97.8 % satisfactory.

Food safety is a collective responsibility of government, industry, and consumers. All food producers/ importers are responsible under Canadian law for the safety of the food they produce and distribute. The results of the 2024/25 NMMP sampling activities indicated that the vast majority of food products available in Canada during the 2024/25 sampling year were compliant with food safety standards. The few non-compliant samples that were detected resulted in follow-up actions by the CFIA and industry. Follow-up actions taken by both industry and the CFIA acted to improve Canadian manufacturing processes and identify imported products that did not meet food safety standards. These actions allowed the CFIA to continue to safeguard Canada's food system and the health and well-being of Canadians.

What is the NMMP?

The National Microbiological Monitoring Program (NMMP) is a food surveillance program managed by the CFIA to support CFIA verification of industry compliance with food safety standards, provide information on the effectiveness of food safety control measures and interventions, facilitate access of Canadian food products to international markets, and maintain consumer confidence in the safety of the food supply. Under the NMMP, a broad range of imported and domestic food products are sampled at Safe Food for Canadians (SFC) licence holding establishments (i.e., those that produce food products that are exported or traded inter-provincially or those that import food products), but samples may also be collected at other establishment types, such as warehouses, distribution centres, and wholesalers.

All NMMP samples are tested at CFIA laboratories. All samples are subject to appropriate follow-up actions by both industry and the CFIA. Such follow-up actions could include follow-up inspections, additional sampling, product disposal, corrective action requests, food safety investigations, product recalls, etc.

In addition to the NMMP, the CFIA also manages the Targeted Survey Program, another food microbiology surveillance program which operates at the retail level. While the NMMP monitors known food-hazard combinations, i.e., specific microorganisms in specific foods that are recognized to occur and whose presence indicates a food safety concern, the purpose of Targeted Surveys is to generate baseline information on the occurrence of additional potential hazards in foods. Should a food-hazard combination be identified under these Targeted Surveys, the food product may be subsequently monitored under the NMMP.

What was sampled?

In the 2024/25 sampling year, domestic and imported food products of the following commodities were tested: red meat and poultry products, egg products, dairy products, fresh fruits and vegetables, processed fruit and vegetable products, and fish and seafood products. For the purpose of this report, domestic food products included unprocessed or minimally processed food products that were grown/ raised in Canada and food products that were processed or manufactured in Canada. Imported food products included unprocessed or minimally processed food products that were grown/ raised outside of Canada and food products that were processed or manufactured outside of Canada.

Food products within these commodities were selected for testing on the basis of known food-hazard combinations and historical levels of compliance. The number of samples that were taken for each product depended on various factors, including the number of establishments producing the food product, whether the food product would be consumed directly or would undergo further preparation, historical compliance levels, market access requirements, etc.

Sampling of imported food was performed at points of entry and distribution facilities; therefore, test results of imported foods reflected the conditions the foods were exposed to during processing, handling and storage. Imported foods are required to meet the same standards as domestic products.

In addition to sampling domestic and imported food products, the CFIA also tested environmental samples collected from domestic food processing environments to support CFIA verification that domestic producers were able to control the presence of pathogens within the processing environments and that domestic food products were produced under sanitary conditions.

The CFIA's role is to provide oversight and verify that the industry is producing safe food and complying with standards in place. Industry is responsible for implementing controls and practices, which may include sampling and testing programs, to ensure that all food they produce or import into Canada is safe. Therefore, the CFIA does not test all imported or domestically produced lots of food. A randomized strategy is employed under the NMMP to test representative samples of these foods.

What tests were performed?

Food and environmental samples collected under the NMMP in 2024/25 were tested for microorganisms (pathogens and indicator organisms) associated with known food-hazard combinations or manufacturing processes. Certain food samples were also tested for physiochemical properties or non-microbial indicators (see below). The majority of methods used for testing were found in Health Canada's Compendium of Analytical Methods (Health Canada, 2008a). Non-compendium methods were also used when appropriate. These methods included both rapid screening and confirmatory methods.

Foodborne pathogens are microorganisms that can cause illness when ingested. Under the NMMP in 2024/25, samples were tested for the following foodborne pathogens: *Escherichia coli* O157:H7/NM*, Staphylococcus aureus, Listeria monocytogenes, Salmonella* species (spp.)*, Vibrio parahaemolyticus*, *Trichinella spiralis* and *Cyclospora cayetanensis*.

Indicator organisms are microorganisms that do not cause illness but may be associated with pathogens or unsanitary practices. The detection of indicator organisms does not always imply the existence of a food-related health hazard but can expose unsanitary practices and conditions under which pathogens could contaminate food products. Under the NMMP in 2024/25, samples were tested for the following indicator organisms: generic *E. coli*, *Listeria* spp., coliforms, and Aerobic Colony Counts (ACC).

Physiochemical characteristics of foods are evaluated to assess the ability of such foods to support microbial growth. Under the NMMP in 2024/25, samples were tested for the following physiochemical indicators: pH, water activity, and salt content.

Lastly, non-microbial indicators are not designed to determine the presence or absence of microorganisms. These criteria are used to obtain information pertaining to other aspects of food safety. Such tests may be performed to identify manufacturing processes that could support the introduction of potential food safety hazards. Under the NMMP in 2024/25, samples were tested for the following non-microbial indicators: presence of central nervous system tissue in raw mechanically separated beef and finely textured beef, red meat and poultry product species verification, and phosphatase testing in pasteurised dairy products.

How were samples assessed?

Results from samples tested under the NMMP are assessed using assessment criteria specific to a food type and test of interest. These assessment criteria set clear limits in determining if food products and their processing environments are compliant with food standards. In Canada, Health Canada's Standards and Guidelines for Microbiological Safety of Food – An Interpretive Summary (Health Canada, 2008b) contains microbiological assessment criteria based on current Canadian regulatory standards and guidelines. Additional information on Canadian standards and guidelines is also found in published documents, such as the Policy on *Listeria monocytogenes* in Ready-to-Eat Foods (Health Canada, 2023), the Guidance Document on *E. coli* O157:H7 and *E. coli* O157:NM in Raw Beef (Health Canada, 2014), the Bacteriological guidelines for fish and fish products (end product) (CFIA, 2019), the Policy on Managing Health Risk Associated with the Consumption of Sprouted Seeds and Beans (Health Canada, 2006), the Guidance on Reducing the Risk of *Salmonella* Enteritidis in Shell Eggs Produced in Canada (Health Canada, 2013) and the Voluntary Guidance on Improving the Safety of Soft and Semi-

Soft Cheese made from Unpasteurized Milk (Health Canada, 2015). International standards, such as those outlined by the International Commission on Microbiological Specifications for Foods (ICMSF), may also provide information on microbiological assessment criteria when appropriate (ICMSF, 2011).

Assessment criteria for samples tested under the NMMP in 2024/25 are found in the Appendix. Sample assessment was dependant on the level and type of analytes, i.e., pathogens, indicator organisms and/or non-microbial indicators, detected in the food and environmental samples and, sometimes, on the physiochemical characteristics of the food samples. On the basis of these assessment criteria, samples tested were assessed as satisfactory, unsatisfactory or investigative.

A satisfactory sample assessment indicated that there were no concerns identified with the food tested as all test results were considered acceptable by the assessment criteria. An unsatisfactory sample assessment indicated that one or more test results were considered unacceptable by the assessment criteria and the sample therefore did not meet standards and guidelines. An unsatisfactory sample assessment often resulted from the detection of an analyte which was not considered to be acceptable at any level or by the detection at high levels, i.e., exceeding the standard or guideline, of an analyte that was considered to be acceptable at certain levels. An investigative sample assessment indicated that the sample may have been satisfactory, but that further information was required to make this determination. An investigative sample assessment often resulted from the detection at elevated levels, i.e., approaching but not exceeding the standard or guideline, of an analyte that was considered to be acceptable at lower levels. Appropriate follow-up actions were taken in response to both unsatisfactory and investigative sample assessments.

Microbial assessment criteria for *L. monocytogenes* in ready-to-eat (RTE) food products tested under the NMMP in 2024/25 were based upon Health Canada's Policy on *Listeria monocytogenes* in Ready-to-Eat Foods (Health Canada, 2023). This policy assigns a risk classification of RTE foods according to consumer risk. Category 1 RTE foods are those in which the growth of *L. monocytogenes* can occur throughout the stated shelf-life. Category 2A RTE foods are those in which a limited potential for growth of *L. monocytogenes,* to levels not exceeding 100 CFU/g, can occur throughout the stated shelf-life. Category 2B RTE foods are those in which the growth of *L. monocytogenes* will not occur (that is, increase not exceeding 0.5 log CFU/g) throughout the stated shelf-life. As such, the assessment criteria specific to *L. monocytogenes* in RTE foods differed depending on the food category. Detection of *L. monocytogenes* in a Category 1 food or at > 100 CFU/g in a Category 2A or 2B food resulted in an unsatisfactory sample assessment, while the detection of *L. monocytogenes* at ≤ 100 CFU/ g in a Category 2A or 2B food resulted in an investigative sample assessment.

At the time of writing this report, no assessment guidelines had been established in Canada for *C. cayetanensis* in fresh fruits and vegetables. The analytical methods used to analyse fresh fruit and

vegetable samples for the parasite *C. cayetanensis* only detected the presence of parasite genetic material and could not discriminate between viable (potentially infectious) and non-viable (non-infectious) parasites. The detection of *C. cayetanensis* genetic material was therefore assessed as investigative, indicating that further consideration was warranted to determine which follow-up actions would be the most appropriate.

The number of samples of each food type and analyte tested and their assessment results, including their percent satisfactory rates, are reported below. Note that percent satisfactory rates were calculated by dividing the number of satisfactory samples by the total number of samples tested. As mentioned above, an investigative sample assessment indicated that the sample may have been satisfactory, but that further information was required to make this determination. Therefore, the calculated percent satisfactory rates may have under-estimated the actual proportions of tested products that were satisfactory. The significance of percent satisfactory rates derived from small numbers of samples/ tests should be interpreted with caution. For this report, we considered that this included percent satisfactory rates derived from fewer than 50 samples.

What were the 2024/25 NMMP results for red meat and poultry products?

i) Ready-to-eat red meat and poultry products

Ready-to-eat products are normally eaten in the same condition as that in which they are purchased. They are not normally further prepared before consumption, except perhaps being washed/rinsed, thawed, or warmed. Ready-to-eat red meat and poultry products have been associated with foodborne illness due to contamination from raw or undercooked products or exposure to environmental contaminants while being handled in processing establishments, catering establishments and in the home kitchen.

Under the NMMP in 2024/25, samples of domestic and imported RTE red meat and poultry products were tested for *Salmonella* spp. and *L. monocytogenes*. RTE beef products that had not been fully cooked, e.g. some dry or semi-dry or fermented products, were also tested for *E. coli* O157:H7/NM. A total of 1,056 domestic samples were tested, and they were assessed as 99.8 % satisfactory (Table 1). One sample of a Category 1 product, bacon, was assessed as unsatisfactory due to the detection of *L. monocytogenes*. One sample of a Category 2B product, frozen cooked chicken nuggets, was assessed as investigative due to the detection of ≤ 100 CFU/g of *L. monocytogenes*.

In addition, 87 samples of imported RTE red meat and poultry products were tested, the majority of which originated from the United States and Italy (Figure 1). They were assessed as 95.4 % satisfactory

(Table 1). Two samples of Category 1 products, prosciutto from Italy and sausage from Italy, were assessed as unsatisfactory due to the detection of *L. monocytogenes*. Two samples of Category 2B products, chorizo sausage from Spain and frozen cooked chicken wings from the Ukraine, were assessed as investigative due to the detection of ≤ 100 CFU/g of *L. monocytogenes*.

Table 1: Assessment of domestic and imported ready-to-eat red meat and poultry products sampled under the NMMP in 2024/25.

