



CGCN-RCCV CERTIFICATION PROGRAM, OPTION 2 PROTOCOLS

CANADIAN GRAPEVINE CERTIFICATION NETWORK

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TITLE: CGCN-RCCV Certification Program, Option 2 protocols

SUBJECT: This program contains the requirements for the production of *Vitis* spp. nursery stock (grapevines) for domestic use, including ornamental species. This program uses a systems approach in order to produce virus tested grapevines.

Updates

The Program will be amended from time to time as new knowledge emerges, and the most recent version will be published on the CGCN-RCCV website, www.cgcn-rccv.ca. Users should ensure that they are referring to the most recent version.

Disclaimer

While this Program's objective is to allow verification of plant material that has been produced under a system which aims to minimize the risk of infection being present in grapevines, there remains the possibility that a proportion of plants may contain viruses. CGCN-RCCV accepts no liability for claims regarding virus being present in any plants produced under this program.

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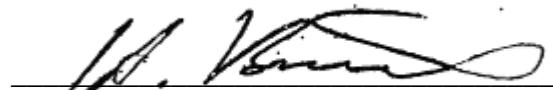
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Review

This directive will be reviewed by the CGCN-RCCV Board of Directors every five years unless otherwise needed. For further information or clarification, please contact the CGCN-RCCV.

Endorsement

Approved by:

A handwritten signature in black ink, appearing to read 'H. Buchler', written over a horizontal line.

Hans Buchler, Chair, CGCN-RCCV

Date: March 8th, 2021

Introduction

The propagation and shipment of grapevines is considered to be a high-risk pathway for the movement of plant pests. Viruses and virus-like organisms are very common in the production of grapevines. While some viruses are known to have a minor effect on infected grapevines, other viruses can cause very serious diseases and can lead to major crop losses (e.g. Grapevine leafroll disease). Grapevines that have been infected by viruses, and most other virus-like organisms, cannot currently be cured. The only way to remove a virus from a vineyard or a block of nursery grapevines is by destroying the infected host plants and by replanting clean grapevines free of viruses listed in Appendix 5.

The virus certification program described in this document uses a systems approach in order to produce virus tested grapevines. Various independent components such as virus-testing, field inspection, isolation distances, and vector control, all work together to minimize the presence and the spread of viruses.

The CGCN-RCCV Certification Program is an audit-based program which uses testing and integrated pest risk management measures as the basis for the phytosanitary certification of grapevines.

Scope

This program is for the use of Canadian grapevine nurseries and breeders wishing to participate in the CGCN-RCCV Certification Program and for CGCN-RCCV staff involved in compliance with this program.

Definitions

Buffer zone: An area free of grapevines, measured from the drip line of the grape canopy to the drip line of the adjacent crop. The drip line is the outermost portion of a canopy from which water would drip to the ground.

Existing Planting(s): Plantings that have been previously planted with material from other accredited certification programs or with non-certified material. An existing planting could also be mother plant(s) kept in an isolated pest-free environment in a greenhouse and used as source material for tissue culture multiplication.

Grapevine(s): Vines, cuttings, grafts, scions, buds, rootstock and other plants and plant products of grapevine for vegetative propagation.

Nursery: Facility that produces nursery stock.

Option 1: A certification system and process starting from G1 (Generation one) tested plant material.

Certified Plus: The Certification mark or label identifying grapevines certified under Option 1.

Option 2: A certification system and process based on testing grapevines used for propagation

for pathogens listed in Appendix 5.

Certified: The Certification mark or label identifying grapevines certified under Option 2.

Pest or pest organism: Anything that is injurious or potentially injurious, whether directly or indirectly, to plants or to products or by-products of plants, and includes any plant proscribed as a pest, pathogens, vectors insects or others

Pest control manager: A qualified person employed by an approved facility and given overall responsibility and authority for implementing the requirements of a specified program.

Pest management plan: A written description of procedures or processes designed to control, suppress, or eradicate pest populations to meet prescribed phytosanitary standards.

Tested: Having been subjected to an official examination, other than visual, to determine the presence or absence of a pest.

Vector: an organism, that transmits a disease or parasite from one plant to another.

Virus: Virus and virus-like pathogens including phytoplasmas, viroids, and graft-transmissible agents.

Virus-certified stock: Plants for planting and propagation produced under an official virus testing and certification program.

