



CANADIAN FOOD INSPECTION AGENCY 59 Camelot Drive Ottawa, (Ontario), Canada K1A 0Y9 (Tel: 613-225-2342; FAX: 613-228-6602)	D-98-01
	(EFFECTIVE DATE) May 6, 2009 (7th Revision)
Title Import Requirements for Seed Potatoes and Other Potato Propagative Material	

SUBJECT:

This directive governs the admission of field-grown seed potatoes and potato propagative material such as true (botanical) seed, *in vitro* plantlets, micro-tubers and mini-tubers into Canada.

This directive has been revised to update the review date, as well as minor administrative changes. The content of this directive has not changed.

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Review

This directive will be reviewed every 2 years unless otherwise needed. The next review date for this directive is May 6, 2011. The contact for this directive is Joanne Rousson. For further information or clarification, please contact the Canadian Food Inspection Agency (CFIA).

Endorsement

Approved by:

Chief Plant Health Officer

Amendment Record

Amendments to this directive will be dated and distributed as outlined in the distribution below.

Distribution

1. Directive mail list (Regions, PHRA, USDA)
2. Provincial Government, Industry (via Regions or the Program Network)
3. National Industry Organizations (Canadian Horticulture Council)
4. Internet

Introduction

The introduction of economically important potato pests into Canada could result in substantial costs in eradication, containment or control. Pest establishment could lead to an increase in the use of chemical controls and could jeopardize export markets.

Scope This directive provides detailed information to the Canadian Food Inspection Agency (CFIA) Operations staff, Canada Border Service Agency, Canadian importers, foreign exporters, international trade specialists, national plant protection organizations (NPPO) and the general public, on requirements that have to be met in order to import seed potatoes and other propagative potato material into Canada.

- References**
- FAO, 2005 - *Requirements for the Establishment of Pest Free Areas*, ISPM No. 4, Rome
 - FAO - *Glossary of Phytosanitary Terms* (updated annually), ISPM No. 5, Rome
 - NAPPO, 2003 - *Requirements for the Importation of Potatoes into a NAPPO country*, RSPM No. 3

- NAPPO, 2009 - *NAPPO Glossary of Phytosanitary Terms*, RSPM No. 5
- FAO, 2002 - *Regulated non-quarantine pests: concepts and application*, ISPM No. 16, Rome.

This directive supersedes D-98-01 (6th revision)

Definitions, abbreviations and acronyms

Definitions for terms used in the present document can be found in the Plant Health Glossary of Terms at www.inspection.gc.ca/english/plaveg/protect/dir/glosterme.shtml.

1.0 General Requirements

1.1 Legislative Authority

The Plant Protection Act, S.C. 1990, c.22

The Plant Protection Regulations, SOR/95-212

The Canadian Food Inspection Agency Fees Notice, Canada Gazette, Part 1 (05/13/2000)

The Seeds Act R.S., c. S-8 and amendments 1976-77, c.28 and 1985, c.47.

The Seeds Regulations Part II. The unofficial consolidated Statutes of the Regulations are available at following website: <http://laws.justice.gc.ca/en/S-8/C.R.C.-c.1400/index.html>

1.2 Fees

The CFIA is charging fees in accordance with the *Canadian Food Inspection Agency Fees Notice*. For information regarding fees associated with imported product, please contact the Import Service Centres (ISC) at the following phone numbers: Eastern ISC 1-877-493-0468; Central ISC 1-800-835-4486; Western ISC 1-888-732-6222. Anyone requiring other information regarding fees may contact any local CFIA office or visit us at our Fees Notice Web Site : <http://www.inspection.gc.ca/english/reg/cfiaacia/feesfraais/feesfraise.shtml>.

1.3 Regulated pests

Appendix 1 contains a list of quarantine pests of current concern to Canada for potatoes and associated soil. This list may not be exhaustive and may be subject to change as circumstances dictate and information becomes available on various pests. The CFIA has the authority to take action on any of the pests considered to be quarantine pests for Canada through its responsibility for the implementation of the *Plant Protection Act and Regulations*.

Regulated Non-Quarantine Pests (RNQP) of potatoes are distinguished from quarantine pests based on specific criteria as set out in *Regulated non-quarantine pests: concepts and application* (ISPM No. 16, FAO, 2002), and must be under official control through the

Canadian Seed Potato Certification program. The CFIA is responsible for the Canadian Seed Potato Certification program through its responsibility for the implementation of the *Seeds Act* and *Regulations*.

