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Phytophthora ramorum Protocol for Retail Nurseries and Retail Nursery Dealers (rCNP)

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Contents

Introduction

This chapter is covers Retail Nurseries and retail nursery dealers who are intrastate shippers only. Online retail plant sellers would not be considered a retail nursery and would use Chapter 3 when positive plants are found. Any nursery that ships interstate would be covered in Chapter 3.

Retail nurseries and retail nursery dealers represent a different type of risk from *Phytophthora ramorum* (*P. ramorum*) than nurseries that specialize in propagating and growing plants. The nature of the retail business tends to require that plants be moved more often in order to present them to the public for sale. Plants are **not** intended to remain on site for an extended period of time and plants do **not** tend to receive cultural controls like pruning or pesticides at the same frequency as they would during the plant production process.

As retail nurseries and retail nursery dealers are at the end of the production and distribution process, they normally represent a lower risk of distributing infected plants to other nurseries and facilities in the plant distribution system. Retail nurseries are the final location in the plant distribution system as well as the final location before infected plants are moved directly to the environment.

It is important that retail nurseries and retail nursery dealers do **not** become a location where noninfected plants could become infected in route to the point of final planting.

If the facility of concern is an intrastate commerce propagation, wholesale and re-wholesale nursery, intrastate commerce grower, or an intrastate commerce broker with a nursery site of hold lot, please note the following:

- If a State is interested in quarantine less than the entire State for P. ramorum it must enforce restrictions on the intrastate movement of regulated, restricted, and associated articles that are substantially the same restrictions as those imposed by Federal regulation on the interstate movement of regulated, restricted, and associated articles.
- Intrastate movement for nurseries that have been confirmed positive for *P. ramorum* in plants, water, or other regulated articles is not covered by Federal regulations. State inspectors have authority to limit movement intrastate. Creation and implementation of an intrastate protocol should closely resemble the Federal protocol for the movement of interstate material. Please refer to Interstate Confirmed Nursery Protocol on page 3-1-1 for guidance.

Goal

The goal of this protocol is to prevent the spread of *Phytophthora ramorum*, a quarantine plant pathogen, and to simplify the movement of *P. ramorum*-free nursery stock. When procedures described in this protocol are implemented, plant-to-plant spread and movement of the pathogen through nursery shipments should be minimized. Cooperation by nursery management personnel is essential. Early detection and reporting of potential *P. ramorum* plant infections are crucial to ensure spread is contained.

Disclaimer

Any interpretation of this chapter or its procedures not consistent with the goal listed above, is a misinterpretation of the protocol.

Trigger Events For Use of the Confirmed Retail Nursery and Retail Nursery Dealer Protocol

This protocol is to be implemented by USDA–APHIS–PPQ, in cooperation with State Plant Regulatory Officials (SPROs) when the presence of *P. ramorum* has been confirmed in a retail nursery or retail nursery dealer. Any detection of *P. ramorum*, a quarantine plant pathogen, requires a regulatory response. Samples may have been collected during surveys or inspections such as a Cooperative Agricultural Pest Survey (CAPS), State Nursery Cleanliness Survey, Plant Protection Act (PPA) Section 7721, or other surveys; State inspections, trace forward survey, trace back survey, or found by other means. The Retail Nursery and Retail Nursery Dealer protocol can be used in all of these cases.

Samples **must** be diagnosed using a method approved by USDA–APHIS–PPQ and consistent with the Potentially Actionable Suspect Sample (PASS) protocol (*see* the PPQ *Phytophthora ramorum* Web site for diagnostic information and the PASS protocol).

When planning to announce or make a public statement about the detection of a federally regulated pest, the State Plant Regulatory Official (SPRO) and/or the public information officer for the State department of agriculture must first contact the State Plant Health Director (SPHD) and/or USDA–APHIS–Office of Legal and Public Affairs (LPA).

Challenges

P. ramorum is a micro-organism and difficult to detect. It can infect plants; infest container mix, soil, and water; and persist in these substrates despite the best eradication efforts. Based on the understanding of the pathogen biology, these protocols and regulations will be adjusted accordingly. Detection and management of this pathogen is informed by continually improving science.