1.0 General requirements

To be involved in this program a nursery must be located in Canada and produce propagative grapevines, either own rooted or grafted. Nurseries must have the means to keep adequate records and adhere to outlined protocols.

1.1 Fees

The CGCN-RCCV is charging fees in accordance with the CGCN-RCCV Fee Schedule (Appendix 4). For more information regarding fees associated with this program, contact the CGCN-RCCV.

1.2 Pests regulated under the CGCN-RCCV CERTIFICATION PROGRAM, Option 2 Protocols

A list of grapevine pathogens or viruses that are covered under this program can be found in Appendix 5. Virus testing methods used are based on tests reported in the scientific literature. Reference Appendix 5 for a list of virus-testing methods currently authorized and viruses of concern. Refer to Appendix 7 for future consideration of Grapevine Pinot Gris Virus (GPGV) status.

1.3 Regulated commodities

All propagative plant parts other than seed of the genera *Vitis* spp. intended for propagation and distribution for domestic use.

2.0 Specific requirements

Facilities intending to participate in the CGCN-RCCV Certification Program must submit a complete application package to the CGCN-RCCV by March 31st of the calendar year prior to planting. In subsequent years, a participant in good standing is required to renew their participation in the program by March 31st of the calendar year. If the participant withdraws, or is removed from the program, another application will be required for re-entry into the program.

2.1 Participation in the program

To become an approved facility, the facility must:

- Complete and sign an Application for authorization under the CGCN-RCCV Certification Program for *Vitis* spp. nursery stock (see Appendix 1) indicating that the applicant is willing and able to comply with the terms and conditions of the CGCN-RCCV Certification Program;
- Develop a written Preventative Control Plan (PCP) (please see Appendix 2 for a checklist of items that must be included in the PCP), that clearly describes the procedures or processes designed to control a pest population to a level that meets the requirements of this program. The plan for the facility must include an internal system to verify compliance with the PCP;
- Designate a qualified individual to be the Pest Control Manager (PCM). The PCM is vested with the authority and responsibility to develop and implement a quality management system that meets the requirements of the CGCN-RCCV Certification Program. The PCM may designate qualified personnel or contractors to assist in developing and implementing different components of the quality management system such as: pest management, record keeping and administration;
- Develop a quality management system to meet the administrative, plant identification, and record-keeping requirements of the CGCN-RCCV Certification Program as described in this program;
- Complete a facility inventory declaration that includes the varieties/clones and rootstocks planted, their origin, the class of plantings, the total area to be planted, the field/block history for the past two years and the location of the fields/blocks planted, Universal Transverse Mercator grid reference (system of numerical coordinates to identify any point on the earth's surface) where available range road or lot and concession number, etc. as appropriate. Please see Appendix 3 for the Facility Inventory Declaration.
- Prepare a clear and detailed map of the facility indicating anticipated cultivar locations;
- Submit the completed signed application form and a copy of the facility's PCP to the CGCN-RCCV; and
- Successfully complete a facility evaluation by a CGCN-RCCV authorized auditor (see Appendix 2 for a facility evaluation checklist).

Once a facility is approved under the CGCN-RCCV Certification Program, it will be assigned a unique registration number. The facility will be listed in a central public registry on the CGCN-RCCV website.

2.1.1 Registration transfer to a new owner

Facilities that are approved under the CGCN-RCCV Certification Program and have been transferred to a new owner must re-apply for participation within the program.

2.2 Certification levels

2.2.1 Generation 3 (G3)

All propagative material produced under this program must be derived from existing plantings where all plants to be used for propagating material have been tested for all viruses on the list in Appendix 5. When existing plantings are found free of all viruses (except Grapevine Rupestris Stem Pitting associated Virus and Grapevine Fleck Virus), the plants will be considered Generation 3.

2.2.2 Generation 4 (G4)

Material must be propagated from G3 mother plants, grown in accordance with this program. This is material most often grown for retail sale, i.e. wholesale and retail nurseries.

2.3 General production requirements

2.3.1 Planting sites

All G3 and G4 planting sites must be clean cultivated or planted with an approved cover crop as outlined in Appendix 9.

Planting sites should be selected to minimize contamination by virus-vectoring nematodes from surrounding land, through drainage, flooding, irrigation, or other means. Section 2.4 of this program outlines the buffer zone requirements in relation to plantings.