1.3.1 Continental United States (U.S.)

The following quarantine pests are known to occur in the continental U.S. and are regulated under this directive:

- Colorado potato beetle (*Leptinotarsa decemlineata*)
- Columbia root knot nematode (*Meloidogyne chitwoodi*, Golden et al. 1980)
- Golden nematode (*Globodera rostochiensis* Wollenweber)
- Pale cyst nematode (*Globodera pallida* Stone)
- Potato rot nematode (*Ditylenchus destructor* Thorne)
- Soybean cyst nematode (*Heterodera glycines* Ichinohe)

Most RNQP associated with imports of seed potatoes from the continental U.S. are managed through the acceptance of seed potatoes that are produced under a certification system judged equivalent to the Canadian program. However, because of differences in certification standards specific requirements apply to the following pest:

- Bacterial Ring Rot (BRR); *Clavibacter michiganensis* subsp. *sepedonicus* (Spieckermann & Kotthoff 1914) Davis, Gillaspies, Vidaver & Harris 1984)

Background information for various pests is provided in Appendix 2.

1.4 Regulated Commodities

All potato parts (*Solanum tuberosum* L., and other tuber bearing *Solanum* species), for propagation are regulated. This includes field-grown seed tubers, true (botanical) seed, *in vitro* plantlets, micro-tubers, mini-tubers, cuttings, etc. All quantities of seed are regulated equally: there is no exception for the importation of small quantities of seed.

1.5 Commodities Exempt

Processed potatoes and frozen potato products are not regulated (e.g. frozen fries, canned potatoes, potato chips, potato flakes, potato starch etc.).

Import requirements for potatoes for consumption and processing are outlined in policy directive D-96-05 "Import Requirements for Potatoes for Consumption and Processing" this directive is available at the following Internet address:
<http://www.inspection.gc.ca/english/plaveg/potpom/potpome.shtml>

1.6 Regulated Areas

Potato propagative material is regulated from all origins but areas of particular phytosanitary interest (origin or destination) are:

1. All countries other than the continental U.S.
2. Areas of the U.S. (states) where at least one regulated pest listed in section 1.3.1 has been reported (Appendix 6).
3. U.S. states that have a seed potato certification program considered substantially equivalent to the Canadian certification program (see Appendix 5)
4. Consignments of potatoes destined for the Province of Newfoundland and Labrador.

2.0 Specific Requirements

Note: Province of Newfoundland and Labrador:

All purple and blue skinned potato varieties susceptible to potato wart disease (*Synchytrium endobioticum* (Schilb.) Perc.) are PROHIBITED entry into Newfoundland and Labrador; except for the following varieties which are resistant, and can be imported: AC Blue Pride, AC Domino, Blue Mac and Brigus. Moreover, potatoes shipped to that province must be free of the Colorado potato beetle (*Leptinotarsa decemlineata*).

2.1 True (botanical) seed

2.1.1 True seeds, from areas other than the continental U.S.

A Permit to Import issued under the *Plant Protection Regulations* **is required**. An application for a Permit to Import (CFIA/ACIA 5256) must be forwarded to the Permit Office, 3rd Floor East, 59 Camelot Drive, Ottawa, Ontario K1A 0Y9. A copy of this form and information pertaining to the import policy directive D-97-04, is available at the following Internet address, under "Form No." 5256:
<http://www.inspection.gc.ca/english/for/mpppe.shtml>

A Phytosanitary Certificate **is required**.

The Phytosanitary Certificate must contain the following additional declaration: "The potato plants from which the seed in this consignment was produced were free of seed-transmitted viruses and viroids". The declaration may be based on absence of the disease in the country of origin of the parent material (as determined by the phytosanitary officials of the country of origin, based on internationally accepted standards), or based on laboratory tests of the parent material and isolation to prevent infection with seed-transmitted viruses and viroids.

The following viruses and viroids are seed-transmitted:

- Andean potato latent virus (APLV)
- Arracacha virus B - Oca strain (AVB-O)
- Potato Spindle Tuber Viroid (PSTVd)
- Potato virus T (PVT)
- Potato yellowing virus (PYV)
- Tobacco ringspot virus - calico strain (TRSV-Ca)
- Tomato black ring virus (TBRV)

2.1.2. True seeds, from the continental U.S.

A Permit to Import issued under the *Plant Protection Regulations* **is not required**.

