

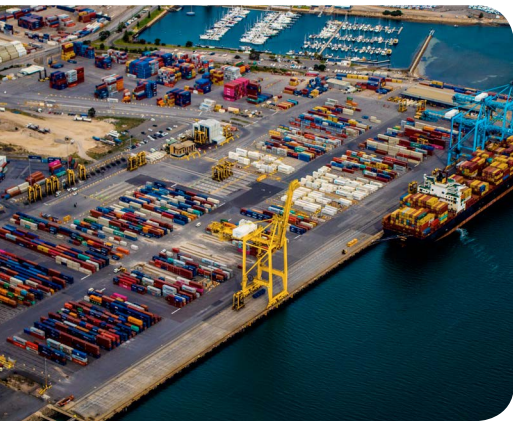


European  
Commission



## EXPORTER GUIDE

for Submitting Alternatives  
to Methyl Bromide Treatment  
to the Canadian Food Inspection Agency (CFIA)  
February 2020



## Background on this Guide and Acknowledgements

As signatories to the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer, the European Union (EU) and Canada are committed to phasing-out production and consumption of methyl bromide (MB), with exemptions for quarantine and pre-shipment uses of MB.

The EU has a ban on all uses of MB; however, Canada still allows – and in some circumstances requires – MB use for quarantine and pre-shipment applications. In 2016, the EU Delegation to Canada and the Canadian Food Inspection Agency (CFIA) established a working group to discuss alternatives to MB for these applications. The working group agreed to an EU-funded project to develop comprehensive guidelines for submitting proposals to the CFIA for MB alternative treatments. This Guide is the product of this work and is intended to facilitate EU-Canada trade by assisting potential exporters from the EU in preparing and submitting these proposals.

To facilitate an exchange of best practices and aid in the development of this guide, a workshop was held on March 19 and 20, 2019 in Ottawa, Canada. Workshop participants included representatives of the European Commission, EU Member States' National Plant Protection Organizations, the EU's fresh fruit and vegetable industry, the CFIA, and other Canadian government organizations, as well as researchers from the EU and Canada and guest speakers from the United States.

This Guide would not have been possible without the collaborative engagement of representatives from the CFIA, the European Commission, and the various experts that attended the workshop.

The project was funded by the European Union under the Partnership Instrument.

The Exporter Guide was prepared by Michelle Marcotte and Ken Vick.

---

***This publication has been produced with the assistance of the European Union. The contents of this publication are the sole responsibility of the authors and can in no way be taken to reflect the views of the European Union.***

More information on the European Union is available on the Internet (<https://europa.eu/>).

# TABLE OF CONTENTS

Background on this Guide and Acknowledgements .....	2
List of Tables, Figures, and Boxes .....	4
List of Acronyms .....	5
<b>1 Introduction.....</b>	<b>7</b>
1.1 Purpose of this Guide .....	8
1.2 How to Use this Guide .....	8
<b>2 Process for Developing an Alternative Treatment Proposal .....</b>	<b>9</b>
2.1 Preparatory Activities .....	11
2.2 Preparation of a Proposed Alternative Treatment .....	13
2.3 Review of Proposal in Canada.....	16
2.4 After Trade is Established .....	16
<b>3 Discussion on Possible Alternatives to Methyl Bromide Treatment .....</b>	<b>17</b>
3.1 Research Requirements .....	18
3.2 Systems Approaches.....	19
3.3 Chemical or Physical Treatments.....	27
3.4 Irradiation.....	29
<b>Appendices .....</b>	<b>30</b>
Appendix 1: List of NPPOs by Country .....	30
Appendix 2: Research Resources .....	37
Appendix 3: EU Market Access Support Associations, Companies and Organizations and other Resources.....	39
Appendix 4: Canada’s Pest Risk Analysis Process.....	42
Appendix 5: Relevant RSPM and ISPM Standards .....	43
Appendix 6: Further References.....	46

## List of Tables, Figures, and Boxes

Table 1. IPPC Official Contact Points for EU Member States and Canada .....	30
Table 2. European Union Reference Laboratories .....	37
Table 3. Local and Regional Research and Technical Resources.....	38
Table 4. Market Access Support Associations, Organizations and Companies.....	39
Figure 1. Submission Process for Alternatives to MB Treatment.....	10
Figure 2. Canada’s PRA Process .....	42
Box 1: Snapshot of Canada’s Horticultural Sector.....	7
Box 2: The Importance of Collaborating with Experienced Canadian Importers .....	11
Box 3: Communication Protocols .....	12
Box 4: The Importance of Developing a Trust-based Relationship with the NPPO.....	13
Box 5: Success Stories of Systems Approaches for Quarantine Treatment .....	21

## List of Acronyms

AIRS	Automated Import Reference System
ALPP	Areas of Low Pest Prevalence
CAD	Canadian Dollar
CATTS	Controlled Atmosphere Temperature Treatment System
CETA	Comprehensive Economic and Trade Agreement
CFIA	Canadian Food Inspection Agency
CPM	Commission on Phytosanitary Measures
EPPO	European and Mediterranean Plant Protection Organization
EU	European Union
HS	Harmonized System
IPM	Integrated Pest Management
IPPC	International Plant Protection Convention
ISPM	International Standards for Phytosanitary Measures
MB	Methyl Bromide
MRL	Maximum Residue Limit
NAPPO	North American Plant Protection Organization
NPPO	National Plant Protection Organization
PFA	Pest Free Area
PRA	Pest Risk Analysis
RSPM	Regional Standards for Phytosanitary Measures
US	United States
USDA	United States Department of Agriculture



# INTRODUCTION

The Comprehensive Economic and Trade Agreement (CETA) is a free trade agreement between the European Union (EU) and Canada. It has been provisionally in force since 21 September 2017. It immediately removed 98 percent of tariff lines between the two parties and facilitated bilateral cooperation in numerous key areas, including sanitary and phytosanitary measures.

Under CETA, both parties retain their ability to require sanitary and phytosanitary standards be met in importing food, animals, and plants in order to protect the health and safety of their citizens, environment, and economy by, inter alia, guarding against the introduction of quarantine pests. For the Canadian market, this responsibility falls to the Canadian Food Inspection Agency (CFIA), which is Canada's primary regulator in this regard. Plant protection includes the agriculture, forestry, and environmental sectors. In relation to importing fruits and vegetables, protection of the Canadian horticultural sector against pests is an important objective (see Box 1).

## Box 1: Snapshot of Canada's Horticultural Sector

Canada's climate is predominantly cool and temperate, supporting commercial production of field and root crops, berries, pome and stone fruit, grains, and forest products. Some regions of the country are considerably warmer and can support the commercial production of apricots, cherries, etc. In addition, some Canadian provinces have a vast year-round production of fruits and vegetables from greenhouses.

According to Statistics Canada, the farm-gate value of fruits and vegetables produced in Canada was CAD 2.4 billion in 2018, evenly split between vegetables and fruits.<sup>1</sup> Together, carrots, tomatoes, dry onions, lettuce, sweet corn, broccoli, and peppers represented more than half of the total value of field vegetables grown in Canada. The main vegetables produced in Canada in 2018 were tomatoes (497 thousand tonnes), carrots (354 thousand tonnes), dry onions (240 thousand tonnes), sweet corn (190 thousand tonnes), and cabbage (171 thousand tonnes).<sup>2</sup> For the same year, the main fruits produced were apples (385 thousand tonnes), cranberries (177 thousand tonnes), blueberries (149 thousand tonnes), grapes (109 thousand tonnes), and strawberries (27 thousand tonnes).<sup>3</sup>

1 Government of Canada, Statistics Canada. 2019. "Fruit and vegetable production, 2018." The Daily, 22 February <<https://www150.statcan.gc.ca/n1/daily-quotidien/190222/dq190222c-eng.htm>>.

2 Government of Canada, Statistics Canada. 2019. "Table 32-10-0365-01: Area, production and farm gate value of vegetables." Data, 30 November <<https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3210036501>>.

3 Government of Canada, Statistics Canada. 2019. "Table 32-10-0364-01: Estimates, production and farm gate value of fresh and processed fruits (x 1,000)." Data, 30 November <<https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=3210036401>>.

Methyl bromide (MB) fumigation is an effective treatment to ensure that products pose minimal phytosanitary risk. However, when released into the atmosphere, MB depletes the ozone layer and allows increased ultraviolet radiation to reach the earth's surface. As a response to this problem, many industrialized and developing countries signed the Montreal Protocol on Substances that Deplete the Ozone Layer in 1987, which establishes legally binding controls on the national production and consumption of ozone-depleting substances. Specifically, MB has been listed as such a substance since 1992.



While the EU has completely banned the use of MB, Canada still requires it as the only approved quarantine treatment for the quarantine and pre-shipment applications of some products. This Canadian requirement for MB treatment can pose significant challenges for EU-based exporters who are unable to treat commodities in the EU with MB.

The CFIA has recognized Canada's commitment to phase out the use of MB and has indicated a willingness to review potential alternatives to MB fumigation, including systems approaches for key fruit and vegetable imports.



### 1.1 Purpose of this Guide

The purpose of this Guide is to assist EU exporters of fruit and vegetables and other agricultural and forest commodities in understanding Canada's phytosanitary requirements and to work with the relevant EU stakeholders to propose alternatives to MB treatment to the CFIA. In this context, the term "alternatives" means single treatments, methods, and processes and refers to chemical, physical, and biological methods and combinations of these, which are referred to as "systems approaches."

### 1.2 How to Use this Guide

This Exporter Guide is divided into two sections, supported by appendices.

Section 2 explains the various steps an exporter has to accomplish prior to exporting agricultural or forestry commodities to Canada if the current Canadian phytosanitary import requirements include MB treatment. Exporters that meet current Canadian phytosanitary requirements will be directed to other resources outside of this Guide (see Appendix 6). For those that cannot meet current requirements (for example, if MB is currently the only acceptable quarantine treatment in Canada), Section 2 addresses a number of steps for grower-exporters to undertake in the EU in order to prepare a proposal to the CFIA for alternative treatment.

Section 3 provides general information about current potential alternatives to MB, such as systems approaches and alternative physical or chemical treatments. This section also gives an overview of the research data and validation that will be required to enable potential exporters to work with their National Plant Protection Organization (NPPO) to support a request for alternatives to MB treatment.



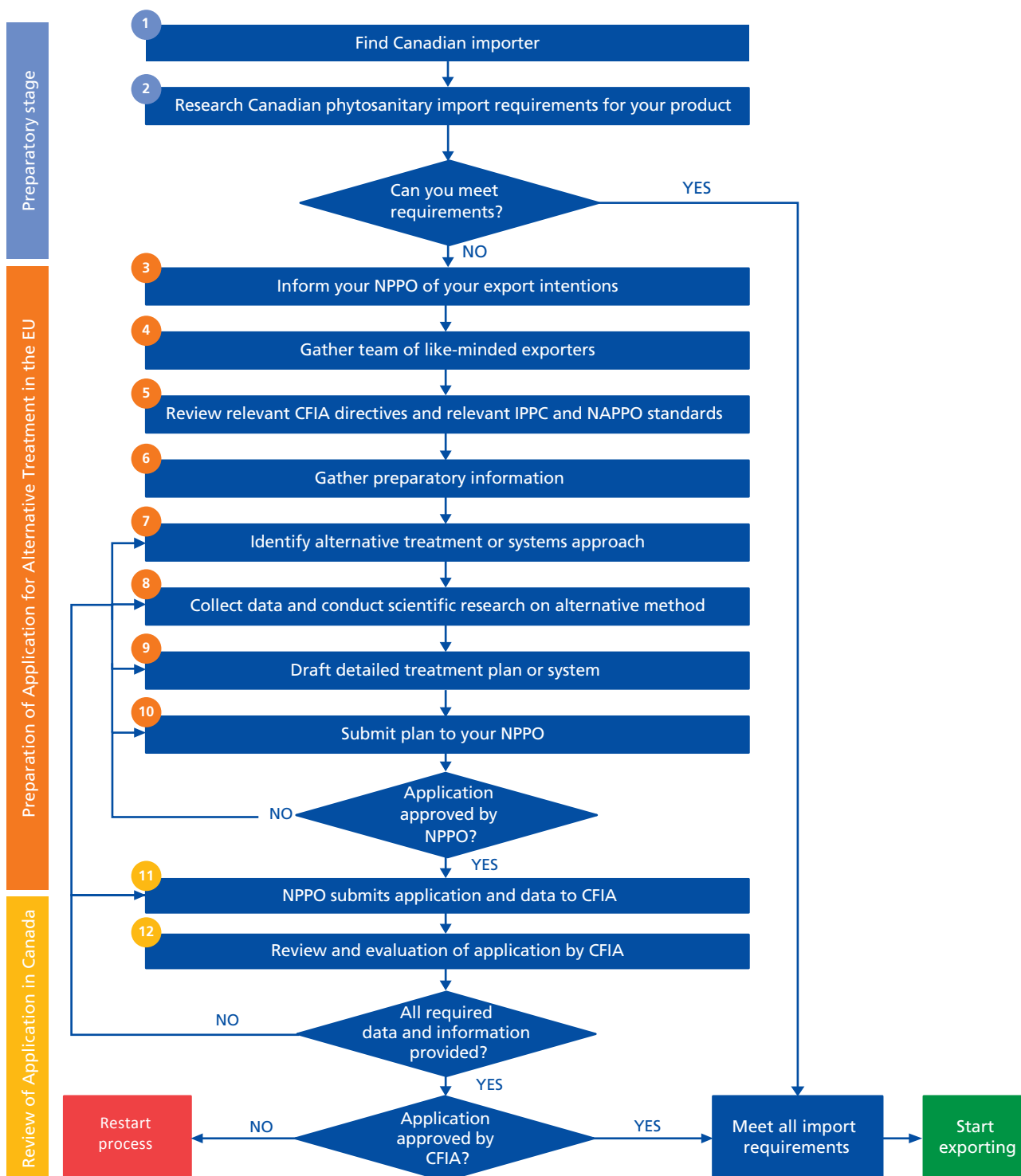
# PROCESS FOR DEVELOPING AN ALTERNATIVE TREATMENT PROPOSAL



The flowchart in Figure 1 illustrates the various stages for submitting a proposal for alternatives to MB to the CFIA. **Stage 1** entails partnering with Canadian importers and gathering detailed information about the Canadian phytosanitary import requirements for the commodity of interest. **Stage 2** entails working with various stakeholders to develop proposals for alternative treatments where the CFIA requires MB treatment for the given commodity. **Stage 3** entails the local (EU) NPPO submitting the proposed alternative to the CFIA for review and evaluation.