Material that is not regulated under the CGCN-RCCV Certification Program but that may be a host of the pests regulated under the CGCN-RCCV Certification Program should be located as far as possible from plantings of CGCN-RCCV Certification Program approved material. Minimum distances are described in section 2.4.

Expansion of blocks at planting sites is possible upon request. All of the requirements necessary for authorizing a new block must be met. See Appendix 9, section 2.2

Sampling and virus testing of the expanded section of the block must be conducted on the same schedule as the original part of the block.

For information regarding the detection of a quarantine pest in relation to planting sites,

please see section 2.8.1 of this document.

2.3.2 Pest management

Regular treatment schedules, or other pest management strategies, must comply with provincial recommendations and treatments must be applied to control potential virus vectors, e.g. mealy bugs, scale, aphids, mites, treehoppers, leafhoppers, etc. Records of spraying, surveying or other pest management actions must be maintained and made available to the CGCN-RCCV inspector on request. Treatment and control of known and suspected vectors of grapevine viruses is critical for the maintenance of virus free status and should be practiced on both the certified area and the surrounding grape plantings if the area is maintained by the operator.

2.3.3 Nematode testing

Soil sampling must be conducted by a CGCN-RCCV approved person and, any analysis of soil samples for virus-vectoring nematodes must be carried out by a laboratory authorized (Appendix 8) by the CGCN-RCCV.

2.3.3.1 Existing planting sites

Soil must be tested for nematodes every year for 3 years and then every third year thereafter. If tests are positive, broadleaf weeds growing in the buffer zone should be tested for nepovirus. *Xiphinema* or *Longidorus* nematodes must be tested for presence / absence of nepovirus.

If *Xiphinema* or *Longidorus* are present in the buffer zone, grapevines in the certified block will also need to be tested for nepoviruses on an ongoing basis.

For further details, refer to Appendix 9.

2.3.4 Sanitation and cultural practices

Operators must take steps to ensure that tractors and other equipment used in the CGCN-RCCV Certification Program approved block are free of soil and other matter potentially harbouring vectors prior to entering the block. Suitable precautions must be taken to prevent the introduction of pathogen virus-vectoring nematodes, which may be associated with soil and could be moved into the CGCN-RCCV Certification Program blocks with cultivation or spray equipment. Records of equipment cleaning must be maintained and made available upon request.

Production maintenance activities must be planned so that workers start with the highest certification level block in order to minimize the movement of potentially virus infected, nematodes, mealybug and scale insect populations.

2.3.5 Block/field monitoring

The PCM must monitor the approved block for visual symptoms of viruses and other diseases at least once a month during the growing season. Records of these inspections must be kept, including the name of the person who performed them, the dates inspected, area monitored and the results of the monitoring. If signs or symptoms of a virus or other pests of significance are found during these visual inspections, the CGCN-RCCV must be

contacted immediately for further testing and confirmation.

2.3.6 Identifying marks

The CGCN-RCCV and the facility PCM must agree upon appropriate labels for the facility. The labels must be weather resistant and must distinguish material grown under the CGCN-RCCV Certification Program from other types of material. The PCM must notify the CGCN-RCCV in advance if the facility wishes to modify the labelling system.

2.3.6.1 Grapevines planted in the ground

In a row of grapevines in which every plant consists of the same cultivar/rootstock combination, the grapevines at both ends of the row must be labelled to identify the cultivar/rootstock combination of that row. When more than one combination is planted in a row, each cultivar/rootstock combination must be clearly labelled within the row.

2.3.6.2 Grapevines in pots or pot-in-pot systems (containerized material)

Each potted grapevine or container must be clearly identified to reflect its certified status and the cultivar/rootstock combination. A typical weather-resistant label attached directly to the grapevine and bearing that information is recommended however any weather-resistant identification method (stickers, paint, pot colour, rubber tape, etc) approved by CGCN-RCCV may be used. If another identification method other than labels is used then the facility's records must include the required information and link it to the chosen identification method.

2.3.6.3 Harvested stock

Harvests of individual grapevines, bundles or crates must be labelled and processed in separate facilities or on separate days from material not in the CGCN-RCCV Certification Program. If processing happens in the same facility where non-certified material is handled, the facility needs to be thoroughly cleaned and any non-certified propagating material has to be removed from the premises in order to avoid any accidental co-mingling of product. A record of the cleaning procedure must be kept.

