Some processes, equipment, and materials described in this manual may be patented. Inclusion in this manual does not constitute permission for use from the patent owner. The use of any patented invention in the performance of the processes described in this manual is solely the responsibility of the user. APHIS does not indemnify the user against liability for patent infringement and will not be liable to the user or to any third party for patent infringement.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of any individual’s income is derived from any public assistance program. (Not all prohibited bases apply to all programs). Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA’s TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, SW., Washington, DC 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

When using pesticides, read and follow all label instructions.
Contents

Figures  LOF-1
Tables  LOT-1
Introduction  1-1
Preparation  2-1
Growing Site Inspections  3-1
Inspecting Postentry Quarantine Material  4-1
Description of Postentry Quarantine Material Release Procedures  5-1
Responsibilities of State and Federal Inspectors  6-1
List of Circulars  7-1
Alphabetical List of Diseases  8-1
Diseases and Pathogens of Concern
  On Postentry Genera With No Circulars  9-1
Disease and Pathogenic Organism Circulars  10-1
Directory of PPQ Postentry Quarantine Liaison Officers  A-1
Plant Inspection Stations  B-1
Directory of SPROs and State PEQ Contacts  C-1
Violations of the Postentry Growing Agreement  D-1
Plant Genera Subject to Postentry Quarantine  E-1
Forms and Permits  F-1
Postentry Quarantine Regulation 7 CFR 319.37-7  G-1
Plants Growing in Postentry Quarantine  H-1
Pesticide Safety  I-1
Glossary  Glossary-1
Index  Index-1
Figures

Figure 9-1  Symptoms of Witches’ Broom on Carya spp.  9-3
Figure 9-2  Symptoms of chlorotic ring and line pattern caused by an unknown agent, on Crataegus wattinga leaf  9-4
Figure 9-3  Cydonia spp. with symptoms of Quince Sooty Ringspot Agent on Quince C7/1 leaf; healthy leaf on left  9-5
Figure 9-4  Cydonia spp. with yellow spotting and distortion of leaves caused by Quince Stunt Agent; healthy leaf on left  9-6
Figure 9-5  Symptom of streaking on leaves caused by virus on Humulus spp.  9-7
Figure 9-6  Chrome yellow mottle symptoms caused by Cherry Leaf Roll Virus on Juglans regia foliage  9-8
Figure 9-7  Juglans regia foliage showing chlorotic ring patterns, a symptom caused by Cherry Leaf Roll Virus  9-8
Figure 10-1  Example of virus-infected Hibiscus spp.; NOT Yellow-vein Virus, but when such as this is found, it should be submitted for identification  10-4
Figure 10-2  Aesculus hippocastanum (horse chestnut) tree; virus causes a general yellow appearance  10-15
Figure 10-3  Aesculus hippocastanum (horse chestnut); leaf with banding pattern, a symptom of Yellow Oak Leaf Vein Virus  10-15
Figure 10-4  Puccinia graminis on Berberis spp.; aecial stage on underside of leaf; may attack stems and fruit  10-18
Figure 10-5  Puccinia chrysanthemi on Chrysanthemum spp.; orange to brown spots on lower leaf surface; common disease; submit specimens  10-27
Figure 10-6  Puccinia horiana on Chrysanthemum spp.; white, waxy spots on lower surface of leaf  10-28
Figure 10-7  The wilting of cherry (possibly caused by Apple Proliferation Phytoplasma)  10-30
Figure 10-8  Progresses to death of the tree (possibly caused by Apple Proliferation Phytoplasma)  10-31
Figure 10-9  Enlarged stipules of an infected Malus plant  10-32
Figure 10-10  Enlarged stipules of an infected Malus plant (left) compared to the regular-sized stipules on an uninfected plant (right)  10-32
Figure 10-11  The necrosis on cross-section of branches of cherry (possibly caused by Apple Proliferation Phytoplasma)  10-33
Figure 10-12  The necrosis on cross-section of trunk of cherry (possibly caused by Apple Proliferation Phytoplasma)  10-34
Figure 10-13  Floral necrosis of cherry (possibly caused by Apple Proliferation Phytoplasma)  10-35
Figure 10-14 Uredinia of *Uromyces transversalis* 10-40
Figure 10-15 *Uredinia* (across the width of the leaf) and telium (dark) of *Uromyces transversalis* 10-41
Figure 10-16 Uredinia, erumpent, across the width of the leaf of *Uromyces transversalis* 10-42
Figure 10-17 Uredinia (across the width of the leaf) of *Uromyces transversalis* 10-43
Figure 10-18 Uredinia (yellowish) and telia (dark) of *Uromyces transversalis* 10-44
Figure 10-19 Carnation Etched Ring Virus on *Dianthus* spp.; atypical; note white lines in first and third leaves 10-46
Figure 10-20 Carnation Etched Ring Virus on *Dianthus* spp.; note typical symptoms showing etched rings in first leaf 10-47
Figure 10-21 Carnation Etched Ring Virus on *Dianthus* spp.; severe symptoms 10-47
Figure 10-22 Euonymus Mosaic 10-53
Figure 10-23 Witches’ Broom on *F. americana*; healthy (left); foliar chlorosis (right), reduced leaf size and branch proliferation 10-57
Figure 10-24 *Fraxinus excelsior* leaflet showing a symptom of Arabis Mosaic Virus 10-57
Figure 10-25 *Puccinia gladioli* telia 10-59
Figure 10-26 *Puccinia gladioli* telia 10-60
Figure 10-27 *Puccinia mccleanii* telia on leaf 10-61
Figure 10-28 *Puccinia mccleanii* telia on leaf 10-62
Figure 10-29 *Puccinia glyceriae* 10-68
Figure 10-30 *Puccinia glyceriae* close up 10-69
Figure 10-31 *Gymnosporangium fuscum* on *Juniperis* spp.; note dark brown telial horns and lack of branch swelling 10-73
Figure 10-32 *Gymnosporangium fuscum* on *Juniperis* spp.; telial horns expanded and gelatinized after rain 10-73
Figure 10-33 *Gymnosporangium fuscum* on *Juniperis* spp.; telial horns expanded and gelatinized after rain 10-74
Figure 10-34 *Gymnosporangium asiaticum* on *Juniperis*; telial spores 10-76
Figure 10-35 *Gymnosporangium japonicum* on *Juniperis* spp.; sori on branches 10-78
Figure 10-36 Ligustrum Mosaic Agent on *Ligustrum* spp. 10-81
Figure 10-37 Distribution of Apple Mosaic Virus 10-87
Figure 10-38 Bark cankers (right) on second-year wood of *Pyrus* variety of “Winter Nelis” caused by Pear Blister Canker Viroid 10-87
Figure 10-39 Roughening, brown mottling and blistering (right) of second-year wood of *Pyrus* spp. “pattern”; symptoms caused by Pear Blister Canker Viroid 10-88
Figure 10-40 Peach leaves with Plum Pox Virus (PPV) showing vein clearing 10-116
Figure 10-41 Apricot *Prunus* spp. with Plum Pox Virus (PPV) 10-116
Figure 10-42 Plum fruit with Plum Pox Virus (PPV); schematic drawing of symptoms on leaves and fruit 10-117
Figure 10-43  Example of Plum Pox Virus (PPV)-induced color breaking (pink flecks) in certain peach cultivars 10-117
Figure 10-44  Example of Plum Pox Virus (PPV)-induced color breaking (pink flecks) in certain peach cultivars 10-118
Figure 10-45  Distribution of Rose Wilt Agent; Australia (including Tasmania), New Zealand, Republic of South Africa; a similar disease occurs in Italy; for quarantine purposes, we will prohibit roses from these countries 10-125
Figure 10-46  First symptoms of Rubus stunt in red raspberry; numerous weak and erect shoots develop from the root buds 10-128
Figure 10-47  Floricane of Rubus stunt-infected blackberry cv. “Thornless Evergreen,” showing witches’ broom growth and yellowing 10-129
Figure 10-48  Phyllody of flowers of red raspberry cv. “Norfolk Giant” Sepals, petals, and pistils become leaflike structures; stamens usually remain normal 10-130
Figure 10-49  Watermark Disease of Salix spp.; typical die-back symptoms of this quarantine-significant disease caused by Erwinia salicis 10-133
Figure D-1  Liaison Officer’s Statement Preparation D-6
Figure F-1  APHIS 7060, Official Warning, Violation of Federal Regulations F-2
Figure F-2  Example of PPQ Form 236, Notice of Shipment and Report of Imported Plants to be Grown Under Postentry Quarantine F-3
Figure F-4  Routing and Distribution of PPQ Form 236 F-5
Figure F-5  Example of PPQ Form 391 Specimens for Determination F-6
Figure F-7  Example of PPQ Form 518 Report of Violation F-8
Figure F-8  Example of PPQ Form 546 Agreement for Postentry Quarantine—State Screening Notice (7 CFR 319.37) F-9
Figure F-10  Routing and Distribution of PPQ Form 546 F-12
Figure F-11  Example of PPQ Form 547 Postentry Quarantine Tag F-13
Figure F-12  Example of PPQ Form 587 Application for Permit to Import Plants or Plant Products F-15
Figure F-14  Example of a Controlled Import Permit for Postentry Quarantine (CIP) F-17
Figure F-18  Example of a Witness Statement F-21
# Tables

**Postentry Quarantine**

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1-1</td>
<td>How to Use Decision Tables</td>
<td>1-6</td>
</tr>
<tr>
<td>Table 1-2</td>
<td>Procedures to Report a Problem with the <em>PEQ Manual</em></td>
<td>1-8</td>
</tr>
<tr>
<td>Table 3-1</td>
<td>Decision Table for Handling Plant Debris or Waste</td>
<td>3-6</td>
</tr>
<tr>
<td>Table 4-1</td>
<td>Pest Findings and Appropriate Action</td>
<td>4-5</td>
</tr>
<tr>
<td>Table 4-2</td>
<td>Decision Table for Preserving Specimens</td>
<td>4-9</td>
</tr>
<tr>
<td>Table 4-3</td>
<td>Instructions for Preparing Fixatives</td>
<td>4-10</td>
</tr>
<tr>
<td>Table 4-4</td>
<td>Comparing Symptoms</td>
<td>4-11</td>
</tr>
<tr>
<td>Table 4-5</td>
<td>Instructions for PPQ Form 391</td>
<td>4-12</td>
</tr>
<tr>
<td>Table 4-6</td>
<td>Instructions for PPQ Form 236</td>
<td>4-13</td>
</tr>
<tr>
<td>Table 10-1</td>
<td>Comparison of Chrysanthemum Rust and Chrysanthemum White Rust</td>
<td>10-28</td>
</tr>
<tr>
<td>Table A-1</td>
<td>Directory of PEQ Liaison Officers</td>
<td>A-2</td>
</tr>
<tr>
<td>Table B-1</td>
<td>Directory of Plant Inspection Stations</td>
<td>B-1</td>
</tr>
<tr>
<td>Table C-1</td>
<td>Directory of State Plant Regulatory Officials and State PEQ Contacts</td>
<td>C-3</td>
</tr>
<tr>
<td>Table D-1</td>
<td>Instructions for completing a Report of Violation (PPQ Form 518)</td>
<td>D-4</td>
</tr>
<tr>
<td>Table D-2</td>
<td>Case File Responsibilities</td>
<td>D-8</td>
</tr>
<tr>
<td>Table E-1</td>
<td>Plant Genera Subject to Postentry Quarantine</td>
<td>E-3</td>
</tr>
<tr>
<td>Table H-1</td>
<td>Causal Agent and Onset of Symptoms</td>
<td>H-1</td>
</tr>
<tr>
<td>Table H-2</td>
<td>Inspection Aid for Plants Growing in Postentry Quarantine</td>
<td>H-1</td>
</tr>
</tbody>
</table>
Contents

Purpose 1-1
Scope 1-2
Users 1-3
Related Documents 1-3
  Code of Federal Regulations 1-3
Application 1-4
Conventions 1-4
  Advisories 1-4
  Boldface 1-5
  Bullets 1-5
  Change Bar 1-5
  Chapters 1-5
  Contents 1-5
  Control Data 1-5
  Decision Tables 1-6
  Examples 1-6
  Footnotes 1-6
  Heading Levels 1-6
  Hypertext Links (Highlighting) to Tables, Figures, and Headings 1-7
  Indentions 1-7
  Italics 1-7
  Numbering Scheme 1-7
  Transmittal Number 1-7
Using the Manual 1-8
  Reporting Problems With or Suggestions For the Manual 1-8
  Manual Updates 1-8
  Ordering Additional Manuals and Revisions 1-9

Purpose

The Postentry Quarantine (PEQ) Manual enables State inspectors to perform the following tasks:

◆ Complete appropriate form for the Permit Unit (PPQ Form 546 only)
◆ Complete appropriate forms for the Postentry Quarantine Unit (PEQU)
◆ Conduct a survey of the growing site to determine whether to approve the site
Inspection of postentered plant material during the growing period for pests (primarily plant pathogens)

Scope

The Postentry Quarantine Manual covers procedures for conducting PEQ tasks beginning with the request to approve a growing site and ending with the release or refusal of the plant material.

The manual is divided into the following chapters:

- **Introduction** on page 1-1
- **Preparation** on page 2-1
- **Growing Site Inspections** on page 3-1
- **Inspecting Postentry Quarantine Material** on page 4-1
- **Description of Postentry Quarantine Material Release Procedures** on page 5-1
- **Responsibilities of State and Federal Inspectors** on page 6-1
- **List of Circulars** on page 7-1
- **Alphabetical List of Diseases** on page 8-1
- **Diseases and Pathogens of Concern** on page 9-1
- **Disease and Pathogenic Organism Circulars** on page 10-1

The manual also includes 10 appendixes, a Glossary, and an Index.

The *Introduction* contains basic information about the Postentry Quarantine Manual. This chapter includes the manual’s purpose, scope, users, and application; a list of related documents that provide the authority for the manual’s content; directions about how to use the manual; and the conventions (unfamiliar or unique symbols and highlighting) that appear throughout the manual.

The *Preparation* provides an orientation to conducting a postentry quarantine inspection including the necessary and needed forms, tools and equipment, and warnings for personal and inspectional safety.

The *Procedures* provide an overview of growing site inspections including inspector authority, site waivers, and disposal procedures.

*Inspecting Postentry Quarantine Growing Materials* provides procedures for inspecting PEQ growing materials including how plants may enter the country,
Introduction

Users

The Postentry Quarantine Manual is written for use by State inspectors performing PEQ duties for Plant Protection and Quarantine (PPQ). The secondary users of this manual are PPQ Postentry Quarantine Liaison Officers (PEQLO) and Investigative and Enforcement Services (IES) Investigators.

Related Documents

The following documents are related to this manual:

- 7 CFR 319.37 (Postentry Quarantine Regulation 7 CFR 319.37-7 on page G-1) and associated manual part(s)
- Compendia of nursery diseases

Code of Federal Regulations

The Code of Federal Regulations (CFRs) provide the authority for the regulatory action taken and are enforced by CBP and PPQ. The restrictions and prohibitions listed in this manual are covered by 7 CFR 319.37-7.

general inspection guidelines, detailed inspection procedures, pest identification procedures, and how to record inspection results.

Descriptions of Postentry Quarantine Material Release Procedures provides an overview of the criteria needed to release healthy PEQ material from quarantine.

Responsibilities of State and Federal Inspectors provides a breakdown of the specific responsibilities of both State and Federal PEQ inspectors.

The List of Disease Circulars; Alphabetical List of Diseases; Plant Pathogenic Organisms of Interest on Postentry Plants; and Disease Circulars provide different avenues for accessing information regarding the different disease circulars and plant pathogenic organisms.

The Appendixes contain supplementary information not appropriate for other components of topics, explanations, and elaborations not essential to the manual but helpful to the user, and information that interrupts the application of the information or makes the information more difficult to follow.

The Glossary defines specialized words, abbreviations, and acronyms associated with postentry quarantine. The Index contains topics and links or page numbers for quick reference.
Application

The Postentry Quarantine Manual informs PPQ officers and State inspectors about how to:

- Approve or disapprove postentry growing sites
- Complete forms associated with the PEQ program
- Handle violations (especially violations of the conditions of entry listed on PPQ Form 546)
- Inspect nursery stock for plant pathogens
- Provide the basic knowledge of practical application for the program

Conventions

Conventions are established by custom and are widely recognized and accepted. Major conventions used in this manual follow.

Advisories

Advisories are used throughout the Postentry Quarantine Manual to bring important information to your attention. Please carefully review each advisory. The definitions coincide with American National Standards Institute (ANSI), and are in the format shown below.

- **DANGER**
  DangerTable message is used in the event of imminent risk or death of serious injury.

- **WARNING**
  WarningTable message to be used in the event of possible risk of serious injury.

- **CAUTION**
  CautionTable message is used for tasks involving minor to moderate risk of injury.

- **NOTICE**
  NoticeTable message is used to alert a reader of important information or Agency policy.

- **SAFETY**
  SafetyTable message is used for general instructions or reminders related to safety.
**Boldface**

Boldface type is used to emphasize important words throughout the *PEQ Manual*. These words include: **cannot, do not, does not, except, lacks, must, neither, never, nor, not, only, other than**.

**Bullets**

Bulleted lists indicate that there is **no order** to the information being listed.

**Change Bar**

A black change bar (*see* left margin) is used to indicate a change and appears on the revised page. Unfortunately, change bars **do not** always appear when text is merely deleted. Change bars from the previous update are deleted when the chapter or appendix is revised.