The steps under each of these stages are discussed in more detail below, with links to the relevant databases and sources of information.

**Figure 1. Submission Process for Alternatives to MB Treatment**



## 2.1 Preparatory Activities

### 1 Partnering with an Experienced Canadian Importer

Early in the process, it is very important to identify and obtain the services of a Canadian-resident importer who can conduct market assessments with interested wholesale, retail, and/or institutional buyers to assess whether there is a market in Canada for the commodity to be exported.

### 2 Understanding and Complying with the Canadian Import Requirements

Determining what the Canadian import requirements are and ensuring that the exporter is able to comply with them is essential. This can be accomplished by (a) consulting the database of import requirements; (b) checking the [list of regulated pests](#); (c) reviewing the relevant regulations and guidance documents for the given commodity; and (d) determining if the requirements can be met.

#### Box 2: The Importance of Collaborating with Experienced Canadian Importers

The CFIA prioritizes risk assessments based on domestic interest and thus needs to know that there will be a market for the product in Canada. Canadian importers that are familiar with the regulations and procedures are vital in supporting requests for risk analysis. Importantly, the CFIA only releases import permits (if required) or other documentation to Canadian resident importers.

To follow and meet all the phytosanitary import regulations (most of which are not covered in this Guide), exporters will need to collaborate with a Canadian-resident importer. Experienced importers will be aware of, and can assist potential exporters with, the pertinent legislation, regulations, shipping requirements, and many other aspects pertaining to import into Canada of the concerned product; these may include regulatory aspects other than the phytosanitary requirements that this Guide covers (e.g., regulations pertaining to food safety, packaging, and labelling).

The importer is also the applicant for import permits (when one is needed). The CFIA will not provide copies of permits or permit numbers to exporters or brokers as per The Plant Protection Act and The Plant Protection Regulations and, in some cases, to protect business confidentiality.<sup>4</sup> This information, including any additional requirements outlined in the Permit to Import, must be provided to the exporter or broker by the applicant/importer in possession of the Permit to Import.

The Government of Canada maintains a database of major Canadian importers, which can be searched by commodity, country of origin, destination, etc.<sup>5</sup>

<sup>4</sup> See section 2.1.2 c below.

<sup>5</sup> Government of Canada, Innovation, Science and Economic Development Canada. 2013. "Canadian Importers Database." Business and Industry <<https://www.ic.gc.ca/eic/site/cid-dic.nsf/eng/home>>.

#### a) Consult Import Requirements Database

The [Automated Import Reference System \(AIRS\) database](#) contains phytosanitary import requirements for all CFIA-regulated commodities.<sup>6</sup> There are both a short tutorial on how to use the database and what information it contains and an AIRS User Guide with further information.<sup>7</sup>

AIRS can be searched by commodity, by Harmonized System (HS) codes, or by selecting from the menu of categories to find the product of interest.

AIRS requires information that includes the origin of the commodity, the type of commodity, the destination Canadian province or territory of the commodity, and its end use. The destination province or territory is essential information, as there are domestic phytosanitary requirements in Canada pertaining to specific regions.<sup>8</sup>

With this information, the system generates a complete list of requirements to be met to export

<sup>6</sup> Government of Canada, CFIA. 2019. "Automated Import Reference System (AIRS)." Plants, 22 November <<http://www.inspection.gc.ca/plants/imports/airs/eng/1300127512994/1300127627409>>.

<sup>7</sup> Government of Canada, CFIA. 2016. Automated Import Reference System (AIRS) User's Guide. <[http://airs-sari.inspection.gc.ca/AIRS\\_External/english/help-eng.aspx](http://airs-sari.inspection.gc.ca/AIRS_External/english/help-eng.aspx)>.

<sup>8</sup> Government of Canada, CFIA. 2018. "Domestic Plant Protection Measures." Plants, 21 November <<http://inspection.gc.ca/plants/plant-pests-invasive-species/domestic-measures/eng/1523384657071/1523384657601>>.

a commodity to the selected destination. If no search results are obtained it does not necessarily mean that there are no requirements; it is advisable to adjust the search or contact the local NPPO (see Box 3).

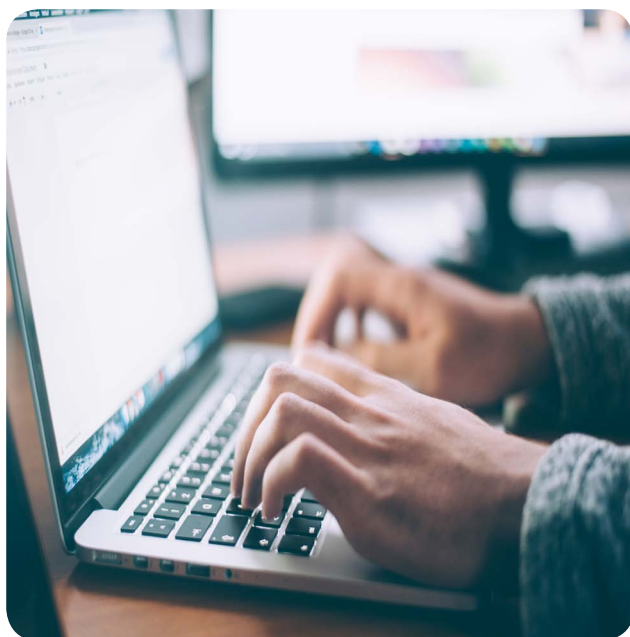
AIRS is updated regularly and should be checked routinely. It is also possible to subscribe to the listserv to get email notifications of changes to Canada's phytosanitary import requirements.

**Box 3: Communication Protocols**

The CFIA is the designated NPPO in Canada. Communications and applications concerning imports into Canada are to proceed between the CFIA's International Plant Protection Convention (IPPC) contact point and other country NPPOs or Canadian importers. EU exporters should contact their NPPO (see Appendix 1 for a list of EU NPPOs) who may in turn contact the CFIA.

**b) Check Canada's List of Regulated Pests**

In general, Canada requires all imports to be free from specific pests, which are listed on the CFIA's website. The List of Pests Regulated by Canada is organized alphabetically by scientific and common English or French name.<sup>9</sup> This information may also be obtained by contacting the NPPO (see Appendix 1).



9 Government of Canada, CFIA. 2019. "List of Pests Regulated by Canada." Plants, 21 November <<http://www.inspection.gc.ca/plants/plant-pests-invasive-species/pests/regulated-pests/eng/1363317115207/1363317187811>>.

Even if a pest is not named on the List of Regulated Pests, it may still be considered a quarantine pest by Canada, as it may simply not yet have been identified within the context of trade. Thus, Canada's list of regulated pests is subject to change, as new pests are identified and assessed. Less frequently, pests may be deregulated for various reasons.

The most efficient way to remain current with the CFIA's plant protection programs is to sign up for email notifications on the CFIA website.<sup>10</sup>

**c) Consult the Canadian Regulations and Guidance Documents**

[The Plant Protection Act](#)<sup>11</sup> and [Plant Protection Regulations](#)<sup>12</sup> are Canada's main legislative tools to prevent the importation, exportation, and spread of plant pests. There are also numerous guidance documents (e.g., directives and regulatory requirements) that apply to plants, plant products, animals, and food, and regulatory requirements. All legislation and guidance documents can be found on the CFIA website and in its extensive Guidance Document Repository.<sup>13</sup>

**d) Determine if the Canadian Phytosanitary Import Requirements Can be Met**

Having analysed all relevant regulations, directives, and guidance documents associated with a particular commodity, pest, and location where the crop is grown, it may be that the commodity is prohibited from entry to Canada, that a MB treatment is required, and/or that the CFIA will consider alternative treatments. It is also possible that no Canadian importer or NPPO has yet applied to the CFIA with a suitable alternative treatment for evaluation.

10 Government of Canada, CFIA. 2016. "Email Notification Services: Plants." About the CFIA, 23 June <<http://inspection.gc.ca/english/util/listserv/listsube.shtml>>.

11 Government of Canada. 1990. The Plant Protection Act. S.C. 1990, c. 22 <<https://laws-lois.justice.gc.ca/eng/acts/p-14.8/FullText.html>>.

12 Government of Canada. 1995. Plant Protection Regulations. SOR/95-212 <<https://laws-lois.justice.gc.ca/eng/regulations/SOR-95-212/FullText.html>>.

13 Government of Canada, CFIA. 2016. "Guidance Document Repository." Industry Guidance, 30 June <[http://www.inspection.gc.ca/industry-guidance/eng/1374161650885/1374161737236?gp=3&gc=24&ga=79#gdr\\_results](http://www.inspection.gc.ca/industry-guidance/eng/1374161650885/1374161737236?gp=3&gc=24&ga=79#gdr_results)>.

- If the import requirements listed in AIRS for the commodity/growing location/end use and Canadian destination are met, the Canadian importer can proceed by following the directions in AIRS.
- If the import requirements listed in AIRS are not met due to a MB treatment requirement, an alternative treatment may be proposed to allow import of the commodity into Canada. Section 2.2 below explains the steps to follow in the EU to submit a proposal to Canada through the national NPPO or the Canadian importer.
- If the commodity is not in AIRS, the national (EU) NPPO or the Canadian importer can contact the CFIA (Appendix 1 lists Canada's IPPC contact point) who will then determine if a Pest Risk Analysis (PRA) is required. A PRA assesses the risk to Canada presented by a certain pest or commodity, which may act as a pathway through which that pest may be introduced to Canada; whether the risk can be mitigated to an acceptable level; and communicates the risk analysis to stakeholders. The steps involved in a PRA are listed in Appendix 4 and follow accepted IPPC guidelines.



## 2.2 Preparation of a Proposed Alternative Treatment

In instances where the current phytosanitary requirements cannot be met, because MB is the only accepted treatment in Canada, the CFIA has indicated a willingness to consider proposed alternative treatments (including systems approaches). The process to develop, test, and validate a treatment that will satisfy Canada's requirements for quarantine security can be broken down into the following steps:

### 3 Inform the National NPPO of Export Intentions

National NPPOs<sup>14</sup> are responsible for communicating with the CFIA to clarify Canada's import requirements and request risk assessments for new commodities or commodities from new origins – importantly, the CFIA will not communicate directly with foreign exporters. Therefore, exporters should inform their NPPO about their intent to export to Canada early on to determine the Canadian import requirements. If MB treatment against quarantine pests is required, exporters should notify the NPPO that they wish to propose an alternative to MB treatment (see Box 4), which may be a stand-alone treatment, systems approach, or other method. The NPPO can then review and submit the proposal to the CFIA on the exporter's behalf.

#### Box 4: The Importance of Developing a Trust-Based Relationship with the NPPO

Successful EU exporters consider communication with their NPPO and between that NPPO and the CFIA in Canada to be the most important strategy to ensure trusted business relationships be built. The NPPO of the exporting country needs to know it can trust the research and marketing channel from researchers who have designed and tested a quarantine treatment and to trust that it will be carried out without fail with expert and knowledgeable supervision by the exporter. Good communication and follow-up throughout the entire process is required to build trust.

<sup>14</sup> A list of these is provided in Appendix 1.



#### 4 Gather a Team of Like-Minded Exporters

Gaining the approval of an alternative treatment method for a quarantine pest is complex and time consuming. The NPPO in the exporting country will want to ensure that applicants – be it an industry association, an export promotion agency, or large individual growers/exporters – have the funding and support to responsibly develop and propose a validated alternative treatment before requesting the NPPO’s intervention.

Experience has shown that, with the exception of very large and/or experienced exporters, teams of like-minded exporters who can pool resources are more likely to successfully complete the necessary research required for an alternative method. Consultations with industry associations and with Member States’ experts may reveal such like-minded exporters (see Appendix 3).

Pulling resources and expertise from a group of growers in several EU Member States interested in a commodity produced under similar conditions may create synergies and allow cost- and resource-sharing. However, even if a quarantine treatment or system is shown to be effective in the growing conditions of more than one EU Member State, concerned Member State’s NPPOs still have to submit separate proposals for CFIA approval.

It is also important to identify qualified and supportive research resources (and funding) to develop, test, and validate the proposed alternative treatment method (see Appendix 2).

Finally, obtaining market-access support services of associations and shippers, especially if the intended

alternative method involves in-transit treatment, is a good idea (see Appendix 3).