2.4 Specific production requirements

2.4.1 G3 requirements for Option 2

Origin of replanting material (rootstock and scion). Origin of rootstock replanting material to replace removed or missing plants must originate from CGCN-RCCV Certified plantings if available. Any other rootstock sources must be tested before grafting according to protocols developed by CGCN-RCCV. Scion wood must be sourced from CGCN-RCCV Certified virus-free material.

2.4.1.1 Buffer zone

Buffer zones are necessary to reduce the chance of infection by naturally transmitted viruses. G3 blocks must be separated from other non-certified material by a minimum of 6 metres from the drip line of the canopy on all sides. The buffer zones must be

clean cultivated or planted with an approved cover crop or the buffer zone may be planted with virus tested Rosaceae or *Vitis* spp. plants. For more information on cover crops, please reference Appendix 9.

2.4.2 G4 requirements

Planting sites on which tree fruits or other Rosaceae originating outside this certification program, or grapevines were previously grown, cannot be used for planting G4 blocks for two years after removal of these crops. Alternatively, these plants can be treated with a systemic herbicide, followed by removal of the treated host plants. This must be followed by a fallow period of one growing season.

2.4.2.1 Buffer zone

Approved planting sites must have a minimum of 4 metre buffer zone separating CGCN-RCCV Certification Program grapevines from grapevines not in the CGCN-RCCV Certification Program. The buffer zones must be clean cultivated or planted with an approved cover crop. Alternatively, the buffer zone may be planted with woody plants, such as conifers, that are not hosts to grapevine viruses or virus tested *Vitis* spp. or Rosaceae plants.

2.4.2.2 Identifying Marks

G4 plants of the same rootstock/scion combination in nursery rows must be clearly labeled at the beginning and end of the rows. If more than one rootstock/scion combination is planted in a row, they must be separated by a one metre gap and clearly labeled at the beginning and end of each combination.

2.4.2.2 Virus testing

Follow-up virus testing of G4 material is not required except when virus-like symptoms are detected during inspection.

2.4.3 Specific requirements for the production of containerized grapevines

Containerized grapevines must meet all the requirements of this program as outlined in this document, and the specific containerized requirements outlined below must also be followed.

2.4.3.1 Soil and growing media

2.4.3.1.1 Soil-free growing media

The growing media to be used in containers must consist of soil-free material, including but not limited to: expanded or baked clay pellets; ground coconut husks, coffee hulls, cocoa pods or rice husks; peat; perlite, pumice, sawdust, sphagnum, vermiculite or bark. The components of the growing media must not have been previously used for growing plants or for other agricultural purposes. The components of the growing media must be mixed and maintained under conditions which preclude soil contamination or contamination by water runoff. At the inspector's discretion, samples of the media may be taken to verify the absence of soil and/or nematodes. The above list of growing media is not exhaustive. Other growing media

may be used if approved by the CGCN-RCCV.

2.4.3.1.2 Soil

Soil may be used for containerized plants but the soil shall be tested and found free of *Xiphinema* and *Longidorus* nematodes capable of transmitting nepoviruses, or fumigated prior to planting. Other treatments may also be used if approved by CGCN-RCCV. The soil must also be sieved to remove any significant root debris.

Note: Further restrictions for other soil pests (ex.: Japanese Beetle or Grape Phylloxera in regulated areas) may apply regarding the use of soil for containerized plants, for domestic movement.

2.4.3.1.3 Barriers to prevent soil contamination

For containerized plants grown in nursery blocks, the containers must be set on a barrier which prevents direct soil contact, such as plastic, hard packed clay, pavement, or a minimum of five centimeters of coarse gravel. The site must be located to preclude soil contamination, either directly or through water runoff from drainage, flooding, irrigation or other means eg. raised, or protected by dams or drainage ditches.

2.4.3.1.4 Buffer zones

Buffer zones are not required for containerized grapevines.