A Phytosanitary Certificate **is required** and must indicate the state of origin.

The Phytosanitary Certificate will contain the following additional declaration:

“The potato plants from which the seed in this consignment was produced were free of seed-transmitted viruses and viroids”.

The declaration may be based on known absence of the disease in the state of origin of the parent material (as determined by the phytosanitary officials of the U.S., based on internationally accepted standards), or based on laboratory tests of the parent material and isolation to prevent infection with seed-transmitted viruses and viroids mentioned above (section 2.1.1) .

2.2 Field-grown seed potatoes

2.2.1 Field-grown seed potatoes, from areas other than the continental U.S.

Prior approval by the CFIA is required to import field-grown seed potatoes from areas other than continental U.S. This is usually only allowed through Post Entry Quarantine (PEQ). Field-grown seed potato tubers (usually 1 to 3 tubers per variety) can be imported through PEQ, but growing parts will be introduced *in vitro* before testing can be initiated. In most cases, *in vitro* plantlets are imported for PEQ and only *in vitro* material is released for entry into Canada after PEQ, details are covered under section 2.3 Protected environment: *in vitro* plantlets, micro-tubers, mini-tubers, cuttings.

The direct importation of commercial quantities of field-grown potatoes will only be considered after a comprehensive pest risk analysis has been completed. Requirements for phytosanitary certification will be specified on the Permit to Import or a pest risk analysis will be required before importation will be permitted.

2.2.2 Field-grown seed potatoes from the continental U.S.

Recognized certification agency

Under the *Seeds Act* and the *Seeds Regulations*, seed potatoes from the U.S. must be certified and packaged in accordance with the requirements of a recognized certification agency, and the requirements must be substantially equivalent to the requirements specified in the Canadian *Seeds Regulations* (sections 45 to 62). A limited number of states have recognized seed potato certification programs (see Appendix 5). Field-grown seed potatoes from only these states are permitted entry into Canada for propagation. Proper documentation to this effect (e.g., tags, movement certificates, etc.) must accompany each shipment.

United States Department of Agriculture-Animal and Plant Health Inspection Service
(USDA-APHIS approved laboratory):

http://www.aphis.usda.gov/import_export/plants/plant_exports/national_seed_health_system.shtml

USDA-APHIS officials have established a quality assurance program for laboratories doing testing for some potato pests. Those laboratories are being monitored regularly by USDA-APHIS officials and have adopted principles and testing procedures considered equivalent to the ones used by laboratories approved under the CFIA program. Testing results from USDA-APHIS approved laboratories are considered as equivalent under the Seeds Regulations and tubers from the respective seed lots can be imported and planted in Canada for recertification without further testing in a CFIA accredited laboratory. Specific declaration attesting that the testing was done in a USDA-APHIS approved laboratory are stated below.

Permit to Import

A Permit to Import issued under the *Plant Protection Regulations* **is required**. An Application for Permit to Import (CFIA/ACIA 5256) must be forwarded to the Permit Office, 3rd Floor East, 59 Camelot Drive, Ottawa, Ontario K1A 0Y9. A copy of this form is available at the following Internet address, under "Form No." (CFIA/ACIA 5256) :
<http://www.inspection.gc.ca/english/for/mpppe.shtml>

Regular permits are issued with a duration of three growing seasons. They are usually issued for "various exporters from the continental USA" for potatoes originating from one regulated state. Quantities are not limited.

Special permits for potatoes of unregistered varieties or other potatoes for propagation which are not covered in this directive (e.g. research, exhibitions, commercial trials, etc.) are usually issued for one year, for limited quantities of potatoes. Import conditions for these permits are determined by an evaluation of the risk of introduction of regulated pests represented by each individual situation and are indicated on the permit.

Phytosanitary Certificate

A Phytosanitary Certificate **is required** and must indicate the state of origin.

1. Additional declaration on the Phytosanitary Certificate related to potato cyst nematodes:

“Soil associated with the seed potato lot of this shipment was surveyed and tested according to the agreed upon protocol and Potato cyst nematodes (*Globodera rostochiensis* and *Globodera pallida*) were not detected.”

2. Additional declarations on the Phytosanitary Certificate related to other quarantine nematodes:

With the exception of states regulated for golden nematode (*Globodera rostochiensis*) and/or pale cyst nematode (*Globodera pallida*), where the potatoes originate from a state affected by one or more other regulated nematode pests (listed in Appendix 5), the following additional declaration certifying freedom from each regulated nematode pest found in that state must be added:

“The material in this consignment was grown in an area free of (common and scientific name(s) of pest(s)); this declaration is made on the basis of official soil surveys.”.