Analytes	# Tests	# Satisfactory	# Investigative[a]	# Unsatisfactory	% Satisfactory[b]
Domestic (1056 samples)					
E. coli O157:H7/NM	5	5	n/a	0	100[c]
L. monocytogenes	1056	1054	1	1	99.8
Salmonella spp.	443	443	n/a	0	100
Imported (87 samples)					
E. coli O157:H7/NM	2	2	n/a	0	100[c]
L. monocytogenes	87	83	2	2	95.4
Salmonella spp.	87	87	n/a	0	100
Samples	**# Samples**	**# Satisfactory**	**# Investigative**	**# Unsatisfactory**	**% Satisfactory[b]**
Domestic	1056	1054	1	1	99.8
Imported	87	83	2	2	95.4
Total samples	**1143**	**1137**	**3**	**3**	**99.5**

[a] n/a = not applicable. The investigative assessment does not apply.

[b] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

[c] Due to the small sample/test number, the significance of the % satisfactory rate should be interpreted with caution.

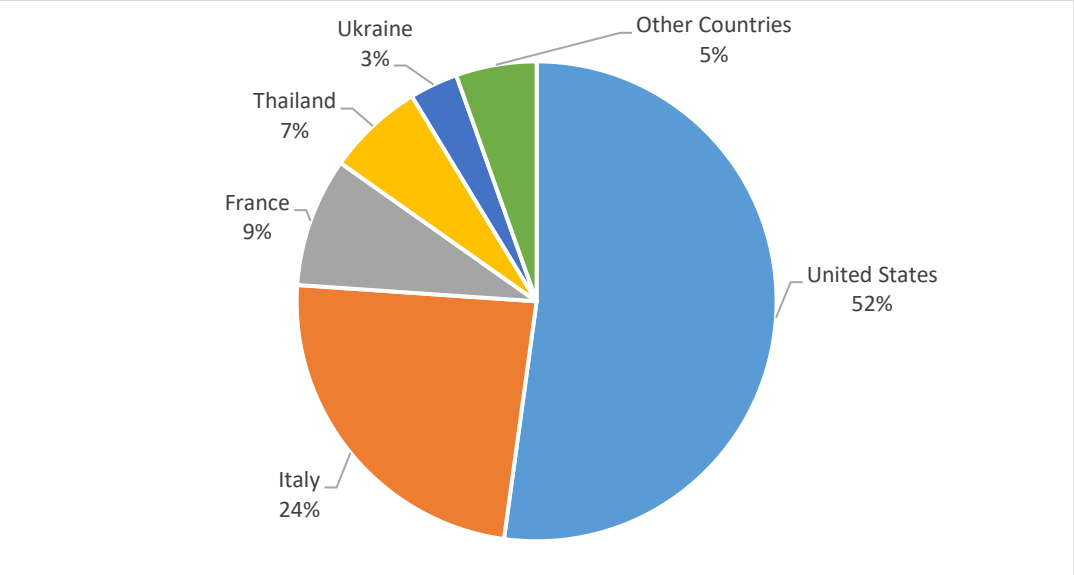

Figure 1. Percent distribution of imported ready-to-eat red meat and poultry products analyzed by country of origin (n = 87).

ii) Finished raw ground beef products and precursor materials

Finished raw ground beef products (FRGBP) include all raw ground beef/veal that will be sold to consumers in that state, as well as raw beef/veal that contain comminuted and formed beef/veal (e.g., burgers). Precursor materials include any raw beef/veal products intended to be used for production of FRGBP. This includes, but is not limited to, beef trim, bench trim, head meat, cheek meat, tongue roots, weasand meat, hearts, comminuted beef products and other raw beef components, such as primal or sub-primal cuts (e.g., chucks, top round, sirloin cuts, etc.). Pathogens, such as *E. coli* O157:H7/NM, can contaminate the outer surfaces of whole intact pieces of precursor materials during slaughter and this contamination may be introduced into FRGBP during grinding. Foodborne illness has been caused by consumption of *E. coli* O157:H7/NM in FRGBP that were not fully cooked.

Under the NMMP in 2024/25, samples of domestic and imported precursor materials and FRGBP were tested for *E. coli* O157:H7/NM and generic *E. coli*. A total of 619 samples of domestic precursor material samples and 593 samples of domestic FRGBP were tested and assessed together as 98.4 % satisfactory (Table 2). Six samples of precursor materials and 13 samples of FRGBP were assessed as investigative due to the detection of elevated levels of generic *E. coli.*

In addition, 45 samples of imported precursor materials and 23 samples of imported FRGBP were tested, the majority of which originated from the United States, Australia, and New Zealand (Figure 2). They were assessed together as 100 % satisfactory (Table 2). No *E. coli* O157:H7/NM was detected in any of the imported product samples (Table 2).

Table 2: Assessment of domestic and imported precursor materials and finished raw ground beef products sampled under the NMMP in 2024/25.

Analytes	# Tests	# Satisfactory	# Investigative[a]	# Unsatisfactory[b]	% Satisfactory[c]
Domestic Precursor Material (619 samples)					
E. coli O157:H7/NM	619	619	n/a	0	100
Generic *E. coli*	619	613	6	n/a	99.0
Domestic Finished Raw Ground Beef Products (593 samples)					
E. coli O157:H7/NM	593	593	n/a	0	100
Generic *E. coli*	593	580	13	n/a	97.8
Imported Precursor Material (45 samples)					
E. coli O157:H7/NM	45	45	n/a	0	100[d]
Generic *E. coli*	45	45	0	n/a	100[d]
Imported Finished Raw Ground Beef Products (23 samples)					
E. coli O157:H7/NM	23	23	n/a	0	100[d]
Generic *E. coli*	23	23	0	n/a	100[d]
Samples	**# Samples**	**# Satisfactory**	**# Investigative**	**# Unsatisfactory**	**% Satisfactory[c]**
Domestic	1212	1193	19	0	98.4
Imported	68	68	0	0	100
Total samples	**1280**	**1261**	**19**	**0**	**98.5**

[a] n/a = not applicable. The investigative assessment does not apply.

[b] n/a = not applicable. The unsatisfactory assessment does not apply.

[c] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

[d] Due to the small sample/test number, the significance of the % satisfactory rate should be interpreted with caution.

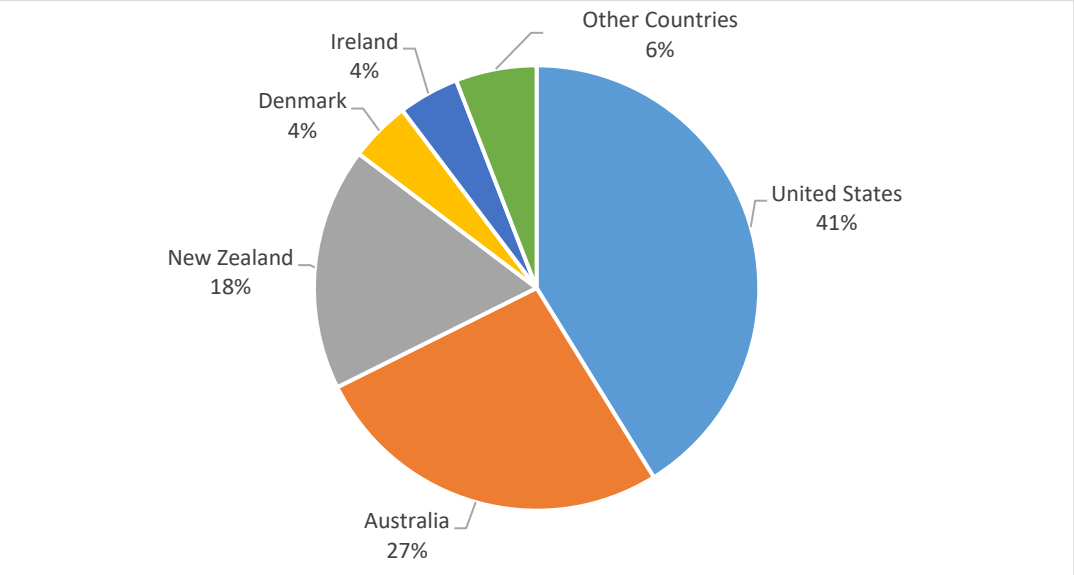

Figure 2. Percent distribution of imported precursor materials and finished raw ground beef products analyzed by country of origin (n = 68).

iii) Raw mechanically separated beef and finely textured beef

Mechanically separated beef and finely textured beef are edible beef products obtained by mechanically separating most of the bone and cartilage from portions of beef from which the bone and cartilage have not been previously removed. Bovine Spongiform Encephalopathy (BSE), more commonly known as Mad Cow Disease, is a progressive, degenerative neurological disease. The BSE prion is able to infect humans, causing variant Creutzfeld-Jakob Disease (vCJD; FDA, 2012), through human consumption of contaminated beef products from BSE-infected cattle. Since BSE may be present in central nervous system (CNS) tissue of BSE-infected cattle, the spinal cord is removed from beef carcasses and portions of beef prior to their use as material for mechanical separation (CFIA, 2019). The CFIA tests domestic mechanically separated and finely textured beef products to verify the absence of CNS tissue. Although detection of CNS tissue in a beef product does not necessarily mean that the BSE prion is present, detection of CNS tissue is a trigger for follow up actions to ensure that the establishment in question is producing this type of product in a manner that meets Canadian standards.

Under the NMMP in 2024/25, 23 domestic mechanically separated beef and finely textured beef samples were tested for the presence of CNS tissue, and they were assessed as 95.7 % satisfactory. One sample was assessed as unsatisfactory due to the presence of CNS tissue.

iv) Raw pork and wild boar

Human infection by the parasitic roundworm *T. spiralis* is traditionally associated with ingestion of infected raw and undercooked pork. Because of modern production methods of raising pigs in confinement and high-quality feed, *T. spiralis* is rare in Canadian domestic swine populations. However, precautions must remain in effect due to the presence of *T. spiralis* in wildlife and the potential for its sporadic transfer to domestic herds. Government testing for *T. spiralis* in commercial pork and wild boar establishments also supports the Canadian pork industry's continued access to international markets.

Under the NMMP in 2024/25, market hogs, breeder hogs, and wild boar were tested for *T. spiralis.* The analytical methodology for testing *T. spiralis* in pork allowed for tissues from up to 100 animals to be pooled per sample and submitted for analysis. A total of 351 samples of domestic hogs and wild boar, representing 33,630 individual animals, were tested. All samples were assessed as satisfactory.

v) Meat species verification

Red meat and poultry products may contain species not listed on the product label or be missing species listed on the label. In some cases, a producer may fraudulently substitute less expensive species for some or all of the more expensive species declared on the label. In other cases, the presence of other species may occur due to improper cleaning of equipment and contamination during processing. Meat species verification provides information on the ability of food processors to control the introduction of meat species not listed on product labels, due to either fraudulent substitution or poor sanitation.

Under the NMMP in 2024/25, 33 samples of domestic red meat and poultry products and 27 samples of imported red meat and poultry products, with label claims indicating that they were composed of a single species or a combination of specific species, were tested to verify these label claims. Selected products were those that had been ground to the point where it was impossible to determine through visual examination which species were used. These included raw ground meat products, RTE products and other products which had received heat treatment. All imported products originated from the United States (Figure 3). Domestic product samples were assessed as 97.0 % satisfactory and imported product samples were assessed as 100 % satisfactory. One domestic sample, a pepperoni, was assessed as unsatisfactory because the meat species identified in the product did not match those listed on the product label.