Additional challenges related to retail nurseries and/or retail nursery dealers include the following:

- Disposition of plants when **not** confirmed positive is a challenge when ownership is **not** clear
- If found positive, held plants, which are moved and lose their identity to surrounding plants that may be implicated for destruction and quarantine
- Lack of interest in ensuring plants are **free** of pathogens when plants are under consignment at a retail location

- Large retail chains create a unique pathway that is further complicated by the increasing use of consignment sales in ornamental plants
- Movement of nursery plants to plant brokers who bring material from larger nurseries and disseminate to multiple States increase the likelihood of accidental exposure to contamination of *P. ramorum* to other nursery products
- Plant traceability back to origin is difficult when multiple brokers/ nurseries are involved
- Plants under consignment complicate orders for plant destruction of confirmed positive plants because ownership is **not** local
- Potential reduction of effectiveness of the notification system is likely to occur when a nursery with a compliance agreement sells a broker (receiving State is notified) and then the broker retail nursery dealer in multiple states.

- Securing plant material at retail nursery dealers is a challenge, examples include space limitations and loss of communication between inspectors and managerial shifts at the facilities

Confirmed Retail Nursery and Retail Nursery Dealer Steps

Any confirmed-positive article, such as a plant or water sample, triggers the confirmed nursery protocol. In chronological order, the steps for the Confirmed Retail Nursery and Retail Nursery Dealer protocol (rCNP) are as follows:

1. Communicate and notify.
2. Conduct trace investigations (concurrently with securing the nursery).
3. Secure the nursery (concurrently with conducting trace investigations).
4. Survey the nursery (delimitation inspection).
5. Disinfest the nursery.
6. Conduct 90-day (minimum) quarantine activities
7. Release plants in the retail nursery or retail nursery dealer.
8. Conduct post-quarantine release monitoring.

NOTICE: Prior to an APHIS-confirmed positive determination, the National Plant Protection Laboratory Accreditation Program (NPPLAP) approved laboratory must communicate all suspect positive diagnostic samples to inspectors as soon as one of the following has occurred:

- Culture that matches the morphology for P. ramorum as determined and reported by an APHIS-approved laboratory; or
- Positive PCR using APHIS-approved work instructions by an APHIS-approved lab- oratory

For all Potentially Actionable Suspect Samples (PASS), laboratories must immediately forward the plant material and DNA to the APHIS–PPQ–S&T Beltsville Laboratory (see Contact Information for the Phytophthora ramorum Program on page A-1- 1) and notify the State's State Plant Health Director (SPHD) and State Plant Regulatory Official (SPRO) and the National Operations Manager (NOM).

Confirmed Retail Nursery and Retail Nursery Dealer Protocol Steps

1. Communicate and notify

When a sample is confirmed positive, laboratories need to notify the SPHD and the SPRO, the National Operations Manager (NOM), the National Program Manager, and the submitter. The SPRO (if State authority is used) or the SPHD (if Federal authority is used) should designate an official to lead the activity.

1.1 The designated official will notify the confirmed-positive nursery of the con- firmed-positive and instruct the nursery to place a hold on all regulated plants at the nursery or as many plants as deemed necessary by the inspector.

1.2 SPHD and SPRO will notify the NOM of the nursery notification and the hold on the plants.

1.3 SPHD and/or SPRO will provide a list of the identified facilities found through trace back and trace forward investigations to the NOM within 10 business days of a confirmed P. ramorum-positive sample in a nursery (SEE 2—Con- duct investigations on page 4-1-5). The NOM will notify SPHDs and/or SPROs of States sending or receiving these shipments.

1.4 SPHDs and/or SPROs will notify affected retail nurseries and retail nursery dealers within their States.

1.5 Laboratories need to notify the SPHD and the SPRO, the NOM, the National Program Manager, and the submitter. The SPRO (if State authority is used) or the SPHD (if Federal authority is used) may notify the owner of the nursery.