3. Additional declaration on the Phytosanitary certificate related to *Bacterial Ring Rot (Clavibacter michiganensis subsp. sepedonicus)* :

The Canadian seed potato certification program includes a mandatory laboratory testing program for *Clavibacter michiganensis* subsp. *sepedonicus* for all seed potato farms. Equivalent requirements are applied to all importations of seed potatoes from the U.S. Laboratory testing is required for this disease in all instances. Whenever the testing provided under a U.S. State seed potato certification program would be, at a minimum, equivalent to the Canadian system for bacterial ring rot, additional testing would not be required.

One of the following additional declaration must be used:

- a) When testing **is done** in a USDA-APHIS approved laboratory:
(mandatory for seed potatoes intended for re-certification, details in section 2.2.3 below)

"A representative sample of each seed lot in the consignment was tested within the last growing season in a USDA-APHIS approved laboratory and found free of *Clavibacter michiganensis* subsp. *sepedonicus*. "

or

- b) When the testing **is not done** in a USDA-APHIS approved laboratory, the following declaration must be used:

"A representative sample of each seed lot in the consignment was tested within the last growing season and found free of *Clavibacter michiganensis* subsp. *sepedonicus*. "

NOTE: The required sample size for bacterial ring rot testing is: 1% of the tubers (minimum of 5) to a maximum of 400 for every lot imported.

Non-registered varieties

It is a requirement under the *Seeds Act* that imported seed potatoes must be of a variety registered in Canada, except where otherwise provided by the *Seeds Regulations* (see "Garden Varieties" below). Seed potatoes of a non-registered variety can only be imported if they are being multiplied for either "experimental purposes or for production for export" (*Seed Regulations*, section 59 (4)(a)). "Experimental purposes" includes evaluation of the variety for registration. The justification for import (experimental or for re-export) as well as the expected quantity to be imported must be indicated on the Application for Permit to Import.

Non-registered varieties of potatoes have not been officially approved for production in Canada: importers are producing these potatoes at their own risk.

Part of the variety registration process is to ensure that Total Glycoalkaloid (TGA) levels of a registered variety are within the limits established by Health Canada. It is the responsibility of the importer to ensure that potatoes of an unregistered variety, sold for human consumption, meet Health Canada standards.

Garden Varieties

Potatoes with unique characteristics such as purple skin, blue flesh or frost tolerance often have a limited commercial production potential and value, but may be of interest to home gardeners. Garden varieties are potato varieties which are exempted from registration or for which registration has been cancelled because of minimal production. They are exclusively intended for personal production and consumption by home gardeners and can only be imported for this purpose. Production of garden varieties for the purpose of multiplying seed is limited to 1 ha/ per seed potato farm unit and sale to table and processing markets is prohibited. The justification for import (garden variety) as well as the expected quantity to be imported must be indicated on the Application for Permit to Import.

More information on garden varieties can be found in CFIA policy directive D-98-04 "Seed Potato Program - Certification of Garden Potato Varieties in Canada". A copy of this directive is available at the following Internet address, under Directives: <http://www.inspection.gc.ca/english/plaveg/potpom/potpome.shtml>

Similar to non-registered varieties, most garden varieties have not been officially approved for production in Canada and for that reason may not have been evaluated for Total Glycoalkaloid (TGA) levels. Gardeners are producing these potatoes at their own risk.

Other Canadian jurisdictions requirements

Depending on planting locations, other requirements (e.g. provincial, municipal) may apply. It is the responsibility of the importer to ensure compliance with these.

2.2.3 Field-grown seed potatoes intended for planting on a seed potato farm in Canada

Where imported seed potatoes are intended for planting on a farm participating in Canada's seed potato certification program, it is the responsibility of the importer to obtain a 'North American Certified Seed Potato Health Certificate' (example provided in Appendix 3) for each seed lot imported. This form is used by the seed potato inspector to assign an 'equivalent' Canadian seed potato certification "Class" to the imported seed lot (a complete procedure is described in Appendix 4).

Assignment of an equivalent class is necessary **for all** imported seed potatoes intended for planting on a seed potato farm (even if they are not intended for re-certification). All seed potatoes grown on farms participating in Canada's seed certification program must be of a class equivalent to or better than the Foundation class.