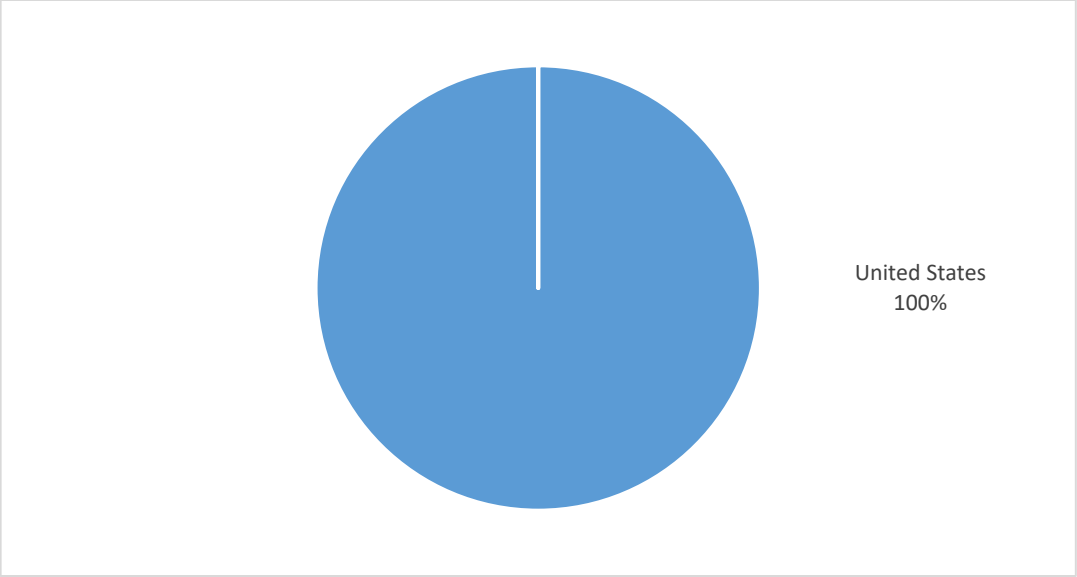

Figure 3. Percent distribution of imported red meat and poultry products for meat species verification analyzed by country of origin (n = 27).

vi) Environmental testing in ready-to-eat red meat and poultry product establishments

Ready-to-eat meat products may become exposed to environmental contaminants during processing. These products are often consumed without further processing that might kill or remove pathogens, thus if pathogens are present, they are a food safety concern. Environmental testing of surfaces at food production establishments provides information on the ability of food processors to control the presence of contaminants within their processing environments.

Under the NMMP in 2024/25, food contact surfaces within domestic SFC licence holding establishments producing RTE red meat and poultry products were swabbed during production, and the swabs were combined and tested for *Listeria* spp. If *Listeria* spp. were detected in an environmental sample, the sample was further tested to determine if *L. monocytogenes* was present. A total of 1,010 environmental samples, representing approximately 10,100 food contact surfaces, were tested for *Listeria* spp. The samples were assessed as 97.2 % satisfactory. Nine samples were assessed as unsatisfactory due to the detection of *L. monocytogenes.* Nineteen samples were assessed as investigative due to the detection of indicator organisms (*Listeria* spp.), i.e., *Listeria* spp. other than *L. monocytogenes*.

vii) Percent satisfactory history

The historical percent satisfactory rates of domestic and imported red meat and poultry products and environmental samples tested under the NMMP between April 1, 2021 and March 31, 2025 are summarized in Table 3. Consistently high percent satisfactory rates were observed for both product and environmental samples over the years.

Table 3: Historical percent satisfactory rates of red meat and poultry products and environmental samples.[a]

	2024/25	2023/24	2022/23	2021/22
Ready-to-eat red meat and poultry products	99.5 % (1143)	99.5 % (1119)	99.3 % (1095)	99.3 % (1125)
Precursor materials and finished raw ground beef products	98.5 % (1280)	98.6 % (1314)	98.1 % (1345)	98.6 % (1328)
Raw mechanically separated and finely textured beef	95.7 % (23)[b]	96.0 % (25)[b]	100 % (24)[b]	100 % (22)[b]
Raw pork and wild boar	100 % (351)	100 % (331)	100 % (339)	100 % (337)
Meat species verification	98.3 % (60)	99.2 % (128)	100 % (107)	100 % (88)
Environmental testing	97.2 % (1010)	96.9 % (980)	96.6 % (973)	96.5 % (980)

[a] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

[b] Due to the small sample/test number, the significance of the % satisfactory rate should be interpreted with caution.

What were the 2024/25 NMMP results for eggs and egg products?

i) Egg products

Egg products include all frozen, liquid, dried and cooked egg products. These products are subjected to pasteurization or cooking. In addition to *Salmonella* spp., which are associated with shell eggs, other microorganisms may be introduced during the production of egg products.

Under the NMMP in 2024/25, domestic and imported egg product samples were tested for ACC, coliforms, *L. monocytogenes* and *Salmonella* spp. The type of product sampled determined which analytes the sample was tested for. A total of 134 domestic egg product samples were tested, and they were assessed as 99.3 % satisfactory (Table 4). One sample of liquid egg yolk product was assessed as unsatisfactory due to the detection of high levels of coliforms. One sample of an imported dried whole egg product from the United States was tested. It was assessed as satisfactory.

Table 4: Assessment of domestic and imported egg products sampled under the NMMP in 2024/25.

Analytes	# Tests	# Satisfactory	# Investigative[a]	# Unsatisfactory	% Satisfactory[b]
Domestic (134 samples)					
ACC	108	108	n/a	0	100
Coliforms	108	107	n/a	1	99.1
L. monocytogenes	134	134	0	0	100
Salmonella spp.	134	134	n/a	0	100
Imported (1 sample)					
ACC	1	1	n/a	0	100[c]
Coliforms	1	1	n/a	0	100[c]
L. monocytogenes	1	1	0	0	100[c]
Salmonella spp.	1	1	n/a	0	100[c]
Samples	**# Samples**	**# Satisfactory**	**# Investigative**	**# Unsatisfactory**	**% Satisfactory[b]**
Domestic	134	133	0	1	99.3
Imported	1	1	0	0	100[c]
Total samples	**135**	**134**	**0**	**1**	**99.3**

[a] n/a = not applicable. The investigative assessment does not apply.

[b] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

[c] Due to the small sample/test number, the significance of the % satisfactory rate should be interpreted with caution.

ii) Environmental testing in shell egg grading stations and egg product establishments

Environmental testing of surfaces at food production establishments provides information on the ability of food processors to control the presence of contaminants, such as *Salmonella* spp. and *Listeria* spp., within their processing environments.

At shell egg grading stations in Canada, eggs are washed, checked for cracks, weighed, sorted, and packaged. Under the NMMP in 2024/25, surfaces from both graded and ungraded product areas within domestic shell egg grading stations were swabbed, and the swabs from each area were combined and tested for *Salmonella* spp. A total of 374 tests for *Salmonella* spp. were performed on 187 combined environmental samples (food contact and non-food contact surfaces), representing approximately 1,870 surfaces within the shell egg grading establishments. The samples were assessed as 100 % satisfactory (Table 5).

Egg products are produced at egg product processing establishments in Canada. Under the NMMP in 2024/25, surface swabs were taken from food contact surfaces and non-food contact surfaces along the manufacturing line, both prior to production and during production. Samples taken prior to production were tested for *Salmonella* spp., while samples taken during production were tested for *Salmonella* spp. and *Listeria* spp. If *Listeria* spp. were detected, the sample was further tested to determine if *L. monocytogenes* was present. A total of 26 environmental samples, representing approximately 260 surfaces from both raw and finished product areas within the processing establishments, were subjected to 26 tests for *Listeria* spp. and 52 tests for *Salmonella* spp. The samples were assessed as 100 % satisfactory (Table 5).

In total, in 2024/25, 213 environmental samples from shell egg grading stations and egg product establishments were tested, and they were assessed as 100 % satisfactory.

Table 5: Assessment of environmental samples from shell egg grading stations and egg product establishments sampled under the NMMP in 2024/25.

Analytes	# Tests	# Satisfactory	# Investigative[a]	# Unsatisfactory	% Satisfactory[b]
Shell egg grading station environmental swabs (187 samples)					
Salmonella spp.	374	374	n/a	0	100
Egg product establishment environmental swabs (26 samples)					
L. monocytogenes	26	26	0	0	100[c]
Salmonella spp.	52	52	n/a	0	100

Samples	# Samples	# Satisfactory	# Investigative[a]	# Unsatisfactory	% Satisfactory[b]
Shell egg grading station environmental	187	187	n/a	0	100
Egg product establishment environmental	26	26	0	0	100[c]
Total environmental samples	**213**	**213**	**0**	**0**	**100**

[a] n/a = not applicable. The investigative assessment does not apply.

[b] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

[c] Due to the small sample/test number, the significance of the % satisfactory rate should be interpreted with caution.

iii) Percent satisfactory history

The historical percent satisfactory rates of domestic and imported egg products and environmental samples tested under the NMMP between April 1, 2021 and March 31, 2025 are summarized in Table 6. Consistently high percent satisfactory rates were observed for both product and environmental samples over the years.

Table 6: Historical percent satisfactory rates of egg products and environmental samples.[a]

	2024/25	2023/24	2022/23	2021/22
Egg products	99.3 % (135)	98.6% (207)	97.9 % (239)	99.2 % (261)
Environmental testing	100 % (213)	99.2% (248)	100 % (225)	99.1 % (218)

[a] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

What were the 2024/25 NMMP results for dairy products?

i) Flavoured fluid milk products

In Canada, milk undergoes pasteurization to kill pathogens that may be present in the raw milk. Therefore, their presence in the final product may be due to a variety of factors such as inadequate pasteurization, or contamination of the milk post-pasteurization. Flavoured milks are often consumed without further processing that might kill or remove pathogens thus, if pathogens are present, they are a food safety concern. Imported fluid milk represents only about 1 % of what is consumed by Canadians (Catford *et al*, 2014), therefore only domestic flavoured fluid milk products are tested under the NMMP.

Under the NMMP in 2024/25, flavoured fluid milk product samples were tested for generic *E. coli*, *L. monocytogenes,* and ACC. A total of 72 samples of domestic products were tested, and they were assessed as 100 % satisfactory (Table 7).

Table 7: Assessment of domestic flavoured fluid milk products sampled under the NMMP in 2024/25.

Analytes	# Tests	# Satisfactory	# Investigative[a]	# Unsatisfactory	% Satisfactory[b]
ACC	72	72	n/a	0	100
Generic *E. coli*	72	72	n/a	0	100
L. monocytogenes	72	72	n/a	0	100
Samples	**# Samples**	**# Satisfactory**	**# Investigative[a]**	**# Unsatisfactory**	**% Satisfactory[b]**
Total domestic samples	**72**	**72**	**n/a**	**0**	**100**

[a] n/a = not applicable. The investigative assessment does not apply.

[b] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

ii) Cheese products

Cheese is a processed product for which microbial contamination may be introduced during production. A broad range of types of cheeses made from various milk sources, of various moisture contents and using various manufacturing techniques are tested. Because the microbial contaminants in cheese products made from pasteurized milk and those made from raw milk may differ, the sampling results for these two categories of cheese products are presented separately.

Under the NMMP in 2024/25, domestic and imported cheese products were sampled and tested for generic *E. coli*, *Salmonella* spp., *L. monocytogenes,* and *S. aureus*. In addition, *E. coli* O157:H7/NM

testing was performed on cheese products claimed to be made from raw milk, and phosphatase testing was performed, when deemed appropriate, to verify claims of pasteurization.

A total of 313 samples of domestic pasteurized milk cheese products were tested, and they were assessed as 99.7 % satisfactory (Table 8). One sample, akkawi cheese, was assessed as unsatisfactory due to the detection of high levels of *S. aureus.*

In addition, 183 samples of imported pasteurized milk cheese products were tested, the majority of which originated from France, Italy, and Greece (Figure 4). They were assessed as 98.4 % satisfactory (Table 8). Two samples of burrata cheese from Italy and one sample of goat cheese from Spain were assessed as unsatisfactory due to the detection of high levels of generic *E. coli.*

Table 8: Assessment of domestic and imported pasteurized milk cheese products sampled under the NMMP in 2024/25.

