Pathology Submittal Instructions

If you are a vegetable grower, involved in nursery or plug production, own an orchard or if you find yourself responsible for landscape installations and maintenance, chances are that sooner or later you will run into a disease problem. When a disease outbreak occurs you may wish to seek the expertise of Waypoint Analytical’s Anaheim, CA location which offers plant disease diagnosis. Accurate identification of the problem is paramount for developing the right management strategies to prevent further loss of plant material. The accuracy of a given diagnosis is highly dependent upon the quality of the sample submitted and the amount of background information given, i.e. poor samples equal poor diagnosis. The following are a few tips on submitting samples for pathology work that will help you obtain the best possible diagnostic service for you money.

Collect fresh material and try to submit several specimens that display different stages of the observed symptoms. Keep in mind that the pathogen is not always in symptomatic tissue. For example, symptoms observed in the foliage such as chlorosis, marginal necrosis, leaf drop, and wilt may be associated with a vascular wilt or a root rot therefore include as much of the plant as possible.

Plants in advanced stages of disease development (dead) are poor samples since many secondary organisms will have moved in making isolation and identification of the pathogen difficult.

Place samples in a polyethylene bag and label the bag accurately. Place a dry paper towel in the bag to act as a blotter to prevent plant material from decomposing during transit. When submitting roots, handle these with care. Avoid leaving feeder or rotted roots behind. Include a liter of soil to prevent roots from drying out. This soil can also be used for pH, salinity, fertility and nematode testing if needed.

If submitting an entire plant, wrap a twist-tie around the stem at ground level to keep soil off the foliage.

Include the questionnaire to provide information on growing practices, e.g. fertilizer, growth regulator, herbicide and pesticide applications. Information regarding recent environmental conditions e.g. humidity, temperature, wind, etc. is also very helpful. As obvious as it may seem do not forget to include your name, phone number and email address.

If you are shipping samples to us outside of California, please include USDA APHIS Permit 526 inside and outside the shipping package.

It is very important to keep the samples cool and moist. If samples are taken early and will not be shipped to the lab for several hours, place them either in the refrigerator, or in a cooler with an ice pack. The sooner the samples arrive at the lab the better chance the diagnostician will have to isolate the pathogen(s); Priority or Next Day delivery is best.

You should realize that some plant problems will unfortunately defy complete diagnosis, and it may be necessary to submit additional samples. Although the diagnostician should come closer to a definitive answer with each subsequent sample submitted, there will be time when certain plant problems will go unsolved. Diseases involving more than one casual agents often fall in this category. Finally, if you have any doubts as to what to send or any questions regarding sampling, do not hesitate to give the laboratory a call. The diagnostician will be more than happy to walk you through the process to insure a proper sample is submitted.

www.waypointanalytical.com
4741 E. Hunter Ave., Suite A, Anaheim, Ca 92807
714.282.8777
Pathology Questionnaire/Submittal Form

1. Company name: ____________________________
   Contact Name: ____________________________
   Mailing Address: __________________________
   City/State/Zip: ____________________________
   Job Name/Number: __________________________
   Phone: _________________________________
   Fax: _________________________________
   Email: ________________________________

2. I would like my sample results: ( ) Faxed; ( ) Emailed
   Plant/Crop affected: _________________________
   Variety: ________________________________

3. Age: ________________________________
   Type of planting: ( ) commercial; ( ) greenhouse;
   ( ) nursery; ( ) residential; ( ) field;
   other: ________________________________
   Plant site (for landscape only): ( ) street side; ( ) lawn;
   ( ) ground bed; ( ) terrace; ( ) patio; ( ) indoor
   Distribution of disease: ( ) scattered; ( ) localized;
   ( ) uniform; ( ) on slopes; ( ) high spots; ( ) low spots

4. Percentage of plants affected:
   Part of the plant affected: ( ) roots; ( ) stem/trunk; ( ) seed;
   ( ) branch/twigs; ( ) leaves; ( ) bulb/corm; ( ) flower;
   ( ) fruit; ( ) entire plant; other: ________________________________
   General symptoms: ( ) malformation; ( ) canker;
   ( ) dieback; ( ) galls; ( ) spots; ( ) marginal burn;
   ( ) gumming; ( ) stunting; ( ) wilting; ( ) mosaic/mottling;

