



United States Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection and Quarantine



Official Regulatory Protocol for *Phytophthora ramorum* Detections in Landscaped Residential or Commercial Settings

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This USDA, APHIS, PPQ document specifies additional and alternate actions that are to be taken when a positive *Phytophthora ramorum* infection is confirmed in nursery stock planted in residential or commercial landscape settings.

The SOD Questionnaire for Property Owner or Manager (See Appendix 1) should have been completed during the initial property owner or manager contact when the suspect plant(s) was sampled. If not, complete the questionnaire at the time you are collecting plants that are potentially *Phytophthora ramorum* infected.

Procedures to be used for the collection of positive *Phytophthora ramorum* infected plants and their proper disposal.

- State or Federal Regulatory Official will notify consumer/homeowner with infected plant(s).
- Arrange a time and date to collect plants, to conduct a delimitation survey and to disinfect the growing area. Interview consumer as to where and when the plant(s) were purchased. Document this information in the follow up survey, (Appendix 2). Document any proof of purchase the consumer may have, such as receipts, pot labels, et cetera.
- All host and associated host plants within 100 meters of the infected host plants must be surveyed and all symptomatic plants sampled for delimitation after the initial detection. Subsequent detections as a result of the delimitation survey will require all host and associated host plants within 100 meters of the infected plants to be surveyed and all symptomatic plants sampled. Follow the sampling guidelines in the Trace Forward Protocol. The Trace Forward Protocol and soil sampling protocols may be found at http://www.aphis.usda.gov/plant_health/plant_pest_info/pram
- Survey and inspect other hosts and associated hosts in the landscape. Survey the types and number of host and associated host species on the property with the infected plant(s), but outside the delimitation zone and document this inspection. If feasible all host and associated host plants surveyed are to be mapped showing

their location in relation to the infected plants. *P. ramorum* symptomatic plants and other unhealthy appearing plants are to be sampled and tested.

- Plants testing positive for *Phytophthora ramorum* must be removed and destroyed. Follow the sanitary requirements detailed in Appendix 8 of the Confirmed Nursery Protocol (CNP) found at http://www.aphis.usda.gov/plant_health/plant_pest_info/pram
- Remove infected plants including root systems for smaller plants. Double bag to at least a 4-mil thickness. Larger plants must be at least removed to the root collar and the stumps treated in a manner approved by APHIS to prevent sprouting (see Appendix 3 below).
- Remove and destroy all host and associated plants and plant parts (for example, branches of larger shrubs or trees) within 2 meters of an infected plant. As certain trees which are bole hosts are less susceptible to disease, unless these show symptoms and are found with disease, they may be monitored for infection rather than being destroyed at the inspector's discretion. Appendix 3 provides advice on the stump destruction and treatment for infected plants. Destroy the plants per Confirmed Nursery Protocol (CNP). The CNP may be found at http://www.aphis.usda.gov/plant_health/plant_pest_info/pram. Approved methods of destruction include: incineration, deep burial, and steam sterilization. If the operational conditions allow, these plants should be sampled for *P. ramorum* and their location mapped in relation to the infected plant.
- Soil samples should be taken in the plant removal area at the time of plant removal. Sampling locations should take runoff patterns into consideration. Soil sampling should be according to USDA protocol. The soil in the area of the host plant removal will be treated if soil is found to be infested. If the soil is infested, treat a 4-meter area with a metam-sodium (Vapam, Busan, Basamid, Sectagon II) solution for disinfection in accordance with labeling instructions.
- Using the survey follow up questionnaire in Appendix 2, keep a record of exactly what kind, size and number of plants that were destroyed at each location. Some of these consumers will have several plants. Record the owner's name, contact information, address and the physical location of any infected plants. Draw a map, record landmarks or enter the GPS coordinates for follow up surveys.
- Rake a 10 meter area of plant debris around infected plant(s) & double bag, as described above. Use discretion when raking around other plants. Rake from the outer edge of the area towards the infected plant(s).
- Drainage in the area of the infected plant will be evaluated and any standing or run off water should be sampled downstream from the point of infection.
- All host/associated host plants in a 10 meter perimeter beyond the infected plant shall be placed under a 90 day quarantine, to prevent movement from the site. The

plants should be inspected and tested twice during the 90-day period to ensure all *P. ramorum* infected plants have been found. If the plants remain free of *P. ramorum* during this 90 day period, the site will be released from quarantine. The 90 day quarantine must occur during a time conducive to the expression of *P. ramorum* symptoms.

- Follow up: host and associated host plants of *P. ramorum* may be replanted in the area of host/associated host plant removal once the following conditions are met:
 - All testing of sampled plants, soil and water verifies that the pathogen does not occur at the location.
 - A minimum of 90 days has passed from the time of host removal and disinfection.
 - APHIS, USDA or State regulatory official has completed surveillance activities on the surrounding host material.
- Monitor the site for 2 years after the site has been released. The site should be visited when conditions are conducive to the expression of *P. ramorum* symptoms. If observed, sample and test symptomatic plants.

Appendix 1
SOD Questionnaire for Property Owner or Manager

1. Are you the owner of the property? If not please provide owner contact information. _____
2. Did you purchase and/or plant the plant(s) in question? (If “no”, seek information on individual who planted material in question) _____
3. From which retail/Nursery outlet was (were) the plants(s) purchased? _____
4. How long ago did you plant it? (them)? _____
5. Did you purchase any other plants from this same nursery? _____
6. Have you noticed any other problems with plants on your property? _____
7. Have you moved any of these or other nearby plants to a different location?