Analytes	# Tests	# Satisfactory	# Investigative[a]	# Unsatisfactory	% Satisfactory[b]
Domestic (313 samples)					
Generic *E. coli*	311	311	n/a	0	100
L. monocytogenes	311	311	0	0	100
Phosphatase	2	2	n/a	0	100[c]
S. aureus	310	309	n/a	1	99.7
Salmonella spp.	311	311	n/a	0	100
Imported (183 samples)					
Generic *E. coli*	183	180	n/a	3	98.4
L. monocytogenes	183	183	0	0	100
Phosphatase	0	0	n/a	0	n/a
S. aureus	183	183	n/a	0	100
Salmonella spp.	183	183	n/a	0	100
Samples	**# Samples**	**# Satisfactory**	**# Investigative**	**# Unsatisfactory**	**% Satisfactory[b]**
Domestic	313	312	0	1	99.7
Imported	183	180	0	3	98.4
Total samples	**496**	**492**	**0**	**4**	**99.2**

[a] n/a = not applicable. The investigative assessment does not apply.

[b] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

[c] Due to the small sample/test number, the significance of the % satisfactory rate should be interpreted with caution.

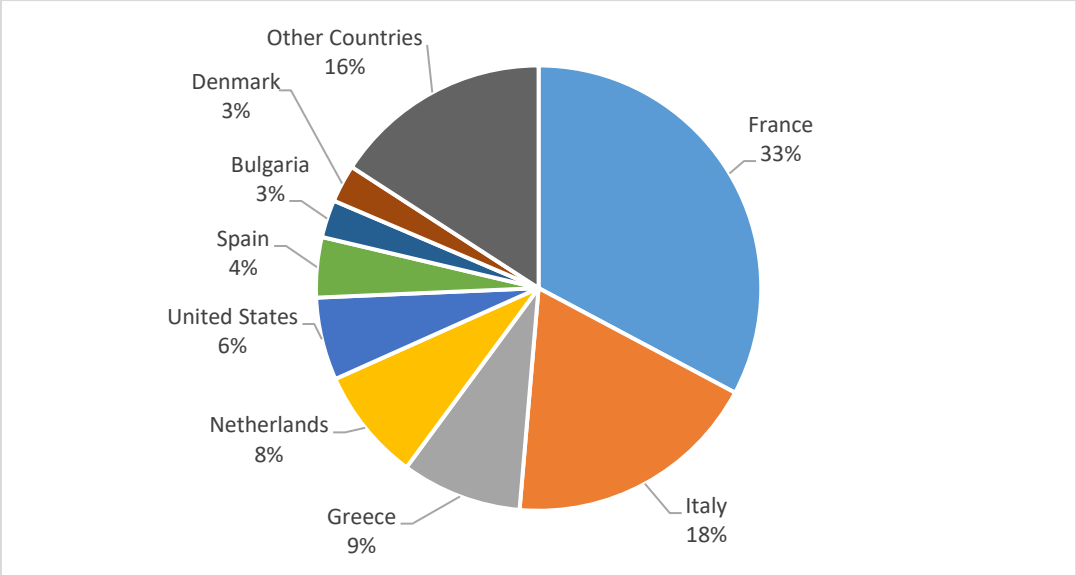

Figure 4. Percent distribution of imported pasteurized milk cheese products analyzed by country of origin (n = 183).

Under the NMMP in 2024/25, 30 samples of domestic cheese products made with raw milk were tested, and they were assessed as 100 % satisfactory (Table 9). In addition, 57 samples of imported raw milk cheese products were tested, the majority of which originated from France, Italy, and Switzerland (Figure 5). They were assessed as 96.5 % satisfactory (Table 9). One sample of Tomme de Savoie cheese from France was assessed as unsatisfactory due to the detection of high levels of generic *E. coli*. One sample of reblochon de Savoie cheese from France was assessed as unsatisfactory due to the detection of high levels of generic *E. coli* and the detection of high levels of *S. aureus*.

Table 9: Assessment of domestic and imported raw milk cheese products sampled under the NMMP in 2024/25.

Analytes	# Tests	# Satisfactory	# Investigative[a]	# Unsatisfactory	% Satisfactory[b]
Domestic (30 samples)					
E. coli O157:H7/NM	30	30	n/a	0	100[c]
Generic *E. coli*	30	30	n/a	0	100[c]
L. monocytogenes	30	30	0	0	100[c]
S. aureus	30	30	n/a	0	100[c]
Salmonella spp.	30	30	n/a	0	100[c]
Imported (57 samples)					
E. coli O157:H7/NM	57	57	n/a	0	100
Generic *E. coli*	57	55	n/a	2	96.5
L. monocytogenes	57	57	0	0	100
S. aureus	57	56	n/a	1	98.2
Salmonella spp.	57	57	n/a	0	100
Samples	**# Samples**	**# Satisfactory**	**# Investigative**	**# Unsatisfactory**	**% Satisfactory[b]**
Domestic	30	30	0	0	100[c]
Imported	57	55	0	2	96.5
Total samples	**87**	**85**	**0**	**2**	**97.7**

[a] n/a = not applicable. The investigative assessment does not apply.

[b] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

[c] Due to the small sample/test number, the significance of the % satisfactory rate should be interpreted with caution.

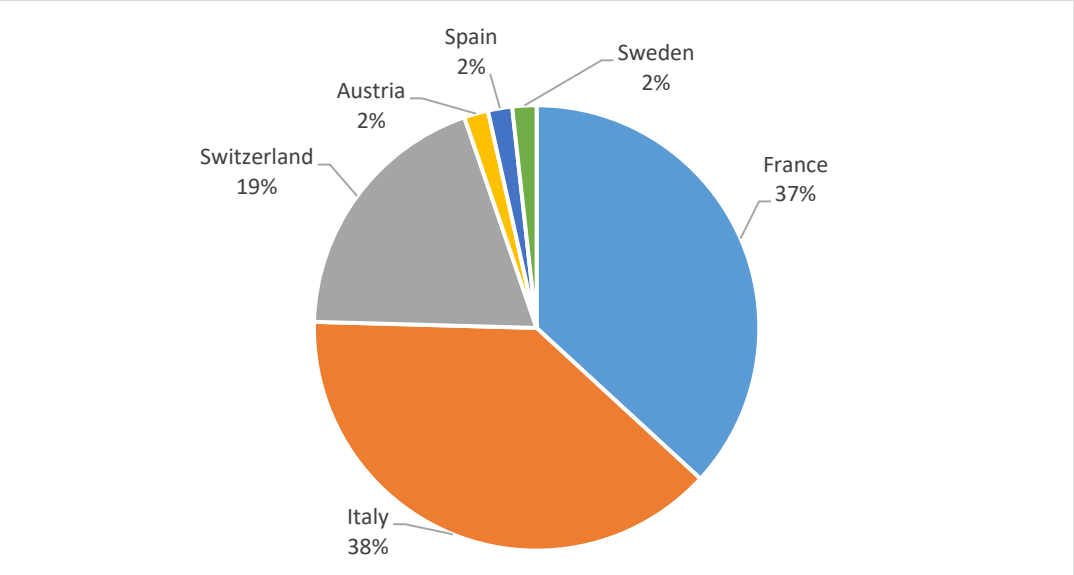

Figure 1. Percent distribution of imported raw milk cheese products analyzed by country of origin (n = 57).

iii) Environmental testing in cheese product establishments

Cheese products may become exposed to environmental contaminants during processing. These products are often consumed without further processing that might kill or remove pathogens, thus if pathogens are present, they are a food safety concern. Environmental testing of surfaces at food production establishments provides information on the ability of food processors to control the presence of contaminants within their processing environments.

Under the NMMP in 2024/25, food contact surfaces within domestic SFC licence holding establishments producing cheese products were swabbed and the swabs were combined and tested for *Listeria* spp. If *Listeria* spp. were detected in an environmental sample, the sample was further tested to determine if *L. monocytogenes* was present. A total of 117 environmental samples, representing approximately 1,170 food contact surfaces, were tested for *Listeria* spp. and they were assessed as 100 % satisfactory.

iv) Percent satisfactory history

The historical percent satisfactory rates of domestic and imported dairy products and environmental samples tested under the NMMP between April 1, 2021 and March 31, 2025 are shown in Table 10. Consistently high percent satisfactory rates were observed for both product and environmental samples over the years.

Table 9: Historical percent satisfactory rates of dairy products and environmental samples.[a]

	2024/25	2023/24	2022/23	2021/22
Fluid milk products	100 % (72)	100 % (68)	100 % (59)	98.3 % (60)
Pasteurized milk cheese products	99.2 % (496)	99.4 % (484)	98.5 % (473)	97.2 % (508)
Raw milk cheese products	97.7 % (87)	97.9 % (94)	98.9 % (91)	96.0 % (100)
Environmental testing	100 % (117)	99.2 % (119)	99.1 % (114)	100 % (119)

[a] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

What were the 2024/25 NMMP results for fresh fruit and vegetables?

i) Whole fresh fruits and ready-to-eat fresh-cut fruits

Whole fresh fruits may be contaminated with pathogens. Ready-to-eat fresh-cut fruits, i.e., raw fruit that have been peeled, sliced, chopped, or shredded prior to being packaged for sale and are intended to be consumed in the same condition as that in which they are purchased, may also be exposed to environmental contaminants during processing. These products are often consumed without further processing that might kill or remove pathogens thus, if pathogens are present, they are a food safety concern. Because the microbial contaminants in whole fresh and RTE fresh-cut fruits may differ, the sampling results for these two categories of products are presented separately. Since RTE fresh-cut fruits are minimally processed, the country in which fruit used in an RTE fresh-cut fruit product is grown determines whether the product is considered domestic or imported.

Under the NMMP in 2024/25, a variety of domestic and imported whole fresh fruits and RTE fresh-cut fruits were targeted for sampling (Figure 6). All whole fresh fruit were tested for generic *E. coli, E. coli* O157:H7/NM and *Salmonella* spp., except for whole cantaloupe, which was not tested for generic *E.*

coli. Some imported berries were tested for the parasite *C. cayetanensis*. All RTE fresh-cut fruits were tested for generic *E. coli, E. coli* O157:H7/NM, *L. monocytogenes*, and *Salmonella* spp.

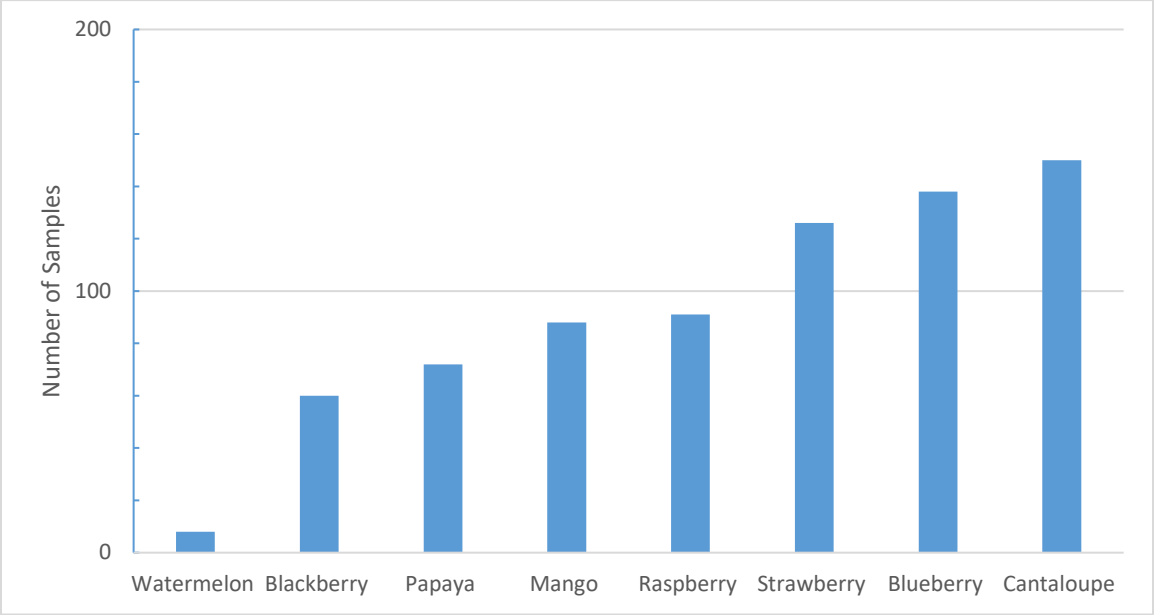

Figure 2. Number of samples and types of whole fresh fruit and ready-to-eat fresh-cut fruit sampled under the NMMP in 2024/25.