5. Yellowing: ( ) shot hole; ( ) defoliation; ( ) tip burn
   When and where were symptoms first observed?

10. Disease situation: ( ) progressive; ( ) relatively stable
    Other: ________________________________

11. Effect on plant: ( ) slight; ( ) moderate; ( ) severe;
    Other: ________________________________

12. Soil type: ( ) heavy clay; ( ) clay-loam; ( ) loam;
    ( ) sandy; ( ) rocky; ( ) container media

13. Drainage: ( ) good; ( ) medium; ( ) poor

14. Weather (past two weeks):
    ( ) Rain:
    amount: ________________________________
    frequency: ______________________________
    relative humidity:
    ( ) Cloudy; ( ) Partly cloudy; ( ) Sunny;
    ( ) Unseasonably hot; ( ) Unseasonably cold
    ( ) Wind - ( ) low; ( ) moderate; ( ) high

15. Chemicals applied: (rates, dates & methods of application):
    Fertilizers: ________________________________
    Fungicides: ________________________________
    Herbicides: ________________________________
    Insecticides: ________________________________
    Other: ________________________________

16. Evidence of insect activity? ( ) yes ( ) no

17. General disturbances: ( ) gas leak; ( ) construction near by;
    ( ) soil added or removed from around plants;
    ( ) excavation nearby? ______________ feet away
    ( ) other: ________________________________

SEND SAMPLES TO:
Waypoint Analytical
4741 E. Hunter Ave.
Suite A
Anaheim, CA 92807
714.282.8777
United States Department of Agriculture
Animal and Plant Health Inspection Service
Plant Protection & Quarantine
4700 River Road
Riverdale, MD 20737

Permee to Move Live Plant Pests, Noxious Weeds, and Soil
Interstate Movement
Regulated by 7 CFR 330

This permit was generated electronically via the ePermits system

<table>
<thead>
<tr>
<th>PERMITTE NAME:</th>
<th>Mr. Paul Santos</th>
<th>PERMIT NUMBER:</th>
<th>P526P-19-04267</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAILING ADDRESS:</td>
<td>4741 E. Hunter Avenue, Suite A, Anaheim, CA 92807</td>
<td>HAND CARRY:</td>
<td>Yes</td>
</tr>
<tr>
<td>PHONE:</td>
<td>714-282-8777</td>
<td>DATE ISSUED:</td>
<td>10/08/2019</td>
</tr>
<tr>
<td>FAX:</td>
<td>714-282-8575</td>
<td>EXPIRES:</td>
<td>10/08/2022</td>
</tr>
<tr>
<td>DESTINATION:</td>
<td>Waypoint Analytical, Incorporated, 4741 E. Hunter Avenue, Suite A, Anaheim, CA 92807</td>
<td>RELEASE:</td>
<td>No</td>
</tr>
</tbody>
</table>

Under the conditions specified, this permit authorizes the following:

<table>
<thead>
<tr>
<th>Regulated Article</th>
<th>Life Stage(s)</th>
<th>Intended Use</th>
<th>Shipment Origins</th>
<th>Originally Collected</th>
<th>Culture Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plant Pathogenic Fruiting Bodies, Mycelia, Bacteria</td>
<td>Plant Parts, Seeds, Whole Plants</td>
<td>Diagnostic Labs</td>
<td>AS, GU, HI, MP, PR, VI, Continental U.S.</td>
<td>Originally Collected from USA including territories</td>
<td></td>
</tr>
<tr>
<td>Plant Pathogenic Fruiting Bodies, Mycelia, Fungi</td>
<td>Plant Parts, Seeds, Whole Plants</td>
<td>Diagnostic Labs</td>
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<td></td>
</tr>
<tr>
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<td>Plant Parts, Seeds, Whole Plants</td>
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</table>

PERMIT GUIDANCE

1) This permit does not authorize movement or release into the environment of genetically engineered organisms produced with the regulated organisms described in this permit. Importation, interstate movement, and environmental release of genetically engineered plant pests require a different permit issued under regulations at 7 CFR part 340. Any unauthorized interstate movement or environmental release, including accidental release, of a regulated GE organism would be a violation of those regulations. Additional guidance and contact information for APHIS Biotechnology Regulatory

THIS PERMIT HAS BEEN APPROVED ELECTRONICALLY BY THE FOLLOWING
PPQ HEADQUARTER OFFICIAL VIA EPERMITS.

Vickie Brewster
10/08/2019

WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to $250,000 (7 U.S.C.s 7734(b)) or punishable by a fine of not more than $10,000, or imprisonment of not more than 5 years, or both (18 U.S.C.s 1001)
Services, can be found at: https://www.aphis.usda.gov/aphis/ourfocus/biotechnology.