#### 5 Review Relevant International and Regional Phytosanitary Standards

The IPPC and the North American Plant Protection Organization (NAPPO) have developed standard protocols for the development, research, testing, and validation of treatments and, in some cases, have already validated alternative treatment methods for control of quarantine pests. Approved standards may thus already be available, as Canada is a member of both the IPPC and NAPPO. These standards can be found online within the International Standards for Phytosanitary Measures<sup>15</sup> and the Regional Standards for Phytosanitary Measures (RSPM).<sup>16</sup>

The list of pertinent standards is provided in Appendix 5 with emphasis on IPPC ISPM 24 (Equivalence of treatment), IPPC ISPM 28 (Phytosanitary treatments for regulated pests), IPPC ISPM 15 (Heat treatment for wood packaging materials), and NAPPO RSPM 34 (Development of Phytosanitary Treatment Protocols for Regulated Arthropod Pests of Fresh Fruits or Vegetables).

Depending on the situation, standards approved by the European and Mediterranean Plant Protection Organization (EPPO) might be relevant and helpful.<sup>17</sup> These are divided into two main series: standards on plant protection products and standards on phytosanitary measures. EPPO Standards are both recommendations to the NPPOs of EPPO member countries and “Regional Standards” as understood by the IPPC.

#### 6 Preparatory Information Gathering

With a team of other growers, exporters, researchers, Member State experts, and market access support

15 Food and Agriculture Organization of the United Nations and IPPC. 2019. “Adopted Standards (ISPMs).” The International Plant Protection Convention <<https://www.ippc.int/en/core-activities/standards-setting/ispms/>>.

16 NAPPO. N.d. “NAPPO Approved Standards: Regional Standards for Phytosanitary Measures (RSPM).” Products <<https://www.napppo.org/english/products/regional-standards/regional-phytosanitary-standards-rspms/>>.

17 European and Mediterranean Plant Protection Organization. 2019 “EPPO Standards.” Resources <[https://www.eppo.int/RESOURCES/eppo\\_standards](https://www.eppo.int/RESOURCES/eppo_standards)>.

organisations, combined with the knowledge of Canada's requirements for the specific commodity, location, and/or pest and of any already approved ISPM or RSPM standards, an EU exporter must gather enough initial information and funding to conduct research on an alternative to MB. It might be possible for a group of Member States to collaborate, accessing resources at both the Member State and industry levels.

## 7 Identify Possible Alternative Methods to Comply with Requirements

Canada does not list possible suitable alternatives to MB for various pests. Proposed alternatives must therefore be developed for each commodity, individual location, and agronomic, packing, and shipping situation.

Other exporters may have already developed and validated MB alternatives that may be applicable or adapted to suit various situations. For such options, refer to the list of ISPM and RSPM Standards in Appendix 5.

## 8 Collect Data and Conduct Research on the Alternative Method

The research and data to support a proposal for an alternative to MB should be provided by experts and include a detailed, tested, and validated treatment plan. Alternative treatments that have been approved by other countries for the same commodity and pest problem may form part of the proposal, validated to show it is effective in the new circumstance. NAPPO RSPM 34 provides guidance on these research aspects (see Appendix 5). Remember



that research and methods must be validated to ensure repeated quarantine security.

Section 3.1 below provides more information about the research requirements.

Appendices 2 and 3 list EU research resources and local market access support associations that can assist further to identify local research resources.

## 9 Draft Detailed Treatment Method

The scope of a treatment plan will depend on the type of the proposed alternative to MB. In the case of a systems approach, the description of the treatment method will include extensive and detailed information about the agronomic methods to be used, followed by the packing house and shipping methods, including packaging materials, handling, storage, and other critical steps along the process that contribute towards mitigating the pest risk and maintaining the phytosanitary integrity of the shipment. Systems approaches particularly require that growers, packers and shippers/exporters all follow the compliant treatment method.

For a physical treatment (heat, cold, irradiation, etc.), the treatment plan might be much simpler, but there are still rigorous requirements for instrumentation, records management, and fail-safe systems to guarantee a product has been treated. More information is provided in Section 3.

**10 Submission of the Application to the NPPO**

As mentioned above, the NPPO of the exporting country should be kept well informed of the team’s work throughout this process and thus be able to validate the work. After submission of all data, research, and the treatment plan, the NPPO might still require further information or additional data or research prior to being satisfied with the proposal.

**2.3 Review of Proposal in Canada**

**11 NPPO Forwards the Application to the CFIA**

Once the NPPO of the exporting country is satisfied with the proposal, it sends it to the CFIA, requesting review and approval of the proposed alternative quarantine treatment method.

**12 Review and Evaluation of the Proposal by the CFIA**

The review timeline depends on the quality of information provided to the CFIA and on the time the NPPO takes to respond to the CFIA’s questions. The following are recommended actions for following-up on the proposal:

- Ensure that the proposal is detailed and that the proposed alternative treatment method is science-based with validated, peer-reviewed data.
- The CFIA will direct any questions or requests for additional information to the NPPO of the exporting country. The exporter(s) should maintain good communications with their NPPO to ensure that appropriate responses are supplied to the CFIA in a timely manner.
- Exporters should inform their country’s Embassy in Canada about the proposal, its purpose, and the information it contains. An agricultural attaché may be available with whom the exporter can liaise. The Embassy can periodically inquire about progress on the exporter’s behalf.



**2.4 After Trade is Established**

If, for whatever reason, there is a change in the pest status or outbreak or a problem emerges that might affect the security of the proposed treatment method, even at just one location, exporters must ensure that their country’s NPPO is informed immediately so they can inform Canadian authorities. In such an instance, the NPPO in the originating country could suggest a method to address the problem to enable continued trade. Such continuous and open communication will foster trust between exporters and Canadian authorities and will facilitate review of proposals for further suggested risk avoidance methods.



# DISCUSSION ON POSSIBLE ALTERNATIVES TO METHYL BROMIDE TREATMENT



Traded commodities can be prohibited if there is a risk they might spread a quarantined pest to a new area or if the commodity cannot be treated in such a way that the quarantined pest risk is mitigated. To combat this, a treatment – of which many have been developed – may be applied to the commodity to completely eradicate the pest from the shipment.

### 3.1 Research Requirements

While MB is prohibited in the EU, it is the only Canadian-approved eradication treatment for traded goods regarding certain quarantined pests. EU exporters wishing to trade in such goods with Canada must provide, through their country's NPPO, proposed alternatives to MB treatment to the CFIA.

The [IPPC ISPM 28](#) on Phytosanitary Treatments for Regulated Pests gives the following instructions for research to develop a new quarantine treatment:

[E]fficacy data has been generated using appropriate scientific procedures, including where relevant an appropriate experimental design. The data supporting the treatment should be verifiable, reproducible, and based on statistical methods and/or on established and accepted international practice; preferably the research should have been published in a peer-reviewed journal.<sup>18</sup>

Conducting this research is technical and requires trained and experienced scientists. This section will present the steps to developing a quarantine treatment and the reasons for applying them. It is, however, beyond the scope of this Guide to describe in detail the scientific experiments and statistical analyses that go into developing a new quarantine treatment, as these depend on many factors, including the product to be exported and where it was grown.

The first step involves assessing what pests and life stages the CFIA has determined present a risk to Canada. If no PRA has ever been conducted, the exporter's country's NPPO will need to contact the CFIA to determine if one is needed and provide any information that Canada may need.



It is important to accurately describe the commodity. For example, if the request for a review of an alternative treatment is for trade in a fruit with leaves and stems attached, it should so be stated in the paperwork.<sup>19</sup> Everything that will be shipped will have to be included in the testing. Developing a treatment that is effective against every pest possibly present will be necessary. Thus the information given by the CFIA to the NPPO in this regard will inform research efforts.

Suppose there is evidence that a particular alternative to a MB treatment, such as a heat treatment, might prove effective and that the PRA conducted by the CFIA identified the egg, all larval stages, and pupae of one insect species as presenting significant quarantine risks. Any approved treatment will need to prove that it can kill all these identified stages or that these will be rendered non-viable. At this point, testing can be simplified by conducting research to show which of the identified insect stages is the most resistant to the proposed treatment and focusing on that stage. If the treatment provides the necessary mortality to this most resistant stage, the more susceptible stages would be controlled as well.

A dose response test is then conducted by treating relatively small numbers of the most resistant stage of the target pest with a range of treatment "doses" in a replicated fashion suitable for statistical analysis. The variable parameter could be the temperature or the temperature is held constant and the variable

<sup>18</sup> Secretariat of the IPPC. 2007. ISPM 28: Phytosanitary treatments for regulated pest. Rome: IPPC and FAO: at p. 6. <[https://www.ippc.int/static/media/files/publication/en/2016/01/ISPM\\_28\\_2007\\_WithoutApp1\\_En\\_2015-12-22\\_PostCPM10\\_InkAmReformatted.pdf](https://www.ippc.int/static/media/files/publication/en/2016/01/ISPM_28_2007_WithoutApp1_En_2015-12-22_PostCPM10_InkAmReformatted.pdf)>.

<sup>19</sup> Bear in mind that leaves and stems may complicate developing a treatment if there are different pests associated with the fruit, or leaves, or stems.

is time; mortality is determined for each “dose” by comparison to untreated control insects. Statistical analysis of these data indicates the needed level of treatment to assure the level of mortality required by Canada.

Since this process is far from infallible, Canada will likely require a validation test (sometimes called a confirmatory test) on a large number of pests to confirm that the treatment does, in fact, achieve the predicted level of efficacy. Alternatively, it may be possible (if the commodity itself can survive the treatment without harm) to suggest a buffer – a change in the variable that would lead to greater expected mortality and ensure total kill or incapacitation of the target organism. This is often the only option for organisms that cannot be reared in sufficient quantities to allow for large-scale testing (for example, wood-boring beetles). A statistician can be of great help in determining how large the buffer needs to be, based on the completed testing.

The research to develop a quarantine treatment takes a long time and is labour intensive. It is important that Canada approve of the experimental methods and statistical analyses to be used and that it specifies the treatment efficacy that will be required prior to conducting research.

Because experience has shown that pest individuals may be more difficult to kill when inside the commodity, most or all tests will likely have to be conducted with the pests in situ; for example, in host fruit tests are preferable to those in petri dishes.

Mortality profiles of various commodity treatments and pests present bell-shaped curves, either shifted to one end or the other or be fairly “normal”. However, the crucial issue is the extremes of the distribution profile: a small percentage of the pests will be very easy to kill and a small percentage will be very difficult to kill. For many aspects of food production, one need not pay much attention to the 2-3% at the extreme ends of the distribution curves. But in quarantine treatments the “hard to kill” end of the distribution is extremely important, because those survivors could be the founders of a new infestation in Canada.

Most statistical analyses are capable of making predictions for the middle part of the distribution curve, which in many instances is the most important part of the distribution. They are not good, however, at predicting doses needed to assure that the small number of very resistant individuals at the extreme of the distribution curve is killed. Thus, engaging a statistician in the design and analysis of the proposed treatment can prove valuable.

### 3.2 Systems Approaches

According to the IPPC definition included in [ISPM 14](#), a “systems approach requires two or more measures that are independent of each other, and may include any number of measures that are dependent on each other. An advantage of the systems approach is the ability to address variability and uncertainty by modifying the number and strength of measures to meet phytosanitary import requirements.”<sup>20</sup>



20 Secretariat of the IPPC. 2017. ISPM 14: The use of integrated measures in a systems approach for pest risk management. Rome: IPPC and FAO: at p. 6. <<http://www.fao.org/3/a-y4221e.pdf>>.



The following are circumstances where it might not be possible to achieve quarantine security with a single treatment:

- Available single treatments might not reach the high level of efficacy required;
- Efficacious treatments that are available might be disallowed by regulatory authorities in the exporting country or not recognised by the importing country, because of such reasons as worker and bystander safety, food safety, environmental concerns, etc.;
- The company that markets the treatment has not registered the treatment in the exporting country and/or established Maximum Residue Limits (MRLs) in the importing country – Canada accepts a standard MRL in case none was provided;
- Facilities needed to conduct the treatment are not available to the exporter;
- The treatment might be too laborious or otherwise impossible for quarantine regulators to administer; or
- The effective treatment might cause unacceptable damage to the commodity.

When no single treatment is acceptable, it may be possible to use several steps and measures, none of which by itself provides the necessary efficacy, but which collectively mitigate the quarantine risk identified by the PRA. Applying two or (usually) more treatments and/or measures to resolve a quarantine issue for a commodity is referred to as a systems approach.

The usual primary requirement for most systems approaches is that there be a naturally low pest prevalence in the production area or that low pest prevalence can be achieved by growing the commodity in pest free enclosures or by otherwise creating low pest prevalence areas, for example, by targeted Integrated Pest Management (IPM).

Other situations that have formed the basis for systems approaches include the following:

- The commodity is imported at a time of the year when the quarantine pest – even if present in the commodity – is not able to survive due to the absence of a suitable host or harsh weather conditions in the importing country;
- The commodity is harvested during a time of year when the pest is not present in the exporting country; or
- The crop is harvested at a stage of ripeness that does not support infestation by the pest.

Systems approaches require in-depth knowledge of pest biology and pest/commodity interactions, but offer the possibility for exporting commodities where no approved or acceptable treatment is available. Box 5 provides examples of systems approaches that have led to successful exports.

An accepted system approach is rigid, because all the agreed elements in the system have to be adhered to and any changes to production methods, inspection schedules, pest control elements, and pest status need to be accepted by the importing quarantine authorities. These changes would probably require new data to show that quarantine security was not compromised by the changes.