Specific requirements also apply for laboratory testing.

a) When imported **for re-certification**:

When the lot is imported for re-certification, by law (*Seeds Regulations*, section 59), testing of a sample for BRR must be carried out in a CFIA-approved laboratory or in a laboratory which can reasonably be considered as equivalent (USDA/APHIS approved laboratory). It is the responsibility of the importer to provide the results of tests performed on a representative sample of each seed lot. The samples must be found negative for BRR prior to planting. The required sample size for BRR testing: 1% of the tubers (minimum 5) to a maximum of 400 for every lot imported.

If the testing takes place in a CFIA-approved laboratory in Canada prior to the actual commercial import of tubers from the seed lot, the manager of the CFIA approved laboratory must obtain a Permit to Import under section 43 of the *Plant Protection Regulations* for authorization to import tuber samples for testing. The CFIA issues one permit that covers all states and is valid for three years. The permit states the following conditions:

“Material must be routed directly to the approved laboratory. The material must be packaged and transported in sturdy leakproof containers. Not for sale/distribution. For laboratory analysis use only. Residual material to be incinerated or autoclaved before disposal, or be transported in leakproof containers to a CFIA-approved landfill site.”

“A list of all samples imported will be retained by the importer for review by a CFIA inspector. Date and process of disposal are to be indicated. If test results are used by U.S. officials for the issuance of a Phytosanitary Certificate for potatoes exported into Canada, sampling must be done under the supervision of such officials”

b) When imported **not for re-certification**:

Test requirements for BRR apply for the imported lots of seed potatoes not intended for re-certification, however the testing **does not need** to be performed in a CFIA-approved laboratory or in a laboratory considered as equivalent (USDA/APHIS approved laboratory). It is the responsibility of the U.S. official signing the Phytosanitary Certificate to assure the validity of such testing.

2.3 Protected environment: *in vitro* plantlets, micro-tubers, mini-tubers, cuttings

To be eligible for import, the material must meet the requirements described in “Production, maintenance, multiplication and certification of nuclear stock seed potatoes” (D-97-08). This material must be grown in a soil-less medium, in a protected environment (i.e., a greenhouse, screen house or growth chamber). When soil has been used to grow this material, requirements of field-grown potatoes apply (see section 2.2 of the current directive).

2.3.1 Protected environment, from countries other than the continental U.S.

Prior approval from the CFIA is required to import *in vitro* plantlets, micro-tubers, mini-tubers, and cuttings from areas other than the continental U.S.

A Permit to Import issued under the *Plant Protection Regulations* **is required** (D-97-04). An Application for a Permit to Import must be forwarded to the Permit Office, 3rd Floor East, 59 Camelot Drive, Ottawa, Ontario K1A 0Y9.

Consignments must be routed through PEQ at the Centre of Expertise for Potato Diseases, 93 Mount Edward Road, Charlottetown, P.E.I., C1A 5T1. Under post-entry quarantine,

each individual accession is tested (100% testing), and phytosanitary certification at origin is waived. It is the responsibility of the importer to ensure that the imported material is free of quarantine pests of concern to Canada (Appendix 1). Infested material will be refused entry. PEQ is a process that can take up to 8-12 months to complete when the starting material is *in vitro*. In the event that non *in vitro* material is received (tubers, cuttings etc.), the material is initially introduced *in vitro* which will increase the time required to complete the process.

The direct importation of *in vitro* plantlets, micro-tubers, mini-tubers, and cuttings will only be considered after a comprehensive pest risk analysis has been completed. Requirements for phytosanitary certification will be specified on the Permit to Import or the requirement for a pest risk analysis will be indicated.

2.3.2 Protected environment, from the continental U.S.

Permit to Import

A Permit to Import issued under the *Plant Protection Regulations* **is required**. An Application for Permit to Import (CFIA/ACIA 5256) must be forwarded to the Permit Office, 3rd Floor East, 59 Camelot Drive, Ottawa, Ontario K1A 0Y9. A copy of this form is available at the following Internet address, under "Form No." (CFIA/ACIA 5256): <http://www.inspection.gc.ca/english/for/mpppe.shtml>

Import **is not** limited to U.S. states whose certification agencies have substantially equivalent requirements to the Canadian *Seeds Regulations*.

Regular permits are issued with a duration of three growing seasons. They are usually issued for "various exporters from the continental U.S." for potatoes originating from one state. Quantities are not limited.