2.5 Record keeping requirements

A participating facility must maintain records on its premises. All records must be maintained and retained in a manner so as to prevent accidental loss. These records must be kept on site for seven years and made available to CGCN-RCCV staff upon request. Failure to produce these records in a timely manner may jeopardize certification status. These records include:

- Records indicating the quantity, Latin (botanical) name, variety /clone, rootstock, origin, date of introduction of grapevine stock to the facility, date of propagation, field, nursery row planting and accession number. These records must be kept at the nursery for seven years after the grapevines have been sold or removed. The use of Appendix 3, facility inventory declaration, for these records is suggested. Growers inventory records can be used instead of Appendix 3 provided they contain the same information. Records must be updated to include material planted since the last systems audit inspection;
- the facility inventory declaration must be updated whenever new material is planted or new blocks are established;
- records of sale or plant movement, invoices. The records must list all grapevines (grafted or own rooted) planted and sold under the CGCN-RCCV Certification Program;
- data collected from monitoring, control or eradication and surveillance activities;
- any cultural and treatment records including planting dates, spray records, cultivation, virus monitoring, bud collecting, grafting and re-grafting, quantities, etc.; and,

- maps of the facility indicating planting blocks.

2.6 Required CGCN-RCCV inspections

The CGCN-RCCV will conduct one systems audit inspection per year and a minimum of one surveillance audit inspection during the production season at a time when disease expression can be observed in the plant material. Audit inspections will take place at a time agreed to by CGCN-RCCV and the approved facility. Facility management representation during the audit is recommended.

The systems audit inspection is a review of the organizational structure, procedures, processes and resources used in implementing the CGCN-RCCV Certification Program in the designated facility. This inspection will assess all system elements of this policy using the checklists in Appendix 2 and may include a hands-on product and/or block/field inspection for viral symptoms or other regulated pests.

The surveillance audit inspection involves an inspection of the plant material, culture of plant material, and a review of documents in the facility to ensure that these conform to the requirements of the CGCN-RCCV Certification Program.

All G3, and G4 blocks must be inspected by a CGCN-RCCV approved inspector at least once during each growing season, and at other times as deemed necessary by a person designated by the CGCN-RCCV to ensure that the program requirements are met. The inspection includes the stock, the land, and any associated documentation.

If it is suspected that material may be infested with a listed pest (refer to Appendix 5), samples of plant parts or the soil surrounding the plants may be taken and tested, at the facility's expense, in order to ensure that the approved block continues to meet the requirements of this program.

2.7 Testing

Any testing for viruses, virus-like diseases, phytoplasmas or viroids must be carried out by an approved lab in Appendix 8. All testing will be at the expense of the nursery facility.

2.8 Non-conformances

The CGCN-RCCV reserves the right to suspend a facility from the CGCN-RCCV Certification Program if any non-compliance is found that threatens the integrity of the program. Elements of the program of a non-critical nature which are evaluated as not in compliance during the facility surveillance or systems audit inspection must be corrected within a timely fashion, as determined in consultation with an Approved Laboratory (Appendix 8). The PCM must attend the facility evaluation and annual systems audit inspection. The PCM is also responsible for ensuring appropriate corrective actions are undertaken.

If the CGCN-RCCV determines that a facility shall be suspended from the CGCN-RCCV Certification Program, the CGCN-RCCV must notify the facility, in writing, that it is no longer eligible to market plants under the CGCN-RCCV Certification Program. In addition, the facility must be informed in writing of the corrective actions required for compliance. Non-compliance with any requirements in this program may result in the cancellation or suspension of registered status of the block or facility until corrective action has been undertaken and approved by the

CGCN-RCCV. If corrective action is feasible, and is undertaken within one growing season, registration of a block or facility may be reinstated. Any infected material and its progeny or parents will cease to be eligible for sale under this program until pest freedom can be re-established and confirmed.

If corrective action is not feasible or is not undertaken within the growing season, CGCN-RCCV Certification Program authorization of a block or facility will be cancelled and it will be prohibited from producing plants under the CGCN-RCCV Certification Program.

2.8.1 Detection of a quarantine pest

If a quarantine pest and/or disease to Canada is detected in an approved facility, the CFIA will be notified immediately by the CGCN-RCCV. Further action will be the responsibility of the CFIA. Depending on the severity of the pest infestation, the facility may be suspended from the CGCN-RCCV Certification Program.

2.8.2 Re-approval following suspension from the CGCN-RCCV CERTIFICATION PROGRAM, Option 2 protocols

When a facility wishes to re-register a block with lapsed registration, the CGCN-RCCV will evaluate the block on a case-by-case basis. The CGCN-RCCV will only re-register such a block if it is satisfied that the block meets the criteria for the requested level of authorization.

Significant sampling and testing over a period of time may be required before the CGCN-RCCV is confident that the block meets the criteria.