Lastly, changes in the pest profile by, for example, a new significant pest emerging is problematic for any quarantine strategy.

## Box 5: Success Stories of Systems Approaches for Quarantine Treatment

## Table Grapes from Italy and Spain to Canada



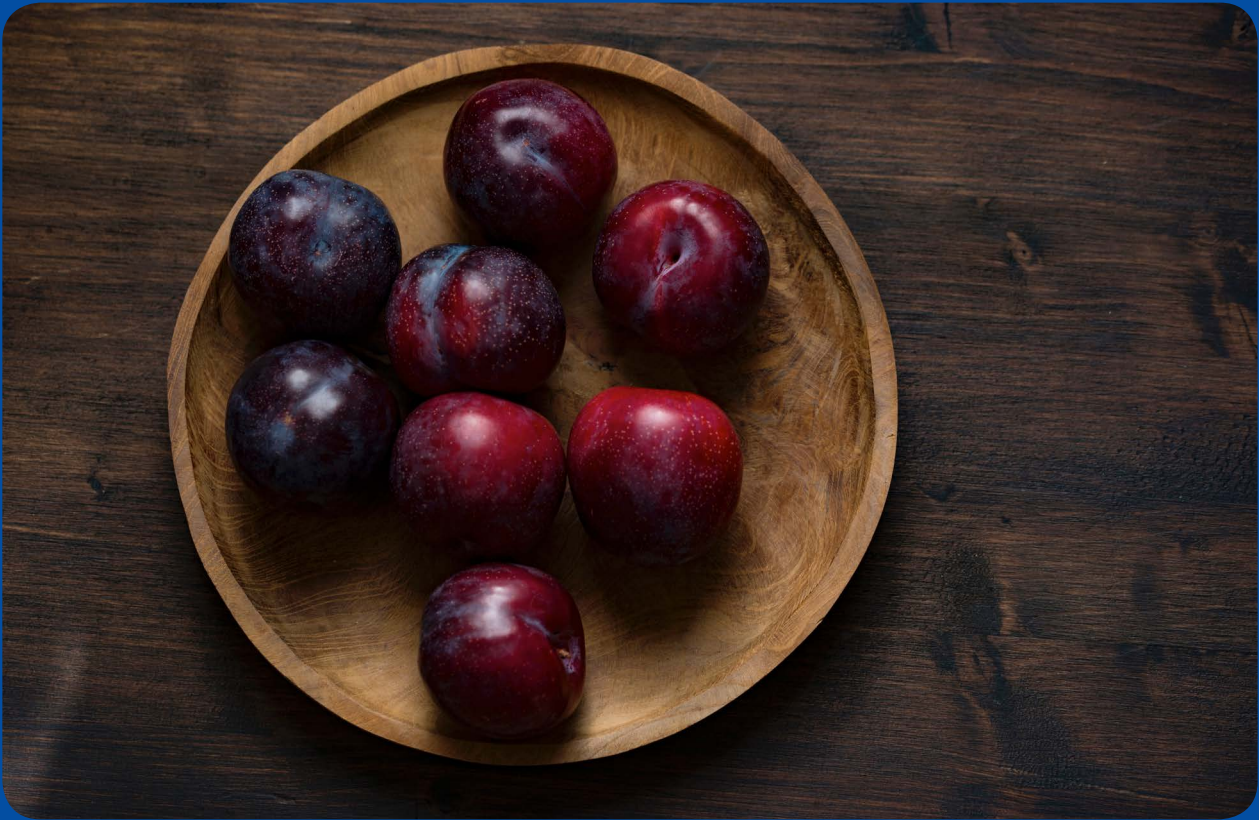
Canada lists *Lobesia botrana* and other pests of Italian and Spanish table grapes as regulated pests (specific pests depending on the location). Previously only methyl bromide was accepted as a treatment for these pests for table grape exports to Canada. However, a systems approach has been approved for table grape exports to Canada from Italy and Spain in accordance with International Standard for Phytosanitary Measures (ISPM) 14: The use of integrated measures in a systems approach for pest risk management.<sup>21</sup>

The systems approach elements include the following:

- Only orchards and packing houses registered with the NPPO are allowed to participate in the systems approach export scheme;
- Orchards must monitor for the pests specific to Canada's list of regulated pests and the monitoring must be effective as a tool to estimate the optimum time for applying chemical controls;
- Chemical and biological controls must be sufficient to ensure the fruit is free of all stages of regulated pests;
- The CFIA may request detailed information pertaining to pest monitoring and controls;
- Fruit sampling is conducted by experienced and approved technicians in the registered packing house;
- The Member State's NPPO will audit 2% of fruit boxes destined for Canada;
- Labelling of fruit boxes must be sufficient to allow for trace back to the grower and packing house;
- Fruit boxes must be safeguarded during packing, loading, and transport;
- Records of all control points must be kept for two years;
- Fruit shipments must be accompanied by a phytosanitary certificate from NPPO; and
- Non-compliance will result in a suspension of shipments by the grower and packing house.

<sup>21</sup> Food and Agriculture Organization of the United Nations and IPPC. 2019. "The use of integrated measures in a systems approach for pest risk management." Resources, 26 June <<https://www.ippc.int/en/publications/607/>>.

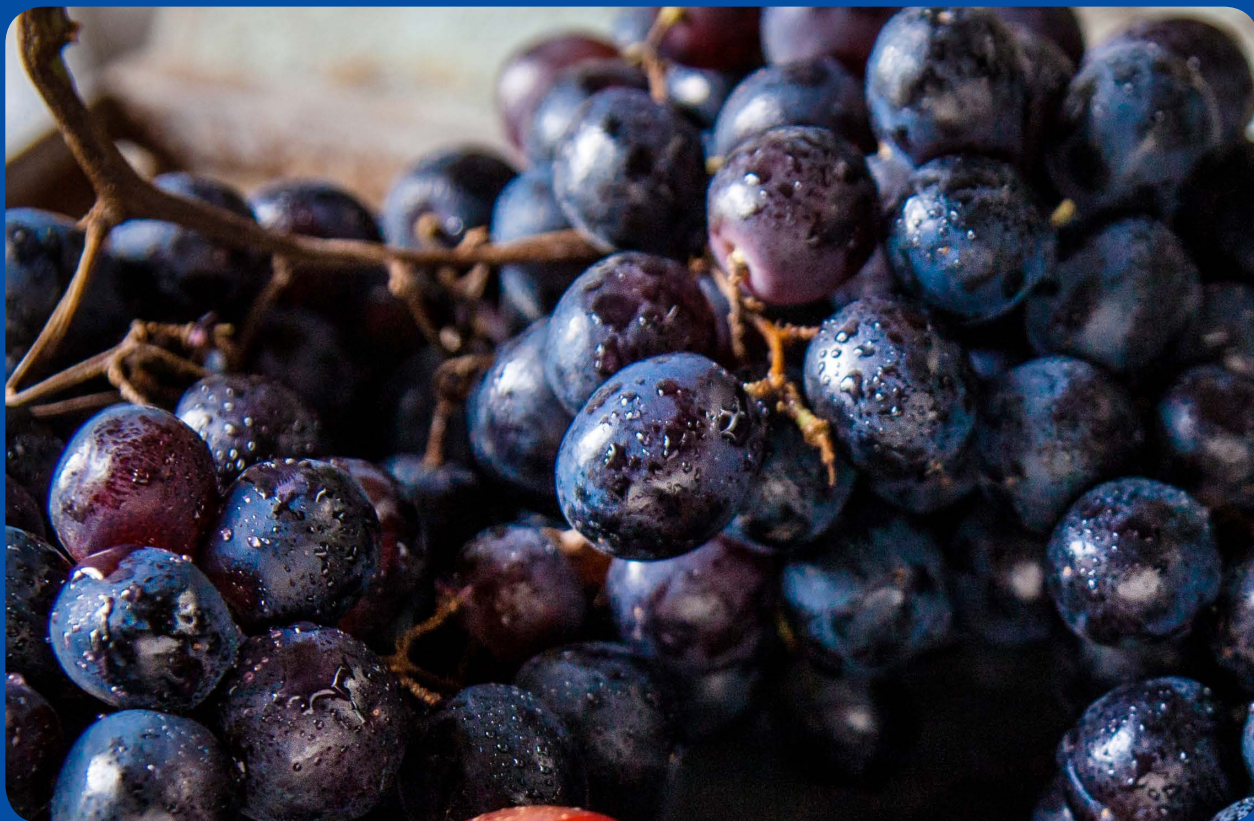
## Plums from Italy to Canada



Although *Lobesia botrana* prefers to infest table grapes, it is also a pest of plums in Italy. Consequently, Canada previously required that Italian plums also be treated with MB. However, a systems approach has been approved that has virtually all the same elements as for table grapes except that the NPPO inspection amounts in the packing house are different and specific to plums.

This additional, accepted systems approach for fruit exports to Canada illustrates that Canada and EU-based growers, packing houses, and NPPOs have the experience and capability to research, validate, negotiate, and agree on system approaches that can assure export capability without using MB.

## Fresh grapes from Egypt



Prior to 2017, fresh grapes from Egypt were not authorized for import to Canada, because the pest risk associated with the commodity had not been evaluated. In 2017, the CFIA completed a PRA and concluded that several quarantine pests of concern to Canada were likely to follow that pathway. One of the pests that Canada considered to be of potential concern was *Lobesia botrana*.<sup>22</sup>

To mitigate the risk of introducing quarantine pests to Canada in association with fresh grapes, Egypt's NPPO developed a systems approach for their production and export, including the following several elements:

- Requirement for orchard certification based on low pest prevalence;
- Pest monitoring to verify low pest prevalence;
- Pre-harvest orchard inspections;
- Traceability of grapes from vineyard to shipping cartons;
- Post-harvest safeguards;
- Pre-shipment inspection;
- Only commercial shipments with a phytosanitary certificate listing an additional declaration are accepted; and
- Inspection at destination to verify compliance.

More information on this approved systems approach can be found on the [CFIA website](#).<sup>23</sup>

22 Government of Canada, CFIA. 2019. "Appendix 1: Summary of phytosanitary import requirements for temperate fresh fruit and tree nuts approved for entry into Canada." Plants, 4 November <<http://www.inspection.gc.ca/plants/plant-pests-invasive-species/directives/date/d-95-08/appendix-1/eng/1322423173660/1541514848668>>.

23 Government of Canada, CFIA. 2019. "D-95-08: Phytosanitary import requirements for fresh temperate fruits and tree nuts." Plants, 1 August; at section 2.21 Fresh grapes (*Vitis* spp.) from Egypt. <[http://www.inspection.gc.ca/plants/plant-pests-invasive-species/directives/horticulture/d-95-08/eng/1322413085880/1322413275292#a2\\_21](http://www.inspection.gc.ca/plants/plant-pests-invasive-species/directives/horticulture/d-95-08/eng/1322413085880/1322413275292#a2_21)>.

### Fresh apples from Japan



Prior to 2018, fresh apples from Japan required either bagging of fruit during the growing season to prevent infestation by quarantine pests or post-harvest treatment with MB to eradicate those pests. Japanese exporters determined that they could no longer meet those requirements and collaborated with producers and representatives from their prefectural and federal governments to develop a systems approach as an alternative option for exporting apples to Canada. In 2018, following an on-site audit of this approach, the CFIA authorized imports of Japanese apples that were produced and prepared for export to Canada in a manner that met the needs of both producers and exporters without the use of a post-harvest MB treatment.

Other Canadian examples where systems approaches are accepted:

- Directive D-13-03: Phytosanitary import requirements to prevent the introduction of *Lobesia botrana*, the European grapevine moth;<sup>24</sup>
- Directive D-10-01: General Phytosanitary Import Requirements for Fresh Pepper and Tomato Fruit from the World<sup>25</sup> (please note that this Directive includes only tomatoes without stems or leaves.).

The following examples of approved quarantine treatments and systems approaches between the United States and other countries are provided as examples of the elements that were required to establish valid treatments that are in current commercial use. The approved systems approaches described below illustrate the use of the ISPM and RSPM Standards for systems approaches.

24 Government of Canada, CFIA. 2018. "D-13-03: Phytosanitary import requirements to prevent the introduction of *Lobesia botrana*, the European grapevine moth." Plants, 2 January <<http://www.inspection.gc.ca/plants/plant-pests-invasivespecies/directives/horticulture/d-13-03/eng/1448986060402/1448986061775>>.

25 Government of Canada, CFIA. 2016. "D-10-01: General Phytosanitary Import Requirements for Fresh Pepper and Tomato Fruit from the World." Plants, 23 March <<http://inspection.gc.ca/plants/plant-pests-invasivespecies/directives/horticulture/d-10-01/eng/1304622464578/1312239593183>>.



## Mexican Avocados to the United States



Mexican avocados were banned from the United States for almost a century because of the threat of introducing Mexican fruit fly and species of avocado seed weevil into the United States in shipments of avocado fruit. A systems approach was therefore developed based on research that showed that Mexican fruit fly does not infest avocados, while still hanging on the tree and that inspections and cultural practices could mitigate the risk of introduction of seed weevil species. It has several elements that must be met in order for the crops to enter the United States:

- Requirement for orchard certification based on low pest prevalence;
- Limited production areas;
- Traceback labelling;
- Pre-harvest orchard inspections;
- Post-harvest safeguards;
- Fruit cutting and inspection in the packing house;
- Port-of-entry inspection and clearance activities; and
- Only commercial shipments with NPPO-issued phytosanitary certificate attesting that approved systems approach work plan was followed are allowed.