A Phytosanitary Certificate and/or a North American Certified Seed Potato Health Certificate **is required** to support the potato material is not infested with a quarantine pest and has been grown in a soil-less medium. For minitubers, the following additional declaration must appear on the phytosanitary certificate and/or North American Certified Seed Potato Health Certificate: "The nuclear stock seed potatoes in this shipment were grown in a protected environment."

Special permits for potatoes of unregistered varieties or other potatoes for propagation which are not included in the scope of this directive (e.g. research, exhibitions, commercial trials, etc.) are usually issued for one year, for limited quantities of potatoes. Import conditions for these permits are determined by an evaluation of the risk of introduction of regulated pests represented by each individual situation and are indicated on the permit.

For information on **Non-registered varieties** and **Garden varieties** refer to these topics in section 2.2.2.

2.3.3 Protected environment, for re-certification in Canada

When an importer wishes to enter potatoes produced in a protected environment for certification under Canada's seed potato certification program the following steps apply:

1. Importers, or any seed potato growers having been supplied by an importer with imported material produced in a protected environment or released from PEQ, must indicate their intentions of entering such material in the Certification program by submitting to the appropriate CFIA Inspector (inspector approved for the enforcement of the *Seeds Regulation*, Part II, related to Seed Potatoes) an Application for Seed Potato Crop Inspection Grower's Declaration (Application; CFIA/ACIA 1317).
2. Such material must be free of all diseases, as described in directive "Production, maintenance, multiplication and certification of Nuclear Stock seed potatoes" (D-97-08). A copy of this directive is available at the following Internet address, under Directives: <http://www.inspection.gc.ca/english/plaveg/potpom/potpome.shtml>
3. All of the different potato lines must be listed on the Application and must be accompanied by the necessary documentation to support the origin, and phytosanitary status of each line. This can be part of a regular Application form submitted by the grower, but should be listed on a separate page. Applicable documentation includes:
 - a) When imported **from the continental U.S.**
 - A 'North American Certified Seed Potato Health Certificate' stating the disease testing status (e.g. assigned the class "Nuclear Stock" **or equivalent**) should be submitted and/or
 - Any documents (Permits to Import, lab results, Phytosanitary Certificates, Bill of Lading etc) that will allow the Inspector to determine the origin and disease status of the material can be submitted.
 - b) When imported **from countries other than the U.S.**, the material is received through PEQ, and the phytosanitary status of the material is determined from testing results obtained from the CFIA laboratory responsible for the PEQ process.
 - The laboratory test results, Notice of Release from Quarantine (CFIA/ACIA 0109) and other relevant documentation sent with the line (ie: Permit to Import, Phytosanitary Certificate, description, letter from supplier, Bill of Lading etc), that normally accompany the lines that are released from quarantine after the PEQ process is complete.

4. As requested under the *Seeds Regulations*, testing for BRR must be carried out in a CFIA-approved laboratory or a laboratory considered as equivalent (USDA/APHIS approved laboratory) . Proof that such testing has been carried out must also accompany the Application. Testing performed in a CFIA laboratory as part of the PEQ process is acceptable to meet this requirement.
5. The Inspector evaluates all of the information submitted as outlined in 2.3.3, 1-4 above. When all of the requirements have been met, an applicable class and certification number will be assigned to the line for further reference of this material as a Certified seed potato line. Shipping Certification documents (Nuclear Stock tags, Nuclear Stock Certificates - CFIA/ACIA 4351, Certificates of Authorization - CFIA/ACIA 4378) can only be issued by a CFIA Inspector when proper certification status has been determined and granted.

2.4 Non-Compliance

Shipments not meeting Canadian Plant Health import requirements will be refused entry and must be returned to the country of origin or destroyed at the importer's expense. Material which does not meet requirements under the *Seeds Act* and *Seeds Regulations* may be allowed entry, under provisions of D-96-05, but will not be given seed status and is not eligible for certification under Canada's Seed Potato Certification Program. Additional information is described in directive "Canadian phytosanitary policy for the notification of non-compliance and emergency action" (D-01-06).