**Chapters**

This manual contains the following chapters: Introduction; Procedures; Reference; Inspecting Postentry Quarantine Growing Material; Descriptions of Postentry Quarantine Material Release Procedures; Responsibilities of State and Federal Inspectors; List of Disease Circulars; Alphabetical List of Diseases; Plant Pathogenic Organisms of Interest on Postentry Plants; and Disease Circulars.

**Contents**

Every chapter section has a table of contents that lists the heading titles within.

**Control Data**

Control data is located at the top and bottom of each page to help manual users keep track of where they are in the manual and be aware of updates to specific chapters, sections, appendixes, etc. in the manual. At the top of each page is the chapter title and first-level heading for that page. At the bottom of each page is the transmittal number (month, year, number), manual title, page number, and unit responsible for content. To track revisions to the *Postentry Quarantine Manual* use the control data.
**Decision Tables**

Decision tables are used throughout the manual. The first and middle columns in each table represent conditions, and the last column represents the action to take after all conditions listed for that row are considered. Begin with the column headings and move left to right, and if the condition **does not** apply, continue one row at a time until you find the condition that does apply.

**Table 1-1 How to Use Decision Tables**

<table>
<thead>
<tr>
<th>If you:</th>
<th>And if the condition applies:</th>
<th>Then:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Read this column cell and row first</td>
<td>Continue in this cell</td>
<td>TAKE action listed in this cell</td>
</tr>
<tr>
<td>Find the previous condition did <strong>not</strong> apply, read this column cell</td>
<td>Continue in this cell</td>
<td>TAKE action listed in this cell</td>
</tr>
</tbody>
</table>

**Examples**

Examples are used to clarify a point by applying it to a real-world situation. Examples always appear in boxes as a means of visually separating them from the other information contained on the page.

**EXAMPLE** Examples are graphically placed boxes within the text as a means of visually separating information from other information contained on the page. Examples always appear in a box like this.

**Footnotes**

Footnotes comment on or cite a reference to text and are referenced by number. The footnotes used in this manual include general text footnotes, figure footnotes, and table footnotes.

General text footnotes are located at the bottom of the page.

When space allows, figure and table footnotes are located directly below the associated figure or table. However, for multipage tables or tables that cover the length of a page, footnote numbers and footnote text **cannot** be listed on the same page. If a table or figure continues beyond one page, the associated footnotes will appear on the page following the end of the figure or table.

**Heading Levels**

Within each chapter there are four heading levels. The first-level heading is indicated by a horizontal line across both the left and right columns, and the heading follows directly below. The second-level heading is in the right-hand column with the text beginning below. The third-level heading is in the right-hand column with the text beginning below. The fourth-level heading is in the right-hand column followed by a period and leading into the text.
**Hypertext Links (Highlighting) to Tables, Figures, and Headings**

Figures, headings, and tables are cross-referenced in the body of the manual and are highlighted in boldface type. These appear in blue hypertext in the online manual.

**EXAMPLE** See Table 1-1 on page 1-6 in the introduction to determine where to report problems with this manual.

**Indentions**

Entry requirements summarized from CFRs, import permits, or policies are indented on the page.

**Italics**

The following items are italicized throughout the Postentry Quarantine Manual:

- Cross-references to headings and titles
- Publication names
- Scientific names of commodities

**Numbering Scheme**

A two-level numbering scheme is used in this manual for pages, tables, and figures. The first number represents the chapter. The second number represents the page, table, or figure. This numbering scheme allows identifying and updating. Dashes are used in page numbering to differentiate page numbers from decimal points.

**Transmittal Number**

The transmittal number contains the month, year, and a consecutively issued number (beginning with -01 for the first edition and increasing consecutively for each update to the edition). The transmittal number is only changed when the specific chapter sections, appendixes, or glossary, tables, or index is updated. If no changes are made, then the transmittal number remains unchanged. The transmittal number only changes for the entire manual when a new edition is issued or changes are made to the entire manual.

**EXAMPLE** 7/2011-05 is the transmittal number for this update and is located in the control data on the pages in this chapter.

7 is the month the update was issued
2011 is the year the update was issued
05 is the number (the original, new edition was 01 plus 4 updates)
Using the Manual

Review the contents of this manual to get a feel for the scope of covered material. Glance through the section you will be using and familiarize yourself with the organization of the information. Use the table of contents following each tab to find the information you need. If the table of contents is not specific enough, turn to the Index to find the topic and corresponding page number.

EXAMPLE To find contact information for the Maryland PEQ Liaison Officer see Directory of PPQ Postentry Quarantine Liaison Officers on page A-1.

Reporting Problems With or Suggestions For the Manual

Use Table 1-2 to determine where to report problems or disagreements, or improvements that directly affect the contents of the Postentry Quarantine Manual.

Table 1-2 Procedures to Report a Problem with the PEQ Manual

<table>
<thead>
<tr>
<th>If you:</th>
<th>Then:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Are not able to access the online manual</td>
<td>CONTACT the PPQ Manuals Unit via email at <a href="mailto:amy.l.frevert@aphis.usda.gov">amy.l.frevert@aphis.usda.gov</a> or call 240-529-0352</td>
</tr>
<tr>
<td>Have a situation that requires an immediate response regarding a procedure or regulatory action</td>
<td>CBP: CONTACT the field office liaison through the chain of command&lt;br&gt;PPQ: CONTACT Dave Farmer via email at <a href="mailto:thomas.d.farmer@aphis.usda.gov">thomas.d.farmer@aphis.usda.gov</a> or call 919-855-7366</td>
</tr>
<tr>
<td>Have a suggestion for improving the formatting of the content (Design, layout, composition) grammar, or spelling</td>
<td>CONTACT the PPQ Manuals Unit via email at <a href="mailto:amy.l.frevert@aphis.usda.gov">amy.l.frevert@aphis.usda.gov</a> or call 240-529-0352</td>
</tr>
<tr>
<td>Disagree with the admissibility of a commodity</td>
<td>CBP: CONTACT the field office liaison through the chain of command&lt;br&gt;PPQ: CONTACT the PPQ Regulations, Permits, and Manuals department through proper channels</td>
</tr>
<tr>
<td>Disagree with policy or procedure</td>
<td>CBP: CONTACT the field office liaison through the chain of command&lt;br&gt;PPQ: CONTACT the PPQ Quarantine Policy, Analysis, and Support through proper channels with the reason for the disagreement and a recommendation</td>
</tr>
</tbody>
</table>

Manual Updates

The PPQ Manuals Unit electronically issues and maintains manuals on the Manuals Unit Web site. The online manuals contain the most up-to-date information.
Immediate update revisions to the manual are issued and distributed via email to CBP Agriculture Specialists, State liaison officers, and all PPQ employees.

Each immediate update contains the following information:
◆ Link to access and download the online manual
◆ List of the revised page numbers
◆ Purpose of the revision[s]
◆ Transmittal number

**Ordering Additional Manuals and Revisions**
Although using the online manuals is the preferred method, APHIS employees may order hard copies of manuals from the APHIS Printing, Distribution, and Mail Services Center in Riverdale, Maryland. Visit the Riverdale Print Shop Web site for detailed information and printing costs. The Manuals Unit is not responsible for printing costs.
Introduction
Using the Manual
# Chapter 2

## Preparation

### Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orientation</td>
<td>2-2</td>
</tr>
<tr>
<td>State and Federal Forms</td>
<td>2-3</td>
</tr>
<tr>
<td>State Nursery Inspection Forms</td>
<td>2-3</td>
</tr>
<tr>
<td>State Quarantine Notice Forms</td>
<td>2-3</td>
</tr>
<tr>
<td>PPQ Form 236, “Notice of Shipment and Report of Inspection of Imported Plants to be Grown Under Postentry Quarantine”</td>
<td>2-3</td>
</tr>
<tr>
<td>PPQ Form 391, “Specimens for Determination”</td>
<td>2-3</td>
</tr>
<tr>
<td>PPQ Form 546, “Agreement for Postentry Quarantine—State Screening Notice (7 CFR 319.37)”</td>
<td>2-4</td>
</tr>
<tr>
<td>PPQ Form 518, “Report of Violation”</td>
<td>2-4</td>
</tr>
<tr>
<td>Tools and Equipment</td>
<td>2-5</td>
</tr>
<tr>
<td>Cautions and Warnings</td>
<td>2-6</td>
</tr>
<tr>
<td>APHIS Form 7060, “Official Warning Violation of Federal Regulations”</td>
<td>2-5</td>
</tr>
<tr>
<td>PPQ Form 569, “Release From Postentry Quarantine”</td>
<td>2-5</td>
</tr>
<tr>
<td>PPQ Form 587, “Application for Permit to Import Plants or Plant Products”</td>
<td>2-5</td>
</tr>
<tr>
<td>“Controlled Import Permit (CIP) for Postentry Quarantine”</td>
<td>2-5</td>
</tr>
<tr>
<td>Personal Warnings</td>
<td>2-6</td>
</tr>
<tr>
<td>Inspectional Warnings</td>
<td>2-6</td>
</tr>
<tr>
<td>Special Note Regarding PIS Inspections</td>
<td>2-8</td>
</tr>
</tbody>
</table>
Orientation

Review the *PEQ Manual* prior to conducting a PEQ inspection for the first time.

If possible, have an experienced inspector accompany you on one or more inspections until you become familiar with the job.

Ask your PEQLO to assist you with routine or difficult problems. (The success of this program depends on cooperation between State and Federal professionals.)

Obtain clear directions to the inspection site: commercial nursery, greenhouse, or hobbyist's home garden.

Contact the grower to arrange for each PEQ inspection appointment. (This is particularly important when dealing with hobbyists. Access is obtained and travel time is saved. Make cold-call inspections only as needed relative to your knowledge of the grower, State guidelines, and pest risk.)

Having an inspection appointment may seem unnecessary or contrary to standard nursery inspection procedures, but an appointment may reduce the likelihood of violations. Tell importers to do the following:

- Assure that PEQ tags are in their proper places
- Read his or her Controlled Import Permit for Postentry Quarantine (CIP) and remember to separate PEQ material from non-PEQ material
- Take the time to tidy growing areas and place dead PEQ material in trash bags for your examination

If importers do not take corrective measures prior to your inspection appointment, report and document violations as appropriate. Act to correct all violations.

**NOTICE**

If your State Department of Agriculture’s policy is to do inspections without appointment, please follow that policy for PEQ articles as well.

If you have reason to believe that correct PEQ compliance is only occurring prior to your announced visit, conduct cold-call inspections to determine the level of actual compliance. Report and document violations as appropriate. Act to correct all violations.
State and Federal Forms

Carry all necessary State and Federal forms.

State Nursery Inspection Forms
Depending on each State's standard operating procedures, State Nursery Inspection forms may be needed to report that contact was made with a specific grower, and any pests found and the treatments recommended.

State Quarantine Notice Forms
Depending on each State's standard operating procedures, State Quarantine Notices may be needed to report detention of PEQ material due to infection or infestation.

PPQ Form 236, “Notice of Shipment and Report of Inspection of Imported Plants to be Grown Under Postentry Quarantine”
PPQ 236 Notice of Shipment and Report of Imported Plants to be Grown Under Postentry Quarantine on page F-3 is an official record of what was shipped to the importer and assists in verifying the following:

- Date they were received
- Kind and quantities of plants shipped
- Number of PEQ tags shipped by the PIS
- Permit and reference numbers
- Pests found and treated for at the PIS
- Requirements necessary to complete the release of the PEQ material

When the PEQ period ends, PPQ Form 236 is used to request release of the PEQ material.

State inspectors may report inspection findings directly on the back of this form throughout the PEQ period, or they may use State forms and transfer the information before sending to the PEQU.

PPQ Form 391, “Specimens for Determination”
PPQ Form 391 Specimens for Determination on page F-5 must be used when shipping insect or disease specimens to national identifiers.
PPQ Form 546, “Agreement for Postentry Quarantine—State Screening Notice (7 CFR 319.37)”
Read the agreement section of (PPQ 546 Agreement for Postentry Quarantine—State Screening Notice (7 CFR 319.37) on page F-9) to the grower (owner or manager) when a PEQ shipment is first received or during the first inspection. Each letter (a. through j.) should be initialed by the applicant. Review this form again with the grower if you observe violations. Tactfully reemphasize AGREEMENT sections a. through j. Stress that the person who signs this form is the “legally accountable” person, and, therefore, must abide by all PEQ rules.

NOTICE
Inform the grower/accountable person that according to Federal law, no PEQ material may be legally propagated or otherwise increased and no shipment or part of a shipment may be moved to another location on the importer’s property or to any other importer’s property without prior approval from the State inspection authorities and written permission of the National Coordinator, Postentry Quarantine Program.

Forward copies 1 and 2 of the application for postentry permits (PPQ Form 546) to:

Head, Permit Unit
USDA, APHIS, PPQ
4700 River Road, Unit 136
Riverdale, Maryland 20737

Copy 3 of the application form should be kept by the State and copy 4 given to the importer.

NOTICE
An applicant with a level 2 e-authentication can apply online for a Postentry Permit. The application will go first to the Permit Unit to check for completeness and whether the applicant has a history with violations. The Permit Unit then forwards to the appropriate State Department of Agriculture. The site is inspected by a State Inspector and approved or disapproved. If approved, an e-permit will be issued. If disapproved, the applicant will be informed.

PPQ Form 518, “Report of Violation”
Use PPQ 518 Report of Violation on page F-8 to report violations of the PEQ permit.

Know that other forms exist, relative to PEQ.
Tools and Equipment

Following is a list of tools and equipment needed to inspect plants being grown under postentry quarantine:

- Copies of PPQ Form 391, “Specimens for Determination”
- State Quarantine Tags, Quarantine Tape, or similar marking equipment for detaining infected PEQ material
- Copies or originals of all forms specific to the PEQ inspection
- Three or four plastic, heavy-duty trash bags for infected PEQ material disposal
Cautions and Warnings

Personal Warnings
Inspectors should always be cautious en route to and during PEQ inspections, but probably no more so than during any other work assignment.

Experienced inspectors know to look for guard dogs, pesticide residues on plants, low-hanging steam pipes, unguarded fans, and dangerous footing. But even experienced inspectors can have accidents. Therefore, take every precaution to minimize accidents, injury, and damage to self, property, and others.

Inspectional Warnings
Genera listed in 319.37-7(b) may be unfamiliar to you. You may wish to do a computer search for pictures. Your importer’s confidence in your abilities is increased if you can identify the plant(s) you are to inspect.

You may not recognize many of the plant diseases that are PEQ significant. They either do not occur in the United States, are of limited distribution, or have symptoms that are similar to endemic diseases. Inspection is based on disease signs and symptoms and it is important to recognize them. Use the

- One hand lens
- Three or four resealable plastic bags (sandwich to 1-gallon size) for bud wood and large disease sample mailing to identifiers
- One or two shoulder-type vials (containing 3% formaldehyde)—for nematodes
- Three or four shoulder-type vials (containing 70% alcohol)—for insects
- One pair of pruning shears
- Three or four shoulder-type vials (empty)—for dry specimen retention
- One pocket knife or similar cutting device
- Three or four shoulder-type vials (containing 70% alcohol)—for insects
- PEQ Manual
- Three or four small envelopes for shipping infected PEQ specimens to identifiers
- One pair of pruning shears
- Two or three paper towel sheets or similar blotter paper—for possible fungal diseases

Make arrangements with the importer if large quantities of plant material need to be destroyed.
Preparation
Cautions and Warnings

If you cannot identify what is causing a symptom on a PEQ plant, take a sample to your local specialist for identification. If this person cannot identify the specimen or suspects the disease is one of those listed as quarantine significant, contact the PEQ Coordinator.

Symptoms caused by fungi, bacteria, and nematodes include wilting, blotching, spotting, chlorosis, mottling, curling, cankers, gall, and die-back. Carefully inspect the host material for spores or fruiting bodies.

Symptoms of viral diseases include mottle, vein clearing, leaf curling, chlorosis, necrotic lesions, distortions, shortening of the internodes, stunting, enations, and color breaking in the bloom. Accurate field identifications are difficult because diagnosis is based on symptoms. Generally, there are no signs (such as fruiting bodies of fungal pathogens) produced by diseases caused by viruses. And, symptoms can be confused with those caused by drought, poor drainage, malnutrition, or injury from spray materials. When virus diseases are found, examine any domestic plants of the same genus growing nearby for similar symptoms. Such comparisons will help determine if the suspected virus was introduced with the host or occurs locally.

Refer plant diseases that are not positively recognized as native or already established, or cannot be completely explained by environmental factors, insect injury, or nutritional troubles to the PEQU, Beltsville, Maryland. Pack specimens carefully before shipping to identifiers (see Pest Identification Procedures on page 4-7). Sent specimens must be characteristic of symptoms and variations observed on the PEQ plants and described in the List of Circulars on page 7-1.

In most cases, the quarantine period for PEQ material is 2 years (or two growing seasons). Exceptions do occur. Therefore, refer to PPQ 546 Agreement for Postentry Quarantine—State Screening Notice (7 CFR 319.37) on page F-9 for specific information.
Special Note Regarding PIS Inspections

It is important to understand that intercepted plant pests are taxonomically identified to the lowest possible taxon (usually to the species level). However, PPQ acts only on those pests that are or are suspected of being quarantine significant. Nonquarantine plant pests are generally allowed entry due to PPQ’s lack of authority to treat these pests. Importers who receive PEQ materials infested with non-quarantine significant plant pests may complain about this policy. PPQ management is not indifferent to importer concerns and is reviewing this loophole. Changes are being considered to require treatments for potential viral vectors such as aphids, whiteflies, or leafhoppers at the PIS. Until this review process is complete, please understand that PPQ will only take action on those pests that are, by Federal law, quarantine significant.
Overview

Growing site inspections are conducted by State (and occasionally Federal) inspectors to preapprove the area(s) where PEQ material will be grown during the PEQ period. Growing site inspections also serve to evaluate the professional capability and intent of the grower.