A total of 25 domestic whole fresh fruit samples and 254 imported whole fresh fruit samples were tested for pathogens and indicator organisms (Table 11). The majority of the imported fruit originated from Mexico and the United States (Figure 7). Domestic and imported samples were assessed as 100 % satisfactory (Table 11). In addition, 37 samples of imported fresh berries, the majority of which originated from Mexico and the United States, were tested for the parasite *C. cayetanensis*. They were assessed as 100 % satisfactory (Table 11).

Table 11: Assessment of domestic and imported whole fresh fruit sampled under the NMMP in 2024/25.

Analytes	# Tests	# Satisfactory	# Investigative[a]	# Unsatisfactory[b]	% Satisfactory[c]
Domestic (25 samples)					
E. coli O157:H7/NM	25	25	n/a	0	100[d]
Generic *E. coli*	18	18	n/a	0	100[d]
Salmonella spp.	25	25	n/a	0	100[d]
Imported (291 samples)					
C. cayetanensis	37	37	0	n/a	100[d]
E. coli O157:H7/NM	254	254	n/a	0	100
Generic *E. coli*	108	108	n/a	0	100
Salmonella spp.	254	254	n/a	0	100
Samples	**# Samples**	**# Satisfactory**	**# Investigative[a]**	**# Unsatisfactory**	**% Satisfactory[c]**
Domestic	25	25	n/a	0	100[d]
Imported	291	291	0	0	100
Total samples	**316**	**316**	**0**	**0**	**100**

[a] n/a = not applicable. The investigative assessment does not apply.
[b] n/a = not applicable. The unsatisfactory assessment does not apply.
[c] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.
[d] Due to the small sample/test number, the significance of the % satisfactory rate should be interpreted with caution.

A total of one domestic RTE fresh-cut fruit sample and two imported RTE fresh-cut fruit samples were tested (Table 12). The imported RTE fresh-cut fruit originated from the United States and Mexico (Figure 7). Domestic and imported samples were assessed as 100 % satisfactory (Table 12).

Table 12: Assessment of domestic and imported ready-to-eat fresh-cut fruit sampled under the NMMP in 2024/25.

Analytes	# Tests	# Satisfactory	# Investigative[a]	# Unsatisfactory	% Satisfactory[b]
Domestic/Domestically Processed (1 sample)					
E. coli O157:H7/NM	1	1	n/a	0	100[c]
Generic *E. coli*	1	1	n/a	0	100[c]
L. monocytogenes	1	1	0	0	100[c]
Salmonella spp.	1	1	n/a	0	100[c]
Imported (2 samples)					
E. coli O157:H7/NM	2	2	n/a	0	100[c]
Generic *E. coli*	2	2	n/a	0	100[c]
L. monocytogenes	2	2	0	0	100[c]
Salmonella spp.	2	2	n/a	0	100[c]
Samples	**# Samples**	**# Satisfactory**	**# Investigative**	**# Unsatisfactory**	**% Satisfactory[b]**
Domestic	1	1	0	0	100[c]
Imported	2	2	0	0	100[c]
Total samples	**3**	**3**	**0**	**0**	**100[c]**

[a] n/a = not applicable. The investigative assessment does not apply.

[b] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

[c] Due to the small sample/test number, the significance of the % satisfactory rate should be interpreted with caution.

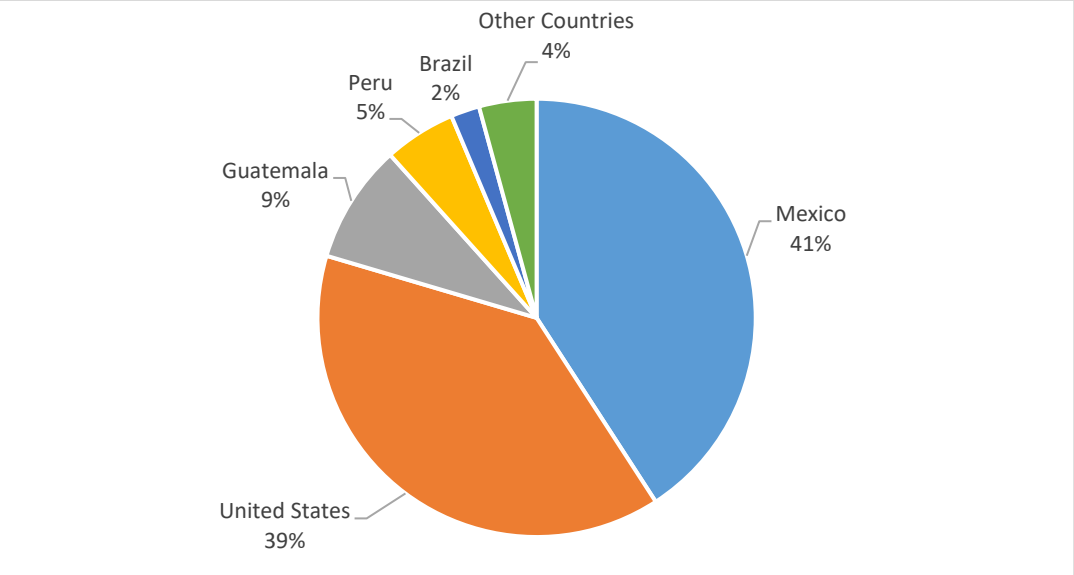

Figure 3. Percent distribution of imported whole fresh fruit and ready-to-eat fresh-cut fruit samples analyzed by country of origin (n = 293).

ii) Whole fresh vegetables and ready-to-eat fresh-cut vegetables

Whole fresh vegetables may be contaminated with pathogens. Ready-to-eat fresh-cut vegetables, i.e., raw vegetables that have been peeled, sliced, chopped, or shredded prior to being packaged for sale and are intended to be consumed in the same condition as that in which they are purchased, may also be exposed to environmental contaminants during processing. These products are often consumed without further processing that might kill or remove pathogens thus, if pathogens are present, they are a food safety concern. Because the microbial contaminants in fresh and RTE fresh-cut vegetables may differ, the sampling results for these two categories of products are presented separately. Since RTE fresh-cut vegetables are minimally processed, the country in which vegetables used in an RTE fresh-cut vegetable product is grown determines whether the product is considered domestic or imported.

Under the NMMP in 2024/25, a variety of domestic and imported whole fresh vegetables and RTE fresh-cut vegetables were targeted for sampling (Figure 8). Whole fresh vegetables and RTE fresh-cut vegetables were tested for generic *E. coli, E. coli* O157:H7/NM, and *Salmonella* spp. In addition, RTE fresh-cut vegetables were tested for *L. monocytogenes*.

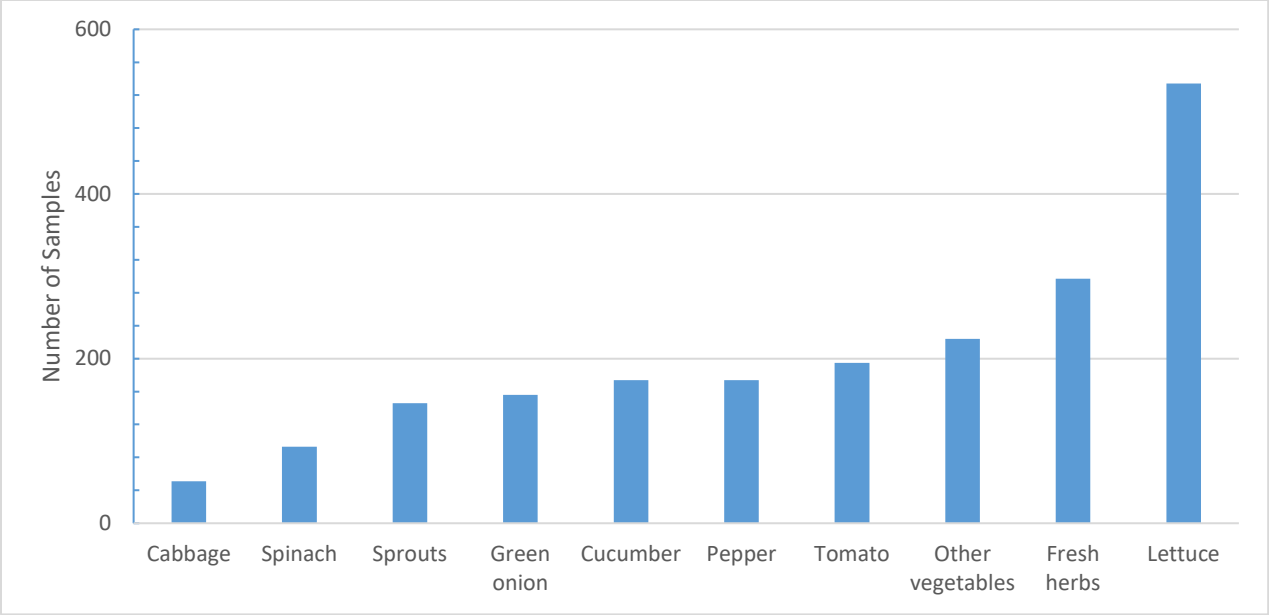

Figure 4. Number of samples and types of whole fresh vegetables and ready-to-eat fresh-cut vegetables sampled under the NMMP in 2024/25.

A total of 335 domestic whole fresh vegetable samples were tested, and they were assessed as 99.7 % satisfactory. One sample of mint was assessed as unsatisfactory due to the detection of high levels of generic *E. coli*. (Table 13). In addition, 308 samples of imported whole fresh vegetables were tested, the majority of which originated from Mexico and the United States (Figure 9). They were assessed as 100 % satisfactory (Table 13).

Table 13: Assessment of domestic and imported whole fresh vegetables sampled under the NMMP in 2024/25.

Analytes	# Tests	# Satisfactory	# Investigative[a]	# Unsatisfactory	% Satisfactory[b]
Domestic (335 samples)					
E. coli O157:H7/NM	335	335	n/a	0	100
Generic *E. coli*	260	259	n/a	1	99.6
Salmonella spp.	335	335	n/a	0	100
Imported (308 samples)					
E. coli O157:H7/NM	308	308	n/a	0	100
Generic *E. coli*	308	308	n/a	0	100
Salmonella spp.	308	308	n/a	0	100
Samples	**# Samples**	**# Satisfactory**	**# Investigative[a]**	**# Unsatisfactory**	**% Satisfactory[b]**
Domestic	335	334	n/a	1	99.7
Imported	308	308	n/a	0	100
Total samples	**643**	**642**	**n/a**	**1**	**99.8**

[a] n/a = not applicable. The investigative assessment does not apply.

[b] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

A total of 22 domestic and 46 imported RTE fresh-cut vegetable samples were tested (Table 14). The majority of imported RTE fresh-cut vegetables originated from the United States (Figure 9). Domestic and imported samples were assessed as 100 % satisfactory (Table 14).

Table 14: Assessment of domestic and imported ready-to-eat fresh-cut vegetables sampled under the NMMP in 2024/25.