## Sweet Oranges and Grapefruit from Chile to the United States



Sweet oranges and grapefruit are hosts of Mediterranean fruit fly, *Ceratitis capitata*, and Chilean false red mite, *Brevipalpus chilensis*. Both pests do not occur in the United States. A PRA determined that there is a risk that these two species would arrive on the same pathway as commercial sweet orange and grapefruit shipments from Chile. A systems approach was thus developed to mitigate this risk of introducing these pests.

One component of the system is to subject the commodity to a cold treatment that is known to be effective against Mediterranean fruit fly in citrus, unless the fruit is sourced from areas of Chile known to be free of Mediterranean fruit fly. This illustrates the flexibility that can be written into systems approaches to fit circumstances.

There is a suite of measures that address the risk presented by the other pest of concern, the Chilean false red mite. Foremost is the ability to demonstrate very low mite prevalence in fruit orchards during a pre-harvest orchard inspection. During this inspection, fruit are randomly selected from each registered orchard and examined by a sensitive washing technique to determine if mites are present. Discovery of a single mite disqualifies that orchard from participating in the systems approach program for the coming year. Other measures include fruit washing, chlorine rinse, forced drying, and waxing. Additional inspections are required before shipment. For exporters who want to ship sweet oranges or grapefruit, but do not qualify for low-pest prevalence or who find the components too laborious, MB fumigation is approved and available to be used in place of the systems approach.



### 3.3 Chemical or Physical Treatments

Physical treatments include heat, cold, and controlled atmospheres, as well as combinations of these. These treatments can be effective when the quarantine pest is more susceptible to extremes of these factors than the host that it is infesting. The basis of a treatment is where the pest exhibits required mortality rates under conditions that give no or at least acceptable damage to the infested host. Recently, in 2019, the IPPC published [ISPM 42](#) for heat and cold treatments used for quarantine.<sup>26</sup> Countries can agree to treatments that are different than in this standard for various reasons.

#### 3.3.1 Cold Treatment

Cold treatment is widely used among EU exporters to treat commodities for fruit flies in citrus, apples, grapes, pears, kiwifruit, and stone fruit, among others. In the research community, much is known about pest and commodity sensitivity to cold. For example, cold treatment for stone fruit and others has most recently been tested as a quarantine treatment during shipping from Spain to India.

On the other hand, some pests that infest commodities produced in temperate/cold climates have evolved physiological mechanisms to deal with winter temperatures that may protect them from the extreme cold temperatures that are used in quarantine treatments. For example, at temperatures that would kill Mediterranean fruit flies in 2-3 weeks,

codling moths, which are naturally adapted to cold winters, may be able to survive for several months in apples.

Years of experience with the use of heat and cold as quarantine treatments have provided a broad understanding – but not yet complete knowledge – about whether either of these treatments will work in a given situation. A general rule is that temperate/cold climate commodities can tolerate cold better than tropical/warm climate commodities: most tropical and some temperate commodities develop chilling injury under even moderately cold conditions.

This research and experience leads to the possibility that cold may not be a successful new treatment for the commodities and pest complexes of most interest to EU exporters to Canada (i.e., commodities possibly infested with *Lobesia botrana*). In regard to *Tuta absoluta*, there have been very few studies conducted on its cold tolerance. On the other hand, recent research conducted in Spain on cold and modified atmosphere treatment in tomato fruit looks promising and may, in time, prove successful.<sup>27</sup> This research is preliminary, however, as it did not study infestation in stems or on leaves, which would be necessary to consider exports of tomatoes on the vine. Also, the 11-day treatment time might be problematic for commodity quality for export marketability. Much larger tests will have to be conducted to determine its possible effectiveness and commercial viability.



<sup>26</sup> Secretariat of the IPPC. 2018. ISPM 42: Requirements for the use of temperature treatments as phytosanitary measures. Rome: IPPC and FAO. <[https://www.ippc.int/static/media/files/publication/en/2019/02/ISPM\\_42\\_2018\\_En\\_Temperature\\_2018-04-21\\_WithCover.pdf](https://www.ippc.int/static/media/files/publication/en/2019/02/ISPM_42_2018_En_Temperature_2018-04-21_WithCover.pdf)>.

<sup>27</sup> Riudavets, Jordi et al. 2016. "The effects of postharvest carbon dioxide and a cold storage treatment on *Tuta absoluta* mortality and tomato fruit quality." *Postharvest Biology and Technology* 120: 213-221.



### 3.3.2 Heat Treatment

With heat treatments, there is no significant resistance to heat in arthropods, whether the commodity originated in a tropical/warm climate or a temperate/cold climate. Almost a hundred years of experience using heat as quarantine treatment has shown that exposing most pests to 45°C for 30 minutes will constitute an effective quarantine treatment. Heat treatment is commonly used for forestry products and numerous standards and reports are available on its use for those products. Heat can be applied through hot air, water saturated hot vapour, and hot water or by other means, such as microwaves or radio-frequencies. As with cold treatment, precision equipment to maintain the target temperature, proper instrumentation to verify that the treatment targets were met, and thorough record keeping are required as outlined in IPPC [ISPM-42](#).

The treatment time starts after the hardest part of the commodity to heat reaches the required temperature. For individual fruit/vegetable, the hardest part to bring up to the target temperature is generally the centre, but for a shipment of stacked pallets, it would be the fruit/vegetable in the centre of the stack. The consequence of this is that fruit/vegetables on the outside of the stack receive much

longer treatment times than those at the centre of the stack. Smaller treatment lots could moderate this issue somewhat, but at the cost of treatment efficiency and throughput. The logistical issues related to heat treatment make it more suitable for small volume commodities like tropical fruit.

Since most tropical commodities are very tolerant of 45°C for short time periods, heat forms the basis for many quarantine treatments used worldwide for tropical fruit. In the United States, where *Tephritid* fruit flies are the main quarantine pest of concern, most mangos, papayas, and other tropical fruit are imported to the mainland by use of a heat quarantine treatment if the fruit comes from countries where these pests occur (depending on the country of origin, irradiation is also a commonly used treatment).

### 3.3.3 Controlled Atmosphere Treatment

Although controlled atmosphere treatment has not found much utility as a quarantine treatment for perishable commodities, it does have potential as part of a combination treatment with heat. One such treatment is called CATTs – Controlled Atmosphere Temperature Treatment System. It appears to reduce phytotoxicity caused by heat alone. A recently

published review supports its usefulness to treat temperate fruit against some common quarantine pests with acceptable fruit quality.<sup>28</sup> It still has the limitation of being restricted to relatively small quantities because of the time required for heat to penetrate to the middle of the treatment lot with the subsequent overheating of fruit on the outside of the treatment lot. At this point, testing has not included some of Europe's most important pests, but there is reason to believe that CATTs would be effective against them. Temperate commodities, such as cherries and apples, have been shown to tolerate the treatment.

The only foods approved for irradiation in Canada are potatoes and onions to inhibit sprouting, wheat and wheat flour to control insect infestation, whole or ground spices and dehydrated seasonings to reduce microbial load, and raw or frozen ground beef to reduce microbial load. Health Canada is considering changes that would improve the ability to use irradiation as a quarantine treatment, but that process is not yet complete.

### 3.4 Irradiation

As of 2019, Canada does not have an overarching regulation allowing the use of irradiation as a quarantine treatment.

Health Canada is the Canadian department responsible for regulating and approving the use of food irradiation. They have a written process to allow persons, companies, and associations to apply for approval to irradiate food for sale in Canada. On its website, Health Canada provides a [check list](#) for persons or organizations to use when preparing a petition to Health Canada to allow the use of irradiation for a particular purpose.<sup>29</sup> Regulations specifying which foods may be irradiated and the treatment levels permitted are set out in [Division 26 of the Food and Drug Regulations](#).<sup>30</sup> All irradiated food must be approved for irradiation in Canada by Health Canada and labelled as required by the regulations. The CFIA is responsible for the administration of the regulations relating to the labelling of irradiated food products under the Food and Drug Act.

28 Neven, L. and S. Johnson. 2017. "Combination Hot Forced Air Treatments and Controlled Atmosphere Treatments: CATTs – Controlled Atmosphere Temperature Treatment System." In *Novel Postharvest Treatments of Fresh Produce*, edited by S. Pareek, 259-288. Boca Raton: CRC Press.

29 Government of Canada, Health Canada. N.d. Food Irradiation Submission Checklist. <[https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/fn-an/alt\\_formats/hpfb-dgpsa/pdf/pubs/checklist\\_irradiation-aide-memoire-eng.pdf](https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/fn-an/alt_formats/hpfb-dgpsa/pdf/pubs/checklist_irradiation-aide-memoire-eng.pdf)>.

30 Government of Canada, Justice Laws Website. 2017. "Division 26: Food Irradiation." *Food and Drug Regulations (C.R.C., c. 870)* <[https://laws-lois.justice.gc.ca/eng/regulations/c.r.c.,\\_c.\\_870/page-90.html#h-574534](https://laws-lois.justice.gc.ca/eng/regulations/c.r.c.,_c._870/page-90.html#h-574534)>.

# APPENDICES

## Appendix 1: List of NPPOs by Country

The full [list of NPPOs of IPPC Contracting parties](#) presently includes 183 countries.<sup>31</sup> The following table is an extract from this list including EU NPPOs and the Canadian NPPO. Note that contact persons change from time to time while the institution and related information remains valid.

**Table 1. IPPC Official Contact Points for EU Member States and Canada**

Country	IPPC Official Contact Point
Austria	<p>Mr. Michael Kurzweil Federal Ministry of Sustainability and Tourism Subdivision II/5d, Stubenring 1 A 1010 Wien, Österreich / Austria <b>Phone:</b> (+43) 1 71100 60 2819 <b>Email:</b> michael.kurzweil@bmnt.gv.at <b>Preferred languages:</b> English <b>Website:</b> <a href="http://www.bmnt.gv.at/">http://www.bmnt.gv.at/</a></p>
Belgium	<p>Mr. Lieven Van Herzele Federal Public Service Health, Food Chain Safety and Environment DG Animals, Plants and Foodstuffs; Service Sanitary Policy Animals and Plants; Division Plant Protection; Eurostation II (7th floor) Place Victor Horta 40, box 10 1060, Brussels, Belgium <b>Phone:</b> (+32) 2 524 73 23 <b>Fax:</b> (+32) 2 524 73 49 <b>Email:</b> lieven.vanherzele@gezondheid.belgie.be <b>Alternate Email:</b> lieven.vanherzele@sante.belgique.be <b>Preferred languages:</b> English, French</p>
Bulgaria	<p>Mr. Nikolay Rosnev Deputy Executive Director Bulgarian Food Safety Agency Pencho Slaveikov Blvd. 15 A, Sofia, 1606, Bulgaria <b>Phone:</b> +359 (0)2 9159 884, +359 (0)2 9173 702 <b>Fax:</b> +359 (0)2 9173 759 <b>Email:</b> n_rosnev@bfsa.bg <b>Alternate Email:</b> fsk@nsrz.government.bg <b>Preferred languages:</b> English <b>Website:</b> <a href="http://www.babh.government.bg/">http://www.babh.government.bg/</a></p>

<sup>31</sup> Food and Agriculture Organization of the United Nations and IPPC. N.d. "List of NPPOs of IPPC Contracting parties." Countries <<https://www.ippc.int/en/countries/nppos/list-countries/>>.