Four primary conditions must be met for a site to be approved:

- Adequate buffer distance away from plants of the same genus and/or other genera of postentry plants
- Adequate space for the growth and maintenance of the total amount of PEQ material expected to be received (the amount of material is indicated on PPQ 546 Agreement for Postentry Quarantine—State Screening Notice (7 CFR 319.37) on page F-9)
- Easily accessible for inspection and available during the State inspector's business hours
- Facility is in a location not prone to theft

Your Authority

The State Plant Regulatory Official (SPRO) or designee has final authority for approval or denial of any proposed site. Even though all primary conditions may be met, a decision to deny the approval of the site may be based on the grower's professional capability and intent or the environmental conditions that could cause exotic pests to be released into the environment.

For example, if plant theft is a local problem, this could be reason for disapproving the growing site. In this instance, the importer should be allowed
Growing Site Inspections
PPQ Form 546

...to suggest and implement remedial safeguard measures that meet your satisfaction, such as fencing the property.

If a grower has habitually violated previous State quarantines or nursery treatment orders, this, too, could be grounds for disapproval. Information on habitual violations should, at minimum, accompany the application to the Permit Unit in Riverdale, Maryland.

PPQ Form 546

Complete PPQ 546 Agreement for Postentry Quarantine—State Screening Notice (7 CFR 319.37) on page F-9 ONLY under the following conditions:

◆ Accountable person who signed for a company is no longer with the company
◆ New importer/company wishes to obtain a Controlled Import Permit for Postentry Quarantine (CIP)
◆ Controlled Import Permit for Postentry Quarantine expired and needs to be renewed
◆ Permittee wants to change the growing site or add a growing site

Section A
Section A is completed by the grower/applicant. Please ask the person completing the form to print his or her name. After the form is completed, forward it to the appropriate State regulatory official.

If, after the Controlled Import Permit for Postentry Quarantine is issued, a request is made by the importer to add additional genera to the permit, the importer must apply for a new Controlled Import Permit for Postentry Quarantine.

During your site inspection read aloud and discuss the “Agreement” section of Section A and have the grower/importer initial all subsections (a. through j.) to:

◆ Answer all importer questions
◆ Ascertain that compliance is possible
◆ Ensure the grower understands the legal requirements
Growing Site

Item a. All plant material will be grown on premises supervised and controlled by me, located as specified in Item 5 above, and will not be moved or distributed without written permission of the appropriate State or Territory Official and (except Hawaii, Guam, and CNMI) the Coordinator, Postentry Quarantine Program.

Approval to move or distribute the plants must be sent to the Coordinator on State Department of Agriculture letterhead. For movement of PEQ plants to a grower in another State, both States will need to send approval to the Coordinator.

Access

Item b. Properly identified officers, either Federal and/or State, will be given access to the premises listed in Item 5 during the inspector's regular business hours.

Distribution

Item c. No increase of these plants by cuttings, grafting, suckers, flowers, seed or air layers will be made; there will be no distribution of the plants or increase; and no cutting of flowers for sale will be made until the plants are released from postentry quarantine, or written permission of the (as in a. above).

Approval to increase the number of plants or cut flowers must be sent to the PEQ Coordinator on State Department of Agriculture letterhead.

Labeling

Item d. The plant material and all increase therefrom will be labeled by specific plant name, port accession number, and date of importation.

NOTICE

The tag should be placed on the first plant in a group of plants. Any additional tags for the same shipment can be placed anywhere within the group of plants. Labels should be removed by a State officer as soon as the release is received from the Postentry Quarantine Unit (PEQU).
Separation

Item e. The plant material will be separated from domestic stock of the same genus including such stock on adjoining premises, by no less that 3 meters (approximately 10 feet) and will be separated from other imported plants by the same distance.

NOTICE

Additional distance requirements should be indicated on PPQ Form 236 in the blank area of Section B-8.

Treatments

Item f. Any treatments prescribed by the officer, including destruction of the quarantined PEQ material or other plants growing on the premises, will be complied with to prevent the dissemination of a plant pest. (Special emphasis should be given to explain the need for control of aphids, whiteflies, leafhoppers, and other known viral vectors.)

Dead Plants

Item g. The appropriate State or Territory official will be notified in writing within 30 days when any abnormality is noticed in the plant material or if the plant material dies. Dead plants will be retained and collected by the State inspector for analysis. Follow disposal procedures described in Disposal Procedures on page 3-5 section in this manual.

Address Change

Item h. Notification of change of address will be sent to the appropriate State or Territorial official and (except Hawaii, Guam, and CNMI) the Coordinator, Postentry Quarantine Program.

Special Requirements

Item i. Plants of Rubus spp. from Europe will be grown in a screen house (16 mesh per inch minimum); plants of Chrysanthemum spp. and Dianthus spp. will be grown in a greenhouse or other enclosed building.

Growing Requirements

Item j. The postentry requirements will be applied to Chrysanthemum spp. for six months after importation, to Dianthus spp. for 1 year after importation, and to all other genera for two years after importation.
The State official completes Section B gives copy 4 to the applicant and retains the third copy. The rest is sent to the following address:

Head, Permit Unit  
USDA, APHIS, PPQ  
4700 River Road, Unit 136  
Riverdale, Maryland 20737

Waiver of Growing Site Inspection

It is **not** critical that you conduct a growing site inspection when a specific importer is an experienced PEQ grower, and you are knowledgeable about the following:

- Professional capability and intent of the grower
- Proposed growing site
- Site has been specifically identified and delimited

In all other situations, inspect growing sites and hold discussions with the importer to assure compliance with the PEQ growing agreement. Taking these two steps will reduce the potential for violations and minimize the potential release of exotic pests into the environment.

Even with experienced PEQ importers, it is important to annually review PEQ growing requirements, especially when new genera are imported.

If PEQ material arrives at the PIS yet there has been no growing site inspection and approval, PIS officials will contact the PEQ Coordinator to discuss the matter. Usually, PEQ materials are allowed to proceed from the port of entry if a PPQ Form 546 completed by both the importer and signed by the state is faxed to the PIS, even though a Controlled Import Permit for Postentry Quarantine has **not** been issued.

Disposal Procedures

Instruct all importers, as often as necessary, of the proper disposal procedures outlined below:

- Any and all debris or waste derived from postentry plants or plant parts **must** be burned, autoclaved, or buried at least 1 1/2 to 2 feet deep; following are a few examples of such material:
  - Debris remaining after pruning (See Table 3-1 Decision Table for Handling Plant Debris or Waste on page 3-6)
Debris that collects naturally (See Table 3-1 Decision Table for Handling Plant Debris or Waste on page 3-6)

Excess wood left from bud grafting

Undesirable plants the grower wants to eliminate

Composting waste or debris from postentered plants or carrying waste or debris from postentered plants to a public landfill is prohibited

Importers must notify, in writing, within 30 days, State (or Federal) inspectors for an inspection when PEQ material dies or appears infected or infested

Importers must save all dead PEQ material in plastic trash bags (PEQ material may be beyond recognition when an inspection is later conducted, but safeguarding in plastic bags will reduce the likelihood of pest dissemination)

Importers or growers must never dispose of any PEQ material (including waste or debris) without the prior approval of a State or Federal inspector (if the importer or grower sees dead plants or evidence of disease, that person must contact the State inspector immediately, moreover, if the importer or grower wants to eliminate undesirable plants, he or she should contact the State inspector prior to roguing out those undesirable plants)

Use Decision Table for Handling Plant Debris or Waste to decide whether you, as a State inspector, may allow a grower to leave plant debris or waste originating from PEQ material on the ground prior to disposing of it.

### Table 3-1 Decision Table for Handling Plant Debris or Waste

<table>
<thead>
<tr>
<th>If the material or waste is:</th>
<th>And the pathogen requiring the plant or material be grown under postentry:</th>
<th>Then:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A large quantity such that collection and disposal of the material would be burdensom</td>
<td>Is a bacterium or a fungus</td>
<td>Have the grower or importer collect the waste or debris and bag it prior to disposition</td>
</tr>
<tr>
<td></td>
<td>Is a virus</td>
<td>Allow the grower or importer to leave the debris on the ground</td>
</tr>
<tr>
<td>A small quantity where collection and disposal would be reasonably easy</td>
<td></td>
<td>Have the grower or importer collect the waste or debris and bag it prior to disposition</td>
</tr>
</tbody>
</table>
EXAMPLE

If a grower has planted 1,000 postentry ash trees, you require that the grower collect and bag the debris because the pest of concern, *Pseudomonas savastanoi var. fraxini* is a bacterium ([Circular 22: Diseases of Fraxinus spp.](#) on page 10-54). If, on the other hand, a grower plants 2,000 postentry lilac bushes (*Syringa* spp.), you could allow the grower to leave the plant debris on the ground because it would involve a large quantity of material, and the pest of concern is the Elm Mottle Virus ([Elm Mottle Virus (Federal Quarantine Significant)](#) on page 10-106).

Refrain from contacting PPQ Headquarters offices unless specifically authorized by PEQLO or by PPQ Headquarters personnel.
Growing Site Inspections
Disposal Procedures
Chapter 4
Inspecting Postentry Quarantine Material

Contents

Overview 4-2
How Plants May Enter 4-2
   If PEQ Material Arrives at an Inspection Station 4-2
   If PEQ Material Does NOT Arrive at an Inspection Station 4-3
General Inspection Guidelines 4-3
   If PEQ Liaison Officer Will be Absent 4-3
Optional Inspection 4-3
   First Inspection 4-4
   Second Inspection 4-4
Detailed Inspection Procedures 4-5
   Inspection of Existing Documents 4-5
   Inspection of Growing Site 4-5
   PEQ Plants Inspection 4-6
   Nearby Plants Inspection 4-6
   PEQ Tags Inspection 4-7
Pest Identification Procedures 4-7
   Submitting Invertebrate Pests for Identification 4-8
   Submitting Plant Diseases for Identification 4-11
PPQ Form 391 “Specimens for Determination” 4-12
PPQ Form 236 “Notice of Shipment and Report of Inspection of Imported Plants to be Grown Under Postentry Quarantine” 4-13
Recording Inspection Results 4-13
Overview

Plant disease symptoms caused by viruses, bacteria, and fungi do not necessarily appear in the same season. Hence, inspecting PEQ material two or more times, if possible, during each growing season would be best. For example, the majority of leaf spots and leaf diseases are not well developed before summer. Virus diseases, in general, are more conspicuous in the spring. (Some virus symptoms are masked or tend to disappear in hot weather.) Cankers of woody plants are usually visible throughout the year. Thus, it is obvious that while late spring and early summer are most satisfactory for virus inspection, mid-summer to fall will give the best results for most fungus diseases.

The principle of seasonal occurrence holds for insects also. Leaf-feeding insects in larval and adult stages may appear in May and June and be entirely absent in mid-summer and later. Insects with a long season of hibernation (many sawflies, scarabs, weevils) spend a relatively short season on the above-ground portions of plants and may be missed unless two or more inspections are made. While plants are frequently fumigated when pests are intercepted at the port of entry, there is always a chance of insect pest introduction. For the first inspection following PIS inspection, submit any insect damage to PEQ material or insects not recognized for identification.

When PEQ material is examined during the growing season, inspection timing is important. Conditions must be optimum for detecting the specific plant pest involved. (A portion of this manual indicates optimal inspection periods.)

Unfortunately, two scenarios are possible:

- Grower receives PEQ material through legal channels
- Grower receives PEQ material through the mail or by a courier service and avoids PIS inspection, recording, tagging, and any necessary treatments (fortunately in some of the later cases, regulatory officials are notified or in some way learn that this has occurred)

How Plants May Enter

If PEQ Material Arrives at an Inspection Station

A detailed inspection is not required when the PEQ material arrives at the grower/importer's location unless the State official so desires. If an inspection is done, report findings directly on the back of PPQ Form 236.
If PEQ Material Does NOT Arrive at an Inspection Station
Notify the PEQLO or State Plant Health Director (SPHD) immediately. The SPHD or PEQLO will insure that the shipment is sent to the closest inspection station no matter the number of items. If the importer does not have a Controlled Import Permit for Postentry Quarantine, the application form (PPQ Form 546) must be completed, both parts A & B before the shipment can be released from the inspection station. Violation proceedings may or may not be justified, and should be decided on a case-by-case basis.

NOTICE
Send all shipments to the closest inspection station. If this is not possible, e.g., the plants have been planted in the field, PPQ must issue an Emergency Action Notice (EAN) and destroy the shipment.

General Inspection Guidelines

If PEQ Liaison Officer Will be Absent
If the PEQLO will be absent for more than two weeks, the Liaison Officer should select someone to act for him or her and then inform the State and the PEQP. If no one is available to act as PEQLO, instruct the State Cooperator to forward the request for release directly to the following address:

Dave Farmer
National Coordinator, Postentry Quarantine Program
Field Operations Manager
USDA, APHIS, PPQ, AQI
Venture IV, Suite 200
920 Main Campus Drive
Raleigh, NC 27606
Tel: 919-855-7366
Fax: 919-855-7390

Optional Inspection
When the postentry shipment first arrives at the growing site (optional), perform the following:

1. Compare the bill of sale or invoice with PPQ Form 236. If you find any discrepancy in the number of plants or their kinds, contact the PEQLO to resolve the discrepancy or to investigate the incident.

2. Inspect plants that will be growing in proximity to the postentered material. Look especially for vectors of viruses—aphids, leafhoppers, and whiteflies. If you find such vectors, have the grower control these pests quickly but when practical.
Inspecting Postentry Quarantine Material
General Inspection Guidelines

3. If you detected any violations during your inspection, get with your PEQLO to investigate and document the violation.

**First Inspection**

**During The First Growing Season**
It is best if you inspect the postentered material twice during the first growing season.

1. To prepare for your inspection, look up the scientific name of the postentered plant(s) in *Plants Growing in Postentry Quarantine* on page H-1. Use the information under the appropriate columns to schedule your inspections and to know for what symptoms to be on the alert. Schedule your inspections according to your local climate and weather patterns. If not listed in *Disease and Pathogenic Organism Circulars* on page 10-1 (fruits and nuts overall), generally inspect the plants for symptoms of diseases at different times of the growing season.

2. Enter the results of your inspection on the back of PPQ Form 236—even if those results are negative.

**Second Inspection**

**During The Second Growing Season**
It is best if you inspect the postentered material twice during the second growing season.

1. To prepare for your inspection, look up the scientific name of the postentered plant(s) in Appendix H, *Plants Growing in Postentry Quarantine* on page H-1. Use the information under the appropriate columns to schedule your inspections and to know for what symptoms to be on the alert. Schedule your inspections according to your local climate and weather patterns. If no specific symptom is listed in the symptom column in Appendix H *Plants Growing in Postentry Quarantine* on page H-1, generally inspect the plants for symptoms of diseases at different times during the growing season.

2. Enter the results of your inspection on the back of PPQ Form 236—even if those results are negative.

3. Based on the inclusive inspection results during the two growing seasons, recommend (or don't recommend) release of the postentered material. If you recommend release, sign the appropriate Block on the bottom of the back side of PPQ Form 236. Get your supervisor's concurrence and have him or her sign the form in the appropriate Blocks next to yours. If both you and your supervisor agree that the plants should not be released from detention, contact your PEQLO.
4. Count all the plants, if feasible, that are alive from the original shipment. Enter both numbers on the back of PPQ Form 236 as “23 plants alive out of the original 98.”

5. Send the completed and signed PPQ Form 236 to your PEQLO. That person will review the form and send it to the PEQU. This Unit and the Postentry Coordinator for Hawaii, Guam, and CNMI are the only officials authorized to release the material to the grower or importer.

Detailed Inspection Procedures

Inspection of Existing Documents

1. Thoroughly inspect all documents to verify the amount and kind of plant material grown.

2. Have the importer explain and/or correct any discrepancies observed.

3. Replace lost documents by contacting the PEQ Coordinator. Additional tags, as needed, can also be obtained by contacting the Coordinator.

Inspection of Growing Site

1. Determine if the growing site is indeed the approved site as stipulated in the original request.

2. If the importer is in compliance, do nothing.

3. If the importer is not in compliance, have the importer correct the situation to your satisfaction.

4. Report any serious violations to the PEQLO.

5. If a new growing site is approved for an existing permit, the State PEQ should forward the new PPQ Form 546 to the Permit Unit in Riverdale, Maryland. Attach a note stating: “PPQ Form 546 is a revision to Permit Number fill in number.”

Use Table 4-1 when inspecting PEQ plants or plants adjacent to PEQ plants

Table 4-1 Pest Findings and Appropriate Action (page 1 of 2)

<table>
<thead>
<tr>
<th>If you find:</th>
<th>Then you¹:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vector insect (whiteflies, aphids, or leafhoppers)</td>
<td>INSTRUCT the owner to control the pest immediately. If he or she does not comply, issue a violation notice. Submit a sample of the pest to the State or University entomologist for identification</td>
</tr>
</tbody>
</table>
Table 4-1 Pest Findings and Appropriate Action (page 2 of 2)

<table>
<thead>
<tr>
<th>If you find:</th>
<th>Then you¹:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nonvector insect</td>
<td>Submit a sample of the pest to the State or University entomologist for identification</td>
</tr>
<tr>
<td>Symptoms or sign of PEQ disease or PEQ suspect disease (see Plants Growing in Postentry Quarantine on page 4-1)</td>
<td></td>
</tr>
<tr>
<td>Symptoms of signs of non-PEQ disease</td>
<td></td>
</tr>
</tbody>
</table>

¹ If the State or University entomologist or plant pathologist does not recognize the insect or the symptoms or signs of the disease to be something that has been reported in that State, immediately contact the National PEQ Coordinator.