2 Conduct Investigations

Conduct trace back and trace forward investigations within a similar time frame to securing the nursery as is practical because invoices and shipping lists are to be provided to the NOM within 10 business days. Trace back investigations will be more common than trace forward investigations, especially at retail nursery dealers. Most retail establishments may not keep records of plant sales however it is necessary to inquire.

2.1 At the time P. ramorum is confirmed in a retail nursery or retail nursery dealer facility, determine the source of the plant(s) to initiate the trace back investigation. Trace back plants include all plants from the source nursery of the same genus as the infected plant regardless of

size, location, or lot, back to the original propagation source (if it still exists). Collect invoices for those purchases and provide to the NOM within 10 days. For more detailed instructions, please see Trace Back Protocol on page 5-3-1.

2.2 Retail plant sales are likely to be intrastate and will be subject to the appropriate State regulations. If the retail nursery or retail nursery dealer has sales records, determine if the establishment has sold to another facility, such as a landscaper, plants that could potentially be infected. Initiate the trace forward investigation by identifying all plants (meeting the following criteria) sold within 6 months of the first confirmed-positive detection of P. ramorum at a nursery: 1) plants of the infected species/cultivar; 2) all regulated plants that originated in the destruction block; and 3) any plants of the high-risk genera: Camellia spp., Kalmia spp., Pieris spp., Rhododendron spp. (including azalea), and Viburnum spp. regardless of their location in the nursery. This com- bination of shipped plants is referred to as the high-priority target plants.

2.3 These plants, including their shipment date(s); quantities; and respective destinations, make up the trace forward list. Identify these high-priority plants using the best available information and to the lowest taxon possible (e.g., if the plants can be identified to cultivar, trace forward activities may be con- ducted at the cultivar level).

3 Secure the Nursery

Establishing destruction and quarantine radius (radii) for confirmed- positive plant(s) When the presence of *Phytothora ramorum* has been confirmed in the nursery or retail nursery dealer, safeguard infected high-risk plants and high-risk plants nearby. The Schematic of Retail Nursery with Positive Plants (Figure 4-1-1 on page 4-1-8 and Table 4-1-2 on page 4-1-9) is included but may not be appropriate for use in retail nursery dealer settings.

3.1 **All** plants within 2 meters of any infected plants shall be held for destruction (destruction radius)

3.2 **All** regulated plants within a 2-meter perimeter (quarantine radius) beyond the 2 meters surrounding the infected plants (i.e., the retail destruction radius) shall be held for a **minimum** 90-day quarantine period **OR** plants can be voluntarily relinquished under official supervision at any time (SEE 7—Release the nursery on page 4-1-13).

3.3 Inspect **all** regulated plants in the nursery that are **not** within the destruction and quarantine radii and hold any plants sampled. Any other product or article an inspector determines presents a risk of spreading *P. ramorum* if an inspector notifies the person in possession of the product or article that it is subject to the restrictions in the regulations, can be held (7 CFR Part 301.92-2).

3.4 Refer to 5—Disinfest the nursery on page 4-1-10 for destruction and treatment protocols.

4 Survey the nursery

The goal of the survey is to locate P. ramorum in the nursery. A detailed and thorough inspection should be conducted in the nursery to determine the presence of P. ramorum. Samples should be collected from symptomatic plants (SEE Biology and Symptoms of P. ramorum on page 7-1-1).

4.1 Delimit the nursery

- Examine all plants within the retail nursery or retail nursery dealer and sample any symptomatic plant tissue found (SEE Plant Symptoms and Sampling for P. ramorum on page