2) If an animal pathogen is identified in your shipment, to ensure appropriate safeguarding, please refer to http://www.aphis.usda.gov/import_export/animals/animal_import/animal_imports_an products.shtml

3) If a human pathogen is identified, please refer to the CDC Etiologic Agent Import Permit Program at http://www.cdc.gov/od/caipp/

4) This permit does not fulfill the requirements of other federal or state regulatory authorities. Please contact the appropriate agencies, such as the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, the U.S. Food and Drug Administration, the Centers for Disease Control and Prevention, the APHIS Veterinary Services unit, the APHIS Biotechnology Regulatory Services, or your State's Department of Agriculture to ensure proper permitting.

5) If you are considering renewal of this permit, an application should be submitted at least 90 days prior to the expiration date of this permit to ensure continued coverage. Permits requiring containment facilities may take a longer period of time to process.

6) When the regulated material includes Domestic soil
You must abide by all local quarantines see: http://www.aphis.usda.gov/planthealth/pests_and_diseases

; PHYTOPHTHORA RAMORUM (Sudden Oak Death): http://www.aphis.usda.gov/planthealth/sod

PERMIT CONDITIONS

USDA-APHIS issues this permit to Paul Santos with Waypoint Analytical, Inc. in Anaheim, California. This permit authorizes the interstate movement of pure cultures of the listed regulated organisms or host material infected with the listed regulated organisms from within the United States and its territories for diagnostic determinations in the APHIS approved facility #2016.

1. • This permit is issued by the United States Department of Agriculture's Animal and Plant Health Inspection Service (APHIS). It conveys APHIS regulations and requirements for the material(s) listed on this permit. It does not reduce or eliminate your legal duty and responsibility to comply with all other applicable Federal and State regulatory requirements.

- The permit number or a copy of the permit must accompany the shipment.

- You must be an individual at least 18 years old, or legal entity such as partnership, corporation, association, or joint venture.

- You are legally responsible for complying with all permit requirements and permit conditions.

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If you violate any applicable laws associated with this permit, you may face substantial civil or criminal penalties. We may cancel all current permits and deny future permit applications.

Without prior notice and during reasonable hours, authorized Federal and State Regulators must be allowed to inspect the conditions associated with the regulated materials/organisms authorized under this permit.

2. The permit holder must:

- maintain a valid PPQ526 permit so long as the regulated materials/organisms are alive or viable,
- not assign or transfer this permit to other persons without APHIS PPQ authorization,
- maintain an official permanent work assignment, residence, or affiliation at the address on this permit,
- notify the Pest Permit Staff as soon as possible of any change in the permit holder's work assignment, residence, or affiliation,
- notify the Pest Permit Staff of the receipt of unauthorized and/or misdirected shipments of regulated materials/organisms,
- adequately mitigate environmental impacts resulting from unauthorized release of regulated materials/organisms and notify the Pest Permit staff immediately if one occurs,
- notify the Pest Permit Staff if the facility is damaged/destroyed or if you wish to decommission the facility,
- destroy all regulated materials/organisms prior to departure from the organization unless other arrangements are confirmed by the Pest Permit Staff.

Notifications to the Pest Permit Staff must be made via 866-524-5421 or pest.permits@usda.gov within one business day of the event triggering a notification.

Vickie Brewster

DATE: 10/08/2019

WARNING: Any alteration, forgery or unauthorized use of this Federal Form is subject to civil penalties of up to $250,000 (7 U.S.C.s 7734(b)) or punishable by a fine of not more than $10,000, or imprisonment of not more than 5 years, or both (18 U.S.C.s 1001)
3. This permit does not authorize movement or use of organisms listed in the Public Health Security and Bioterrorism Preparedness and Response Act of 2002. If any organism listed as a Select Agent is identified from materials associated with this research, the permit holder is required to notify APHIS, Agriculture Select Agent Services (AgSAS) immediately by phone at 301-851-3300 option 3, and within seven (7) days submit APHIS/CDC Form 4A (Report of Identification of a Select Agent or Toxin in a Clinical or Diagnostic Laboratory) to APHIS, AgSAS; 4700 River Rd, Unit 2, Riverdale, MD 20737 (see instructions at: https://www.selectagents.gov/resources/APHIS-CDC_Form_4_Guidance_Document.pdf). Failure to comply with this requirement is a violation of the Agricultural Bioterrorism Protection Act of 2002. For a complete list of Select Agents please visit: https://www.selectagents.gov/selectagentsandtoxinslist.html