Analytes	# Tests	# Satisfactory	# Investigative[a]	# Unsatisfactory	% Satisfactory[b]
Domestic/Domestically Processed (22 samples)					
E. coli O157:H7/NM	22	22	n/a	0	100[c]
Generic *E. coli*	22	22	n/a	0	100[c]
L. monocytogenes	21	21	0	0	100[c]
Salmonella spp.	22	22	n/a	0	100[c]
Imported (46 samples)					
E. coli O157:H7/NM	46	46	n/a	0	100[c]
Generic *E. coli*	46	46	n/a	0	100[c]
L. monocytogenes	38	38	0	0	100[c]
Salmonella spp.	46	46	n/a	0	100[c]
Samples	**# Samples**	**# Satisfactory**	**# Investigative**	**# Unsatisfactory**	**% Satisfactory[b]**
Domestic	22	22	0	0	100[c]
Imported	46	46	0	0	100[c]
Total samples	**68**	**68**	**0**	**0**	**100**

[a] n/a = not applicable. The investigative assessment does not apply.

[b] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

[c] Due to the small sample/test number, the significance of the % satisfactory rate should be interpreted with caution.

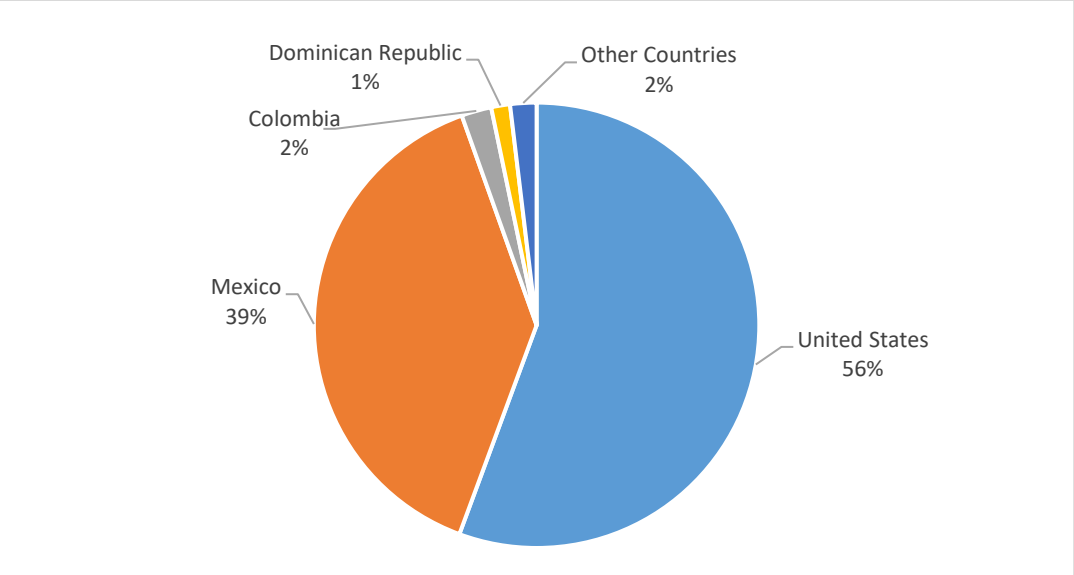

Figure 5. Percent distribution of imported whole fresh vegetables and ready-to-eat fresh-cut vegetables samples analyzed by country of origin (n = 354).

iii) Percent satisfactory history

The historical percent satisfactory rates of domestic and imported whole fresh and RTE fresh-cut fruits and vegetables tested under the NMMP between April 1, 2021 and March 31, 2025 are shown in Table 15. Consistently high percent satisfactory rates were observed for all product samples over the years.

Table 15: Historical percent satisfactory rates of fresh fruit and vegetable samples.[a]

	2024/25	2023/24	2022/23	2021/22
Whole fresh fruits	100 % (316)	99.7 % (337)	100 % (295)	99.6 % (234)
RTE fresh-cut fruits	100 % (3)[b]	100 % (5)[b]	100 % (7)[b]	100 % (8)[b]
Whole fresh vegetables	99.8 % (643)	99.8 % (640)	99.5 % (563)	100 % (468)
RTE fresh-cut vegetables	100 % (68)	100 % (73)	100 % (58)	100 % (61)

[a] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

[b] Due to the small sample/test number, the significance of the % satisfactory rates should be interpreted with caution.

What were the 2024/25 NMMP results for processed fruit and vegetable products?

i) Frozen fruit products

Frozen fruit products may be contaminated with pathogens. These products are often consumed without further processing that might kill or remove pathogens thus, if pathogens are present, they would present a food safety concern.

Under the NMMP in 2024/25, a variety of domestic and imported frozen fruit product samples were tested for *L. monocytogenes* and *Salmonella* spp. (frozen berries only). The products included berries (e.g. blueberries, strawberries), cherries, mangoes, pineapples, rhubarb and soursop. A total of 11 domestic frozen fruit product samples and 13 imported frozen fruit product samples were tested (Table 16). The majority of imported frozen fruit product samples originated from Costa Rica and Mexico (Figure 10). Domestic and imported samples were assessed as 100 % satisfactory (Table 16).

Table 16: Assessment of domestic and imported frozen fruit products sampled under the NMMP in 2024/25.

Analytes	**# Tests**	**# Satisfactory**	**# Investigative[a]**	**# Unsatisfactory**	**% Satisfactory[b]**
Domestic (11 samples)					
L. monocytogenes	11	11	0	0	100[c]
Salmonella spp.	10	10	n/a	0	100[c]
Imported (13 samples)					
L. monocytogenes	13	13	0	0	100[c]
Salmonella spp.	3	3	n/a	0	100[c]
Samples	**# Samples**	**# Satisfactory**	**# Investigative**	**# Unsatisfactory**	**% Satisfactory[b]**
Domestic	11	11	0	0	100[c]
Imported	13	13	0	0	100[c]
Total samples	**24**	**24**	**0**	**0**	**100[c]**

[a] n/a = not applicable. The investigative assessment does not apply.

[b] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

[c] Due to the small sample/test number, the significance of the % satisfactory rate should be interpreted with caution.

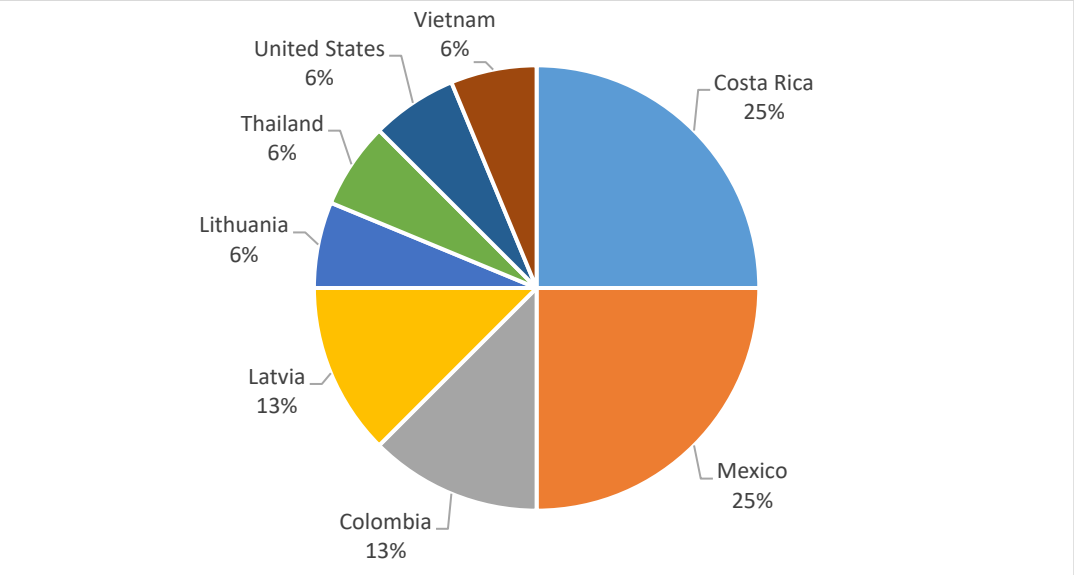

Figure 10. Percent distribution of imported frozen fruit products analyzed by country of origin (n = 13).

ii) Frozen vegetable products

Frozen vegetable products may be contaminated with pathogens. Typically, they are heated or cooked prior to serving. Many frozen vegetable products are clearly labelled with cooking instructions that, if followed, will kill any pathogens that may be present, but some types of frozen vegetable products are not clearly labelled with cooking instructions. Frozen vegetable products that are not clearly labelled with cooking instructions are not always subjected to cooking prior to consumption and thus may be considered RTE.

Under the NMMP in 2024/25, a variety of frozen vegetable products, with or without clearly labelled cooking instructions, were tested for ACC, generic *E. coli* and *L. monocytogenes*. The products included broccoli, carrots, cassava, cauliflower, corn, edamame, green beans, okra, onions, peas and spinach. A total of 8 domestic frozen vegetable product samples were tested, and they were assessed as 87.5 % satisfactory (Table 17). One sample of frozen peas was assessed as investigative due to the detection of ≤ 100 CFU/g of *L. monocytogenes*. In addition, 19 samples of imported frozen vegetable products were tested, the majority of which originated from Spain, the United States, China, India, and Mexico (Figure 11). The samples were assessed as 89.5 % satisfactory (Table 17). One sample of frozen cassava from Uganda and one sample of frozen corn from China were assessed as unsatisfactory due to the detection of high levels of ACC.

Table 17: Assessment of domestic and imported frozen vegetable products sampled under the NMMP in 2024/25.

Analytes	# Tests	# Satisfactory	# Investigative[a]	# Unsatisfactory	% Satisfactory[b]
Domestic (8 samples)					
ACC	8	8	n/a	0	100[c]
Generic *E. coli*	8	8	n/a	0	100[c]
L. monocytogenes	8	7	1	0	87.5[c]
Imported (19 samples)					
ACC	19	17	n/a	2	89.5[c]
Generic *E. coli*	19	19	n/a	0	100[c]
L. monocytogenes	19	19	0	0	100[c]
Samples	**# Samples**	**# Satisfactory**	**# Investigative**	**# Unsatisfactory**	**% Satisfactory[b]**
Domestic	8	7	1	0	87.5[c]
Imported	19	17	0	2	89.5[c]
Total samples	**27**	**24**	**1**	**2**	**88.9[c]**

[a] n/a = not applicable. The investigative assessment does not apply.

[b] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

[c] Due to the small sample/test number, the significance of the % satisfactory rate should be interpreted with caution.

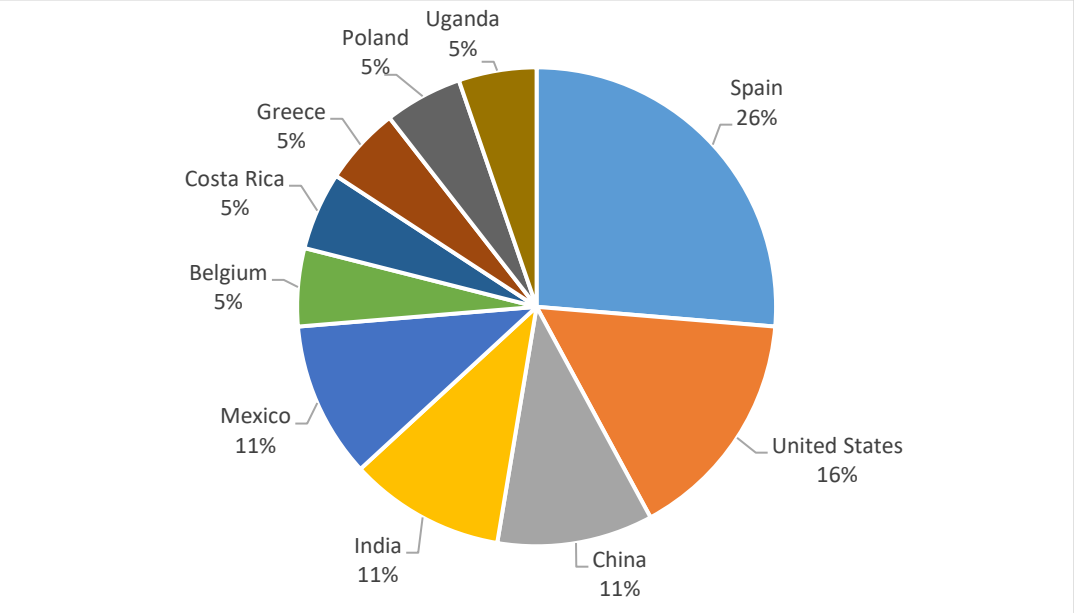

Figure 11. Percent distribution of imported frozen vegetable products analyzed by country of origin (n = 19).

iii) Percent satisfactory history

The historical percent satisfactory rates of domestic and imported processed fruits and vegetables tested under the NMMP between April 1, 2021 and March 31, 2025 are shown in Table 18. Consistently high percent satisfactory rates were observed for all product samples over the years.