**PEQ Plants Inspection**

1. Inspect the PEQ plants for insects and diseases. Count the plants.

2. If you find insects such as whiteflies, aphids, or leafhoppers, have the grower control them immediately since many are known vectors of viruses. Importer compliance is critical.

3. Collect pest specimens for determination and submit to specialist identifiers (see Submitting Invertebrate Pests for Identification on page 4-8 and Submitting Plant Diseases for Identification on page 4-11).

4. Report all of your findings on the back of PPQ Form 236. Record the general condition of the plants and the cause of death of any plants on PPQ Form 236.

**Nearby Plants Inspection**

1. Inspect nearby plants for insects and signs and symptoms of disease.

2. Report any findings to the importer and request treatments for pest elimination.

3. If you find insects such as whiteflies, aphids, or leafhoppers, have the grower control them immediately since many are known vectors of viruses. Importer compliance is critical.

4. Collect pest specimens for determination and submit to specialist identifiers (see Submitting Invertebrate Pests for Identification on page 4-8 and Submitting Plant Diseases for Identification on page 4-11).

**NOTICE**

If you determine the grower/importer can no longer continue growing PEQ material before the material is released, there are two options available to the grower: 1) dispose of all PEQ material using approved disposal methods and contact the PEQLO and Coordinator or PEQP; 2) sell or give the PEQ material to another approved PEQ material grower within the same State with State approval. Contact the Coordinator of PEQP to obtain written approval and PPQ Form 236 for the replacement grower.
5. If the importer fails to control potential vector pests upon your request, document the violation. You may also quarantine surrounding areas if infested.

6. Dispose of dead and diseased PEQ material and any other plant material deemed infected/infested with quarantine-significant pests by applying the disposal procedures established in this manual.

**NOTICE**

All PEQ genera must be 10 feet or more (at the State’s discretion) away from other PEQ material. Non-PEQ genera and plants of a different genus than the PEQ material may be grown within 10 feet of the PEQ material (buffer plants). Inspect buffer plants for quarantine-significant pests the same as you do PEQ material.

**PEQ Tags Inspection**

Look for PEQ tags. Replace lost or missing tags. The PEQLO can request replacement tags by contacting:

Dave Farmer  
National Coordinator, Postentry Quarantine Program  
Field Operations Manager  
USDA, APHIS, PPQ, AQI  
Venture IV, Suite 200  
920 Main Campus Drive  
Raleigh, NC 27606  
Tel: 919-855-7366  
Fax: 919-855-7390

Confiscate and destroy any old PEQ tags that no longer label active PEQ material.

**NOTICE**

Lack of tag could be an indication the shipment was not inspected at an inspection station. If the State inspector does not have a PPQ Form 236 for this shipment and the grower cannot produce this document, a decision will need to be made. If the shipment has just arrived and can be sent to the closest inspection station, do so. If it has been planted on site, destroy it. Contact the SPHD for aid in doing an Emergency Action Notice (EAN).

**Pest Identification Procedures**

Approach each inspection with the question, “Does this importation carry any pest that is new or rare in the United States?” A new pest may be present in a single plant. It is your task to find it.

Take specimens you cannot identify to your local identifier specialists. PPQ Form 391 Specimens for Determination on page F-5 must be completed for
any specimens they cannot identify and they must be sent by overnight mail to:

   Dr. Joseph Foster  
   USDA, APHIS, PPQ  
   Building 580 Powder Mill Rd.  
   Beltsville, MD 20705

Fax a copy of the PPQ 391 to the National Coordinator of Postentry Quarantine Programs:

   Dave Farmer  
   National Coordinator, Postentry Quarantine Program  
   Field Operations Manager  
   USDA, APHIS, PPQ, AQI  
   Venture IV, Suite 200  
   920 Main Campus Drive  
   Raleigh, NC 27606  
   Tel: 919-855-7366  
   Fax: 919-855-7390

Contact the PEQLO for a shipping account number. When suspect or actual pests are found, follow the guidelines below.

**Submitting Invertebrate Pests for Identification**
Use the following procedures for preparing specimens for identification. Treat or safeguard all host material to eliminate pest risk. Rearing intercepted specimens is prohibited without the proper authority.从来 attempt to rear plant pests without authorization from the following:

   Permits, Registration, Imports, and Manuals (PRIM) Staff  
   4700 River Road, Unit 133  
   Riverdale, Maryland 20737-1236

**Arthropods**
For guidance in preserving insects, refer to any of the following publications:

- *An Introduction to the Study of Insects*, Borror, Triplehorn, and Delong

Use Table 4-2 on page 4-9 to determine how to preserve your specimen.
Preserving Specimens in Alcohol

**Adults.** Kill adults by placing them in 70% alcohol.

**Larvae.** Use the following instructions to kill larvae:

1. Place larvae in boiling water.
2. Slowly bring water to boiling point.
3. Allow specimen to cool down.
4. Place specimen in a vial with alcohol.

Select shoulder-type vials over shell vials because they are stronger and provide better protection for the specimens. Fill vials three-quarters full with alcohol and make sure the stoppers fit securely. Bleed air pressure when necessary. For delicate specimens, place wadded paper within the vials to minimize specimen movement. Use screw-cap vials for small specimens. Avoid using cork stoppers because they allow alcohol to evaporate and could result in specimen loss during extended storage.

---

**Table 4-2 Decision Table for Preserving Specimens**

<table>
<thead>
<tr>
<th>If specimen belongs to this order:</th>
<th>Then preserve specimen using this method:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Acarina</em></td>
<td>In alcohol</td>
</tr>
<tr>
<td><em>Coleoptera</em></td>
<td>See <em>Preserving Specimens in Alcohol</em> on page 4-9</td>
</tr>
<tr>
<td><em>Dermaptera</em></td>
<td></td>
</tr>
<tr>
<td><em>Diptera</em></td>
<td></td>
</tr>
<tr>
<td><em>Heteroptera</em></td>
<td></td>
</tr>
<tr>
<td><em>Homoptera</em>(^1)</td>
<td></td>
</tr>
<tr>
<td><em>Hymenoptera</em></td>
<td></td>
</tr>
<tr>
<td><em>Isoptera</em></td>
<td></td>
</tr>
<tr>
<td><em>Lepidoptera</em> (immatures)</td>
<td></td>
</tr>
<tr>
<td><em>Orthoptera</em> (immatures)</td>
<td></td>
</tr>
<tr>
<td><em>Thysanoptera</em> (adults)(^2)</td>
<td></td>
</tr>
<tr>
<td><em>Homoptera</em> on host material (scale insects and immature psyllids)</td>
<td>Dry mounting</td>
</tr>
<tr>
<td><em>Lepidoptera</em> (adults)</td>
<td>See <em>Preserving Dry Specimens</em> on page 4-10</td>
</tr>
<tr>
<td><em>Orthoptera</em> (adults)</td>
<td></td>
</tr>
</tbody>
</table>

---

1 Except whiteflies, scales, and immature psyllids on host material.
2 Add a few drops of vinegar (acetic acid) to the alcohol in vial.
Preserving Dry Specimens
Make sure all specimens are dead. Use one of the following killing agents or seek instructions from the Identifier for alternative killing measures:

- Cyanide
- Ethyl acetate
- Trichloroethylene

**CAUTION**
Label all killing bottles with the “POISON.” Use killing agents with care and follow the label directions.

Pin adult specimens of *Lepidoptera* and *Orthoptera* on pinning blocks before shipping. Pin the styrofoam blocks to the bottom of the pinning box. Use small pinning boxes and place these, snugly padded, inside a shipping box. Seek instructions from the Identifier for additional information.

Partially dry host material with insects (e.g., scale insects and whiteflies) before placing in the container. Unless the host material is thoroughly dry, pack to permit drying after closure of container without damaging specimens.

**Nematodes**

Use the following instructions when preserving nematodes:

1. If you are forwarding nematode-infested host material, place material in a plastic bag to prevent the host material from drying.
2. Separate nematodes from infested material and place in a vial of water. Slowly apply heat until the nematodes stop moving. **Do not** overheat!
3. Prepare either of the fixatives 3% formaldehyde or TAF (see Table 4-3).

**Table 4-3 Instructions for Preparing Fixatives**

<table>
<thead>
<tr>
<th>If preparing this fixative:</th>
<th>Follow this recipe:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3% formaldehyde</td>
<td>1 part formalin + 12 parts water</td>
</tr>
<tr>
<td>TAF</td>
<td>7 ml formalin + 2 ml triethanolomine + 91 ml water</td>
</tr>
</tbody>
</table>

4. Add to the vial containing the specimens a volume of double strength fixative equal to the volume of water in the vial.
5. Place cysts of *Globodera* spp., mature females of *Meloidogyne* spp., and other non-wormlike nematodes, directly into single strength fixative without heating.
Submitting Plant Diseases for Identification

Use Table 4-4 as a guide when examining plants.

**Table 4-4 Comparing Symptoms**

<table>
<thead>
<tr>
<th>Symptoms caused by fungi, bacteria, and nematodes:</th>
<th>Symptoms caused by viruses:</th>
</tr>
</thead>
<tbody>
<tr>
<td>◆ Blotching</td>
<td>◆ Bloom color breaking</td>
</tr>
<tr>
<td>◆ Cankers</td>
<td>◆ Chlorosis</td>
</tr>
<tr>
<td>◆ Chlorosis</td>
<td>◆ Distortions</td>
</tr>
<tr>
<td>◆ Curling</td>
<td>◆ Enations</td>
</tr>
<tr>
<td>◆ Die-Back</td>
<td>◆ Leaf curl</td>
</tr>
<tr>
<td>◆ Galls</td>
<td>◆ Mottle</td>
</tr>
<tr>
<td>◆ Mottling</td>
<td>◆ Necrotic lesions</td>
</tr>
<tr>
<td>◆ Spotting</td>
<td>◆ Shortening internodes</td>
</tr>
<tr>
<td>◆ Wiliing</td>
<td>◆ Stunting</td>
</tr>
<tr>
<td></td>
<td>◆ Vein clearing</td>
</tr>
</tbody>
</table>

Virus symptoms are similar to:

◆ Drought
◆ Malnutrition
◆ Poor drainage
◆ Spray injury

**Selecting Material**

Because diseases have complex life cycles and specimens of different stages of the disease life cycle are helpful in making identifications, select material showing as many stages of disease life cycle as possible. Early stages of the disease may show important diagnostic signs and symptoms, while older material may have the perfect stage of a fungus. Send an ample amount of diseased material.

Since some diseases may be identified by symptoms, when possible, ship disease specimens in a natural state to the Identifier. If the host material becomes dried, molded, shriveled, or decayed, symptoms may be modified or destroyed. If the material is soft or pulpy, partially dry the material and pack between sheets of stiff, absorbent paper to keep the diseased area flat. **Do not** fold leaf specimens. Partially dry succulent leaves before shipping.

For virus suspects, prepare the sample as follows:

1. Remove a branch with leaves showing the symptoms. Leaves should **not** be dry and brittle.
2. Place in a resealable, plastic bag (no wet paper towels). Remove as much of the air as possible and close tightly.

3. Forward as quickly as possible to your local virologist.

If there is no state virologist, forward the sample by overnight express to the PEQU, Beltsville, Maryland. If a positive identification cannot be made, the plant(s) may need to be forwarded to the PEQU for virus indexing. This procedure may increase the quarantine period for this shipment by several years.

---

### PPQ Form 391 “Specimens for Determination”

See PPQ Form 391 Specimens for Determination on page F-5 for an example of Form 391

---

### NOTICE

PPQ Form 391 is the only form approved for use by the U.S. National Museum when submitting specimens for determination. All other forms may be rejected and may cause identification delays. Complete a second or third form if you submit two or three different pests for determination. (Each form and specimen may need to go to different identifiers working in different labs.)

---

### Table 4-5 Instructions for PPQ Form 391 (page 1 of 2)

<table>
<thead>
<tr>
<th>Block:</th>
<th>Instructions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Collection number</td>
<td>Use any numbering system that corresponds to your state’s inspection and interception activities (optional)</td>
</tr>
<tr>
<td>2. Date</td>
<td>Enter as appropriate.</td>
</tr>
<tr>
<td>3. Submitting Agency</td>
<td>Enter as appropriate.</td>
</tr>
<tr>
<td>4. Name of sender</td>
<td>Enter as appropriate.</td>
</tr>
<tr>
<td>5. Type of property</td>
<td>Enter as appropriate.</td>
</tr>
<tr>
<td>6. Address of sender</td>
<td>Enter as appropriate.</td>
</tr>
<tr>
<td>7. Name and address of property or owner</td>
<td>Enter as appropriate.</td>
</tr>
</tbody>
</table>
| 8. Reason for identification   | ◆ Mark box B or C (the one that best describes your reason for submitting this pest)  
◆ Mark box L and add the words “Postentry Material” |
| 9. Explanation                 | If prompt or urgent identification is requested, please provide a brief explanation under Block 22—remarks |
| 10. Host information           | Give scientific name of the host material                                     |
| 11. Quantity of host           | ◆ Write the exact number of plants that were received by the importer  
◆ Write an estimated number of plants affected by the pest you are submitting for identification |
| 12. Plant distribution         | Mark the box that best describes the amount of host material in the nursery, greenhouse, or immediate environment |
**Table 4-5 Instructions for PPQ Form 391 (page 2 of 2)**

<table>
<thead>
<tr>
<th>Block:</th>
<th>Instructions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>13. Plant parts affected</td>
<td>Mark the box or boxes that indicate where on the host you actually found the pest</td>
</tr>
<tr>
<td>14. Pest distribution</td>
<td>Mark the box that best describes the amount of pest infestation</td>
</tr>
</tbody>
</table>
| 15. Unnamed block—this block is only used for submission of insects, nematodes, or mollusks. Skip this block if you are submitting diseased specimens for determination | ◆ Mark the box that tells whether the pest is an insect, nematode, or mollusk.  
◆ Write in the appropriate life stage box how many alive or dead specimens were present at the time of your inspection. |
| 16. Sampling method               | Use words such as:                                                           |
|                                   | ◆ Berlese Funnel                                                             |
|                                   | ◆ Centrifuge                                                                 |
|                                   | ◆ Dissection                                                                 |
|                                   | ◆ Filtration                                                                 |
|                                   | ◆ Hand Sampling                                                              |
| 17. Type of trap and lure         | **Do not** complete this block unless it specifically applies                |
| 18. Trap number                   | **Do not** complete this block unless it specifically applies                |
| 19. Plant pathology—plant symp-    | This block is **only** used for submission of plant pathology specimens. Mark the box that best describes what you observed during your inspection. |
| toms                              | 20. Weed density **Do not** complete this block unless it specifically applies. |
| 21. Weed growth stage             | **Do not** complete this block unless it specifically applies.              |
| 22. Remarks                       | Write the PEQ permit number, reference number, country of origin, and any other location information here that would help you or others find the PEQ material at a later date. Place urgent shipping information here (from Block 9). |
| 23. Tentative determination       | Write the scientific name of the pest. In the case of viruses or when you do not know the scientific name, the common name of the pest is acceptable. **Never** leave this block blank. At least indicate virus, fungus, disease, etc. |
| 24. Determination and notes       | **Do not** write in this area                                             |

**PPQ Form 236 “Notice of Shipment and Report of Inspection of Imported Plants to be Grown Under Postentry Quarantine”**

**Recording Inspection Results**


Complete **only** the back of this form in the area entitled “Inspection Report.”

**Table 4-6 Instructions for PPQ Form 236 (page 1 of 2)**

<table>
<thead>
<tr>
<th>Block:</th>
<th>Instructions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plants imported</td>
<td>Write the genus and species of the host imported</td>
</tr>
<tr>
<td>No.</td>
<td>Write the number of live plants received by the importer</td>
</tr>
</tbody>
</table>
Table 4-6 Instructions for PPQ Form 236 (page 2 of 2)

<table>
<thead>
<tr>
<th>Block:</th>
<th>Instructions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date and findings</td>
<td>If at all possible, use one box for each inspection—record the following information:</td>
</tr>
<tr>
<td></td>
<td>◆ Write any pests observed</td>
</tr>
<tr>
<td></td>
<td>◆ Write any noticeable growth conditions observed</td>
</tr>
<tr>
<td></td>
<td>◆ Write the inspection date</td>
</tr>
<tr>
<td></td>
<td>◆ Write the number of live plants remaining</td>
</tr>
<tr>
<td></td>
<td>When you require treatment for arthropods, including insects, provide a copy of the State inspection form to the PEQLO.</td>
</tr>
<tr>
<td>Recommend for release</td>
<td>Do not complete this section until after the final PEQ inspection—release procedures are covered in Description of Postentry Quarantine Material Release Procedures on page 5-1</td>
</tr>
<tr>
<td>Released from detention</td>
<td>Do not write in this section of the report</td>
</tr>
</tbody>
</table>
Description of Postentry Quarantine Material Release Procedures

Overview

Use the following criteria when releasing healthy PEQ material from quarantine:

1. State inspector completes a final inspection (record on the back of PPQ Form 236, copies 4 and 5, the number of plants remaining).
2. Final inspection should report “no quarantine-significant pests found.”
3. State inspector completes copies 4 and 5 of PPQ Form 236. Once the copies are completed, the State inspector gives the copies to his or her supervisor. The State supervisor reviews and signs both copies of the completed form. The State then forwards the completed and signed copies to the PEQLO. (See PPQ 236 Notice of Shipment and Report of Imported Plants to be Grown Under Postentry Quarantine on page F-3.) If the State Department of Agriculture does not want to have a copy of the PPQ 236 signed by the Coordinator, Postentry Quarantine Program, one copy should be forwarded to the PEQLO and the other destroyed.
4. PEQLO reviews copies 4 and 5 of PPQ Form 236 received from the State. If the PEQLO concurs with the State, the officer recommends release and writes on or stamps copies 4, 5, and 6 (copy 6 only if the PEQLO accompanied the State Inspector on one or both of the inspections) with “Recommend Release” and signs all three copies. The three copies of the signed form (4, 5, and 6) are forwarded to the PEQP. (See PPQ 236 Notice of Shipment and Report of Imported Plants to be Grown Under Postentry Quarantine on page F-3.)
5. Completed PPQ Form 236 must be reviewed and signed by the Coordinator for the Postentry Quarantine Program. Mail or email scanned copies to the following address:

Dave Farmer
National Coordinator, Postentry Quarantine Program
Field Operations Manager
USDA, APHIS, PPQ, AQI
Venture IV, Suite 200
920 Main Campus Drive
Raleigh, NC 27606
Phone: 919-855-7366
6. Importer receives a formal release notice (PPQ Form 569) from the PEQP. (Copies are sent to State and PEQLO.)