Select agents include: *Peronosclerospora philippinensis* (*Peronosclerospora sacchari*), *Coniothyrium glycines* (formerly Phoma glycinicola and Pyrenochaeta glycines), *Ralstonia solanacearum*, *Rathayibacter toxicus*, *Sclerophthora rayssiae*, *Synchytrium endobioticum*, *Xanthomonas oryzae*, *Bacillus anthracis*, *Brucella abortus*, *Brucella melitensis*, *Brucella suis*, *Burkholderia mallei*, and *Burkholderia pseudomallei*.

4. All persons working with the listed regulated materials/organisms must be informed of these permit conditions. Anyone working with these materials/organisms must agree to adhere to and sign/initial these conditions before beginning work. These signed conditions do not need to be submitted to USDA/APHIS but must be readily accessible and made available to Federal and State regulators upon request.

Note: these conditions may be copied and stored electronically for electronic signature and initialing provided that the permit number, authorized materials/organisms and life stages, release locations if applicable, and authorization statement all appear on the document with the permit number. Signing these conditions only indicates that the person working under this permit has read them; the permit holder is the sole responsible party under this permit.

5. All packages for transport must minimally consist of both inner/primary and outer/secondary packages securely sealed so that both are effective barriers to escape or unauthorized dissemination of the listed materials/organisms. The inner/primary package(s) will contain all regulated materials/organisms and must be cushioned and sealed in such a way that it remains sealed during shock, impact, and pressure changes that may occur. The outer/secondary shipping container must be rigid and strong enough to withstand typical shipping conditions (dropping, stacking, impact from other freight, etc.) without opening.

6. Upon receipt all samples potentially containing mobile arthropod life stages must be placed in a refrigerator for at least 4 hours prior to opening the package. Following this initial processing, living samples must be placed in sealed containers for subsequent diagnostic determinations.

7. All packages must be opened within the APHIS approved facility identified above. Whenever possible packages must be opened within a Class II or III biosafety cabinet, otherwise packages must be opened within an area dedicated for this purpose within this facility.

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8. This authorization is strictly for diagnostic activities in a controlled environment only. Plant inoculations are authorized in the laboratory or growth chamber only as necessary to confirm a diagnosis.

9. Vector transmission is not permitted under this authorization. Only mechanical inoculation of plants is permitted.

10. Measures to control potential insect vectors (e.g. black lights, yellow sticky boards, insecticides) must be in place.

11. Placement of organisms into a culture collection or any other research with these organisms is not authorized under this permit. Separate 526 permits are required for these activities.

12. • Adequate protective clothing must be worn when working with soil and infected/infested samples so that movement of plant pests out of the facilities on hands, clothing, and shoes does not occur.

  • The laboratory floor must be uniform (i.e., no cracks/defects) and made of materials that can be cleaned. The floor must be maintained free of soil and infected/infested material.

  • Work benches must be uniform (i.e., no cracks/defects) and made of materials that can be cleaned. When not working with the regulated material, the benches must be cleaned and maintained free of soil and infected/infested material.

  • Any sink that drains water used for processing infested soil, infested growing media, and infected plant materials must be equipped with traps that allow collection of waste water.

  • All waste water from sink traps or other sources that potentially contains live pests or pathogens must be treated according to the devitalization and waste disposal condition in this permit before final disposal.

13. Diagnostic samples must be maintained within the APHIS approved facility identified above. All stored samples must be kept in a locked area with access restricted to authorized personnel.

14. A record of all plant pathogens and pests identified in the regulated material must be maintained at the APHIS approved containment facility identified above. These records must be available to Federal and State regulators upon request.

15. The permit holder or authorized individual must notify APHIS Plant Protection and Quarantine (PPQ) Pests Pathogens and Biocontrol Permit Branch (PPBP) within 10 working days of the confirmation that an organism is identified as (a) a species new to science, (b) an organism not known to occur in the United States, or (c) a pest managed by an APHIS program (https://www.aphis.usda.gov/aphis/ourfocus/planthealth/plant-pest-and-disease-programs/pests-and-diseases). Include the permit number, the origins and dates of receipt of the samples, and the identified organism. The notification must be sent to USDA/APHIS/PPQ/RPM/PPB, 4700
River Rd., Unit 133, Riverdale, MD 20737, faxed to 301-734-8700 or emailed to Pest.Permits@usda.gov as Word, Excel or pdf documents. Notifications must also be sent to the State Plant Health Director (SPHD) and State Plant Regulatory Official (SPRO) of the state of origin of the specific sample within 10 working days. See https://www.aphis.usda.gov/aphis/ourfocus/planthealth/ppq-program-overview/ct_sphd and https://nationalplantboard.org/membership/ for contact information.