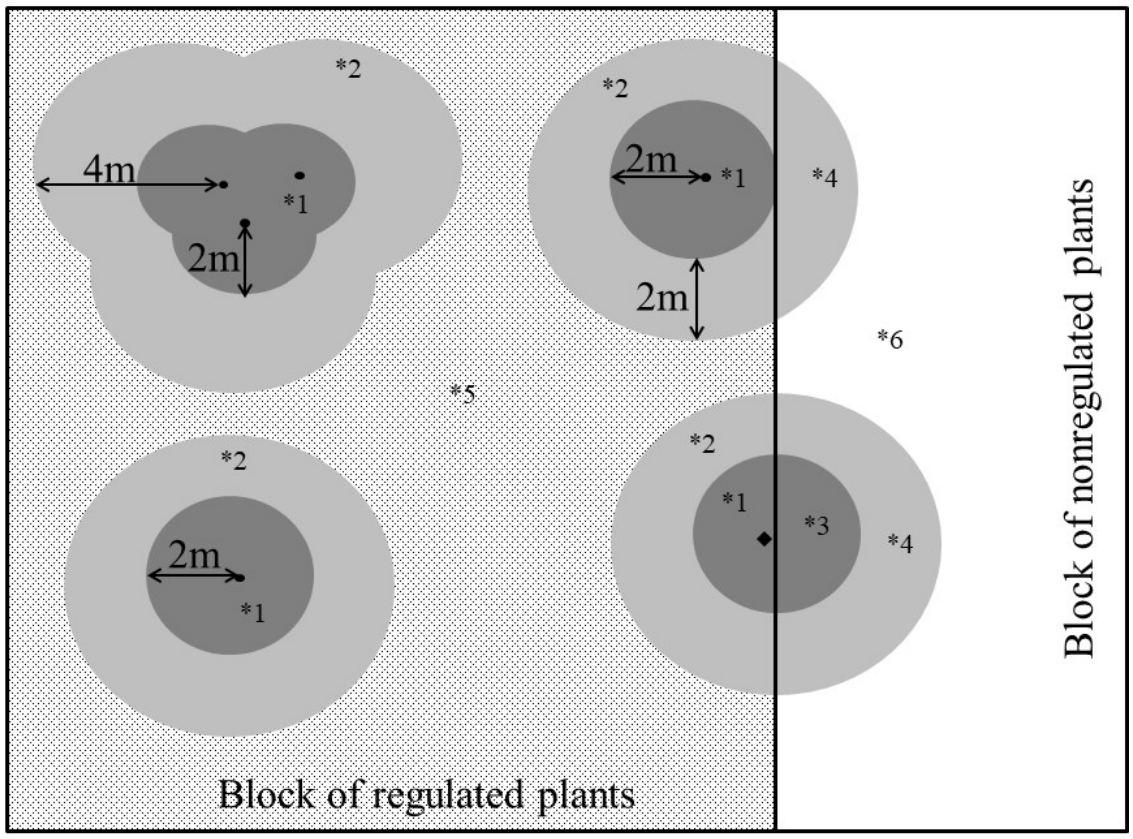
2-1-4). Plants currently regulated in nurseries are included in the APHIS List of Regulated Hosts and Plants Associated with Phytophthora ramorum located on the USDA–APHIS–PPQ Web site (http://www.aphis.usda.gov/plant_health/plant_pest_info/pram/).

- Hold all plants of that taxon (taxa) and all plants that are within 2 meters of the sampled plant. **or** plants can be voluntarily relinquished for destruction under official supervision at any time (SEE 7. Release the Nursery on page 4-1-14).
- Submit samples to the appropriate lab for analysis using a methodology approved by APHIS (SEE Sampling and Submission Protocol on page 8-1-1).
- Release all plants held if sample results are negative.
- Establish destruction and quarantine radius (radii) around plant(s) with positive diagnostic results (SEE 4.2—Establish destruction and quarantine radii for plants confirmed positive during delimiting survey on page 4-1-7) and delimit the nursery again.
- The 90-day plus quarantine period begins when the delimiting survey is complete.