2.9 Corrective measures

When appropriate corrective actions have been taken and the facility meets all the requirements of a facility evaluation and all other conditions of this program, the CGCN-RCCV may authorize reinstatement in the program.

Appendix 1: Application for authorization under the CGCN-RCCV Certification Program for grapevines

Name of facility: _____

Location of facility: _____

Mailing address of facility (if different from location):

Telephone number: _____ Fax number: _____

Email Address: _____

Name, contact phone and email of owner/person having the possession, care or control of the facility:

Name and contact phone and email of Pest Control Manager:

Intended Canadian provinces for sales of produced grapevines:

I, _____ the owner/person in possession, care, or control of the above-named nursery have read and understood all the conditions and obligations stated herein by which I may sell grapevine nursery stock, *Vitis* spp., in accordance with the CGCN-RCCV CERTIFICATION PROGRAM.

I agree to immediately suspend shipment of regulated commodities if notified by the CGCN-RCCV that the designated facility is in non-compliance with the CGCN-RCCV CERTIFICATION PROGRAM. I will immediately notify the CGCN-RCCV if viruses or any other regulated pests are found in the facility. I will allow the name and location of my facility to be included on a publicly accessible website list of nurseries approved under the CGCN-RCCV CERTIFICATION PROGRAM.

Dated _____, 20__ at _____,

Province of _____

Applicant's Signature _____

Facility and Preventative Control Plan evaluation completed and facility recommended for participation by:

Authorized CGCN-RCCV Official: _____ Date: _____

Facility registration number: _____

Application approved by: _____

Authorized CGCN-RCCV Official Date: _____

Appendix 2: Critical elements for the evaluation of the application, facility declaration and the facility preventative control plan.

ITEM CHECK

ITEM	CHECK
1. Has the facility developed and implemented a Preventative Control Plan (PCP) that meets the requirements of the CGCN-RCCV Certification Program.	
2. Does the PCP describe, specify all details (when, where, by whom, how, what is done if pests are found) the procedures for:	
2.1 examination of plant material entering an approved facility	
2.2 examination of production areas (Is there a map of the facility provided in the PCP?)	
2.3 examination of shipping areas	
2.4 pest controls	
2.5 handling, storage and delivery areas	
2.6 ensuring that all pest finds are entered into a Pest Log and that the PCM and the CGCN-RCCV are notified immediately of any pest finds of significance. Refer to Appendix 5	
2.7 ensuring that the persons designated to carry out particular components of the PCP are qualified to do so.	
3. Are the buffer zones owned or under appropriate management control by the applicant? Please provide detail.	
4. Does the facility have a system in place to ensure that only eligible grapevines that comply with the requirements described in this program are marketed under the CGCN-RCCV Certification Program.	
4.1 Clear separation in location or time of non-certified material processing.	
5. Records management:	
5.1 Are they kept for 7 years	
5.2 Is there a responsible person named and contact information provided?	
5.3 Do the records adequately record tracking of material on-site, how material is stored and propagated, records of propagation, procedures or instructions for working with certified material, organizational structure and responsibilities, corrective or preventive actions ordered, record of distribution, list of all suppliers providing plants and products including certification documentation, copies of Phytosanitary Certificates issued, data collected from monitoring, treatment, control or eradication and verification activities.	

Appendix 3: Facility inventory declaration –G3

Facility name: _____
Pest Control Manager: _____
CGCN-RCCV Registration number: _____
Date: _____
Facility mailing address: _____

Block /Field No.: _____
Variety /Clone: _____
Variety/Clone Source: _____
Rootstock: _____
Rootstock Source: _____
No. of ha: _____
Generation: _____
Quantity Planted: _____
Date of Planting/Proposed Date of Planting: _____
Block/Field History: _____
Location of Field: _____
Previous Year: _____
2nd Year Previous: _____

**repeat as needed for each block/field/clone at the G3a level*

Appendix 3B: Facility inventory declaration – G4

Facility name: _____
Pest Control Manager: _____
CGCN-RCCV Registration number: _____
Date: _____
Facility mailing address: _____

Block /Field No.: _____
Variety /Clone: _____
Variety/Clone Source: _____
Rootstock: _____
Rootstock Source: _____
No. of ha: _____
Generation: _____
Quantity Planted: _____
Date of Planting/Proposed Date of Planting: _____
Block/Field History: _____
Location of Field: _____
Previous Year: _____
2nd Year Previous: _____

**repeat as needed for each block/field/clone at the G4*

Appendix 4: Fee Schedule

Nurseries applying to the CGCN-RCCV Certification Program will be required to submit a \$500 non-refundable administration fee along with their application. This will go towards the administration costs involved in reviewing the application, as well as setting up the applicant nursery for testing.