3.0 Appendices

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QUARANTINE PESTS OF POTATOES**VIRUSES**

Andean potato latent virus (APLV)
Andean potato mottle virus (APMoV)
Arracacha virus B - Oca strain (AVB-O)
Beet curly top virus (BCTV)
Potato deforming mosaic virus (Brazil) (PDMV)
Potato virus T (PVT)
Potato virus U (PVU)
Potato virus V (PVV)
Potato yellow vein virus (PYVV)
Potato yellowing virus (PYV)
Tobacco ringspot virus - calico strain (TRSV-Ca), a strain of *Potato Black Ringspot Virus* (PBRV)
Tomato black ring virus (TBRV)

BACTERIA

Brown rot (*Ralstonia solanacearum* (Smith) Yabuuchi et al., race 3 (biovar 2))

NEMATODES

Columbia root knot nematode (*Meloidogyne chitwoodi* Golden et al, 1980)
Golden nematode (*Globodera rostochiensis* (Wollenweber) Behrens)
Stem and bulb nematode (potato race) (*Ditylenchus dipsaci* (Kuhn) Filipjev)
Potato rot nematode (*Ditylenchus destructor* Thorne)
Pale cyst nematode (*Globodera pallida* (Stone) Behrens)
Soybean cyst nematode (*Heterodera glycines* Ichinohe)

FUNGI

Common potato rust (*Puccinia Pittieriana* P.Hennings)
Potato gangrene (*Phoma exigua* Desmazieres var. *foveata* (Foister) Boerema)
Potato smut (*Thecaphora solani* (Thirumulachar & O'Brien) Mordue)
Potato wart disease (*Synchytrium endobioticum* (Schilbersky) Percival)

INSECTS

Colorado potato beetle (*Leptinotarsa decemlineata*)

Note: This list may not be exhaustive and is subject to change as circumstances dictate and as new pest information becomes available.

BACKGROUND INFORMATION FOR VARIOUS PESTS

Bacterial Ring Rot (BRR; *Clavibacter michiganensis* subsp. *sepedonicus*)

The presence of BRR affects exports to many countries. Through the use of disease free nuclear stock class seed potatoes, mandatory laboratory testing, and the application of zero tolerance for certified seed potatoes, BRR has been virtually eradicated from the Canadian seed potato production. Areas free of BRR are being maintained in P.E.I. and N.B. expressly for export to the European Union in accordance with requirements stipulated by the European Commission.

Columbia root knot nematode (*Meloidogyne chitwoodi* Golden et al, 1980)

The Columbia root knot nematode is a soil-borne and tuber-borne pest of potatoes and of cereals, like wheat. It survives in egg masses embedded in the tuber or detached in the soil. The nematodes can also overwinter as infective second stage juveniles (J2), free-living in the soil. Both infested tubers, and infested soil can serve as pathways for introduction and dissemination of the pest.

Pale cyst nematode (*Globodera pallida* (Stone) Behrens)

Golden nematode (*Globodera rostochiensis* (Wollenweber) Behrens)

These two species of potato cyst nematodes are both obligate parasites of the potato family. They attack the roots of the potato and can last in the soil as cysts for extended periods (e.g. minimum of 12 years to over 25 years), in the absence of a host. Both infested soil and infected tubers can serve as pathways of introduction. More information on these pests can be found on the CFIA web site, under *Globodera rostochiensis* and *Globodera pallida* at:

<http://www.inspection.gc.ca/english/plaveg/pestrava/gloros/glorose.shtml>.

Potato rot nematode (*Ditylenchus destructor* Thorne)

Potatoes are the main host for the potato rot nematode, but this pest also attacks a wide range of other crops including onion and garlic bulbs. Seed potatoes are considered the most important pathway for spread.

Soybean cyst nematode, (*Heterodera glycines* Ichinohe)

The soybean cyst nematode is a soil-borne pest. Potatoes are not hosts but may serve as a pathway for introduction if there is infested soil adhering to the imported tubers.

Potato Mop Top Virus (PMTV)

PMTV survives in the soil within dormant resting spores of its fungal vector *Spongospora subterranea* (powdery scab fungus). These infected viable resting spores can persist for up to 18 years in the soil. Systemic movement of the virus within the plant is generally slow and erratic. The most important mean of transmission is via the obligate vector, powdery scab (primary infection), as PMTV-infected tubers planted as seed, will pass the virus on as a secondary infection to only a limited number of progeny tubers (secondary infection).

Tobacco Rattle Virus (TRV)

TRV has a very wide host range involving potatoes, a number of flower bulbs, vegetables and many weed species. Transmission of this virus is by its vector, stubby root nematodes (*Trichodorus* and *Paratrichodorus spp.*) and can cause symptoms of Spraing or Corky ring rot.