Country	IPPC Official Contact Point
Canada	<p>Mr. Steve Côté National Manager and International Standards Advisor Canadian Food Inspection Agency 59 Camelot Drive Ottawa, Ontario K1A 0Y9 Canada <b>Phone:</b> (001) 613 773 7368 <b>Mobile:</b> (001) 343 998 6191 <b>Fax:</b> (001) 613 773 7576 <b>Email:</b> cfia.ippc.acia@canada.ca <b>Alternate Email:</b> steve.cote@canada.ca <b>Preferred languages:</b> English, French <b>Website:</b> <a href="http://www.inspection.gc.ca/">http://www.inspection.gc.ca/</a></p>
Croatia	<p>Mrs. Ksenija Bistrovic Ministry of Agriculture, Directorate of Food and Phytosanitary Policy, Department for Plant Health Ulica grada Vukovara 78, 10000 Zagreb, Croatia <b>Phone:</b> +385 1 6109 126 <b>Fax:</b> +385 1 6109 189 <b>Email:</b> ksenija.bistrovic@mps.hr <b>Preferred languages:</b> English <b>Website:</b> <a href="http://www.mps.hr/">http://www.mps.hr/</a></p>
Cyprus	<p>Ms. Androula Georgiou Director of the Department of Agriculture Department of Agriculture; Ministry of Agriculture, Rural Development and Environment Louki Akrita Avenue, 1412 Nicosia, Cyprus <b>Phone:</b> +00357 22408519 <b>Fax:</b> +00357 22781425 <b>Email:</b> director@da.moa.gov.cy <b>Preferred languages:</b> English</p>
Czech Republic	<p>Mr. Michal Hnizdil Head of Section of Plant Health Care Central Institute for Supervising and Testing in Agriculture (UKZUZ) Zemedelska 1752/1a; 631 00 Brno, Czech Republic <b>Phone:</b> +420 545 110 467 <b>Mobile:</b> +420 773 743 901 <b>Email:</b> ippc.cz@ukzuz.cz <b>Alternate Email:</b> michal.hnizdil@ukzuz.cz <b>Preferred languages:</b> English <b>Website:</b> <a href="http://www.ukzuz.cz/">http://www.ukzuz.cz/</a></p>
Denmark	<p>Ms. Lise Kjærgaard Steffensen Danish Agricultural Agency Nyropsgade 30, DK - 1780 København V, Denmark <b>Phone:</b> (+45) 33 95 80 00 <b>Mobile:</b> (+45) 61 88 78 96 <b>Email:</b> likste@lbst.dk <b>Alternate Email:</b> lternate Email: planter@lbst.dk <b>Preferred languages:</b> English <b>Website:</b> <a href="http://www.lbst.dk/">http://www.lbst.dk/</a></p>

Country	IPPC Official Contact Point
Estonia	<p>Ms. Riina Koidumaa            Head Plant Health and Horticulture Department            Plant Health and Horticulture Department, Estonian Agricultural Board            Teaduse 2, Saku, 75501 Harjumaa, Estonia  <b>Phone:</b> (+372) 5041855  <b>Email:</b> riina.koidumaa@pma.agri.ee  <b>Preferred languages:</b> English  <b>Website:</b> <a href="http://www.pma.agri.ee/">http://www.pma.agri.ee/</a></p>
European Union	<p>Mr. Harry Arijs            Deputy Head of Unit            European Commission, Directorate-General for Health and Food Safety DG SANTE            Directorate-General for Health and Food Safety Plant Health Unit Rue Froissart 101 BE-1049 Bruxelles, Belgium  <b>Phone:</b> (+32) 2 298 76 45  <b>Fax:</b> (+32) 2 296 93 99  <b>Email:</b> harry.arijs@ec.europa.eu  <b>Preferred languages:</b> English, French  <b>Website:</b> <a href="http://ec.europa.eu/food/plant/index_en.htm">http://ec.europa.eu/food/plant/index_en.htm</a></p>
Finland	<p>Mr. Ralf Lopian            Senior Advisor, International Affairs            Ministry of Agriculture and Forestry of Finland            Food Department/Animal and Plant Health Unit, Mariankatu 23, Helsinki, Finland  <b>Phone:</b> +358 40 5965698  <b>Fax:</b> +358 9 16052443  <b>Email:</b> ralf.lopian@mmm.fi  <b>Alternate Email:</b> plant.health@mmm.fi  <b>Preferred languages:</b> English  <b>Website:</b> <a href="http://www.mmm.fi/en/index/frontpage.html">http://www.mmm.fi/en/index/frontpage.html</a></p>
France	<p>Mme Anne-Cécile Cotillon            Sous-directrice de la qualité, de la santé et de la protection des végétaux            Direction générale de l'alimentation (DGAL) Ministère de l'agriculture et de l'alimentation            251, rue de Vaugirard, 75 732 Paris Cedex 15, FRANCE  <b>Phone:</b> +33 1 49 55 58 72  <b>Email:</b> anne-cecile.cotillon@agriculture.gouv.fr  <b>Preferred languages:</b> English, French  <b>Website:</b> <a href="http://agriculture.gouv.fr/administration-centrale">http://agriculture.gouv.fr/administration-centrale</a></p>
Germany	<p>Ms. Karola Schorn            Federal Ministry of Food and Agriculture            Rochusstr. 1, D'53123 Bonn, Germany  <b>Phone:</b> (+49) 228 99 529 3527  <b>Fax:</b> (+49) 228 99 529 4262  <b>Email:</b> 714@bmel.bund.de  <b>Alternate Email:</b> karola.schorn@bmel.bund.de  <b>Preferred languages:</b> English</p>



Country	IPPC Official Contact Point
Greece	<p>Mrs. Annoula Mavridou            Director, Head of NPPO            Hellenic Ministry of Rural Development and Food, Directorate of Plant Produce Protection            150, A. Sygrou Avenue, GR-176 71 Athens, Greece  <b>Phone:</b> (+30) 210 921 2092/ 210 928 7221  <b>Fax:</b> (+30) 210 921 2090  <b>Email:</b> amavridou@minagric.gr  <b>Alternate Email:</b> planthealth@minagric.gr  <b>Preferred languages:</b> English  <b>Website:</b> <a href="http://www.minagric.gr/">http://www.minagric.gr/</a></p>
Hungary	<p>Mr. Gábor Holló            Plant Health Officer            Ministry of Agriculture            Budapest 1055 Kossuth Tér 11 Hungary  <b>Phone:</b> +36 1 7656153  <b>Email:</b> gabor.hollo@am.gov.hu  <b>Preferred languages:</b> English</p>
Ireland	<p>Mr. Barry Delany            Chief Plant Health Officer            Department of Agriculture, Food and the Marine            Horticultural and Plant Health Division, DAFM, Celbridge, Co. Kildare, Ireland  <b>Phone:</b> Phone: +353 15 05 87 59  <b>Mobile:</b> +353 868 212 636  <b>Email:</b> barry.delany@agriculture.gov.ie  <b>Preferred languages:</b> English  <b>Website:</b> <a href="http://agriculture.gov.ie/farmingsectors/planthealthtrade/">http://agriculture.gov.ie/farmingsectors/planthealthtrade/</a></p>
Italy	<p>Mr. Bruno Caio Faraglia            Dirigente            Ministero delle Politiche Agricole Alimentari e Forestali            Direzione General dello Sviluppo Rurale, DISRV, Via XX Settembre 20, 00187 Roma, Italy  <b>Phone:</b> +39 06 46656090  <b>Fax:</b> +39 06 4881707  <b>Email:</b> b.faraglia@politicheagricole.it  <b>Alternate Email:</b> cf.cesaroni@politicheagricole.it  <b>Preferred languages:</b> English, Spanish  <b>Website:</b> <a href="http://www.politicheagricole.it/">http://www.politicheagricole.it/</a></p>
Latvia	<p>Ms. Kristine Lifanova            State Plant Protection Service of Latvia Director            State Plant Protection Service of Latvia            Lielvardes street 36, Riga LV'1006, Latvia  <b>Phone:</b> +371 67027098  <b>Fax:</b> +371 67027302  <b>Email:</b> kristine.lifanova@vaad.gov.lv  <b>Alternate Email:</b> info@vaad.gov.lv  <b>Preferred languages:</b> English</p>

Country	IPPC Official Contact Point
Lithuania	<p>TBD</p> <p>Director of the State Plant Service under the Ministry of Agriculture The State Plant Service under the Ministry of Agriculture Ozo str. 4A, LT'08200, Vilnius, Lithuania</p> <p><b>Phone:</b> +370 5 237 5631 <b>Fax:</b> +370 5 273 0233 <b>Email:</b> info@vatzum.lt <b>Preferred languages:</b> English, Russian <b>Website:</b> <a href="http://www.vatzum.lt/">http://www.vatzum.lt/</a></p>
Luxembourg	<p>Ms. Monique Faber-Decker Service de la protection des végétaux Administration des services techniques de l'agriculture, B.P. 1904, L'1019 Luxembourg-ville, Luxembourg</p> <p><b>Phone:</b> (+352) 45 7172353 <b>Fax:</b> (+352) 45 7172340 <b>Email:</b> monique.faber@asta.etat.lu <b>Preferred languages:</b> English, French <b>Website:</b> <a href="https://agriculture.public.lu/de/pflanzen-boden/pflanzenschutz.html">https://agriculture.public.lu/de/pflanzen-boden/pflanzenschutz.html</a></p>
Malta	<p>Mr. Sharlo Camilleri Director Plant Protection Plant Protection Directorate Plant Biotechnology Center, 110 Annibale Preca Str., Lija LJA 1915, Malta</p> <p><b>Phone:</b> +356 22 92 65 01 <b>Mobile:</b> +356 794 566 66 <b>Email:</b> sharlo.camilleri@gov.mt <b>Alternate Email:</b> plantprotection.mesdc@gov.mt <b>Preferred languages:</b> English <b>Website:</b> <a href="http://www.planthealth.gov.mt/">http://www.planthealth.gov.mt/</a></p>
Netherlands	<p>Mr. Manuel Bram De Hoop Senior Officer Plant Health Ministry of Economic Affairs Netherlands Food and Consumer Product Safety Authority, National Plant Protection Organization P.O. Box 9102 6700 HC Wageningen Netherlands</p> <p><b>Phone:</b> +31 (0) 651584878 <b>Mobile:</b> +31 (0)651584878 <b>Email:</b> m.b.dehoop@nvwa.nl <b>Preferred languages:</b> English <b>Website:</b> <a href="https://english.nvwa.nl/topics/themes/plant-health">https://english.nvwa.nl/topics/themes/plant-health</a></p>
Poland	<p>Mr. Andrzej Chodkowski Main Inspector of the State Plant Health and Seed Inspection Service Main Inspectorate of Plant Health and Seed Inspection Service Al. Jana Pawla II 11, 00-828 Warsaw, Poland</p> <p><b>Phone:</b> (+48) 22 652 92 90 <b>Fax:</b> (+48) 22 652 93 03 <b>Email:</b> gi@piorin.gov.pl <b>Preferred languages:</b> English <b>Website:</b> <a href="http://www.piorin.gov.pl/">http://www.piorin.gov.pl/</a></p>

Country	IPPC Official Contact Point
Portugal	<p>Ms. Ana Paula de Almeida Cruz de Carvalho            Head of Plant Health Department            Plant Health Department            Direção Geral de Alimentação e Veterinária, Edifício 1, Tapada da Ajuda, 1349'018            Lisboa, Portugal  <b>Phone:</b> +351 21 361 32 74  <b>Fax:</b> +351 21 361 32 77  <b>Email:</b> secdssv@dgav.pt  <b>Alternate Email:</b> pcarvalho@dgav.pt  <b>Preferred languages:</b> English</p>
Romania	<p>Mrs. Paulina Gabor            General Manager            National Phytosanitary Authority            Voluntari Bvd. No. 11, Voluntary Town, Ilfov County, Romania  <b>Phone:</b> +4 0212 7032 56  <b>Fax:</b> +4 0212 7032 54  <b>Email:</b> paulina.gabor@madr.ro  <b>Alternate Email:</b> fitosanitar@anfdf.ro  <b>Preferred languages:</b> English  <b>Website:</b> <a href="http://www.anfdf.ro/">http://www.anfdf.ro/</a></p>
Slovakia	<p>Ms. Katarina Benovska            Head Officer            Plant Commodities Department            Ministry of Agriculture of the Slovak Republic, Dobrovicova 12, 812 66 Bratislava,            Slovakia  <b>Phone:</b> +421-2-59266357  <b>Fax:</b> +421-2-59266358  <b>Email:</b> katarina.benovska@land.gov.sk  <b>Alternate Email:</b> b.hellbrandtova@land.gov.sk  <b>Preferred languages:</b> English</p>
Slovenia	<p>Ms. Vlasta Knapic            Ministry of Agriculture, Forestry and Food; Administration of the Republic of Slovenia            for Food Safety, Veterinary Sector and Plant Protection            Dunajska cesta 22, SI – 1000, Ljubljana, Slovenia  <b>Phone:</b> +386 13 00 13 18 ; +386 13 00 13 00  <b>Mobile:</b> +386 41 354 211  <b>Fax:</b> +386 13 00 13 56  <b>Email:</b> fito-import.uvhvvr@gov.si  <b>Alternate Email:</b> fito.uvhvvr@gov.si  <b>Preferred languages:</b> English  <b>Website:</b> <a href="http://www.uvhvvr.gov.si/">http://www.uvhvvr.gov.si/</a></p>

Country	IPPC Official Contact Point
Spain	<p>Mr. José María Cobos Deputy General Director of Plant Health Ministry of Agriculture, Food and Environment C/ Almagro 33 3ª planta, 28014 Madrid <b>Phone:</b> + 34 91 3478281/ 4058 <b>Fax:</b> + 34 91 3474087 <b>Email:</b> jcobossu@magrama.es <b>Preferred languages:</b> English, Spanish</p>
Sweden	<p>Ms. Karin Nordin Chief Plant Health Officer Swedish Board of Agriculture, Plant and Environment Department S-551 82 Jönköping, Sweden <b>Phone:</b> (+46) 36 15 59 15 <b>Fax:</b> (46) 36 12 25 22 <b>Email:</b> karin.nordin@jordbruksverket.se <b>Alternate Email:</b> vaxtinspektionen@jordbruksverket.se <b>Preferred languages:</b> English</p>
United Kingdom	<p>Mr. Samuel Bishop International Plant Health Policy Lead Department for Environment, Food and Rural Affairs DEFRA, 11G35, National Agri'Food Innovation Campus, Sand Hutton, York, YO41 1LZ, United Kingdom <b>Phone:</b> + 44 2080262506 <b>Mobile:</b> + 44 7827976902 <b>Email:</b> sam.bishop@defra.gov.uk <b>Alternate Email:</b> simon.anning@defra.gov.uk <b>Preferred languages:</b> English <b>Website:</b> <a href="http://www.gov.uk/defra">http://www.gov.uk/defra</a></p>

## Appendix 2: Research Resources

For instances where growers or exporters apply to Canada to export a commodity for which Canada currently requires MB treatment or if commodities could be or are associated with a pest on [Canada's Regulated Pest List](#), the ongoing assistance and collaboration of local research scientists and technical experts will be needed.<sup>32</sup>

The CFIA will require that proposals be submitted with extensive data on the commodity, its production and packing conditions, its pests, and how the proposed alternative will reduce the pest risk to levels acceptable to Canada. That data will have to be validated and certified by experts.

