NAPPO
North American Plant Protection Organization
Organización Norteamericana de Protección a las Plantas

NAPPO Regional Standards for Phytosanitary Measures (RSPM)

RSPM 18
Guidelines for Phytosanitary Action Following Detection of Plum Pox Virus

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Contents

Review

NAPPO Standards for Phytosanitary Measures are subject to periodic review and amendment. The next review for this Standard is 2020. A review of any NAPPO Standard may be initiated at any time upon the request of a NAPPO member country.

Approval

This Standard was originally approved by the North American Plant Protection Organization (NAPPO) Executive Committee on October 20, 2002, and revised on October 17, 2004. The current revision was approved on October 30, 2015, and is effective immediately.

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Implementation

See the attached Implementation Plans for implementation dates in each NAPPO country.

Amendment Record

Amendments to this Standard will be dated and filed with the NAPPO Secretariat.

Distribution

This standard is distributed by the NAPPO Secretariat, to the Industry Advisory Group (IAG) and Sustaining Associate Members (SAM), the International Plant Protection Convention (IPCC) Secretariat, and to other Regional Plant Protection Organizations (RPPOs).

Introduction

Scope

These guidelines outline the recommended procedures for delimiting and eradicating Plum Pox Virus (PPV) This standard is applicable to situations where countries would be applying eradication measures. The guidelines also outline procedures for establishing and maintaining a PFA, PFPP and PFPS to allow ongoing trade in PPV susceptible plants for planting and propagation. These guidelines do not preclude other requirements (e.g. certification) for the movement of *Prunus* plants for planting and propagation between countries.

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Definitions

Definitions of phytosanitary terms used in this standard can be found in NAPPO RSPM 5 and in ISPM 5.

Outline of Requirements

Background

Given the discovery of Plum pox virus (PPV) Strain D in Pennsylvania, U.S.A. in 1999 and in Ontario, Canada in 2000, the Executive Committee of the North American Plant Protection Organization (NAPPO) requested its Fruit Tree Panel to examine options for the safe movement of PPV-susceptible plants for planting and propagation among the NAPPO countries. In light of eradication efforts in North America, the focus was on actions taken after detecting PPV and on the IPPC standards for Pest Free Areas (PFA), Pest Free Places of Production (PFPP) and Pest Free Production Sites (PFPS) as potential alternative phytosanitary options.

Requirements

This document provides procedures for National Plant Protection Organizations (NPPOs) of the NAPPO countries to use during a PPV outbreak in order to engage in bilateral discussions with other NPPOs to recognize parts of their countries as free of PPV, thus allowing movement of susceptible host material from these areas. The following general procedures apply: certification, surveys, quarantine/controlled movement, audit, boundary (officially recognized), and appropriate documentation. Methods for conducting surveys are available in Gottwald et al. (2013a, 2013b), Hughes and Gottwald (1998, 2001) Hughes et al. (2002a, 2002b), and Rimbaud et al. (2015).

These guidelines outline the basic procedures that should be considered for defining the extent of the outbreak, as well as the protocol to declare eradication. They also outline procedures for establishing and maintaining a PFA, PFPP and PFPS to allow ongoing trade in PPV susceptible plants for planting and propagation. Additional procedures may be agreed to on a bilateral basis.

Even when a country has declared eradication, continued PPV virus testing of export plants for planting and propagation and other surveys and inspections (as per Sections 1.5, 1.6, 6 and 7) are recommended as an ongoing process.

1. Rationale for Regulatory Actions

1.1 Spread by propagation

Long distance spread of PPV is mainly by movement of diseased plants for planting and propagation. These guidelines put the highest priority on eliminating possible spread in this manner.

1.2 Aphid spread

The distance over which aphid vectors can move PPV is variable. Reported distances in published literature vary from a few meters to more than a kilometer. The measures listed in these guidelines are based on the fact that virus spread is more likely in the immediate area of infection (up to 600 m) and less frequently in the areas beyond.

1.3 Spread from infected fruit

PPV-infected fruit is a potential inoculum reservoir for aphid acquisition and possible transmission to healthy trees. Fruit from infested areas poses a risk to these trees. Therefore, culled fruit should be handled in a manner which precludes aphid access and transmission to healthy trees.

1.4 Non-certified stock

The propagation and movement of non-certified stock poses the greatest risk for spreading PPV. In nurseries, non-certified stock may be grown in close proximity to virus-certified stock and, therefore, warrants the extra precautions described in these guidelines.

1.5 Virus-certified stock

All NAPPO countries should include testing for PPV as part of their certification programs along with appropriate isolation distances. A minimum of 1.5 kilometers is recommended to protect against pathogens vectored by aphids i.e. PPV. Virus-certified source trees for seed, scionwood and rootstock should be tested for PPV at least once every three years, even after eradication of PPV is achieved.