Table 18: Historical percent satisfactory rates of processed fruit and vegetable product samples.[a]

	2024/25	2023/24	2022/23	2021/22
Frozen fruit products	100 % (24)[b]	100 % (40)[b]	100 % (40)[b]	100 % (24)[b]
Frozen vegetable products	88.9 % (27)[b]	90.6 % (32)[b]	93.1 % (29)[b]	100 % (20)[b]

[a] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.
[b] Due to the small sample/test number, the significance of the % satisfactory rate should be interpreted with caution.

What were the 2024/25 NMMP results for fish and seafood products?

i) Ready-to-eat fish and seafood products

Ready-to-eat products are normally eaten in the same condition as that in which they are purchased. They are not normally further prepared before consumption, except perhaps being washed/rinsed, thawed, or warmed. Ready-to-eat fish and seafood products have been associated with foodborne illness. Microbial contaminants causing illness may originate from the raw materials used to manufacture the RTE fish and seafood products or exposure to environmental contaminants while being handled in processing establishments.

Under the NMMP in 2024/25, domestic and imported RTE fish and seafood products were tested for generic *E. coli*, *S. aureus*, *Salmonella* spp. and *L. monocytogenes*. A total of 249 domestic samples were tested, and they were assessed as 98.0 % satisfactory (Table 19). One sample of a Category 1 product, surimi, was assessed as unsatisfactory due to the detection of *L. monocytogenes*. Four samples of Category 2B products, smoked salmon, frozen salmon, frozen cooked crab and frozen smoked trout spread, were assessed as investigative due to the detection of ≤ 100 CFU/g of *L. monocytogenes*.

In addition, 153 samples of imported RTE fish and seafood products were tested, the majority of which originated from China, Vietnam, India, and the United States (Figure 12). The samples were assessed as 98.0 % satisfactory (Table 19). Three samples of Category 2B products, frozen cooked shrimp from the United States, frozen smoked salmon from Poland and frozen salmon tartare from Chile, were assessed as investigative due to the detection of ≤ 100 CFU/g of *L. monocytogenes*.

Table 19: Assessment of domestic and imported ready-to-eat fish and seafood products sampled under the NMMP in 2024/25.

Analytes	# Tests	# Satisfactory	# Investigative[a]	# Unsatisfactory	% Satisfactory[b]
Domestic (249 samples)					
Generic *E. coli*	249	249	n/a	0	100
L. monocytogenes	249	244	4	1	98.0
S. aureus	249	249	n/a	0	100
Salmonella spp.	249	249	n/a	0	100
Imported (153 samples)					
Generic *E. coli*	153	153	n/a	0	100
L. monocytogenes	153	150	3	0	98.0
S. aureus	152	152	n/a	0	100
Salmonella spp.	153	153	n/a	0	100
Samples	**# Samples**	**# Satisfactory**	**# Investigative**	**# Unsatisfactory**	**% Satisfactory[b]**
Domestic	249	244	4	1	98.0
Imported	153	150	3	0	98.0
Total samples	**402**	**394**	**7**	**1**	**98.0**

[a] n/a = not applicable. The investigative assessment does not apply.

[b] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

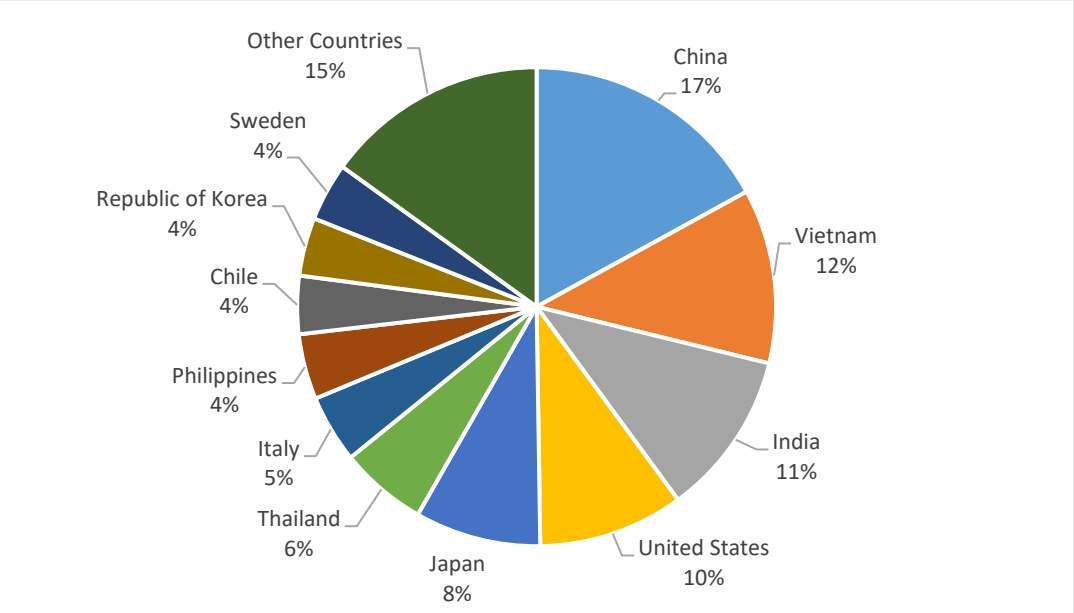

Figure 12. Percent distribution of imported ready-to-eat fish and seafood products analyzed by country of origin (n = 153).

ii) Raw bivalve molluscan shellfish

Raw seafood may be contaminated with pathogens. These products are sometimes consumed without further processing that might kill or remove pathogens, thus if pathogens are present, they are a food safety concern.

Under the NMMP in 2024/25, domestic and imported raw bivalve molluscan shellfish were tested for generic *E. coli* and *Salmonella* spp. Raw bivalve molluscan shellfish samples of live (shellstock) oysters were tested for *V. parahaemolyticus*, either alone or in combination with generic *E. coli* and *Salmonella* spp. testing. The type of raw bivalve molluscan shellfish sampled determined which analytes the sample was tested for.

A total of 172 domestic raw bivalve molluscan shellfish samples were tested, of which 125 were live (shellstock) oysters. Overall, they were assessed as 94.2 % satisfactory (Table 20). One sample of mussels and two samples of clams were assessed as unsatisfactory due to the detection of high levels of generic *E. coli.* Seven live (shellstock) oyster samples were assessed as unsatisfactory, one sample due to high levels of generic *E. coli,* five samples due to high levels of *V. parahaemolyticus*, and one sample due to the detection of high levels of generic *E. coli* and high levels of *V. parahaemolyticus.*

In addition, three samples of imported raw bivalve molluscan shellfish were tested, all of which were live (shellstock) oysters. These samples, which originated from the United States, were assessed as 100 % satisfactory (Table 20).

Table 20: Assessment of domestic and imported raw bivalve molluscan shellfish sampled under the NMMP in 2024/25.

Analytes	# Tests	# Satisfactory	# Investigative[a]	# Unsatisfactory	% Satisfactory[b]
Domestic (172 samples)					
Generic *E. coli*	77	72	n/a	5	93.5
Salmonella spp.	77	77	n/a	0	100
V. parahaemolyticus (live oysters only)	119	113	n/a	6	95.0
Imported (3 samples)					
Generic *E. coli*	2	2	n/a	0	100[c]
V. parahaemolyticus (live oysters only)	1	1	n/a	0	100[c]
Samples	**# Samples**	**# Satisfactory**	**# Investigative[a]**	**# Unsatisfactory**	**% Satisfactory[b]**
Domestic	172	162	n/a	10	94.2
Imported	3	3	n/a	0	100[c]
Total samples	**175**	**165**	**n/a**	**10**	**94.3**

[a] n/a = not applicable. The investigative assessment does not apply.

[b] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

[c] Due to the small sample/test number, the significance of the % satisfactory rate should be interpreted with caution.

iii) Environmental testing in ready-to-eat fish and seafood product establishments

Ready-to-eat fish and seafood products may become exposed to environmental contaminants during processing. These products are often consumed without further processing that might kill or remove pathogens, thus if pathogens are present, they are a food safety concern. Environmental testing of surfaces at food production establishments provides information on the ability of food processors to control the presence of contaminants within their processing environments.

Under the NMMP in 2024/25, food contact surfaces within domestic SFC licence holding establishments producing RTE fish and seafood products were swabbed, and the swabs were combined and tested for *Listeria* spp. If *Listeria* spp. were detected in an environmental sample, the sample was further tested to determine if *L. monocytogenes* was present. A total of 156 environmental samples, representing approximately 1,560 food contact surfaces, were tested for *Listeria* spp. The samples were assessed as 96.8 % satisfactory. One sample was assessed as unsatisfactory due to the detection of *L. monocytogenes,* and four samples were assessed as investigative due to the detection of indicator organisms (*Listeria* spp.), i.e., *Listeria* spp., other than *L. monocytogene*s.

iv) Percent satisfactory history

The historical percent satisfactory rates of samples of domestic and imported fish and seafood products and environmental samples tested under the NMMP program between April 1, 2021 and March 31, 2025 are shown in Table 21. Consistently high percent satisfactory rates were observed for both product and environmental samples over the years.

Table 21: Historical percent satisfactory rates of fish and seafood products and environmental samples.[a]

	2024/25	2023/24	2022/23	2021/22
Ready-to-eat fish and seafood products	98.0 % (402)	99.3 % (408)	97.9 % (341)	n/a[b]
Raw bivalve molluscan shellfish[c]	94.3 % (175)	89.9 % (179)	89.2 % (111)	86.8 % (76)
Environmental testing	96.8 % (156)	93.2 % (162)	98.3 % (120)	93.8 % (80)

[a] % satisfactory rates are calculated by dividing all satisfactory samples by total samples tested. An investigative result indicates that a sample may be satisfactory, but further information is required to make the determination. Thus, calculated % satisfactory rates may under-estimate the actual proportion of tested products that are satisfactory.

[b] Prior to 2022/23, RTE fish and seafood products were not sampled under the NMMP.

[c] Prior to 2022/23, only live (shellstock) oysters were sampled under the NMMP.

What do the NMMP results mean?

Under the NMMP in 2024/25, 12,641 tests were performed on 5,305 domestic and imported food products. Specifically, 8,833 tests were performed on 4,047 domestic products and 3,808 tests were performed on 1,258 imported products. Results indicated that domestic products were 99.0 % satisfactory and imported products were 98.9 % satisfactory. Overall, a 98.9 % satisfactory rate was observed for combined domestic and imported products. In addition, there were 1,735 tests performed on 1,496 environmental samples, which were assessed as 97.8 % satisfactory.

The detection of a pathogen in a food sample represented a direct food hazard. The detection of a pathogen in an environmental sample indicated that the pathogen was present in the production environment and that the food product was at a higher risk of being contaminated. The detection of indicator organisms did not always imply the existence of a food-related health hazard but may have exposed unsanitary practices and conditions under which pathogens could have contaminated food products.