Table 2 below presents the **European Union Reference Laboratories** responsible for supporting horizontal activities of the Commission and of the Member States in the area of plant health.

**Table 2. European Union Reference Laboratories**<sup>33</sup>

Pests	Organization	Contact
Insects and Mites	Agency for Health and Food Safety (AGES, Institute for Sustainable Plant Production)	Spargelfeldstraße 191 1220 Vienna, Austria
	French Agency for Food, Environmental and Occupational Health and Safety (ANSES, Plant Health Laboratory, Entomology and Invasive Plants Unit)	755 avenue du campus Agropolis, CS 30016 34988 Montferrier-sur-Lez cedex France
Nematodes	Flanders Research Institute for Agriculture, Fisheries and Food (ILVO, Plant Sciences, Nematology group, Burg)	Van Gansberghelaan 96 9820 Merelbeke, Belgium
	French Agency for Food, Environmental and Occupational Health and Safety (ANSES, Plant Health Laboratory, Nematology Unit)	Domaine de la Motte au Vicomte-BP 35327 35653 Le Rheu France
Bacteria	Flanders Research Institute for Agriculture, Fisheries and Food (ILVO, Plant Sciences, Bacteriology group)	Van Gansberghelaan 96 9820 Merelbeke, Belgium
	Research Centre for Plant Protection and Certification (CREA-DC (DIALAB), Laboratory of Phytopathology, Bacteriology group)	via Carlo Giuseppe Bertero 22, 00156 Roma Italia
	Netherlands Food and Consumer Product Safety Authority- National Reference Centre Plant Health (NVWA-NRC, Bacteriology group)	Geertjesweg, 15, 6706 EA Wageningen The Netherlands
	National Institute of Biology (NIB, Department of Biotechnology and Systems Biology, Bacteriology and Metrology Unit, Laboratory for diagnostics of bacteria)	Večna pot 111, Ljubljana, Slovenia
Fungi and oomycetes	French Agency for Food, Environmental and Occupational Health and Safety (ANSES, Plant Health Laboratory, Mycology Unit)	Domaine de Pixérécourt, CS 400009 54220 Malzéville, France
Virus and Phytoplasmas	Netherlands Food and Consumer Product Safety Authority National Reference Centre Plant Health (NVWA-NRC, Virology group)	Geertjesweg, 15 6706 EA Wageningen The Netherlands
	Research Centre for Plant Protection and Certification (CREA-DC (DIALAB), Laboratory of Phytopathology, Virology group)	via Carlo Giuseppe Bertero 22, 00156 Roma, Italy
	National Institute of Biology (NIB, Department of Biotechnology and Systems Biology, Microbiology Unit, Laboratory for diagnostics of viruses, viroids and phytoplasmas)	Večna pot 111, Ljubljana, Slovenia

32 <http://www.inspection.gc.ca/plants/plant-pests-invasive-species/pests/regulated-pests/eng/1363317115207/1363317187811>

33 See European Union. 2019. "Commission Implementation Regulation (EU) 2019/530 of 27 March 2019." Eur-Lex, 27 March <<https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32019R0530&from=EN>>.

Moreover, there may be a number of scientific and technical resources available in your country or region. The following list is indicative and not exclusive.

**Table 3. Local and Regional Research and Technical Resources**

Country	Institute or Company	Contact person	Field of specialization	Contact information including email
Germany	Humboldt University	Dr. Christoph Reichmuth	Methyl bromide alternatives, especially for stored products and spaces	Humboldt-University of Berlin, Faculty of Agriculture and Horticulture, Department of Crop and Animal Sciences, Division Phytomedicine Lentzeallee 55/57 - 14195 Berlin Tel:+49-30-2093-46442 email: reichmuth@t-online.de
Germany	Julius Kühn Institute (JKI)  Bundesforschungs-institut für Kulturpflanzen		Plant Health Division	Institut für nationale und internationale Angelegenheiten der Pflanzengesundheit Messeweg 11/12 38104 Braunschweig Tel: +49 (531) 2 99-33 71 ag@julius-kuehn.de www.julius-kuehn.de
Netherlands	Wageningen University and Research	Dr. Jan Verschoor	Food and Bio-Based Research	P.O. Box 17 / 6700 AA Wageningen, The Netherlands. Jan.verschoor@wur.nl Tel. +31(0)317 48 12 93 www.wur.nl
Spain	Sustainable Plant Protection Program  IRTA	Dr. Jordi Riudavets	Plant protection, methyl bromide alternatives in agronomy	Ctra. Cabrils km 2 08348 Cabrils (Barcelona). Spain Tel. +34 750 75 11 jordi. riudavets@irta.es www.irta.es
Spain	Laboratori d'Agricultura i Sanitat Vegetal de Catalunya	Dr. Jaume Almacellas		Avinguda de l'Alcalde Rovira Roure, 191 25198 Lleida, Spain Tel.+34 973 30 54 77 jalmacellas@gencat.cat
Spain	IRTA	Dr. Cinta Calvet	Plant Protection	Cinta.calvet@irta.cat
Spain	IRTA	Dr. Neus Teixidor	Postharvest	Neus.teixidor@irta.cat
Spain	IVIA (Instituto Valenciano de Investigaciones Agrarias)		Plant protection  Food industry	Carretera CV-315, Km 10,7 46113 - Moncada (Valencia)

### Appendix 3: EU Market Access Support Associations, Companies and Organizations and other Resources

The following table provides contact details for EU-based commodity associations, companies and organizations that can assist exporters with their needs. It is important to note that although this list is alphabetical by location, these service providers usually provide market access support to members of more than one country or region.

**Table 4. Market Access Support Associations, Organizations and Companies**

Country	Organisation	Contact Information
Belgium	Fresh Trade Belgium	Sint – Annaplein 3 9290 Berlare, Belgium Tel: +32 (0)93 39 12 52 Email: freshtradebelgium@fvphouse.be Alternate Email: info@fvphouse.be Website: <a href="https://freshtradebelgium.be">https://freshtradebelgium.be</a>
EU	FRESHFEL EUROPE	Rue de Trèves 49-51 box 8 B-1040 Brussels, Belgium Tel: +32.(0)2.777.15.80 Email: info@freshfel.org Website: <a href="https://freshfel.org/">https://freshfel.org/</a>
EU	EUCOFEL – FruitVegetables Europe	38, Rue de la Loi, B-1040 Brussels, Belgium Tel: +32 2 721 72 88 Email: eucofel@eucofel.org Website: <a href="https://www.eucofel.eu/">https://www.eucofel.eu/</a>
EU	CEI BOIS - European Confederation of Woodworking Industries	Rue Montoyer 24, B-1000 Brussels, Belgium Tel: +32 2 556 25 85 Email: info@cei-bois.org Website: <a href="https://www.cei-bois.org/contact/">https://www.cei-bois.org/contact/</a>
EU	European Seeds Association	Avenue des Arts, 52 (7th floor) 1000 Brussels, Belgium Tel: +32 2 743 28 60 Email: secretariat@euroseeds.eu
France	ANEEFEL - Association Nationale des Expéditeurs et Exportateurs de Fruits et Légumes	97, Boulevard Pereire 75017 Paris, France Tel: +33 (0)1 45 23 91 90 Website: <a href="https://www.aneefel.com">https://www.aneefel.com</a>
Germany	Deutscher Fruchthandelsverband e.V	Bergweg 6 53225 Bonn, Germany Tel: +49 228 911 45-0 Email: info@dfhv.de Website: <a href="http://www.dfhv.de">www.dfhv.de</a>
Germany	Bundesvereinigung der Erzeugerorganisationen Obst und Gemüse e.V. – BVEO	Pariser Platz 3, 10117 Berlin, Germany Tel: +49 (0) 30 20641498-0 Email: bveo@drv.raiffeisen.de Website: <a href="http://www.bveo.de/">http://www.bveo.de/</a>
Greece	Greek Fruits – Greek Exporters of Fruits and Vegetables	Tel: +30 6944240357 Website: <a href="http://greekfruits.eu/en/about-us.html">http://greekfruits.eu/en/about-us.html</a>

Country	Organisation	Contact Information
Greece	Incofruit - Association of Greek Export enterprises for fruits vegetables and juice	Tel: +30 211 800 71 60 Website: <a href="http://www.incofruit.gr/">http://www.incofruit.gr/</a>
Hungary	FruitVeb	1119 Budapest, Mohai út 38 or 1118 Budapest, Villányi út 35-43, Hungary Tel: +36 70 776 5530 Email: <a href="mailto:info@fruitveb.hu">info@fruitveb.hu</a> Website: <a href="https://fruitveb.hu/">https://fruitveb.hu/</a>
Italy	CSO ITALY Soc. Coop.	Via Béla Bartók 29/G, 44124 – Ferrara, Italy Tel: +39 0532 904511 Email: <a href="mailto:info@csoservizi.com">info@csoservizi.com</a> Website: <a href="http://www.csoservizi.com">www.csoservizi.com</a>
Italy	Fruitimprese - Associazione Imprese Ortofrutticole	Via Sabotino 46 - 00195 Roma, Italy Tel: +39 0637515147 Email: <a href="mailto:info@fruitimprese.it">info@fruitimprese.it</a> Website: <a href="https://www.fruitimprese.it/index.php">https://www.fruitimprese.it/index.php</a>
Netherlands	Fresh Produce Center	Fresh Produce Center Loius Pasteurlaan 6 2719 EE Zoetermeer, The Netherlands Tel: +31 (0)79-368-11 26 Website: <a href="https://groentenfruihuis.nl/">https://groentenfruihuis.nl/</a>
Spain	Anecoop	46010, Valencia, Spain Tel: +34 963 938 500 Email: <a href="mailto:info@anecoop.com">info@anecoop.com</a> Website: <a href="https://anecoop.com/">https://anecoop.com/</a>
Spain	Spanish Federation of Food and Drink (FIAB)	Velázquez, 64 – 3ª Planta 28001 Madrid -Spain Tel: +91 411 72 11 Email: <a href="mailto:fiab@fiab.es">fiab@fiab.es</a>
Spain	Federación Española de Asociaciones de Productores Exportadores de Frutas, Hortalizas, Flores y Plantas vivas	Website: <a href="https://www.fepex.es/home.aspx">https://www.fepex.es/home.aspx</a>
Spain	ProExport	Ronda Levante, 1 Entlo. 30008 Murcia, Spain Tel: +34 968 27 17 79 Email: <a href="mailto:proexport@proexport.es">proexport@proexport.es</a> Website: <a href="http://www.proexport.es">www.proexport.es</a>
Spain	APOEXPA – Asociación de Productores y Exportadores de Frutas y otros Productos Agrarios	APOEXPA – Asociación de Productores y Exportadores de Frutas y otros Productos Agrarios C/ San Martín de Porres, 3 – 1º. 30001 Murcia, Spain Tel: +34 968 20 49 49 Email: <a href="mailto:info@apoexpa.es">info@apoexpa.es</a> Website: <a href="http://www.apoexpa.es/">http://www.apoexpa.es/</a>