1.6 Surveillance

Field experience from Canada and the United States, where the virus has been present for some years, showed that general surveillance failed to detect PPV before it had spread significantly. Thus, specific methods such as field surveys (symptomatic and asymptomatic leaves) and packing house inspections are recommended. It is also strongly recommended that these measures be continued when PPV eradication is declared to aid in the early detection of any future PPV introductions.

2. Actions Taken After Detecting PPV

Following the initial detection of PPV, delimiting and detection surveys and trace-back and trace-forward should be carried out and a quarantine area established as soon as possible. The goal should be to define those areas where PPV is present, identify the extent of the infestation, and contain it to facilitate both the eradication of the infestation, and the safe movement of PPV hosts.

2.1 Delimiting surveys

The delimiting survey is an intensive survey to identify the area infested by PPV, including sites with known infestations, and those sites potentially infested as established by trace-back and trace-forward and other similar investigations. These surveys should include all susceptible species in orchards, nurseries, natural areas, residential, public and commercial properties, etc. The purpose of this survey is to determine the extent of the infested area and facilitate the establishment of a quarantine area around the infestation. The survey methodology should be statistically sound such as the hierarchical sampling described in Hughes and Gottwald (1998) and Hughes et al. (2002a, 2002b).

2.2 Quarantine area

The quarantine area should be officially established and include all infested areas. It is recommended that a buffer zone of at least 1.5 kilometers from all outlying positive trees be used to define a quarantine area. Detection surveys are recommended to 10 km beyond a quarantine area. Movement out of the quarantine area of susceptible species and their propagative parts should be controlled. Intensive surveys should continue within the quarantine area until eradication. If eradication is declared, surveys should continue within the former quarantine area. To limit propagative spread of PPV, replanting and propagation of PPV susceptible species within a quarantine area should be prohibited.

2.3 Eradication

An eradication program should be initiated in the quarantine area. This program should include the elimination of infested trees, exposed trees and tree regrowth, vector control, replant limitations, and other procedures. The program should apply to all infested host material regardless of location, e.g. orchards, nurseries, natural areas, residential, public or commercial properties, etc.

2.4 Trace-back and trace-forward investigation and associated surveys

Trace-back and trace-forward investigations should be initiated to identify origin and distribution of all plants for planting and propagation that have entered or been removed from the quarantine area. This material may be the source of the infestation and/or indicate other potentially infested locations. The immediate surrounding area of both the recipient and provider of the plants for planting and propagation should be intensively surveyed.

2.5 Detection surveys

Plants for planting and propagation, e.g. rootstock, budwood, seed, and finished trees, should be intensively surveyed for the presence of PPV.

A general survey of susceptible species should be conducted in orchards, packing houses, natural areas, residential, public, and commercial properties, etc. The purpose of this survey is to identify infestations of PPV. The hierarchical sampling (Hughes and Gottwald (1998), Hughes et al. (2002a, 2002b)) or another statistically sound method should be used to the extent possible, especially in areas of high risk of spread or likelihood of occurrence. The diagnostic protocols as described in the ISPM 27 Annex 2: 2012 should be followed.

3. Pest Free Areas (PFA)

Areas where general surveillance indicates that PPV is not present are suitable for the establishment of a PFA. This option should be avoided within infested areas due to the biology of PPV. If the PFA is located within a country, or part of a country, that is later declared free of PPV, these procedures are no longer necessary**.** However, the maintenance of a PFA should minimize the effect of a subsequent infestation.

3.1 Establishment of a PFA

3.1.1 Boundaries

The area should be described based on officially recognized boundaries. Physical features that can act as natural barriers should be identified. The PFA should be no closer than 10 km from a quarantine area.

3.1.2 Movement restrictions

Only material from another PFA, PFPP or PFPS or material that has been officially tested and found free of PPV may be permitted to enter into a PFA.

3.1.3 Surveys

All survey procedures to detect and delimit PPV as described in sections 2.1 and 2.5 apply to the establishment of a PFA.

3.2 Maintenance of a PFA

3.2.1 Movement restrictions

Movement restrictions described in section 3.1.2 should be maintained.

3.2.2 Monitoring

The requirements for general surveillance as described in the ISPM 4: 1996 should be followed. This should be supplemented by surveying sources of rootstock, budwood and seed, and monitoring of cull fruit at packing houses and canneries. Surveys of orchards are also recommended.