Nurseries participating in the Program will be required to collect a \$0.25 levy per vine sold under the CGCN-RCCV Certification Program. This amount will be remitted back annually to CGCN-RCCV on January 30th, for the 12 months prior (January 1st to December 31st) CGCN-RCCV reserves the right to audit invoices and nursery procedures to ensure the amount remitted is correct.

The price of a vine produced through this program is up to the discretion of the nursery.

The levy will be subject to a yearly review by CGCN-RCCV.

Appendix 5: Approved virus-testing methods and viruses of concern

The CGCN-RCCV Certification Program has identified the viruses of concern for testing at each Generation level. This is subject to revision as necessary.

Grapevine Viruses of Concern:

Virus of Concern	G1	G2	G3	G4
Arabis Mosaic Virus	X	O	O	
Grapevine Fanleaf virus	X	X	X	
Grapevine Leafroll Associated Virus 1	X	X	X	
Grapevine Leafroll Associated Virus 3	X	X	X	
Grapevine Leafroll Associated Virus 4 strains	X	O	O	
Grapevine Leafroll Associated Virus 7	X	O	O	
Strawberry latent ringspot virus	X	O	O	
Raspberry ringspot virus	X	O	O	
Tomato Ringspot virus	X	O	O	
**Grapevine Fleck Virus	X	O	O	
Grapevine Leafroll Associated Virus 2	X	O	O	
Grapevine Leafroll Associated Virus 2 Red Globe Strain	X	O	O	
Grapevine Virus A (associated with grapevine Kober stem grooving disease)	X	O	O	
Grapevine virus B (associated with grapevine corky bark disease)	X	O	O	
Grapevine Virus D (associated with rugose wood disease)	X	O	O	
*Grapevine Virus E	X	O	O	
*Grapevine Virus F	X	O	O	
Grapevine red blotch virus	X	X	X	
Grapevine Pinot gris virus	X	X	X	
Grapevine asteroid mosaic-associated virus	X	O	O	
**Grapevine rupestris stem pitting associated virus and its strains	X	O	O	
Raspberry ringspot virus	X	O	O	
Tomato black ring virus	X	O	O	
Phytoplasmas: Flavescence dorée, Bois noir, Australian grapevine yellows, Palatinate Yellow, Aster Yellows, X Disease	X	O	O	
*Crown Gall	X	O	O	

X: testing mandatory at generation level

O: option based on field agent recommendations

***not on G1 testing under CFIA protocol**

**** allowed under Option 2 protocols**

Approved testing methods:

- 1) Nucleic acid detection by PCR (polymerase chain reaction), Quantitative PCR, ddPCR and MCHqPCR
- 2) High Throughput Sequencing
- 3) Any other diagnostic method approved by CGCN-RCCV

Appendix 6: Frequency of retesting

If any positives found below the acceptable level of 0.1%, all vines in the composite plus one vine from each side in the same row must be removed or the individual vines within the composite should be re-tested for the above-mentioned viruses and identify the vines infected and removed along with ones on either side of the positively tested vine.

In the case of percent positives equals or exceeds the acceptable level of 0.1%, the sample size for subsequent years shall be calculated based on the Table 1 listed below.

In case of the percent positives records higher than the previous year testing which indicates the spread of virus within the vineyard block, then the sample size for subsequent years shall be calculated based on the Table 1 listed below. This applies to viruses that need to be tested at G3 level according to Appendix 5.

Table 1

Virus Infection in Year 2 % of total vines tested	Virus testing for blocks exceeding allowable limit of 0.1% in 3rd or Subsequent Years
0.1-1%	20%
1-2 %	40%
2-5 %	60%
>5 %	100%

***virus testing in 3rd and subsequent years may be limited to viruses known to be present.**

Appendix 7

Grapevine Pinot Gris Virus (GPGV)

Currently there is still some uncertainty around different strains of GPGV occurring in Canada and around the world. There are asymptomatic strains that seem to have no effect on the growth of the vine and the quality of the grape that are relatively widespread in most of the Provinces, while rare symptomatic strains appear to have a negative effect on yield and quality. If further research indicates that there is little or no risk of asymptomatic strains becoming symptomatic, and assessed to have no horticultural significance, CGCN-RCCV may decide to allow the presence of asymptomatic GPGV in propagating blocks certified under Option 2 protocols.