**NOTICE**

It is very important that all copies of PPQ Form 236 be removed from both the State and PEQLO's files when a shipment is recommended for release.

**NOTICE**

PEQ material **must not** be sold until the release process is complete.

**NOTICE**

If State inspectors hold/quarantine PEQ material beyond the normal detention period for further observation or final treatments, etc., the PEQLO and the PEQP should be notified.
Chapter 6
Responsibilities of State and Federal Inspectors

Contents

Overview 6-1
Liaison Officer Responsibilities 6-1
State Inspector Responsibilities 6-2

Overview

The PEQ program is a cooperative Federal–State undertaking. By agreement, State inspectors who have specialized training do field inspections of PEQ material. (Generally, State inspectors are more knowledgeable about local growing conditions and circumstances and have a working relationship with the importers.) Federal officers provide support and administrative roles.

Liaison Officer Responsibilities

◆ Assist State inspectors in difficult matters especially with regard to inspections, interceptions, PEQ material disposal, and violations
◆ Assist State inspectors with inspections of PEQ material when State inspectors are sporadically unable to perform this function
◆ Assist State inspectors when extending quarantine periods due to signs, symptoms, or pest infestations found during final inspections
◆ Concur or deny requests for PEQ releases sent by State inspectors on behalf of importers; send approved requests to PEQU (inaccurate or incomplete PPQ Form 236s must be returned to the State officials for correction or completion)
◆ Maintain a file on all released PEQ material for a period of time established by the PEQU (the period is generally two years)
◆ Review all PEQ documents prepared by State and Headquarters Units and process according to established procedures
◆ Train and assist State inspectors in proper PEQ inspection procedures, distribute PEQ information and new manual parts to State inspectors, and maintain an active file on all material currently under PEQ quarantine
When delays in receiving permits occur, contact the following:

   Head, Permit Unit
   USDA, APHIS, PPQ
   4700 River Road, Unit 136
   Riverdale, Maryland 20737

When delays occur with regard to inspections or other difficulties, contact the following:

   Dave Farmer
   National Coordinator, Postentry Quarantine Program
   Field Operations Manager
   USDA, APHIS, PPQ, AQI
   Venture IV, Suite 200
   920 Main Campus Drive
   Raleigh, NC 27606
   Tel: 919-855-7366
   Fax: 919-855-7390

**State Inspector Responsibilities**

- Conduct all PEQ inspections according to established guidelines, guidelines are found in this manual and in M 319.37-19, and is also available from the PEQLO and PPQ
- Conduct the PEQ site inspection; if a new growing site is approved for an existing permit, the State PEQ official should forward the new PPQ Form 546 to the Permit Unit in Riverdale, Maryland, however, attach a note stating that PPQ Form 546 is revising the former permit—including the permit number
- Document and report importer violations to PEQLO
- Extend quarantine periods according to PPQ direction when signs, symptoms, or pests are present during the final PEQ inspection or when a shipment is commingled with a later-arriving shipment
- Forward PPQ forms to the State supervisor who will send the forms to the PEQLO for final review and processing, this includes denials of requests for growing sites
- If you receive an improperly completed PPQ Form 236 from the PIS, contact the PEQ Coordinator
- Instruct all importers in proper PEQ material handling procedures
- Maintain an active file on all material currently under PEQ quarantine
Seek assistance and training from PEQLO especially in difficult matters dealing with inspections, interceptions, PEQ material disposal, and violations.

Submit unidentifiable pest specimens and disease samples to local identifier authorities. If the local identifier is unable to identify the specimen submitted, forward the specimen to the PEQU for identification.
Chapter 7

List of Circulars

Contents

Introduction 7-1
Circulars 7-1

Introduction

Use this chapter as well as chapters 8, 9, and 10 as job aides to identify plant diseases. Disease and Pathogenic Organism Circulars on page 10-1 describes diseases that are either common, quarantine significant, or both. Additional circulars will be added to this manual periodically. See Alphabetical List of Diseases on page 8-1 for an alphabetized list of diseases and see Diseases and Pathogens of Concern on page 9-1 for a list of diseases not included in chapter 10.

Circulars

Circular 1: Diseases of Abelmoschus spp., Althaea spp., and Hibiscus spp.

◆ Bhendi Yellow Vein-Mosaic Agent (Federal Quarantine Significant) on page 10-2
◆ Cotton Anthocyanosis Agent (Federal Quarantine Significant) on page 10-4
◆ Cotton Curliness on Hibiscus on page 10-5
◆ Cotton Leaf Curl Agent (Federal Quarantine Significant) on page 10-5
◆ Hibiscus Leaf Curl Agent on Hibiscus (Federal Quarantine Significant) on page 10-8
◆ Okra Mosaic Virus (Federal Quarantine Significant) on page 10-8
◆ Okra Yellow Leaf Curl Agent (Federal Quarantine Significant) on page 10-8

Circular 2: Diseases of Acacia spp.

◆ Acacia Rust (Federal Quarantine Significant) on page 10-8
Circular 3: Diseases of Acer spp.

- Maple (Acer) Leaf Spot (Federal Quarantine Significant) on page 10-9
- Maple (Acer) Variegation Agent (Federal Quarantine Significant) on page 10-10
- Xanthomonas acernea (Federal Quarantine Significant) on page 10-11

Circular 4: Diseases of Actinidia spp.

- Actinidia Rust (Federal Quarantine Significant) on page 10-11
- Pseudomonas syringae pv. actinidiae (bacterial canker of kiwifruit) on page 10-13

Circular 5: Diseases of Aesculus spp.

- (Aesculus) Horse Chestnut-Variegation Virus (Federal Quarantine Significant) on page 10-14

Circular 6: Diseases of Anacardium spp.

- Xanthomonas campestris pv. mangiferaeindicae on page 10-16

Circular 7: Diseases of Berberis spp., X Mahoberberis spp., and Mahonia spp.

- Black Stem Rust (Federal Quarantine Significant) on page 10-17

Circular 8: Diseases of Blighia spp.

- Okra Mosaic Virus (Federal Quarantine Significant) on page 10-8

Circular 9: Diseases of Bromeliaceae spp.

- Bromeliaceae on page 10-19

Circular 10: Diseases of Brugmansia spp. and Datura spp.

- Colombian Datura Virus (Federal Quarantine Significant) on page 10-19
- Datura Shoestring Virus on page 10-20

Circular 11: Diseases of Carica spp.

- Papaya (Carica) Leaf Reduction Virus on page 10-21

Circular 12: Diseases of Cedrus spp.

- Douglas Fir Canker (Federal Quarantine Significant) on page 10-22

Circular 13: Diseases of Chrysanthemum spp. 
(Dendranthema), Leucanthemella serotina, and Nipponanthemum nipponicum

- Chrysanthemum White Rust (Federal Quarantine Significant) on page 10-25
Circular 14: Diseases of Corylus spp.
- Apple Proliferation Phytoplasma (Federal Quarantine Significant) on page 10-29
- Filbert (Corylus) Blight on page 10-36

Circular 15: Diseases of Crataegus spp.
- Crataegus monogyna and Mespilus germanica on page 10-38

Circular 16: Diseases of Crocosmia spp.
- Gladiolus Rust (Federal Quarantine Significant) on page 10-38
- Uredo gladioli-buettneri (Federal Quarantine Significant) on page 10-44

Circular 17: Diseases of Dianthus spp.
- Carnation Wilt on page 10-45
- Dianthus Virus Diseases on page 10-46
- Leaf Rot of Carnation on page 10-49

Circular 18: Diseases of Dimocarpus spp.
- Witches’ Broom on page 10-50

Circular 19: Diseases of Diospyros spp.
- Circular Leaf Spot of Oriental or Japanese Persimmon on page 10-51

Circular 20: Diseases of Eucalyptus spp.
- Pestalotia disseminata (Federal Quarantine Significant) and Leaf Chlorosis Virus on page 10-52

Circular 21: Diseases of Euonymus spp.
- Euonymus Mosaic (Euonymus-Variegation) Agent (Federal Quarantine Significant) on page 10-52

Circular 22: Diseases of Fraxinus spp.
- Ash Canker Disease (Federal Quarantine Significant) on page 10-54
- Fraxinus Other Virus Reports on page 10-56
- Fraxinus Variegation Virus on page 10-58

Circular 23: Diseases of Gladiolus spp.
- Gladiolus Rust (Federal Quarantine Significant) on page 10-38
- Puccinia gladioli [Castagne] (Federal Quarantine Significant) on page 10-58
- Puccinia mccleanii [Doidge] (Federal Quarantine Significant) on page 10-60
<table>
<thead>
<tr>
<th>Circular</th>
<th>Diseases of</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>24</td>
<td><em>Humulus</em> spp.</td>
<td>10-62</td>
</tr>
<tr>
<td></td>
<td>Hop Nettlehead Strain of Arabis Mosaic Virus</td>
<td>10-64</td>
</tr>
<tr>
<td></td>
<td>Verticillium Wilt</td>
<td>10-66</td>
</tr>
<tr>
<td>25</td>
<td><em>Hydrangea</em> spp.</td>
<td>10-67</td>
</tr>
<tr>
<td></td>
<td>Hydrangea Rust (Federal Quarantine Significant)</td>
<td>10-67</td>
</tr>
<tr>
<td>26</td>
<td><em>Jasminum</em> spp.</td>
<td>10-69</td>
</tr>
<tr>
<td></td>
<td>Bacterial Leaf Spot of Jasmine</td>
<td>10-69</td>
</tr>
<tr>
<td></td>
<td>Chlorotic Ringspot, Phyllody, Yellow Ring Mosaic Disease (Federal Quarantine Significant)</td>
<td>10-70</td>
</tr>
<tr>
<td></td>
<td>Jasmine Variegation Agent (Federal Quarantine Significant)</td>
<td>10-70</td>
</tr>
<tr>
<td></td>
<td>Sampaquita Yellow Ringspot Mosaic Disease (Federal Quarantine Significant)</td>
<td>10-71</td>
</tr>
<tr>
<td>27</td>
<td><em>Juniperus</em> spp.</td>
<td>10-72</td>
</tr>
<tr>
<td></td>
<td>Douglas Fir Canker (Federal Quarantine Significant)</td>
<td>10-72</td>
</tr>
<tr>
<td></td>
<td>Japanese Pear Rust</td>
<td>10-71</td>
</tr>
<tr>
<td></td>
<td>Juniper Pear Rust (Federal Quarantine Significant)</td>
<td>10-75</td>
</tr>
<tr>
<td></td>
<td>Juniper Rust</td>
<td>10-76</td>
</tr>
<tr>
<td></td>
<td>Needlecast Disease (Federal Quarantine Significant)</td>
<td>10-79</td>
</tr>
<tr>
<td>28</td>
<td><em>Larix</em> spp.</td>
<td>10-80</td>
</tr>
<tr>
<td></td>
<td>Douglas Fir Canker (Federal Quarantine Significant)</td>
<td>10-80</td>
</tr>
<tr>
<td></td>
<td>European Larch Canker (Federal Quarantine Significant)</td>
<td>10-80</td>
</tr>
<tr>
<td>29</td>
<td><em>Ligustrum</em> spp.</td>
<td>10-80</td>
</tr>
<tr>
<td></td>
<td>Ligustrum Mosaic Agent (Federal Quarantine Significant)</td>
<td>10-80</td>
</tr>
<tr>
<td>30</td>
<td><em>Litchi</em> spp.</td>
<td>10-82</td>
</tr>
<tr>
<td></td>
<td>Phytophthora litchii (Federal Quarantine Significant)</td>
<td>10-82</td>
</tr>
<tr>
<td></td>
<td>Witches’ Broom</td>
<td>10-50</td>
</tr>
</tbody>
</table>
Circular 31: Diseases of *Malus* spp. and *Pyrus* spp.
- Apple Branch Canker on page 10-83
- Apple Canker on page 10-85
- Apple Mosaic Virus on page 10-86
- Apple Proliferation Phytoplasma (Federal Quarantine Significant) on page 10-89
- Chlorotic Leafspot Virus on page 10-89
- Japanese Pear Rust on page 10-71
- Rough Bark (Phomopsis Canker) (Federal Quarantine Significant) on page 10-90
- Rubbery Wood Phytoplasma (Federal Quarantine Significant) on page 10-92
- Valsa ceratosperma (V. Mali) (Federal Quarantine Significant) on page 10-92

Circular 32: Diseases of *Mangifera* spp.
- Ceratocystis manginecans (sudden decline of mango) on page 10-93
- Ceratocystis mangicola (Sordariomycetes: Microascales) on page 10-94
- Ceratocystis mangivora (Sordariomycetes: Microascales) on page 10-94
- Fusarium sterilhyphosum (Federal Quarantine Significant) on page 10-95
- Fusarium tupiense (Sordariomycetes: Hypocreales) on page 10-96
- Pseudofusicoccum stromaticum (Dothideomycetes: Botryosphaeriales) on page 10-97
- Xanthomonas campestris pv. mangiferaeindicae on page 10-98

Circular 33: Diseases of *Morus* spp.
- Mulberry Rust (Federal Quarantine Significant) on page 10-98
- Mulberry Mosaic Agent (Federal Quarantine Significant) on page 10-99

Circular 34: Diseases of *Olea* spp.
- Olive Latent Ringspot Virus on page 10-100
- Olive Partial Paralysis Virus on page 10-101
- Olive Sickle Leaf Virus on page 10-102

Circular 35: Diseases of *Passiflora* spp.
- Cucumber Mosaic Virus on page 10-103
- Passion Fruit (Passiflora) Mosaic Virus on page 10-104
- Passion Fruit (Passiflora) Woodiness Virus on page 10-105
Circular 36: Diseases of *Philadelphus* spp.
- Elm Mottle Virus (Federal Quarantine Significant) on page 10-106

Circular 37: Diseases of *Picea* spp.
- Douglas Fir Canker (Federal Quarantine Significant) on page 10-22
- Rhododendron-Spruce Needle Rust Chrysomyxa ledi (Alb. & Schw.) by var. rhododendri (DC) Savile (Federal Quarantine Significant) on page 10-106
- Spruce (Picea) Needle (Cushion) Rust on page 10-106

Circular 38: Diseases of *Pinus* spp.
- Douglas Fir Canker (Federal Quarantine Significant) on page 10-22
- Hemicycliophora dhanachandi (Hemicycliophoridae) on page 10-108
- Scotch Pine Blister Rust (Federal Quarantine Significant) on page 10-109

Circular 39: Diseases of *Populus* spp.
- Cytospora tritici (Soradariomycetes: Diaporthales) on page 10-111
- Poplar (Populus) Bacterial Canker (Federal Quarantine Significant) on page 10-112

Circular 40: Diseases of *Prunus* spp.
- Apple Proliferation Phytoplasma (Federal Quarantine Significant) on page 10-89
- European Rusty Mottle of Cherry (Federal Quarantine Significant) on page 10-113
- Plum Pox Virus (Federal Quarantine Significant) on page 10-114

Circular 41: Diseases of *Pseudolarix* spp.
- European Larch Canker (Federal Quarantine Significant) on page 10-80

Circular 42: Diseases of *Pseudostuga* spp.
- Douglas Fir Canker (Federal Quarantine Significant) on page 10-22

Circular 43: Diseases of *Punica* spp.
- Bacterial Blight on Pomegranate on page 10-119
- Xiphinema granatum (Longidoridae) on page 10-119

Circular 44: Diseases of *Quercus* spp.
- White Rot and an Undescribed Gall-Forming Rust (Federal Quarantine Significant) on page 10-120
Circular 45: Diseases of Ribes spp. (Grossularia)
- Black-Currant Reversion Agent (Federal Quarantine Significant) on page 10-120

Circular 46: Diseases of Rosa spp.
- Cytospora rosarum (Sordariomycetes: Diaporthales) on page 10-123
- Rose Wilt Agent (Federal Quarantine Significant) on page 10-123

Circular 47: Diseases of Rubus spp.
- Raspberry Leaf Blotch Virus (RLVB) on page 10-125
- Rubus Stunt Phytoplasma (Federal Quarantine Significant) on page 10-126

Circular 48: Diseases of Salix spp.
- Virus Chlorosis on page 10-131
- Watermark Disease (Federal Quarantine Significant) on page 10-131

Circular 49: Diseases of Sorbus spp.
- Leaf Distortion on page 10-134
- Mountain Ash Variegation Agent (Federal Quarantine Significant) on page 10-134
- Ringspot Mosaic of Sorbus on page 10-135

Circular 50: Diseases of Syringa spp.
- Elm Mottle Virus (Federal Quarantine Significant) on page 10-106

Circular 51: Diseases of Ulmus spp.
- Elm Mottle Virus (Federal Quarantine Significant) on page 10-106

Circular 52: Diseases of Vaccinium spp.
- Diaporthe australafricanas (Sordariomycetes: Diaporthales) on page 10-136

Circular 53: Diseases of Watsonia spp.
- Gladiolus Rust (Federal Quarantine Significant) on page 10-38
- Puccinia mccleanii [Doidge] (Federal Quarantine Significant) on page 10-60
- Uredo gladioli-buettneri (Federal Quarantine Significant) on page 10-44
- Uromyces gladioli [Henn.] (Federal Quarantine Significant) on page 10-62
Circular 54: Diseases of Ziziphus spp.