4. Pest Free Places of Production (PFPP) and Pest Free Production Sites (PFPS)

This option could be implemented in non-surveyed areas where general surveillance indicates that PPV is not present. Due to the biology of PPV, this option should be avoided within infested areas (see exception under section 4.3). If the PFPP or PFPS is located within a country, or part of a country, that is later declared free of PPV, these procedures are no longer necessary. However, the maintenance of a PFPP or PFPS should minimize

the effect of a subsequent infestation. ISPM 10: 1999 contains further details of the concept and criteria for PFPPs and PFPSs.

4.1 Establishment of a PFPP or a PFPS
All requirements to establish a PFA in Section 3.1 apply to this section.

4.1.1 Additional requirements for a PFPP or a PFPS

4.1.1.1 Field grown plants for planting and propagation
Virus-certified stock should be isolated from non-certified stock by a minimum of 600 m unless sources of rootstock, budwood and seed used to produce the non-certified stock are tested for PPV. Non-certified source trees from which propagative material is harvested should be tested within one year prior to, or one year after, the collection of the propagative material. Trees produced from non-certified sources should not leave the PFPP or PFPS until the above testing is complete.

Buffer Zone - All PPV susceptible species within 600 m of the nursery, including orchards, other nurseries, natural areas, residential, public and commercial properties should be surveyed. All orchards and nursery plantings should be surveyed by hierarchical sampling (Hughes and Gottwald (1998), Hughes et al. (2002a, 2002b)) or another statistically sound method. All plants of PPV susceptible species within natural areas, residential, public and commercial properties should be individually tested.

4.1.1.2 Plants for planting and propagation in an enclosed facility
The facility structure should be constructed to exclude PPV vectors. Production practices should include measures to prevent entry of PPV vectors and PPV infested material into the facility.

Buffer Zone - All plants of PPV susceptible species within 40 m of the enclosed facility should be removed or regularly tested.

4.2 Maintenance of a PFPP or a PFPS
All requirements to maintain a PFA in section 3.2 apply to this section.

4.2.1 Buffer zone
The buffer zones described in 4.1.1.1 and 4.1.1.2 should be surveyed at least every 3rd year.

4.2.2 Virus-certified sources
Virus-certified propagative source material (e.g. rootstock, budwood, and seed, etc.) should be surveyed at least every 3rd year and buffer zones maintained according to the criteria described in 4.1.1.1 and 4.1.1.2 .

4.2.3 Non-certified sources
Non-certified source trees from which propagative material is harvested should be tested within one year prior to, or one year after, the collection of the propagative material. Trees

produced from non-certified sources should not leave the PFPP or PFPS until the above testing is complete.

4.3 PFPS within infested areas

PPV susceptible species may be moved from an infested area only if it is certified free of PPV and originates from an enclosed, NPPO-approved facility as described in 4.1.1.2.

5. Change in Status of a PFA, PFPP or PFPS

The detection of PPV within a PFA, PFPP or PFPS will immediately revoke the PPV free status of the area. To regain pest free status the procedures in section 6 below should be followed.

6. PPV Eradication

ISPM 9: 1999 should be consulted in addition to the PPV-specific criteria and measures described below.

6.1 Survey criteria to confirm PPV eradication

Intensive surveys in the quarantine area should include all susceptible species in orchards, nurseries, natural areas, residential, public and commercial properties, etc. All orchards should be surveyed using the hierarchical sampling described in Hughes and Gottwald (1998) and Hughes et al. (2002a, 2002b); or another statistically sound method. In addition, monitoring of cull fruit at packing houses and canneries, etc. should be done.

Three consecutive years of negative survey results are needed to declare eradication of the PPV infestation.

Delimiting surveys are recommended to 10 km beyond a quarantine area.

6.2 Additional measures following eradication

Surveys within the quarantine area should continue for three years after declaration of eradication albeit at a less intensive level. During the three year monitoring period, nurseries would be eligible to ship plants for planting and propagation of susceptible species from the area but are required to maintain propagation and sales records.

7. Monitoring Country Freedom

After eradication is declared, the requirements for general surveillance as described in the ISPM 6: 1998 should be followed. This should be supplemented by surveying sources of rootstock, budwood and seed, and monitoring of cull fruit at packing houses and canneries. Surveys of orchards are recommended.

8. Certification Programs

Currently, the international movement of PPV susceptible plants for planting and propagation is restricted to certification programs. Because of the biology and economic impact of the disease, testing for PPV should be included in a certification program regardless of the PPV status in the area. Every source tree, including rootstock, budwood and seed used in the certification program should be tested for PPV at least every three years. Virus-certified stock and its propagative source material should be located no closer than 10 km from a quarantine area.

9. Bilateral Agreements

Scientifically and technically justified modifications to the application of these guidelines may be agreed to on a bilateral basis.