16. Standard Operating Procedures (SOPs) must be filed with, and approved by, the APHIS PPQ Pest Permit Staff at: email: pest.permits@usda.gov; phone: 866-524-5421; fax: 301-734-8700; address: 4700 River Road, Unit 133, Riverdale, MD 20737. All contact information must be kept current and the SOPs must be dated. If requirements in the permit conditions are more restrictive than the SOPs, permit conditions take precedence. APHIS PPQ must approve any changes to the SOPs before implementation.

A list of all persons with access to the containment facility must be maintained and available upon request by Federal or State Regulatory Officials.

All persons working with the regulated material/organism(s) must be trained on, and implement the permit conditions, and all APHIS approved SOPs governing the facility listed above.

17. Modifications to the containment facility or any changes that affect the containment of the regulated materials/organisms must be approved by APHIS prior to making changes. Please contact the Pest Permit Staff (email: pest.permits@usda.gov; phone: 866-524-5421; address: 4700 River Rd., Unit 133, Riverdale, MD 20737; Fax: 301-734-8700).

18. DEVITALIZATION AND WASTE DISPOSAL

All regulated materials/organisms and all items coming in direct contact or exposed to the regulated materials/organisms must be sterilized/sanitized/decontaminated prior to removal from the authorized containment facility. This includes all items from shipping, culturing, care, and maintenance of these regulated materials/organisms. This requirement includes but is not necessarily limited to: packaging directly exposed to the regulated materials/organisms, substrates (culture media, soil, plant materials (food materials or host plants)), leftover/unused/unneeded live cultures, and dead specimens/cultures unless specified otherwise in the permit.

Prior to disposal or reuse, you must treat all contaminated and all potentially contaminated materials by one of the following methods, either alone or in combination:

1) autoclaved (see protocol below), 2) disposed of off-site by a facility holding a valid PPQ compliance agreement (organisms and/or contaminated waste must be stored in sealed containers prior to pick up by this company), 3) incinerated, 4) immersed in 5,250-6,000 PPM sodium hypochlorite solution (1 part fresh household bleach to 9 parts water) for at least 20 minutes, or 5) immersed in 70 percent alcohol for at least 30 minutes.
Treated waste will be double bagged prior to disposal.

Other sterilization methods are only allowed with prior written agreement from the USDA/APHIS PPQ Pest Permit Staff.

If using an autoclave the following protocol must be used:
a. Waste must be autoclaved at 121 Celsius (250 Fahrenheit) for a minimum of 30 minutes at 15 psi.
b. Autoclave tape or other indicators must be placed on each load prior to treatment. The autoclave tape or other indicator on each container must be checked to verify color change before disposal.
c. The autoclave must be calibrated according to the manufacturer's instructions and a commercially available biological indicator kit that uses bacterial spores of Geobacillus stearothermophilus that are rendered unviable at 121 Celsius (250 Fahrenheit) must be used every three months.

OR

The autoclave must be calibrated according to the manufacturer's instructions every two years and a commercially available biological indicator kit that uses bacterial spores of Geobacillus stearothermophilus that are rendered unviable at 121 Celsius (250 Fahrenheit) must be used every two weeks.

d. A written record of the calibration and the biological indicator tests must be maintained.

You must follow the manufacturer's instructions for the Geobacillus sterothermophilus and if any growth is observed, you must have the autoclave serviced and retested before it is used again for the regulated articles/organisms listed on this permit.

19. As an alternative to the DEVITALIZATION AND WASTE DISPOSAL requirements listed above, devitalization/destruction of organisms and infected material may be conducted off site by a facility holding a valid PPQ compliance agreement prior to disposal. Vendor may or may not be in the same state. All organisms, contaminants and/or packaging materials must be in sealed containers during transport to this waste management facility in order to prevent any unauthorized dissemination of the regulated articles.

20. There is to be no further movement or distribution of the listed regulated materials/organisms within the United States and its territories unless the recipient holds, or is named as a responsible party on a valid PPQ526 permit for receipt of such materials/organisms.

END OF PERMIT CONDITIONS