In total, 26 product samples and 10 environmental samples were assessed as unsatisfactory. Of the 26 unsatisfactory food product samples, 10 were assessed as unsatisfactory due to the detection of one or more pathogens, 12 were assessed as unsatisfactory due to the detection of high levels of indicator organisms, two were assessed as unsatisfactory due to the detection of both a pathogen and high levels of indicator organisms, one was assessed as unsatisfactory due to the presence of CNS tissue, and one was assessed as unsatisfactory because the meat species identified did not match those indicated on the product label. The 10 unsatisfactory environmental samples were due to the detection of *L. monocytogenes*.

In addition, 30 product samples and 23 environmental samples were assessed as investigative. Of the investigative product samples, 11 were assessed as investigative due to the detection of ≤ 100 CFU/g of *L. monocytogenes* in Category 2B RTE foods, and 19 were assessed as investigative due to the detection of elevated levels of indicator organisms. The 23 environmental samples were assessed as investigative due to the detection of indicator organisms (*Listeria* spp.), i.e., *Listeria* spp. other than *L. monocytogenes*.

These results indicate that Canada maintained a very high overall level of quality and safety during the 2024/25 sampling year for both domestic and imported food products and for the environments under which domestic products were produced. In addition, the levels of satisfactory products observed in the 2024/25 sampling year were relatively consistent with previous years, indicating that this high level of quality and safety was being maintained over time.

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Appendix: Assessment Criteria for NMMP Samples

Assessment criteria (n, c, m, and M) are used to assess test results to determine if a sample is satisfactory, unsatisfactory, or investigative. For all sample plans, "n" represents the number of sample units (i.e., sub samples) from a single lot of product to be tested. Collectively, these samples units represent one sample. "c" represents the maximum allowable number of unacceptable sample units in a 2-class plan (i.e., only two possible results) or marginally acceptable sample units in a 3-class plan. "m" represents a microbiological limit which, in a 2-class plan, separates sample units of acceptable from unacceptable quality or, in a 3-class plan, "m" separates sample units of acceptable quality from those of marginally acceptable quality. "M" represents a microbiological limit which, in a 3-class plan, separates sample units of marginally acceptable quality from those of unacceptable quality.

Commodity	Analyte	n	c	m	M	Satisfactory	Investigative[a]	Unsatisfactory[b]
Red Meat & Poultry Products								
RTE Red Meat and Poultry Products (Category 1)	*L. monocytogenes*	5	0	0	-	not detected	n/a	detected
RTE Red Meat and Poultry Products (Category 2A/2B)	*L. monocytogenes*	5	0	1×10^2	-	not detected	detected and ≤m CFU/g in all sample units	detected and >m CFU/g in one or more sample units
RTE Red Meat and Poultry Products	*Salmonella* spp.	5	0	0	-	not detected	n/a	detected
RTE Beef Products that Have Not Been Fully Cooked	*E. coli* O157:H7/NM	5	0	0	-	not detected	n/a	detected
Precursor Materials	generic *E. coli*	60	0	1×10^2	-	≤m CFU or MPN/g	>m CFU or MPN/g	n/a
Precursor Materials	*E. coli* O157:H7/NM	60	0	0	-	not detected	n/a	detected
Finished Raw Ground Beef Products	generic *E. coli*	5	0	1×10^2	-	≤m CFU or MPN/g	>m CFU or MPN/g	n/a
Finished Raw Ground Beef Products	*E. coli* O157:H7/NM	5	0	0	-	not detected	n/a	detected
Raw Mechanically Separated Beef & Finely Textured Beef	Central Nervous System (CNS) Tissue	4	n/a			not detected	n/a	detected

Commodity	Analyte	n	c	m	M	Satisfactory	Investigative[a]	Unsatisfactory[b]
Raw Pork & Wild Boar	*T. spiralis*	Up to 100	n/a			not detected	n/a	detected
Red Meat and Poultry Products	Species Verification	1	n/a			detected as declared or not detected and not declared	n/a	not detected but declared or detected but not declared
Environmental - RTE Red Meat and Poultry Product Establishments	*Listeria* spp.	10	0	0	-	not detected	*Listeria* spp. other than *L. monocytogenes* detected	*L. monocytogenes* detected
Eggs and Egg Products								
Egg Products	ACC	5	0	5×10^4 (1×10^4 for dried albumen)	-	≤m CFU/g	n/a	>m CFU/g in one or more sample units
Egg Products	Coliforms	5	0	10	-	≤m CFU or MPN/g	n/a	>m CFU or MPN/g in one or more sample units
Egg Products	*Salmonella* spp.	10	0	0	-	not detected	n/a	detected
RTE Egg Products (Category 1)	*L. monocytogenes*	5	0	0	-	not detected	n/a	detected
RTE Egg Products (Category 2A/2B)	*L. monocytogenes*	5	0	1×10^2	-	not detected	detected and ≤m CFU/g in all sample units	detected and >m CFU/g in one or more sample units
Environmental - Shell Egg Grading Stations	*Salmonella* spp.	5	0	0	0	not detected	n/a	detected
Environmental – Egg Product Establishments	*Listeria* spp. (during production)	3	0	0	-	not detected	*Listeria* spp. other than *L. monocytogenes* detected	*L. monocytogenes* detected
	Salmonella spp. (before production)	4	0	0	0	not detected	n/a	detected

Commodity	Analyte	n	c	m	M	Satisfactory	Investigative[a]	Unsatisfactory[b]
Environmental – Egg Product Establishments	*Salmonella* spp. (during production)	3	0	0	0	not detected	n/a	detected
Dairy Products								
Flavoured Fluid Milk Products	generic *E. coli*	5	0	0	-	not detected	n/a	detected
RTE Flavoured Fluid Milk Products (Category 1)	*L. monocytogenes*	5	0	0	-	not detected	n/a	detected
Flavoured Fluid Milk Products	ACC	5	2	5×10^4	1×10^6	≤m CFU/g or if c is not exceeded	n/a	>M CFU/g in one or more sample units or if c is exceeded
Cheese Products (pasteurized milk)	generic *E. coli*	5	2	1×10^2	2×10^3	≤m CFU or MPN/g or if c is not exceeded	n/a	>M CFU or MPN/g in one or more sample units or if c is exceeded
Cheese Products (raw milk)	generic *E. coli*	5	2	5×10^2	2×10^3	≤m CFU or MPN/g or if c is not exceeded	n/a	>M CFU or MPN/g in one or more sample units or if c is exceeded
Cheese Products (raw milk)	*E. coli* O157:H7/NM	5	0	0	-	not detected	n/a	detected
Cheese Products	*Salmonella* spp.	5	0	0	-	not detected	n/a	detected
RTE Cheese Products (Category 1)	*L. monocytogenes*	5	0	0	-	not detected	n/a	detected
RTE Cheese Products (Category 2A/2B)	*L. monocytogenes*	5	0	1×10^2	-	not detected	detected and ≤m CFU/g in all sample units	detected and >m CFU/g in one or more sample units
Cheese Products (pasteurized milk)	*S. aureus*	5	2	1×10^2	1×10^4	≤m CFU/g or if c is not exceeded	n/a	>M CFU/g in one or more sample units or

Commodity	Analyte	n	c	m	M	Satisfactory	Investigative[a]	Unsatisfactory[b]
								if c is exceeded
Cheese Products (raw milk)	*S. aureus*	5	2	1×10^3	1×10^4	≤m CFU/g or if c is not exceeded	n/a	>M CFU/g in one or more sample units or if c is exceeded
Cheese Products (pasteurized milk)	Phosphatase[c]	3	2	5	10	≤m ug/g or if c is not exceeded	n/a	>M ug/g in one or more sample units or if c is exceeded
Environmental - Cheese Product Establishments	*Listeria* spp.	10	0	0	-	not detected	*Listeria* spp. other than *L. monocytogenes* detected	*L. monocytogenes* detected
Fresh Fruits and Vegetables								
Fresh and RTE Fresh-Cut Fruits & Vegetables	generic *E. coli*	5	2	1×10^2	1×10^3	≤m CFU or MPN/g or if c is not exceeded	n/a	>M CFU or MPN/g in one or more sample units or if c is exceeded
Fresh and RTE Fresh-Cut Fruits & Vegetables	*E. coli* O157:H7/NM	5	0	0	-	not detected	n/a	detected
Fresh and RTE Fresh-Cut Fruits & Vegetables	*Salmonella* spp.	5	0	0	-	not detected	n/a	detected
RTE Fresh-Cut Fruit & Vegetable Products (Category 1)	*L. monocytogenes*	5	0	0	-	not detected	n/a	detected
RTE Fresh-Cut Fruit & Vegetable Products (Category 2A/2B)	*L. monocytogenes*	5	0	1×10^2	-	not detected	detected and ≤m CFU/g in all sample units	detected and >m CFU/g in one or more sample units
Blackberries and Raspberries	*C. cayetanensis*	5	0	0	-	not detected	detected[d]	n/a
Processed Fruit and Vegetable Products								

Commodity	Analyte	n	c	m	M	Satisfactory	Investigative[a]	Unsatisfactory[b]
Frozen Vegetable Products	ACC	5	0	-	2.5×10^5	≤M CFU/g	n/a	>M CFU/g in one or more sample units
Frozen Vegetable Products	generic *E. coli*	5	2	1×10^2	1×10^3	≤m CFU or MPN/g or if c is not exceeded	n/a	>M CFU or MPN/g in one or more sample units or if c is exceeded
Frozen Fruit & Vegetable Products (Category 2B)	*L. monocytogenes*	5	0	1×10^2	-	not detected	detected and ≤m CFU/g in all sample units	detected and >m CFU/g in one or more sample units
Frozen Berries	*Salmonella* spp.	5	0	0	-	not detected	n/a	detected
Fish and Seafood Products								
RTE Fish and Seafood Products	generic *E. coli*	5	1	4	40	≤m CFU or MPN/g or if c is not exceeded	n/a	>M CFU or MPN/g in one or more sample units or if c is exceeded
RTE Fish and Seafood Products (Category 1)	*L. monocytogenes*	5	0	0	-	not detected	n/a	detected
RTE Fish and Seafood Products (Category 2A/2B)	*L. monocytogenes*	5	0	1×10^2	-	not detected	detected and ≤m CFU/g in all sample units	detected and >m CFU/g in one or more sample units
RTE Fish and Seafood Products	*S. aureus*	5	1	1×10^3	1×10^4	≤m CFU/g or if c is not exceeded	n/a	>M CFU/g in one or more sample units or if c is exceeded
RTE Fish and Seafood Products	*Salmonella* spp.	5	0	0	-	not detected	n/a	detected
Raw Bivalve Molluscan Shellfish	generic *E. coli*	5	1	230 MPN/ 100g	330 MPN/ 100g	≤m or if c is not exceeded	n/a	>M in one or more sample units or if c is exceeded

Commodity	Analyte	n	c	m	M	Satisfactory	Investigative[a]	Unsatisfactory[b]
Raw Bivalve Molluscan Shellfish	*Salmonella* spp.	5	0	0	-	not detected	n/a	detected
Raw Bivalve Molluscan Shellfish (oysters only)	*V. parahaemolyticus*	5	0	1×10^2	n/a	≤m MPN/g	n/a	>m MPN/g in one or more sample units
Environmental - RTE Fish and Seafood Product Establishments	*Listeria* spp.	10	0	0	-	not detected	*Listeria* spp. other than *L. monocytogenes* detected	*L. monocytogenes* detected

[a] n/a = not applicable. The investigative assessment does not apply.

[b] n/a = not applicable. The unsatisfactory assessment does not apply.

[c] Phosphatase activity is measured by the ug/g of phenol liberated during the assay.

[d] The analytical methods used to analyse fresh produce for *C. cayetanensis* could not discriminate between viable (potentially infectious) and non-viable (non-infectious) parasites. The detection of parasite genetic material was therefore assessed as investigative.