- Longidorus pisi (Longidoridae) on page 10-137
Chapter 8

Alphabetical List of Diseases

- *Acacia* Rust (Federal Quarantine Significant) page 10-8
- *Actinidia* Rust (Federal Quarantine Significant) page 10-11
- *(Aesculus)* Horse Chestnut-Variegation Virus (Federal Quarantine Significant) page 10-14
- Apple Branch Canker page 10-83
- Apple Canker page 10-85
- Apple Mosaic Virus page 10-86
- Apple Proliferation Phytoplasma (Federal Quarantine Significant) page 10-29
- Ash Canker Disease (Federal Quarantine Significant) page 10-54
- Bacterial Blight on Pomegranate page 10-119
- Bacterial Leaf Spot of Jasmine page 10-69
- Bhendi Yellow Vein-Mosaic Agent (Federal Quarantine Significant) page 10-2
- Black-Currant Reversion Agent (Federal Quarantine Significant) page 10-120
- Black Stem Rust (Federal Quarantine Significant) page 10-17
- Bromeliaceae page 10-19
- Carnation Wilt page 10-45
- *Ceratocystis mangicola* (Sordariomycetes: Microascaceae) page 10-94
- *Ceratocystis manginecans* (sudden decline of mango) page 10-93
- *Ceratocystis mangivora* (Sordariomycetes: Microascaceae) page 10-94
- Chlorotic Leafspot Virus page 10-89
- Chlorotic Ringspot, Phyllody, Yellow Ring Mosaic Disease (Federal Quarantine Significant) page 10-70
- *Chrysanthemum* White Rust (Federal Quarantine Significant) page 10-25
- Circular Leaf Spot of Oriental or Japanese Persimmon \textit{page 10-51}
- Columbian \textit{Datura} Virus (Federal Quarantine Significant) \textit{page 10-19}
- Cotton Anthocyanosis Agent (Federal Quarantine Significant) \textit{page 10-4}
- Cotton Curliness on Hibiscus \textit{page 10-5}
- Cotton Leaf Curl Agent (Federal Quarantine Significant) \textit{page 10-5}
- \textit{Crataegus} monogyna and \textit{Mespilus} germanica \textit{page 10-38}
- Cucumber Mosaic Virus \textit{page 10-103}
- \textit{Cytospora} rosarum (Sordariomycetes: Diaporthales) \textit{page 10-123}
- \textit{Cytospora} tritici (Sordariomycetes: Diaporthales) \textit{page 10-111}
- \textit{Datura} Shoestring Virus \textit{page 10-20}
- \textit{Dianthus} Virus Diseases \textit{page 10-46}
- \textit{Diaporthe} australafricana (Sordariomycetes: Diaporthales) \textit{page 10-136}
- Douglas Fir Canker (Federal Quarantine Significant) \textit{page 10-22}
- Elm Mottle Virus (Federal Quarantine Significant) \textit{page 10-106}
- Euonymus Mosaic (Euonymus-Variegation) Agent (Federal Quarantine Significant) \textit{page 10-52}
- European Larch Canker (Federal Quarantine Significant) \textit{page 10-80}
- European Rusty Mottle of Cherry (Federal Quarantine Significant) \textit{page 10-113}
- Filbert (\textit{Corylus}) Blight \textit{page 10-36}
- Fraxinus Other Virus Reports \textit{page 10-56}
- Fraxinus Variegation Virus \textit{page 10-58}
- \textit{Fusarium} sterilihyphosum (Federal Quarantine Significant) \textit{page 10-95}
- \textit{Fusarium} tupiense (Sordariomycetes: Hypocreales) \textit{page 10-96}
- Gladiolus Rust (Federal Quarantine Significant) \textit{page 10-38}
- \textit{Hemicycliophora} dhanachandi \textit{page 10-108}
- Hibiscus Leaf Curl Agent on Hibiscus (Federal Quarantine Significant) \textit{page 10-8}
- Hop Nettlehead Strain of Arabis Mosaic Virus \textit{page 10-64}
- Hydrangea Rust (Federal Quarantine Significant) \textit{page 10-67}
- Japanese Pear Rust \textit{page 10-71}
Alphabetical List of Diseases

- Jasmine Variegation Agent (Federal Quarantine Significant) page 10-70
- Juniper Pear Rust (Federal Quarantine Significant) page 10-75
- Juniper Rust page 10-76
- Leaf Distortion page 10-134
- Leaf Rot of Carnation page 10-49
- Ligustrum Mosaic Agent (Federal Quarantine Significant) page 10-80
- Longidorus pisi (Longidoridae) page 10-137
- Maple (Acer) Leaf Spot (Federal Quarantine Significant) page 10-9
- Maple (Acer) Variegation Agent (Federal Quarantine Significant) page 10-10
- Mountain Ash Variegation Agent (Federal Quarantine Significant) page 10-134
- Mulberry Mosaic Agent (Federal Quarantine Significant) page 10-99
- Mulberry Rust (Federal Quarantine Significant) page 10-98
- Needlecast Disease (Federal Quarantine Significant) page 10-79
- Okra Mosaic Virus (Federal Quarantine Significant) page 10-8
- Okra Yellow Leaf Curl Agent (Federal Quarantine Significant) page 10-8
- Olive Latent Ringspot Virus page 10-100
- Olive Partial Paralysis Virus page 10-101
- Olive Sickle Leaf Virus page 10-102
- Papaya (Carica) Leaf Reduction Virus page 10-21
- Passion Fruit (Passiflora) Mosaic Virus page 10-104
- Passion Fruit (Passiflora) Woodiness Virus page 10-105
- Pestalotia disseminata (Federal Quarantine Significant) and Leaf Chlorosis Virus page 10-52
- Phytophthora litchii (Federal Quarantine Significant) page 10-82
- Plum Pox Virus (Federal Quarantine Significant) page 10-114
- Poplar (Populus) Bacterial Canker (Federal Quarantine Significant) page 10-112
- Pseudofusicoccum stromaticum (Dothideomycetes: Botryosphaerales) page 10-97
- Pseudomonas syringae pv. actinidiae (bacterial canker of kiwifruit) page 10-13
- Puccinia gladioli [Castagne] (Federal Quarantine Significant) page 10-58
Alphabetical List of Diseases

- *Puccinia mccleanii* [Doidge] (Federal Quarantine Significant) page 10-60
- Raspberry Leaf Blotch Virus (RLBV) page 10-125
- Ringspot Mosaic of Sorbus page 10-135
- *Rhododendron*-Spruce Needle Rust *Chrysomyxa ledi* (Alb. & Schw.) by var. *rhododendri* (DC) Savile (Federal Quarantine Significant) page 10-106
- Rose Wilt Agent (Federal Quarantine Significant) page 10-123
- Rough Bark (Phomopsis Canker) (Federal Quarantine Significant) page 10-90
- Rubbery Wood Phytoplasma (Federal Quarantine Significant) page 10-92
- Rubus Stunt Phytoplasma (Federal Quarantine Significant) page 10-126
- Sampaquita Yellow Ringspot Mosaic Disease (Federal Quarantine Significant) page 10-71
- Scotch Pine Blister Rust (Federal Quarantine Significant) page 10-109
- Spruce (*Picea*) Needle (Cushion) Rust page 10-106
- *Uredo gladioli-buettneri* (Federal Quarantine Significant) page 10-44
- *Uromyces gladioli* [Henn.] (Federal Quarantine Significant) page 10-62
- *Uromyces nyikensis* [Syd. & P. Syd.] (Federal Quarantine Significant) page 10-63
- *Valsa ceratosperma* (V. Mali) (Federal Quarantine Significant) page 10-92
- Verticillium Wilt page 10-66
- Virus Chlorosis page 10-131
- Watermark Disease (Federal Quarantine Significant) page 10-131
- White Rot and an Undescribed Gall-Forming Rust (Federal Quarantine Significant) page 10-120
- Witches’ Broom page 10-50
- *Xanthomonas acernea* (Federal Quarantine Significant) page 10-11
- *Xanthomonas campestris* pv. mangiferaeindicae page 10-16
- *Xiphinema granatum* (Longidoridae) page 10-119
Chapter 9

Diseases and Pathogens of Concern

On Postentry Genera With No Circulars

Contents

Introduction 9-1
Abelmoschus spp. (okra) 9-2
Blighia 9-2
Bromeliaceae 9-2
Carya spp. 9-3
Cedrus spp. 9-3
Chaenomeles spp. 9-4
Crataegus wattina 9-4
Crocosmia spp. 9-5
Cydonia spp. 9-5
Gladiolus spp. 9-6
Hibiscus spp. 9-6
Humulus spp. 9-7
Jasminum spp. 9-7
Juglans regia 9-7
Larix spp. 9-9
Malus spp. 9-9
Morus spp. 9-9
Philadelphus spp. 9-9
Picea spp. 9-9
Pinus spp. 9-9
Prunus spp. 9-9
Pseudolarix spp. 9-10
Pyrus spp. 9-10
Salix spp. 9-10
Syringa spp. 9-10
Ulmus spp. 9-10
Watsonia spp. 9-10

Introduction

The following list of hosts and plant pathogenic organisms includes those for which there are no Circulars.
Abelmoschus spp. (okra)

- Cotton Anthocyanosis Agent
- Okra Mosaic Virus
- Okra Yellow Leaf Curl Agent

Blighia

- Okra Mosaic Virus

Bromeliaceae

- *Puccinia pitcairniae* Lagh.
- *P. tillandsiae* Cummins & Pollack—in Florida
- *Uredo nidularii* P. Henn
- *Ustilago tillandsiae* Patterson

**NOTICE**

The family Bromeliceae is on the list as Postentry for HI only.
Carya spp.

- Witches’ Broom

Figure 9-1 Symptoms of Witches’ Broom on Carya spp.

Cedrus spp.

- Fusarium fuliginosporum Sibilia
**Chaenomeles spp.**

- Apple Chlorotic Leaf Spot Virus
- Apple Ring Spot Agent
- Quince Sooty Ringspot Agent
- Quince Stunt Agent—probably a complex disease caused by Quince Sooty Ringspot Agent and Apple Chlorotic Leaf Spot Virus

**Crataegus wattina**

- Unknown agent

*Figure 9-2  Symptoms of chlorotic ring and line pattern caused by an unknown agent, on *Crataegus wattina* leaf*
Crocosmia spp.

- *Uredo gladioli-buettneri* Bub.
- *Uromyces nyikensis* Syd. & P. Syd.

Cydonia spp.

- Quince Sooty Ringspot Agent

![Figure 9-3 Cydonia spp. with symptoms of Quince Sooty Ringspot Agent on Quince C7/1 leaf; healthy leaf on left](image)

- Quince Stunt Agent—probably a complex disease caused by Quince Sooty Ringspot Agent, Apple Chlorotic Leaf Spot Virus, and Quince Yellow Blotch Agent
- Quince Yellow Blotch Agent
**Diseases and Pathogens of Concern**

**Gladiolus spp.**

- *Uredo gladioli-buettneri* Bub.
- *Uromyces nyikensis* Syd. & P. Syd.

**Hibiscus spp.**

- Cotton Anthocyanosis Agent
- Hibiscus Leaf Curl Agent

---

*Figure 9-4 Cydonia spp. with yellow spotting and distortion of leaves caused by Quince Stunt Agent; healthy leaf on left*
**Humulus spp.**

- Unknown virus

Figure 9-5  Symptom of streaking on leaves caused by virus on *Humulus* spp.

**Jasminum spp.**

- Chlorotic Ringspot Yellow Ring Mosaic Disease
- Sampaquita Yellow Ringspot Mosaic Disease

**Juglans regia**

- Cherry Leaf Roll Virus—a disease of concern on *Prunus* spp.
Figure 9-6  Chrome yellow mottle symptoms caused by Cherry Leaf Roll Virus on *Juglans regia* foliage

Figure 9-7  *Juglans regia* foliage showing chlorotic ring patterns, a symptom caused by Cherry Leaf Roll Virus
Larix spp.

- *Lachnellula willkommii* (Harteg) Dennis

Malus spp.

- Apple Ring Spot Agent
- Apple Chlorotic Leaf Spot Virus (= Plum Bark Split Strain of Apple Chlorotic Leaf Spot Virus)
- Apple Green Crinkle Agent
- Apple Chat Fruit Agent

Morus spp.

- Mulberry Dwarf Phytoplasma (Witches’ Broom)

Philadelphus spp.

- Elm Mottle Virus

Picea spp.

- *Chrysomyxa ledi* (deBary) var. *rhododendri* (deBary) Savile—reported in the U.S. on Rhododendron

Pinus spp.

- *Cronartium ribicola* J.C. Fischer

Prunus spp.

- Arabis Mosaic Virus
- Cherry Leaf Roll Virus
- European Stone Fruit Yellows Phytoplasma
- Plum Bark Split Strain of Apple Chlorotic Leaf Spot Virus (= Apple Chlorotic Leaf Spot Virus)
- Raspberry Ringspot Virus
- Strawberry Latent Ringspot Virus
- Tomato Blackring Virus
Diseases and Pathogens of Concern
Pseudolarix spp.

**Pseudolarix** spp.
- *Lachnellula willkommii* (Harteg) Dennis

**Pyrus** spp.
- Apple Ring Spot Agent (RPP33:731)
- Pear Blister Canker Viroid (RPP39:596)
- Pear Bud Drop Agent (RPP41:466 and RPP45:753o)

**Salix** spp.
- *Erwinia salicis* (Day) Chester

**Syringa** spp.
- Elm Mottle Virus

**Ulmus** spp.
- Elm Mottle Virus

**Watsonia** spp.
- *Uredo gladioli-buettneri* Bub.
- *Uromyces nyikensis* Syd. & P. Syd.
Chapter 10

Disease and Pathogenic Organism Circulars

Contents

Circular 1: Diseases of Abelmoschus spp., Althaea spp., and Hibiscus spp. 10-2
Circular 2: Diseases of Acacia spp. 10-8
Circular 3: Diseases of Acer spp. 10-9
Circular 4: Diseases of Actinidia spp. 10-11
Circular 5: Diseases of Aesculus spp. 10-14
Circular 6: Diseases of Anacardium spp. 10-16
Circular 7: Diseases of Berberis spp., X Mahoberberis spp., and Mahonia spp. 10-17
Circular 8: Diseases of Blighia spp. 10-19
Circular 9: Diseases of Bromeliaceae spp. 10-19
Circular 10: Diseases of Brugmansia spp. and Datura spp. 10-19
Circular 11: Diseases of Carica spp. 10-21
Circular 12: Diseases of Cedrus spp. 10-22
Circular 13: Diseases of Chrysanthemum spp. (Dendranthema), Leucanthemella serotina, and Nipponanthemum nipponicum 10-25
Circular 14: Diseases of Corylus spp. 10-29
Circular 15: Diseases of Crataegus spp. 10-38
Circular 16: Diseases of Crocosmia spp. 10-38
Circular 17: Diseases of Dianthus spp. 10-44
Circular 18: Diseases of Dimocarpus spp. 10-50
Circular 19: Diseases of Diospyros spp. 10-51
Circular 20: Diseases of Eucalyptus spp. 10-52
Circular 21: Diseases of Euonymous spp. 10-52
Circular 22: Diseases of Fraxinus spp. 10-54
Circular 23: Diseases of Gladiolus spp. 10-58
Circular 24: Diseases of Humulus spp. 10-64
Circular 25: Diseases of Hydrangea spp. 10-67
Circular 26: Diseases of Jasminum spp. 10-69
Circular 27: Diseases of Juniperus spp. 10-71
Circular 28: Diseases of Larix spp. 10-80
Circular 29: Diseases of Ligustrum spp. 10-80
Circular 30: Diseases of Litchi spp. 10-82
Circular 31: Diseases of Malus spp. and Pyrus spp. 10-82
Circular 32: Diseases of Mangifera spp. 10-93
Circular 1: Diseases of *Abelmoschus* spp., *Althaea* spp., and *Hibiscus* spp.

- Bhendi Yellow Vein-Mosaic Agent (Federal Quarantine Significant) 10-2
- Cotton Anthocyanosis Agent (Federal Quarantine Significant) 10-4
- Cotton Curliness on Hibiscus 10-5
- Cotton Leaf Curl Agent (Federal Quarantine Significant) 10-5
- Hibiscus Leaf Curl Agent on Hibiscus (Federal Quarantine Significant) 10-8
- Okra Mosaic Virus (Federal Quarantine Significant) 10-8
- Okra Yellow Leaf Curl Agent (Federal Quarantine Significant) 10-8

**Bhendi Yellow Vein-Mosaic Agent (Federal Quarantine Significant)**


**Synonyms**

_Ochrovena hibiscae_ Capoor, Hibiscus Yellow Vein-Mosaic Virus
Hosts

Distribution
Bangladesh, India, and Sri Lanka

Symptoms
Alcea rosea. There is faint vein-clearing of the young leaves followed by swelling of the veins at several points of the undersides of the leaves. The vein swelling gradually extends to nearly all veins which become thickened and gnarled as the leaf grows. The thickened veins are a deep green in color and appear opaque when seen against the light.