4.2 Establish destruction and quarantine radii for plants confirmed positive during delimiting survey

- Plants at retail nursery dealers can be very transient, making it difficult to implement some of the following measures. Adapt as much of this protocol to the situation as practical.
- Establish destruction radius (radii) by flagging a 2-meter radius (a 4- meter diameter circle) around all infected plants (SEE Figure 4-1-1 on page 4-1-8) **or** inspector-witnessed relocation/segregation of plants within the nursery with safeguarding **or** plants can be relinquished under official supervision at any time (SEE 7—Release the nursery on page 4-1-13); include plants on carts or other movable shelving situations.
- Establish quarantine radius (radii) by flagging a 4-meter radius (an 8- meter diameter circle) around all infected plants (SEE Figure 4-1-1 on page 4-1-8) OR inspector-witnessed relocation/segregation of plants within the nursery with safeguarding OR voluntary destruction.
- Limit access to destruction and quarantine radius (radii) or other designated hold areas. Ensure proper sanitation measures are applied (SEE 5—Disinfest the nursery on page 4-1-10 and Biosecurity Measures for Nurseries on page 9-1-1).
- Inspectors should document all actions taken on EAN or State equivalent.

Schematic of Destruction (D) and Quarantine (Q) Radii



Legend of Destruction (D) and Quarantine (Q) Radii of Positive Plants Schematic

(*1) Destruction block Destroy all plants, containers, and leaf debris

(*2) Quarantine block Hold all plants from sale for a minimum of 90 days

(*3) D-radii in block with nonregulated plants Destroy all plants; nonregulated plant nursery stock could still move the pathogen

(*4) Q-radii in block with nonregulated plant Hold all plants from sale during the delimiting survey until all diagnostic results are final

(*5) Rest of the block with regulated plants. Positive block needs to be intensely sampled and held until positive block delimitation samples are returned

(*6) Rest of the block of nonregulated plants Release all plant materials for sale if found to be asymptomatic during the delimiting survey

4.3 Sample other articles of concern at the nursery

Not all of the following articles of concern will be found at the majority of retail nurseries and retail nursery dealers. Sample other articles of concern if they occur at the facility.

4.3.1 Water sampling:

- Determine the source of water used at the nursery site and where drainage water flows. Note the type of irrigation system(s) in use, areas of standing water, any safeguards against water back flow in the irrigation system, as well as any water treatment practices if recirculated water is used.
- Water sampling is not required for irrigation water from municipal water facilities that treat their water prior to released.
- Sample any retention pond or surface water at the nursery (SEE Water Sam- pling and Processing Protocol on page 10-1-1). Bottle of bait is the preferred sampling method for surface water.

4.3.2 Sampling instructions for soil: Standing water will be sampled in place of substrate soil sampling. No substrate soil samples are required for this sampling protocol.

4.3.3 Cull pile and compost pile sampling: determine how the nursery disposes of culled and other waste plant material. Cull and compost piles will be uncommon in a retail nursery or retail nursery dealer, however, if cull or compost piles are present, record the location of any piles as these may be contaminated with infected plant material or associated soil and/or growing media.

- Check cull and compost piles for P. ramorum symptomatic plants and plant material and sample if observed.
- If a cull or compost pile is found to be positive, establish and demarcate the area by visibly and indelibly flagging 1 meter out from the perimeter of the cull pile.
- Sample and test soil for the presence of P. ramorum at the down slope edge of the cull pile.
- Determine how the nursery disposes of cull and compost piles.
- Restrict access.
- Determine the appropriate treatment or destruction method (SEE Treatment and Disinfection Options on page 12-1-1).

4.3.4 Segregation of plants on hold:

Once inspection and sampling are complete, any held plants may be consolidated and segregated. If the plants are not consolidated and segregated, the affected portion of the nursery must be closed to the public. With the approval of the regulatory officer, segregated plants may be moved to a site within the nursery or to a location away from the nursery if properly safe- guarded. Any movement of the segregated plants must be done in a manner that will safeguard and prevent the spread of the disease at the nursery and be conducted under the direction of an inspector. Segregation must include storage on an impermeable surface (e.g., a 45-mil thick pond liner or concrete or asphalt) and not within 2 meters of any other plants. The impermeable surface should ideally be situated to drain away from regulated plants.

5 Disinfest the nursery

Inspectors should use appropriate disinfection measures for conditions found at the establishment. For information on disinfesting and sanitizing any nursery, SEE Treatment and Disinfection Options on page 12-1-1 and Biosecurity Measures for Nurseries on page 9-1-1.