8. What is the address of that location? _____
9. Did you move any plants here from a different location? _____
10. What types and varieties were they? (if host material proceed to question 11 & 12)

11. How long ago was that? _____
12. What is the address of that location? _____
13. Do you have a landscape company that did any planting for you? _____
14. What is the contact information for the landscape company? _____

15. Have you added any mulch, potting soil or top soil to the yard recently? _____
16. Do you know the source of the material in # 15? _____

Information on plant material for inspector visiting property:

1. What is the variety and number of plants? _____

2. What is the condition of the plant material? _____
3. Have the suspect plants been trimmed or pruned? _____
4. How were the trimmings disposed of?

5. Did the plant material come in pots? _____.
6. Did you dispose of the pots or re-use them?

7. If the pots were reused or stored, describe how the pots were handled. _____

8. Where are the plants now? _____

Appendix 2
Follow up Survey for locations with infected plants

Locations that have been found to have infected plants will be monitored for two years as part of the national survey. The affected area will not be under any quarantine or regulatory control, unless additional outbreaks are detected.

Sudden Oak Death Property Owner or Manager Survey:

1. Date of plant collection: _____

2. Property Owner or Manager Name:

3. Location: _____

4. Name(s) and numbers of plants collected for destruction:
 - a. _____ # _____
 - b. _____ # _____
 - c. _____ # _____
 - d. _____ # _____
 - f. _____ # _____
 - g. _____ # _____
 - h. _____ # _____
 - i. _____ # _____

5. Where were the plants purchased?
 - a. _____ # _____
 - b. _____ # _____
 - c. _____ # _____
 - d. _____ # _____
 - f. _____ # _____
 - g. _____ # _____
 - h. _____ # _____
 - i. _____ # _____

6. When were the plants purchased?
 - a. _____ # _____
 - b. _____ # _____
 - c. _____ # _____
 - d. _____ # _____
 - f. _____ # _____
 - g. _____ # _____
 - h. _____ # _____
 - i. _____ # _____

7. Any proof of purchase or documentation such as receipts, pot labels, etc...
List Here: _____

8. Survey types of host plants in the landscape and list names and numbers:

a.	_____	#	_____
b.	_____	#	_____
c.	_____	#	_____
d.	_____	#	_____
f.	_____	#	_____
g.	_____	#	_____
h.	_____	#	_____
i.	_____	#	_____

9. Samples of *symptomatic* landscape hosts taken? Yes No

10. Soil samples taken? Yes No (plants still in pots)

11. Comments:

Appendix 3

Cut Stump Treatments for *P. ramorum* Host and Associated Plants

1. Cut the infected plant(s) using a saw or mower to leave 30cm (12”) stumps. This involves cutting a tree or plant down and treating the freshly cut surface with a solution of triclopyr amine herbicide (Garlon 3A). Cut the top of the stump level to allow uniform herbicide coverage. Thoroughly wet the cambium layer next to the bark so the conducting tissue will carry the herbicide to the roots. On larger trees treat only the outer 2 to 3 inches of the stump (the internal heartwood of the tree is already dead). On trees 3 inches or less in diameter, treat the entire cut surface. Apply treatments immediately after cutting to achieve maximum effectiveness. If application is delayed after cutting, re-cut the stump and apply the triclopyr to the live tissue. Delaying herbicide application to freshly cut trees can result in prolific sprouting from the tree collar and roots. Ensure that the herbicide is applied within 20 minutes of cutting because if the time interval is exceeded the wound will start to heal reducing ingress of the herbicide into the tree. All other cut surfaces should be painted with the herbicide. Also paint bark and any exposed roots with triclopyr. While it is not absolutely necessary, cutting the sides of the stump with an axe will increase cut surface area (frill girdle method, see label) and increase the uptake of the triclopyr. Moisture stress may affect control during the summer and early fall. Applications during the spring upward sap flow are not as successful as late spring and early summer treatments. Undiluted water-soluble herbicide formulations are more effective than the esters.
2. Monitor for re-growth after 6 months and treat any as below. Inspect re-growth for any *Phytophthora ramorum* infection.
3. Spray re-growth with Garlon 4 or Garlon 3A (triclopyr). This chemical has been shown to be more effective than glyphosate for this purpose, and can be applied to foliage, and cut stems. If still accessible, re-wound the original stump to expose live tissue, and paint triclopyr next to the wounded area. For some woody species, notably sourwood, blackgum, red maple, and persimmon, that are not effectively controlled by triclopyr alone, the addition of a small quantity of an imazapyr herbicide (2 ounces of Arsenal AC per gallon in a 50:50 Dilution of Garlon 3A in water) greatly enhances the performance of triclopyr on hard to control species.
4. When herbicides are to be used near watercourses, the relevant authority (EPA) must be informed before any operations commence. Only glyphosate (Roundup) and triclopyr (Garlon 4) can be used near water (It is a violation of Federal law to use pesticides in a manner inconsistent with their labeling, please read labels carefully and apply accordingly). Carry out initial cut stump treatments with Roundup Pro Biactive, and re-growth treatments using either glyphosate (if within 1 m of a watercourse) or Garlon 3A or Garlon 4 if further than 1m from watercourse.
5. If a state has a registered herbicide that is labeled in that state for use on a specific *P. ramorum* host or associated host species, use of that herbicide would be acceptable to USDA, APHIS to eradicate the host plant.