Potato Spindle Tuber Viroid (PSTVd)

PSTVd is now considered to be officially eradicated from the Canadian potato industry. The disease has not been found in Canadian potato crops since 1980. A survey for the viroid was completed for Prince Edward Island and New Brunswick in 1989, and for the western provinces of British Columbia, Alberta and Saskatchewan in 2002. In 2004 the PSTVd survey was completed in the remaining provinces of Manitoba, Ontario, Quebec, Nova Scotia, and Newfoundland.

Colorado potato beetle (*Leptinotarsa decemlineata*)

The Colorado potato beetle occurs in all the major potato regions of the world, but it is not present in the province of Newfoundland and Labrador. Potatoes shipped to this province must be free of the pest.

NORTH AMERICAN CERTIFIED SEED POTATO HEALTH CERTIFICATE

Identification Grower/Importer

Name:	
City, State/Prov:	

Lot information

Variety		Quantity shipped	
Acres		Size	

Lot certification Lot origination from tissue culture

Certification #		Lot originating from tissue culture	No	Yes
Seed Class/Gen.		Year micropropagated for planting		
Certifying State/Prov		By:		

Production Environment Pedigree Fill one column per production year; use different initials in Greenhouse and Field boxes for different farms (eg. JSF for John Smith Farms); indicate a tuber-united lot with a "+" after the initials; describe other footnotes in "Notes" below.

Number of years produced in field soil: _____

Year of production	1999	2000	2001	2002	2003	2004	2005	2006
Greenhouse (insect excluding) & sterile soil								
Field (note special measures below)								
Certification no.								
Certifying State / Prov.								

Summer Field Readings (field inspection) Post harvest test readings

	1 st	2nd	3rd	Final	FINAL	Post harvest test location
% leafroll:						
% mosaic:						
% varietal mix:						Elisa test results (latent viruses)
% blackleg (less than):					Sample no.:	% PVY :
% vert +% fusarium + % early blight (less than):					Sample count:	% PVX:

Other diseases

	Not known to occur in grower's area.	No. of years since last found on grower's farm, or NONE ON RECORD if free > 10 years	Not found this year during normal certification field inspections
Bacterial Ring Rot			
Late Blight			

Notes:

The above information is accurate to the best of our knowledge

Program official & title:	Date:
Signature:	Telephone:
Agency: Canadian Food Inspection Agency	Fax no.:

Adapted from a form approved for use by the Certification Section of the Potato Association of America which is available in Excel format at <http://www.umaine.edu/paa/Certification/certifsec31802.htm>

APPENDIX 4**ASSIGNING SEED CLASS TO IMPORTED FIELD-GROWN SEED POTATOES**

To be carried out by a CFIA seed potato inspector:

1. Identify the number of years the seed lot has been grown in the field. This is the generation number.

Do not rely on the class name for generations as they are not consistent from State to State and are not necessarily consistent with Canada's interpretation. For example, in many States the first generation in the field is the "nuclear class" and second field generation is called "Generation 1".

2. Compare field readings of the lot with the tolerance for the equivalent generation.

Generation 1 - Pre-Elite
Generation 2 - Elite I
Generation 3 - Elite II
Generation 4 - Elite III
Generation 5 - Elite IV
Generation 6 - Foundation
Generation 7 - Certified

Assign a corresponding class to the imported seed lot if the final field reading listed on the 'North American Certified Seed Potato Health Certificate' meets the *Seeds Regulations* tolerances for that class. If the field readings exceed the tolerance for that class, compare to the tolerances of the next lower class, until the readings match the tolerance set under the *Seed Regulations*.

The class assigned shall be the highest class allowed according to the tolerances set by the *Seed Regulations*, but no higher than the equivalent number of generations.

e.g.: A seed lot from California is submitted for classification has a 0.3 mosaic field reading and is classed as Generation 3 (G3) by the State Certification Agency.

G3 in California represents a class that has been in the field for four years (N being the first field generation followed by, G1, G2, G3). This would be equivalent to Elite 3 (E3) in the Canadian Certification Program. The disease tolerance for viruses is 0.2; this does not qualify for E3. The best class that can be assigned to the lot is Elite IV (tolerance of 0.3 for viruses).

APPENDIX 5

The occurrence of potato pests in U.S. States that have a recognized seed potato certification program considered

www.inspection.gc.ca/english/plaveg/protect/dir/d-98-01-appendix5e.shtml