5.1 Plant destruction

5.1.1 When a P. ramorum-infected plant is found, all other plants, including pots and growing media within 2 meters (destruction radius) of the infected plant, will be removed and destroyed using one or more of the techniques detailed in Treatment and Disinfection Options on page 12-1-1. This includes pots and potting media.

5.1.2 Plants can be voluntarily relinquished under official supervision at any time (SEE 7—Release the nursery on page 4-1-13).

5.2 Debris removal All plant debris, including growing media, leaves, stems, flowers, roots, and any other plant parts found within the destruction radius, will be removed and destroyed using one or more of the techniques detailed in Treatment and Disinfection Options on page 12-1-1.

5.3 Nonporous surfaces will be disinfested beneath plants. For instance, wipe off shelves with Lysol or other approved disinfectant (SEE Treatment and Disinfection Options on page 12-1-1 for recommended disinfestation options.)

5.4 Porous surfaces: If the nursery is found to have an infested porous surface, remedial action must be developed and implemented with the written approval of an inspector. This is done in order to prevent contact of plants with soil or any other surface that can- not be immediately disinfested. A durable, impermeable ground barrier (e.g., a 45-mil pond liner) may be used as an inexpensive temporary measure. The condition of the barrier must be monitored and maintained and foot traffic minimized. SEE Treatment and Disinfection Options on page 12-1-1 for other recommended options.

5.5 Equipment and personnel:Use recommended disinfestation options and biosecurity measures (SEE Treatment and Disinfection Options on page 12-1-1 and Biosecurity Measures for Nurseries on page 9-1-1). Use appropriate sanitation practices, such as disinfesting clippers used to cut plants or using disposable gloves to prevent cross- contamination.

5.6 Biosecurity measures, such as tool sanitation, equipment disinfestation, and appropriate sanitation measures for employees, are designed to minimize the risk of introduction to or spread and survival of the pathogen in a nursery (SEE Biosecurity Measures for Nurseries on page 9-1-1 for recommended biosecurity measures).

5.7 Treatments for cull piles, compost piles, water, soil, or growing media It is unlikely cull piles, compost piles, water, soil, or growing media will need remediation at a retail nursery dealer, but they may need remediation at a retail nursery. If they are found to be positive, they will need to be treated (SEE Treatment and Disinfection Options on page 12-1-1).

5.8 Considerations for inspectors

5.8.1 Determine if plants will be placed on hold, destroyed on site, destroyed off site, or relinquished to an inspector.

5.8.2 Determine sanitation protocols established for the facility including management oversight (e.g., how is information on holds communicated among employees and

management staff?).

5.8.3 Determine management oversight and responsibility for plants for sale. How is information on holds communicated among employees and management staff? How will plants on hold be safeguarded? Who owns the plants and is responsible for destruction costs?

5.8.4 Determine which disinfestation methods are appropriate for the site (SEE Treatment and Disinfection Options on page 12-1-1). For instance, disinfesting concrete or asphalt may not be practical at a retail nursery dealer's based on the movement of the plants at the store.

5.8.5 Determine the number of plants that must be destroyed and the number the nursery may voluntarily destroy or relinquish to an inspector. Determine the number of positive plants, the number of potentially positive plants, and the location of those plants in the nursery. The inspector can use the information collected to determine the State authority for holds, plant destruction, and other components of the nursery disinfestation.

6 Ninety-day

Plants can be relinquished under official supervision at any time. Release the nursery on page 4-1-13). These activities follow the completion of quarantine activities the delimiting survey and may run concurrent with some for the disinfestation activities taking place at the nursery.

6.1 The quarantine period begins when the delimiting survey is completed (i.e., the period last sample is taken and an EAN or State equivalent is issued) and lasts a minimum of 90 days. During the quarantine period, inspection, sampling, and testing must reveal no further detection of P. ramorum, or the quarantine period will be extended. If a positive sample occurs, the 90-day (minimum) quarantine period restarts and the appropriate measures will be taken (SEE 3—Secure the nursery on page 4-1-6).