A description of the symptoms on shrubby forms of Hibiscus has not been found. They would probably be, in part, similar to those on okra (Abelmoschus esculentus) which follows.

A. esculentus
The first symptom is clearing of the small veins, and then of the larger ones, the ill-defined, yellowish-green to pale yellow areas later extending into the mesophyll. In severely diseased plants, the young leaves develop generalized chlorosis rather than a mosaic pattern. All growth produced after infection is stunted. The leaves are undersized and the petioles are short. Flowering is sparse and few fruits are formed. Most of the leaves on a diseased plant develop thickening of the veins on the lower side but no foliar growths or enations are formed.

Transmission
The white fly, Bemisia tabaci Genn. (B. gossypiperda Misra and Lamba); by grafting.
References


**Cotton Anthocyanosis Agent (Federal Quarantine Significant)**

In progress.
Cotton Curliness on Hibiscus

Synonyms
Gossypium virus 2

Hosts
Gossypium hirsutum L., G. maritima, G. vitifolium Lam. and probably other Gossypium species., Hibiscus cannabinus L., and Solanum dulcamara L.

Vectors
Aphis gossypii, A. laburni, Epitretranychus althaea, and Myzus persicae

Distribution
Azerbaijan and Russia (Siberia)

Symptoms
The symptoms are similar to those of Cotton Leaf Curl, except in the following particulars:

◆ Enations are absent
◆ Hosts include S. dulcamara, a plant outside the family Malvaceae
◆ Reduced vein thickening
◆ Varieties showing resistance are not the same
◆ Vectors are different

References

Cotton Leaf Curl Agent (Federal Quarantine Significant)

Synonyms
Gossypium virus 1 and Ruga gossypii Holmes

Hosts
Abelmoschus esculentus (L.) Moench (Hibiscus esculentus L.), Althaea rosea L. Cav., (Althaea rosea Cav.), Gossypium barbadense L. (G. vitifolium), G. barbadense L. (G. peruvianum Cav. & G. vitifolium Lam.), G. somalense (Gürke) J. B. Hutch., Hibiscus cannabinus L., H. sabdariffa L. and Malvaviscus arboreus Cav. There is evidence that Sida alba L. and S. cordifolia L. may also be hosts.
**Vectors**
The white flies, *Bemisia tabaci* (Gennadius) (*B. gossypiperda* M. & L.) and *B. goldingi*.

**Distribution**
Africa

**Symptoms**
*Gossypium.* On *G. barbadense*, which includes Sea Island cotton and Egyptian cotton including Sakel, the disease is most severe and takes somewhat different forms than on *G. hirsutum*, commonly called American cotton.

Severely infected Sakel plants exhibit a characteristic twisted appearance, particularly in the petioles and fruiting branches. The plants tend to become abnormally tall with elongated and irregularly curved internodes. In extreme cases there may be practically no lateral growth on the upper parts, accompanied with bud shedding. Occasionally, however, severe infection gives rise to stunting rather than elongation of the plant. Curiously, this stunted expression of the disease is characteristic of its expression on certain varieties of American cotton. These show shortened internodes and a bunchy-top type of growth.

Sterility may be caused in infected plants as a result of suppression of the buds or their death soon after formation.

American cotton, is somewhat resistant to leaf curl and shows more variety in its symptoms. Some varieties develop a typical leaf curling with or without small enations, others a leaf mosaic, and yet others both types of symptoms.

The mosaic type of cotton leaf curl begins as a clearing of the veins. The chlorotic areas increase in size and frequently appear all over the leaf surface with a tendency to concentrate along the main veins, or they may be few and concentrated in certain areas of the leaf. They are most prominent on the upper surface and vary in color from pale green to light yellow to nearly white. In some instances, the whole leaf may appear yellow with puckered margins. The uneven distribution may result in asymmetrical growth and distortion.

Leaf curl and crinkle symptoms (on *G. barbadense*) first appear as isolated local thickenings of the veins, which are darker green or more opaque than normal veins. This symptom is best seen on the underside of the leaf viewed by transmitted light. As more and more of the veins are involved, they become thickened and appear gnarled and abnormally prominent. The margins of the leaf then curl upward or, less frequently, downward. In extreme cases enations develop on the veins on the lower surface of the leaf. These are cup-like or expanded pads of tissue that may attain a diameter up to one half of an inch.
The upper side of the leaf departs less from the norm. It may show a wrinkled appearance due to a slight sinking of the veins, and of course, it is affected by any curling of the margins. Similar symptoms may appear on the bracts and, in a reduced form, on the corolla.

*Alcea rosea* plants often have strongly thickened veins and curl considerably in the later stages.

*Hibiscus esculentus* plants have leaves showing conspicuous net-vein thickening with small inconspicuous enations. Curling may or may not be present.

The disease does little damage to *Malvaviscus arboreus* plants. A small amount of vein thickening and leaf curling occurs.

On *Sida* there may be a slight amount of thickening (presumably of the veins). Occasionally there is leaf curling.

Most of the information presented is taken from Tarr’s monograph.

---

**NOTICE**

Laird and Dickson report the disease, Leaf Crumple Virus, of cotton described in California is very similar to Cotton Leaf Curl Virus and may prove to be a strain of this disease.

---

**References**


**Hibiscus Leaf Curl Agent on Hibiscus (Federal Quarantine Significant)**
In progress.

**Okra Mosaic Virus (Federal Quarantine Significant)**
In progress.

**Okra Yellow Leaf Curl Agent (Federal Quarantine Significant)**
In progress.

---

**Circular 2: Diseases of Acacia spp.**

- *Acacia* Rust (Federal Quarantine Significant) 10-8

**Acacia Rust (Federal Quarantine Significant)**
August 2005

**Causal organism**
*Uromycladium tepperianum* (Sacc.) McAlpine

**Synonyms**
*Uromyces tepperianus* Sacc.

**Hosts**
*Acacia* spp., *Albizia* spp., and *Racosperma* spp.

**Distribution**
Australia, Java, New Caledonia, New Zealand, Papua New Guinea, and South Africa

**Symptoms**
*Spermogonia*. Spermogonia are minute, brownish becoming black, globose and 150 μm in diameter.
Telia. Telia develop on galls on leaves, branches, inflorescences and fruits. Infection causes swollen distorted galls up to 18 x 6 cm and witches’ brooms of different shapes and sizes. The telia are cinnamon to chocolate brown in color and powdery in appearance.

**Description**

*Spermatia.* Spermatia are hyaline and ellipsoid.

_Teliospores._ Teliospores are composed of a cluster of three probasidial cells at the top of a single pedicel, depressed globose to globose. They are cinnamon brown in color, thickly vertically striate, margin is crenulate with the wall 2 to 3 μm at the apex. They are 14 to 22 μm high and 18 to 25 μm wide with one apical germ pore. The pedicel is hyaline, septate, and deciduous.

**Notes**

Aecia and uredinia are unknown.

**References**


---

**Circular 3: Diseases of Acer spp.**

- Maple (*Acer*) Leaf Spot (Federal Quarantine Significant) 10-9
- Maple (*Acer*) Variegation Agent (Federal Quarantine Significant) 10-10
- _Xanthomonas acernea_ (Federal Quarantine Significant) 10-11

**Maple (Acer) Leaf Spot (Federal Quarantine Significant)**

Revised Sept. 1987; restructured Feb. 1996

**Causal Organism**

*Xanthomonas acernea* Owaga Burk

**Synonym**

*Pseudomonas acernea* Owaga

**Hosts**

*Acer buergeranum* (*Acer trifidum*) Hook & Arn. (and by inoculation 13 other *Acer* spp., & *Aesculus turbinata* Blume, and *Koelreuteria paniculata* Laxm)

**Distribution**

Japan
Symptoms
The leaves show irregular, water soaked, later pale gray or black spotting, and finally turn black and shrivel.

Characters
Non-spore forming rod, 0.5 to 1 x 2-.6 μm (.8 x .4), and aerobic, uniflagellate, gram and aniline positive (?), liquefying gelatin, clearing milk not coagulating it, producing some acid, no gas from six sugars and glycerine, reducing nitrates and forming Hs. Colonies first round smooth, white, margin entire turning citron yellow in 2 days at 32 °C. Thermal death point 59 °C.

References

Maple (Acer) Variegation Agent (Federal Quarantine Significant)

Hosts

Distribution
Europe and Japan

A similar disease from Italy was reported by Goldanich (1954) affecting a number of Acer negundo trees. The leaf mottling varied from small dots to star-shaped spots that at times became confluent.

There is also a report from Czechoslovakia by Smolak that mosaic and leaf deformation of Acer pseudoplatanus and A. negundo is present in a park in Podebrady.

Symptoms
“Yellow variegation of the leaves” (Brierley 1944). “Characterized by mottled leaves, peppered with very small, more or less round, light green spots. On some plants the spots were smaller than 1.5 mm in diameter and so numerous that they were difficult to distinguish and give a chlorotic appearance to the plants. On other plants at least some of the spots attain approximately 3 mm in diameter.” (Atanasoff 1935).
NOTICE
A disease of Acer rubrum caused by the Peach Rosette Virus was reported in Georgia in 1960 (Knight, K.G. P.D.R. 44:220). Thirty infected trees were noted in 1953 and by 1959, all had died. The trees were characterized by being stunted, having dense green foliage in the spring that turned reddish in the summer and yellowish before the tree's death.

Transmission
By budding and grafting

Properties
Not determined

References
2. Brierley, P. 1944. Viruses described primarily on ornamental or miscellaneous plants. P.D.R. Suppl. 150:145; 150; 184-85; 414; 436-37; 437; 448-49; 475.
5. CFR 319.37§2.

Xanthomonas acernea (Federal Quarantine Significant)
In progress.

Circular 4: Diseases of Actinidia spp.

- Actinidia Rust (Federal Quarantine Significant) 10-11
- Pseudomonas syringae pv. actinidiae (bacterial canker of kiwifruit) 10-13

Actinidia Rust (Federal Quarantine Significant)
October 2005

Causal Organism
Pucciniastrum actinidiae Hirats.f

Synonyms
None
Hosts
Actinidia spp.

Distribution
People’s Republic of China, Japan, and Taiwan

Symptoms
Uredinia. are located on the lower leaf surface scattered or grouped on yellow or yellowish brown, discolored areas, sometimes thickly scattered over the whole surface of the leaf. They are round, minute, 0.08-0.2 mm across, located under the epidermis, and open when mature by a central pore. They are pale yellow in color.

Telia. are located on the lower surface of the leaf and are under the epidermis in dense clusters limited by the leaf veins. They are often spread over the whole leaf surface and are yellowish brown to brown in color.

Description
Urediniospores. are obovate, ellipsoid or oblong, 18 to 27 x 12 to 16 μm, walls 1.5 to 2 μm thick, minutely echinulate, and subhyaline, with germ pores 7 to 10 μm mostly scattered and obscure.

Teliospores. are intercellular, subglobose, oblong or cuneiform, laterally adherent. They are divided by 2 to 8 (mostly 4) vertical or oblique septa, 20 to 30 μm high, 17 to 18 μm across with walls uniformly thin, smooth, and pale yellow.

Notes
The spermagonial and aecial stages of this rust are unknown.

References
Pseudomonas syringae pv. actinidiae (bacterial canker of kiwifruit)

Causal Organism
Pseudomonas syringae pv. actinidiae

Synonyms
None

Hosts
Actinidia spp.

Distribution
Italy, China, Japan, Korea Republic

Symptoms
Disease characterized by cankers on kiwifruit

Distribution
In spring and early summer, the pathogen develops in expanding shoots and leaves. Small cankers develop on extending vines and leaves develop angular leaf spots surrounded by chlorotic haloes. In winter and early spring, extending cankers form on trunks and branches.

Transmission
Like all pathovars of P. syringae, P. syringae pv. actinidiae is present in infected plant material and, therefore, is usually introduced into new regions in nursery material. The pathogen can be dispersed in aerosols and can be carried between trees and adjacent orchards in wind-driven rain. As a wound-infecting pathogen, it can also be transmitted on orchard equipment such as pruning implements. Data is lacking on the epidemiology of the disease. It is suspected that it is spread by heavy rainfalls, strong winds, animals, and humans. Over long distances, trade of infected planting material can spread the disease. However, infected fruits cannot be totally excluded but seem very unlikely.

Notes
Propagative material of Actinidia spp., except seeds, are currently prohibited from Japan and Taiwan due to a rust (Pucciniaastrum actinidiae Hiratusuka), and are under postentry quarantine from all other countries except Canada, Australia, and New Zealand.

References
Circular 5: Diseases of *Aesculus* spp.

- *Aesculus* Horse Chestnut-Variegation Virus (Federal Quarantine Significant) 10-14

*(Aesculus)* Horse Chestnut-Variegation Virus (Federal Quarantine Significant)
Revised and restructured Feb. 1996

**Synonyms**
None

**Host**
*Aesculus hippocastanum* Linn.

**Distribution**
Czech Republic, Germany, Romania, Slovakia, and United Kingdom

**Symptoms**
Yellow-leaf variegation House (5) wrote, “A tree of rich golden foliage which far surpassed anything of the sort I have seen for richness of effect and color.” Other records of this variegation deal with its transmission.

**Transmission**
By grafting and budding, infection may occur following budding even when the bud fails to grow. In the experiment reported by House (5) the variegation passed upward in the stock, but not downward.
Figure 10-2 Aesculus hippocastanum (horse chestnut) tree; virus causes a general yellow appearance

Figure 10-3 Aesculus hippocastanum (horse chestnut); leaf with banding pattern, a symptom of Yellow Oak Leaf Vein Virus

References
4. Brierley, P. 1944. Viruses described primarily on ornamental or miscellaneous plants. P.D.R. Suppl. 150:145; 150; 184-85; 414; 436-37; 437; 448-49; 475.


---

**Circular 6: Diseases of Anacardium spp.**

![Image](image.png)

◆ *Xanthomonas campestris* pv. *mangiferaeindicae* 10-16

**Xanthomonas campestris pv. mangiferaeindicae**

June 2011

**Causal Organism**

*Xanthomonas campestris* pv. *mangeiferaeindicae* (Gammaproteobacteria: Xanthomonadales)

**Synonyms**

*X. citri* pv. *mangiferaeindicae*

**Host**

*Mangifera indica* (mango) and *Anacardium occidentale* (cashew)

**Notes**

*Xanthomonas campestris* pv. *mangeiferaeindicae* is an economically important pathogen of mango and *Anacardium occidentale* (cashew) and is reportable in the PEST ID database

**Symptoms**

Raised, angular, black lesions

**Distribution**

Africa, Asia, Australia, Brazil, Burkina Faso, and New Zealand

**References**

Circular 7: Diseases of *Berberis* spp., *X Mahoberberis* spp., and *Mahonia* spp.

◆ **Black Stem Rust (Federal Quarantine Significant)** 10-17

**Black Stem Rust (Federal Quarantine Significant)**  

**Causal Organism**  
*Puccinia graminis* Pers.

The Black Stem Rust quarantine requires that nurseries that ship immune or resistant species of Berberis, Mahonia, or Mahoberberis into protected states must contain no susceptible species of these genera. The postentry detention of Berberis, Mahonia, and Mahoberberis is to facilitate determining whether introduced plants are true to name and immune or resistant to *P. graminis*.

We are concerned with enforcing postentry regulations on Black Stem Rust at the pycnial and aecial stages of the rust organism, which is its only expression on Berberis, Mahonia, and Mahoberberis. Discussion of the uredial and telial stages is, therefore, omitted. Descriptions of these may be found in any general text on plant diseases or the rust fungi.

**Synonyms**  
(Listed by Arthur (1934); others may be found in Sydow *Lycoperdon poculiforme* Jacq., *L. lineare* Schr., *Aecidium berberidis* Pers., *Puccinia linearis* Rohl., *P. poculiformis* Wettst., *Diacoma poculiforme* Ktze.)

**Hosts**  
Pycnial and aecial stages are on *Berberis* spp. (except *B. thunbergii* and its varieties) and Mahonia.

Uredial and telial stages, according to Arthur (1934), are on at least 108 species of Gramineae including wheat, rye, and barley.

**Distribution**  
Cosmopolitan following the distribution of its host plants

The pycnial and aecial stages are very rare in the southern states. Stakman et al. (1918) have shown that this is due to the lack of viable teliospores in the spring.

**Symptoms**  
On Berberis, Mahonia, and Mahoberberis (After Heald with amendments from Arthur (1920))
**Pycnial.** The rust appears first on the upper surface of the leaf as a small, circular, yellowish spot that increases in size to 2 to 5 mm or slightly larger. The affected tissue is swollen, becomes marginated with a brighter yellow or reddish-purple color, and shows a central cluster of minute, honey-colored pustules on the upper surface (later turning brownish or nearly black) from which droplets of pycnial nectar ooze. The pustules (pycnia) are 90 to 110 μm in diameter and bear ostiolar filaments 30 to 60 μm long.

**Aecial.** (After Arthur (1920)) Aecidia on leaves, stems, and fruits, on the underside of the leaves in crowded, circular groups 1 to 6 mm across, on discolored, slightly thickened spots, cupulate or cylindric 0.2 to 0.3 mm in diameter, sometimes 2 mm long, but usually much shorter, wall colorless, the margin erose (toothed) slightly recurved; peridial cells oblong 16 to 23 x 19 to 26 μm, the outer wall thick 10 to 12 μm, smooth and transversely striate, the inner wall 2 to 4 μm thick, moderately verrucose, squarely abutted; aeciospores angular, globose or oblong 15 to 19 x 16 to 23 μm; wall colorless, 1 to 1.5 μm thick, considerably thicker above, 5 to 9 μm, finely and closely verrucose appearing smooth when wet.