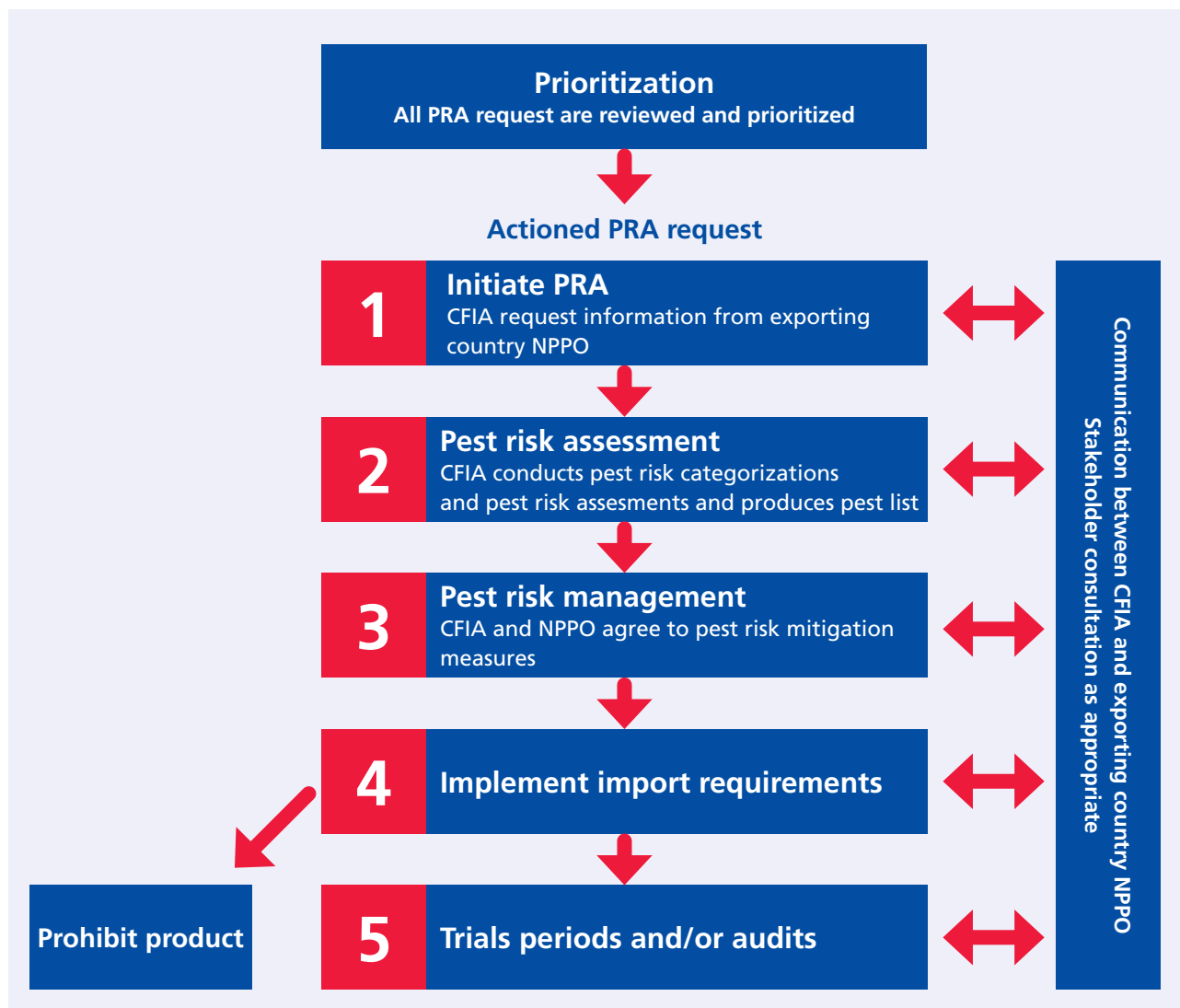


Country	Organisation	Contact Information
Spain	Afrucat	C/ Corregidor Escofet, 64 25005 Lleida - Spain Tel: +34 973 220 149 Email: administracio@afrucat.com Website: <a href="http://www.afrucat.com">http://www.afrucat.com</a>
Spain	COOPERATIVAS AGRO-ALIMENTARIAS	Oficina Central (Madrid) C/ Agustín de Bethencourt, 17, 4ª planta 28003 Madrid, Spain Tel: 91 535 10 35 Email: cooperativas@agro-alimentarias.coop
Spain	ASOCIACION NACIONAL DE OBTENTORES VEGETALES (ANOVE)	C/ Antonio Maura 7, 1º Izq. Madrid, Spain

## Appendix 4: Canada's Pest Risk Analysis Process

PRAs conducted by the CFIA are consistent with international obligations under the IPPC, as outlined in [IPPC ISPM 11](#).<sup>34</sup> Conducting a PRA is a complex process that includes a number of actions to be undertaken, as shown in Figure 2.

Figure 2. Canada's PRA Process



Source: CFIA, 2019

The CFIA receives many requests for completion of PRAs and carefully reviews and prioritizes them. Initially, the NPPO agrees to work with the CFIA and prioritize work on commodity in question. Then, the CFIA needs the exporting country NPPO to agree that they can certify the exported products as meeting the Canadian import requirements and support the treatment or system approach being used in the export country. The length of time needed to complete a PRA may be improved by the following:

- Ensuring good communication and information exchange with the NPPO, growers, exporters, researchers, shippers, the exporter's Embassy to Canada, and Canadian importers; and
- Providing good data and information that describes the size and need for the commodity in the Canadian market place.

<sup>34</sup> Food and Agriculture Organization of the United Nations and IPPC. 2019. "Pest risk analysis for quarantine pests." Resources, 26 June <<https://www.ippc.int/en/publications/639/>>.

## Appendix 5: Relevant RSPM and ISPM Standards

### RSPM Standards

The NAPPO develops science-based [RSPM](#), which are intended to protect agricultural, forest, and other plant resources against regulated plant pests, while facilitating trade.<sup>35</sup>

Currently, there are 41 RSPM standards in place, but several of these are outdated and have been superseded by more recent standards. Additionally, some RSPM standards are less detailed than the ISPM standards, which also apply.

#### Most Relevant RSPM Standards for this Guide's Users

- RSPM 30 (2008): Guidelines for the Determination and Designation of Host Status of a Fruit or Vegetable for Fruit Flies (*Diptera: Tephritidae*);
- RSPM 31 (2012): General Guidelines for Pathway Risk Analysis;
- RSPM 34 (2011): Development of Phytosanitary Treatment Protocols for Regulated Arthropod Pest of Fresh Fruits or Vegetables;
- RSPM 40 (2014): Principles of Pest Risk Management for the Import of Commodities; and
- RSPM 41 (2018): Use of Systems Approaches to Manage Pest Risks Associated with the Movement of Forest Products.

RSPM 41 is an internationally recognized regional standard, which provides a clear framework for importing and exporting countries to establish effective phytosanitary requirements that will minimize pest risks and encourage safe trade of forest products. RSPM 41 provides NAPPO member countries with guidance on the use of integrated risk management measures to mitigate pest risks associated with the movement of wood commodities. Note that this standard pertains to systems approaches for wood; ISPM standard 14 is similar and pertains to fruits and vegetables.

### ISPM Standards

ISPM standards are set by the IPPC and are published on their website.<sup>36</sup> Presently, 43 ISPMs have been adopted. This section focuses on those most relevant for this Guide's users.

- ISPM 04 (1995): Requirements for the establishment of Pest Free Areas.
  - Pest free areas (PFAs) as a risk management option for phytosanitary certification of plants, plant products, and other regulated articles exported from the PFA. The establishment of these supports the scientific justification for phytosanitary measures taken by an importing country for protecting certain environments (see also ISPM 10).
- ISPM 05 (2010): Glossary of phytosanitary terms.
  - This reference standard lists terms and definitions with specific meaning for phytosanitary systems worldwide. It has been developed to provide a harmonized internationally-agreed vocabulary associated with the implementation of the IPPC and ISPMs and is regularly revised.
- ISPM 10 (1999): Requirements for the establishment of pest free places of production and pest free production sites.

<sup>35</sup> The full list of RSPM standards is available at NAPPO. N.d. "NAPPO Approved Standards: Regional Standards for Phytosanitary Measures (RSPM)." Products <<https://www.nappo.org/english/products/regional-standards/regional-phytosanitary-standards-rspsms/>>.

<sup>36</sup> Food and Agriculture Organization of the United Nations and IPPC. 2019. "Adopted Standards (ISPMs)." The International Plant Protection Convention <<https://www.ippc.int/en/core-activities/standards-setting/ispsms/>>.

- This standard describes the requirements for the establishment and use of pest free places of production and pest free production sites as pest risk management options for meeting phytosanitary requirements for the import of plants, plant products, and other regulated articles (see also ISPM 4).
- ISPM 14 (2002): The use of integrated measures in a systems approach for pest risk management.
  - This standard provides guidelines for the development and evaluation of integrated measures in a systems approach for pest risk management (see also RSPM 42 for systems approaches for wood products).
- ISPM 15 (2009): Regulation of wood packaging material in international trade.
  - This standard describes phytosanitary measures that reduce the risk of introduction and spread of quarantine pests associated with the international movement of wood packaging material made from raw wood, which includes dunnage, but excludes wood packaging made from wood not exceeding 6mm in thickness or processed in such a way that it is free from pests (i.e., plywood).
- ISPM 18 (2003): Guidelines for the use of irradiation as a phytosanitary measure.
  - This standard provides technical guidance on the specific procedures for the use of ionizing radiation as a phytosanitary treatment for regulated pests or articles. This does not include treatments used for the production of sterile organisms for pest control; sanitary treatments (food safety and animal health); the preservation or improvement of commodity quality (i.e., shelf life extension); or inducing mutagenesis.
- ISPM 22 (2005): Requirements for the establishment of areas of low pest prevalence.
  - This standard describes the establishment of Areas of Low Pest Prevalence (ALPP) for regulated pests. An ALPP designation facilitates export of a commodity where pests are regulated by an importing country.
- ISPM 24 (2005): Guidelines for the determination and recognition of equivalence of phytosanitary measures.
  - This standard describes the principles and requirements to determine and recognize equivalency of phytosanitary measures, including for international trade (see Annex 3: International Standards for Phytosanitary Measures, ISPM 99).
- ISPM 26 (2006): Establishment of pest free areas for fruit flies (Tephritidae).
  - This standard provides guidelines for the establishment of PFAs for fruit flies of economic importance and for the maintenance of their pest free status.
- ISPM 28 (2009): Phytosanitary treatments for regulated pests.
  - This standard describes the requirements for submission and evaluation of the efficacy data and other relevant information on a treatment to be used as a phytosanitary measure for the control of regulated pests on regulated articles, primarily those in international trade. The adopted treatments provide the minimum requirements necessary to control a regulated pest at a stated efficacy. As phytosanitary treatments are adopted by the Commission on Phytosanitary Measures (CPM), they will be annexed to this standard.
- ISPM 30 (2008): Establishment of areas of low pest prevalence for fruit flies (Tephritidae).
  - This standard provides guidelines for the establishment and maintenance of areas of low pest prevalence for fruit flies by an NPPO. These areas may be utilized as official pest risk management measures alone or as part of a systems approach.

- ISPM 35 (2019): Systems approach for pest risk management of fruit flies (Tephritidae).
  - This standard provides guidance for the development, implementation, and verification of integrated measures in a systems approach as an option for pest risk management of fruit flies (Tephritidae) of economic importance to facilitate trade of fruit fly host products or to minimize the spread of regulated fruit flies within an area.
- ISPM 42 (2019): Requirements for the use of temperature treatments as phytosanitary measures.
  - This standard provides technical guidance on the application of various temperature treatments as phytosanitary measures for regulated pests on regulated articles. This standard does not provide details on specific treatments.

## Appendix 6: Further References

It is important to note that this Guide does not cover other Canadian import requirements and is not intended to be a general export assistance guidance document. Such exporter guides for EU firms are available from various sources, such as [The Food and Beverage Market Entry Handbook: Canada](#) published by the European Commission's Consumers, Health, Agriculture, and Food Executive Agency (CHAFAEA) and the European Commission's [Market Access Database \(MADB\)](#), which provides information about import conditions in third-country markets to companies exporting from the EU.

**EPPO Standards** - [https://www.eppo.int/RESOURCES/eppo\\_standards](https://www.eppo.int/RESOURCES/eppo_standards)

The Government of Canada also provides further information regarding import requirements on the following websites:

### Canadian Food Inspection Agency – General Import Conditions:

<http://www.inspection.gc.ca/plants/imports/eng/1299168480001/1299168593866>

### Canadian Food Inspection Agency - Relevant Directives (selection)

- [D-02-12: Phytosanitary import requirements for non-processed wood and other wooden products, bamboo and bamboo products, originating from all areas other than the continental United States \(U.S.\);](#)
- [D-08-04: Plant protection import requirements for plants and plant parts for planting;](#)
- [D-10-01: General Phytosanitary Import Requirements for Fresh Pepper and Tomato Fruit from the World;](#)
- [D-13-03: Phytosanitary import requirements to prevent the introduction of Lobesia botrana, the European grapevine moth;](#)
- [D- 94-26: Phytosanitary import requirements for root crops \(other than potato\), mushrooms, and vegetables with attached roots for consumption or processing;](#) and
- [D- 95-08: Phytosanitary import requirements for fresh temperate fruits and tree nuts.](#)

### Canadian Food Inspection – List of Pests Regulated by Canada:

<http://www.inspection.gc.ca/plants/plant-pests-invasive-species/regulated-pests/eng/1363317115207/1363317187811>

### CFIA Automated Import Reference System (AIRS):

<http://www.inspection.gc.ca/plants/imports/airs/eng/1300127512994/1300127627409>

### Canada Border Inspection Agency – Importing Commercial Goods to Canada

Step 1 Preparing to import goods: <https://www.cbsa-asfc.gc.ca/import/guide-eng.html>

### Fresh fruit and vegetables - imports:

<http://www.inspection.gc.ca/food/fresh-fruits-and-vegetables/imports-and-interprovincial-trade/eng/1299854973306/1299855024986>

**Government of Canada – List of Importers** - <https://www.ic.gc.ca/eic/site/cid-dic.nsf/eng/home>

## Copyright

Cover : image 1 : Photo by deimagine on istockphoto

Cover : image 2 : Photo by Alex Duffy on Unsplash

Cover : image 3 : Photo by valentinrussanov on istockphoto

Cover : image 4 : Photo by Heather Gill on Unsplash

P6: Photo by Thomas Le on Unsplash

P8 image 1: Photo by Chantal Garnier on Unsplash

P8 Image 2: Photo by Clem Onojeghuo on Unsplash

P9: Photo by Markus Spiske on Unsplash

P12: Photo by Glenn Carstens-Peters on Unsplash

P13: Photo by South\_agency on istockphoto

P14: Photo manonallard on istockphoto

P15: Image 1: Photo by Judit Arnó, IRTA.

P15: Image 2: Photo by Michael Longmire on Unsplash

P16: Photo by Jakub Kapusnak on Unsplash

P17: Photo by Dafinchi on istockphoto

P18: Photo by Jordi Riudavets, IRTA.

P19: Photo by jimfeng on istockphoto

P20 : Photo courtesy of USDA ARS

P21 Box 5: Photo by RinoCdZ on istockphoto

P22 Box 5: Photo by Joanna Kosinska on Unsplash

P23 Box 5: Photo by Heather Gill on Unsplash

P24 Box 5: Photo by Kari Shea on Unsplash

P25 Box 5: Photo by Nur Afni Setiyaningrum on Unsplash

P26 Box 5: Photo by Max on Unsplash

P27 Image 1: Photo by ajcespedes on istockphoto

P27 Image 2: Photo by ajcespedes on istockphoto

P28: Photo by Jordi Riudavets, IRTA.