Appendix 8: Approved labs

The CGCN-RCCV has approved the following labs for testing of grapevine material in the CGCN-RCCV Certification Program. Lab choice for testing is based on location, and lab availability. Other labs will be considered as needed.

Approved labs:

CCOVI Virus Diagnostic Lab at Brock University
1812 Sir Isaac Brock Way
St. Catharines, Ontario
Contact: Sudarsana Poojari

Appendix 9: Approved woody plants/cover crops

1. Buffer Zones and Ground Covers

1.1 To reduce *Xiphinema* and/or *Longidorus* nematode populations and their potential for lateral spread, and to control the spread of nepoviruses, **the groundcover of the 6-metre buffer zone and the certified block** should be one of the following:

- maintained as a homogeneous stand of perennial turf grass established by intentionally seeding with varieties of perennial ryegrass or fescue selected for use as perennial ground covers with minimal contamination by broadleaf weeds.
- planted to an annual Sudangrass or mustard species with biofumigant properties, such as white (*Sinapis alba*) or brown (*Brassica juncea*) mustards, and cultivated under in mid-season to optimize green manure biofumigant effects.
- clean cultivated at least twice a season to disrupt cycles of broadleaf weed growth.

1.2 If the **buffer zone or groundcover of the certified block** is not maintained according to one of the three options listed above, the soil must be tested for *Xiphinema* and *Longidorus* nematodes every year for 3 years and then every third year thereafter. If tests are positive, broadleaf weeds growing in the buffer zone should be tested for nepovirus. *Xiphinema* or *Longidorus* nematodes must be tested for presence / absence of nepovirus.

1.3 If *Xiphinema* or *Longidorus* are present in the buffer zone, grapevines in the certified block will also need to be tested for nepoviruses on an ongoing basis.

1.4 In addition to the above options, **the groundcover of the certified block** may be planted as a green manure cover crop to an annual or short-lived perennial legume species, such as white or berseem clover, with cultivation and re-seeding every 1-3 years, as appropriate to the legume species, in order to control perennial weeds.

Appendix 10

Option 2 – ‘Certified’ *Allowing plants not of G2 or G3 origin into the long-term certification process*

This will allow existing nurseries with plantings that are not derived from G2 or G3 material to become recognized as ‘Certified’ at the G3 level under the long-term standard if the following conditions are met:

- All plants to be certified must be tested for all viruses that the CFIA and the NAPPO partners are testing for (Appendix 5).
- Diagnostic tests using High Throughput Sequencing (HTS) or any other appropriate and accurate diagnostic tool approved by CGCN-RCCV must be performed on all grapevines that are to be certified under the CGCN-RCCV long term standard.
- Maximum composite sample size will be determined based on the type of diagnostic tool used and based on the best available science at the time.
- All grapevines testing positive for any of the viruses listed in Appendix 5 (with the exception of Grapevine Rupestris Stem Pitting-associated Virus and Grapevine Fleck Virus) will have to be removed.
- Soil tests for nematodes must be performed in the planting to be certified as well as in the 6-meter buffer zone as described in Appendix 9. If grapevines have tested positive for nepoviruses, additional sampling specifically around those plants will be required.
- If *Xiphinema* or *Longidorus* nematodes are detected, they and any dicot weeds will have to be tested for nepovirus presence, using a sampling protocol approved by CGCN-RCCV.
- If nepovirus is present in grapevines or dicot weeds, and nematodes, the respective block may not qualify for certification, pending further investigation on the specific block.
- After the first testing of all grapevines and removal of positives, rigorous re-sampling and testing protocols will have to be followed. A random composite sample of 20% per year of the certified planting will initially be required.
- The frequency and sample size of long term, ongoing re-testing will be established based on the types of viruses found in the initial tests and on the presence or absence of confirmed or suspected vectors.
- Origin of replanting material (rootstock and scion). Origin of rootstock replanting material to replace removed or missing plants must originate from CGCN-RCCV Certified plantings if available. Any other rootstock sources must be tested before grafting according to protocols developed by CGCN-RCCV. Scion wood must be sourced from CGCN-RCCV Certified virus-free material.