6.2 During the 90-day (minimum) quarantine period within the quarantine radius (radii)

6.2.1 No fungicides registered for Phytophthora control shall be applied.

6.2.2 Inspectors will visually inspect plants a minimum of two times—once about halfway through the 90-day (minimum) quarantine period, and once near the end of the 90-day (minimum) quarantine period in order to have test results coincide with the end of the quarantine period—according to the protocol (SEE Phytophtha ramorum Inspection and Sampling Protocol for Nurseries on page 2-1-1). Samples will only be taken if symptomatic tissue is observed. The second visual inspection in the quarantine radius (radii) can be done at the same time as the quarantine release survey as described below.

6.2.3 If positive samples were collected during the delimiting survey, inspectors will collect soil and media samples and test them during the quarantine period according to the protocols (SEE Soil and Container Mix Samples and processing Protocol on page 11-1-1).

6.2.4 If positive water samples were collected during the delimiting survey, inspectors will collect water samples and test them during the quarantine period according to the protocols (SEE Water Sampling and Processing protocol on page 10-1-1).

6.3 Quarantine release survey A quarantine release survey of the entire nursery must be completed near the end of the minimum 90-day quarantine period. This survey includes visually inspecting all regulated plants within the nursery and sampling any symptomatic plant tissue, soil of destruction and quarantine radius (radii), and drainage or recirculated irrigation water. When the quarantine period is completed and all plant, soil, and water samples taken are negative for P. ramorum, the nursery can be released.

7 Release the nursery

Nurseries and their plants that have been placed under regulatory control may be released from regulatory control by USDA–APHIS, or its designated authority, after the quarantine period if the following three conditions are met:

- There are no additional detection of P. ramorum in nursery stock based on USDA–APHIS-approved plant inspection sampling and testing protocols for the preceding quarantine period; and
- Water, soil, and growing media have also tested negative for P. ramorum based on USDA–APHIS-approved sampling and testing protocols for the preceding quarantine period (if testing of soil, water, and media is required); and
- The quarantine release survey is negative for P. ramorum.

  OR

- The nursery operator may also choose to destroy plants that have been placed under quarantine at any time within the 90-day quarantine period, however, destruction must be under local authority supervision; and
- If not previously tested and determined to be negative, inspectors must sample and test soil of destruction and quarantine radius (radii) and drain- age or recirculated irrigation water as per Soil and Container Mix Samples and processing Protocol on page 11-1-1 and Water Sampling and Processing protocol on page 10-1-1 or inspector must disinfest porous and nonporous surfaces (SEE 5.3—Nonporous surfaces on page 4-1-10). If soil and water samples taken are negative for P. ramorum, the nursery can be released; and
- Inspectors must revisit the nursery after approximately 90 days and conduct at least a nursery-level survey inspection (SEE Inspection and Sampling Protocol for Nurseries on page 2-1-1) to include sampling of the soil in the destruction radius (radii) if soil is present. Also, the nursery is subject to "Post-Eradication Monitoring" (SEE 8—Post-eradication monitoring on page 4-1-13).

8 Post-Eradication Monitoring

Upon successful completion of the 90-day (minimum) quarantine period (see 6. Ninety-Day (Minimum) Quarantine Activities on page 4-1-14), nurseries that possess regulated plants year-round and/or have the plants on porous surfaces, such as soil, and have been confirmed positive for *P. ramorum* shall be placed in a compliance agreement and have post-eradication monitoring. This monitoring shall occur twice a year during conditions conducive for the detection of *P. ramorum* for 3 years and will follow the Inspection and Sampling Protocol for Nurseries on page 2-1-1. Unless there are additional detections, these nurseries are not under any other quarantine or regulatory action.

If a retail nursery dealer that has been found to be infested has completed all of the following it shall not undergo post-eradication monitoring unless additional plants or articles are found to be positive:

- Plants are only present seasonally; and
- Plants are placed only on nonporous surfaces that have been mitigated

If additional plants or articles are found to be positive, the nursery shall be placed in a compliance agreement and have post-eradication monitoring.