![Figure 10-4 Puccinia graminis on Berberis spp.; aecial stage on underside of leaf; may attack stems and fruit](image)
References

Circular 8: Diseases of Blighia spp.

- Okra Mosaic Virus (Federal Quarantine Significant) 10-8

Circular 9: Diseases of Bromeliaceae spp.

- Bromeliaceae 10-19

**Bromeliaceae**
The restriction on Bromeliads applies only to Hawaii. It is a precautionary measure to protect Hawaii from the possible introduction of injurious pests of Bromeliads, particularly, Ananas sativus Schult., the pineapple. The latter is a major crop of the islands.

Circular 10: Diseases of Brugmansia spp. and Datura spp.

- Columbian Datura Virus (Federal Quarantine Significant) 10-19
- Datura Shoestring Virus 10-20

**Colombian Datura Virus (Federal Quarantine Significant)**
May 6, 1974; restructured Mar. 1996

Brugmansia and Datura are reservoirs for many viruses that attack plants belonging to the family Solanaceae. Some of the viruses may be latent, inciting no symptoms in Datura, while others will show a wide range of symptoms in leaves such as chlorosis, mosaic, twisting, vein-clearing, curling, rugosity, and necrosis. There may also be various other abnormalities as shoot proliferation,
stunted flowers, and stunted plants. Consequently, it might be difficult to associate a virus-like symptom with a virus common name without considerable testing.

**Synonyms**
None

**Hosts**
*Brugmansia X candida* Pers. (*D. candida*) & var. 'Culebra', *B. sanguinea* (Ruiz & Pav.) D. Don (*D. Sanguinea*), and probably other species of arborescent Datura. Virus symptoms were experimentally produced on several indicator plants.

**Distribution**
Colombia

**Symptoms**
Kahn and Bartels (1968) report that Datura plants show vein-banding or chlorotic flecking on expanded leaves followed by mottling. Either the leaves become rugose and slightly distorted or the plants recover. When the plants recover, symptoms often reappear on new growth.

**Description**
The virus particle is a flexuous rod in the Potato virus Y group, around 720 mille microns.

**Transmission**
The virus is transmitted mechanically, i.e., plants touching one another or a person touching an infected plant and then a noninfected one.

**Vector**
The green peach aphid, *Myzus persicae* Sulzer.

**Reference**

**Datura Shoestring Virus**
May 6, 1974; restructured Mar. 1996

Brugmansia and Datura are reservoirs for many viruses that attack plants belonging to the family Solanaceae. Some of the viruses may be latent, inciting no symptoms in Datura, while others will show a wide range of symptoms in leaves such as chlorosis, mosaic, twisting, vein-clearing, curling, rugosity, and...
necrosis. There may also be various other abnormalities as shoot proliferation, stunted flowers, and stunted plants. Consequently, it might be difficult to associate a virus-like symptom with a virus common name without considerable testing.

**Synonyms**
None

**Hosts**

**Distribution**
India

**Symptoms**
According to the report by Giri and Agrawal (1971), Datura leaves develop mosaic and severe blistering, while new leaves show distortion and deformation and are reduced to shoestring-like structures. The plants become severely stunted.

The symptoms on *Nicotiana glutinosa* are similar to Datura, but less severe. When the leaves of *N. tabacum* White Burley are inoculated with the virus, they develop local chlorotic lesions, that spread and become necrotic; and the plants die within 3 to 5 days. The inoculated leaves of *N. rustica* show veinal necrosis, mottle, and necrotic spots; the stems become necrotic and the leaves start falling and the plant collapses.

**Transmission**
Mechanically transmissible

**References**
Hosts

*Carica papaya* L.

Distribution

India

Symptoms

Singh (1969) reports that the first symptom of the disease is vein-clearing of the young leaves, followed by translucent areas developing and adjoining the veins, and by the lamina puckering. The raised areas are dark green in color. The subsequently developed leaves are deformed and reduced in size, and show pronounced distortion. In extreme cases, the entire leaf is reduced to a thread-like appearance at the top of the plant, which is characteristic of the disease. Infected plants are very much stunted and latex flow is reduced.

Older leaves on a diseased plant turn brown and fall off, and the entire stem becomes denuded, with only a small cluster of thread-like leaves at the top (Singh 1969).

Jensen (1949) and Singh (1969) refer to numerous papaya virus diseases from at least 15 countries, including, in the U.S., Florida, Hawaii, and Puerto Rico. Although some of the symptoms are like those of PLRB, these viruses appear to be distinct from the virus disease reported by Singh (1969).

Transmission

By sap

Vector

*Myzus persicae* (Sulzer)

References

**Causal Organism**

*Phacidiopycnis pseudotsugae* M. Wilson G. Hahn imp. stage *Phomopsis pseudotsugae* M. Wilson

**Synonyms**


**Hosts**


**Distribution**

Belgium, Czech Republic, Denmark, France, Germany, Great Britain, Ireland, Italy, Netherlands, New Zealand, Norway, Slovakia, Sweden, former U.S.S.R., and U.S. (Pacific northwest)

Wicker recently reported finding *P. pseudotsugae* cankers on *Larix occidentalis* in the intermountain region of the Pacific Northwest.

**Symptoms**

Three distinct forms of injury have been recorded:

**Blighting of Terminal Shoots.** Terminal shoots blighting has been recorded on seedlings and young plants. The tips of the trunk and the branches are the usual points of invasion and these die back for a length of 10 to 16 in. The needles on the invaded parts first turn brownish-yellow, then become dry and fall. In the tender young tissues, invasion is direct, no wound is necessary. The fungus invades the cortex and cambium, but **does not** penetrate the wood. With the death of the cambium, growth of the infected part ceases, and as a result, there is, at the margin of the diseased tissue, a strong thickening of the cork cells. (For an illustration of this effect see *Phytopath* 19:986). Pycnidia develop abundantly especially near the base of the diseased part. The seedlings may wither away at once, or adventitious buds may commence growth **only** to be killed in turn. The disease tends to be concentrated in certain parts of the seed bed or nursery.
Girdling of Branches and Trunks. Girdling occurs at some intermediate point on the branch or trunk. The girdle seldom reaches a length of 6 inches. Above and below, the tissues continue to grow for a time, and especially above, develop a characteristic swelling. In the end, the parts above the girdled area die from lack of nourishment.

Cankers of Larger Trunks and Branches. Cankers may develop on the larger trunks and branches. On hosts that develop cankers, except Larix, these cankers may attain a size 6 x 7.5 in., but on Larix they reach 6.5 x 13.5 in. in area. If the cankers are numerous and fairly large, the tree may be killed. Isolated cankers may be healed over as the fungus is not perennial in the bark.

The above symptoms are those shown by Pseudotsuga. Boudru states that other hosts react somewhat differently to the disease: Abies show trunks and branches girdling; Tsuga show young leader withering; Cedrus show trunks and branches girdling and terminal bud blighting; and on Larix, only cankers are found usually following wounds caused by pruning or rodents. Larix cankers often exude an abundance of resin.

Wilson (1930) states that it is improbable that P. pseudotsugae will be found on imported Cedrus as it so far has not been found on trees under 20 years old.

Description

Phacidiopycnis pseudotsugae. Apothecia frequently associated with pycnidial locules, innate in the stroma, developing under, but not concrete with, the periderm, one or more ascocarpic areas in a stromata that become erumpent and occur in colonies on discolored areas of the trunk or branch, ascocarps discoid, black, carbonous, 0.25 to 1.0 mm in diameter, at first covered by a pulverulent, olibaceous, stromatic layer that becomes loosened in irregular lobes above the sporulating tissue and finally torn away. At maturity, the darkened hymenium is fully exposed; asci cylindric-club shaped, elongate-stalked, thin-walled, 8-spored, 80 to 135 x 8 to 12 μm; ascospores irregularly uniseriate, continuous, occasionally one or two septate, hyaline, guttulate, elliptic or elliptic-fusiform, ends obtuse or subacute, 10 to 18.8 x 2.8 to 6 μm; producing bud spores in the ascus, these are short, elliptic, or rod-shaped, continuous, hyaline, 3.4-4.8 x 1.0-1.6 μm; paraphyses very numerous, filamentous, septate, tips slightly swollen, simple or occasional branched near the apex, outranking the asci, greenish in mass, tips uniting forming a pale olivaceous epithecium; hypothecium shallow; free unbranched hyphae within the dark, pseudo-parenchymatous excipulum producing microspores comparable in size and shape to those in the asci, spores formed singly from individual hyphal cells on fine isthmi.
Phomopsis pseudotsugae. Pycnidia black, globose, solitary or in groups of 2 or 3, the cavity is divided into more or less completely formed locules, and is from 100 to 500 μm in diameter. At maturity, they become erumpent through small cracks in the bark. The conidia are hyaline, elliptical, fusoid, obtuse at both ends and measure 5.5 to 8.5 x 2.5 to 4 μm. They are extruded in whitish, often coiled cirrhi (threads).

References
**Symptoms**

*P. horiana* produces large, white waxy spots on the undersurface of chrysanthemum leaves. It is much more dangerous to the chrysanthemum industry than *P. chrysanthemi*, the common chrysanthemum rust found in the United States, because it attacks new shoots early in the spring and the climatic factors favorable to the rapid spread of the organism are prevalent at this time of the year. (Kusano)

**Description**

The telial stage of the rust is the one encountered. Aecia and uredia are unknown. The disease spreads from plant to plant by means of sporidia produced by the teliospores.

According to Saccardo (1888) the teliospores are oblong-clavate with a broadened or obtuse to obtuse-pointed apex; base cuneate to applanate; slightly constricted at the septum, hyaline to yellowish, smooth. Spores range from 30 to 45 x 13 to 17 μm with a persistent, pale pedicel up to 40 μm long. Tai and Wei (1933), however, give teliospore sizes as 34 to 57 x 13 to 19 μm.
Figure 10-5 *Puccinia chrysanthermi* on *Chrysanthemum* spp.; orange to brown spots on lower leaf surface; common disease; submit specimens
Table 10-1 may serve as an aid in distinguishing between the common chrysanthemum rust and chrysanthemum white rust.

**Table 10-1 Comparison of Chyrsanthemum Rust and Chrysanthemum White Rust**

<table>
<thead>
<tr>
<th>Species:</th>
<th><em>P. horiana:</em></th>
<th><em>P. chrysanthemi:</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sori color</td>
<td>White to yellow</td>
<td>Chocolate brown</td>
</tr>
<tr>
<td>Uredospores</td>
<td>None</td>
<td>Commonly found</td>
</tr>
<tr>
<td>Teliospore size</td>
<td>34 to 57 x 13 to 19</td>
<td>34 to 57 x 18 to 28</td>
</tr>
<tr>
<td><strong>NOTE:</strong></td>
<td>For signs see Figure 10-6</td>
<td>For signs see Figure 10-5</td>
</tr>
</tbody>
</table>

**NOTICE**

*P. horiana* is relatively fast moving and, under ideal greenhouse conditions, should appear, if present, within a few weeks. Hence, we believe that greenhouse-grown chrysanthemums regardless of the time of year, may be released after six months, if inspection at the end of that time reveals no sign of the rust. Greenhouse growing is required for postentry Chyrsanthemum growing (see Figure F-9).
P. horiana is favored by short day conditions and spreads rapidly under moist, overcrowded conditions. Investigations of the epidemiology of the disease in Japan showed that the optimum temperature for teliospore germination is between 13 °C to 22 °C. And the incubation period of the disease is 10 days.

References

Circular 14: Diseases of Corylus spp.

- Apple Proliferation Phytoplasma (Federal Quarantine Significant) 10-29
- Filbert (Corylus) Blight 10-36

Apple Proliferation Phytoplasma (Federal Quarantine Significant)

Synonym
Witches’ Broom, Rozet (Rosette), Brooming

Time of Year to Inspect
Anytime while in leaf

Specific Symptoms

Hosts
Catharanthus roseus, Corylus spp., Cynodon dactylon, Malus domestica, Prunus avium, P. armeniaca, P. domestica (these Prunus species are possible hosts of Apple Proliferation—further testing to confirm is necessary), and Vitis vinifera
**Plant.** Buds set in August and September start growing in the fall. Infected branches leave trunk at a more acute angle than do healthy branches. For symptoms of this possible infection of the Apple Proliferation Phytoplasma on *Prunus* see [Figure 10-7](#) and [Figure 10-8](#).

![Figure 10-7 The wilting of cherry (possibly caused by Apple Proliferation Phytoplasma)](#)

1 Photo reprinted with the permission of Dr. Natasa Mehle of the National Institute of Biology, Ljubljama, Slovenia.
Leaf. Infected leaves are smaller, stipules enlarged. Color is usually yellowish-green or reddish. For the classic symptoms of enlarged stipules on *Malus* spp., see Figure 10-9 and Figure 10-10.
Figure 10-9 Enlarged stipules of an infected Malus plant

Figure 10-10 Enlarged stipules of an infected *Malus* plant (left) compared to the regular-sized stipules on an uninfected plant (right)
**Branch/Trunk.** Clusters of bushy shoots. Infectious agent stimulates axillary buds on young shoots. Short internodes are produced. For this disease on Prunus, see Figure 10-11.

Figure 10-11  The necrosis on cross-section of branches of cherry (possibly caused by Apple Proliferation Phytoplasma)
Fruits. Reduced in size.

Flowers. Produced later in the season than on healthy plants. For this disease on Prunus flowers, see Figure 10-13.

Figure 10-12 The necrosis on cross-section of trunk of cherry (possibly caused by Apple Proliferation Phytoplasma)
Transmission
Grafting, root fusion, and the psyllids Cacopsylla melanoneura (Forster), & Cacopsylla costalis (Forster), and the leafhopper Fieberiella florii (Stal). Only the leafhopper occurs in North America.

Discussion
This disease reduces the production of marketable fruit by as much as 95% in Europe. Rosetting and shortening of internodes may also be caused by aphid or leaf hopper injury. The causal agent of this disease is not a virus, but a phytoplasma. Evidence of several different strains has been shown.

Distribution
Throughout Europe and in Turkey

References


**Filbert (Corylus) Blight**
Revised and restructured Feb. 1996

**Causal Organism**
*Anisogramma anomala* (Peck) E. Muller
Synonyms

Apioporthe anomala (Peck) Hoehn., Cryptosporella anomala (Peck) Sacc.
Diatrype anomala Peck

Hosts

Corylus americana Marsh. (Hazelnut), Corylus avellana L. (Filbert)

Distribution

Eastern United States and Pacific Northwest

Symptoms

Humphrey's (1893) description of the disease appears to be the most complete. “It appears in the form of protuberances with elliptical bases that burst the bark and arise rather thickly from the affected portion of the branch, which is sunk below the surface of the healthy part.” A section shows that the protuberances (stroma) “contain numerous black flask-like structures, whose tips reach the surface of the protuberance.” “It is very noticeable that in the part of the branch occupied by the fungus, the inner bark (elsewhere a distinct band of tissue) is shrunken to a narrow black line between the wood and the bark. This reduction in the thickness of the inner bark explains at once why the surface of the affected parts is sunken below the rest of the surface and shows that the chief seat of vegetative activity of the fungus is in the rich growing conductive tissues” (Cambium).

According to Barss (1921) the ends of the branches are killed by girdling, the smaller twigs are attacked first and two or three years pass before the top is completely killed. He also states that the blight does not occur on Corylus rostrata Ait. or C. californica Rose.

Description

A specimen collected by G.P. Clinton, at Westerville, CT in 1902 was examined at the New York Botanical Gardens herbarium. This specimen showed large, oval stroma, 4 mm long by 3 mm wide and about 1 mm high. The stroma were wart-like and arranged more or less in two parallel rows usually on one side of the stem, but on one stem the two rows were nearly opposite. The torn epidermis stood up around the base of the stroma. The top or disc was roughened by the ostioles, (the exposed upper extremities of the beaks of the perithecia). The ostioles may have been scattered irregularly over the disc or been in an oval arrangement.

Pustules prominent, subrotund or elliptic, erumpent, 2 to 5 mm in diameter, wood subsunken, surrounded by a black layer, disc convex or slightly depressed, rough, brownish or blackish, powdery white at last; perithecia crowded, immersed in the stroma, now and then elongate; ostiole stalked and
loose, often radiately sulcate, black; asci short, thick, soon disappearing; spores hya-line, elliptic, continuous, 7 to 9 μm long.

References

Circular 15: Diseases of Crataegus spp.

◆ **Crataegus monogyna** and **Mespilus germanica** 10-38

**Crataegus monogyna** and **Mespilus germanica**

*Crataegus monogyna* Jacq. is a host of two or more Gymnosporangium rusts but Fischer failed in his experiments to inoculate it with *G. fuscum*. In this respect, it is similar to *Mespilus germanica* L. A negative result is indicative but **not** conclusive, therefore, **cannot** be dismissed. A discussion of *G. fuscum* may be found in Circular 27: Diseases of *Juniperus* spp. on page 10-71.

Gymnosporangium rusts are rather easily detected but their separation is usually work for a specialist. Rusts on these hosts should be referred to the Postentry Quarantine Unit.

Circular 16: Diseases of *Crocosmia* spp.

◆ **Gladiolus Rust** (Federal Quarantine Significant) 10-38

◆ **Uredo gladioli-buettneri** (Federal Quarantine Significant) 10-44

**Gladiolus Rust** (Federal Quarantine Significant)

August 2005

**Causal Organism**

*Uromyces transversalis* (Thum.) (G. Winter)
Synonyms
_Uredo transversalis_ Thum., _Uromyces watsoniae_ P. Syd & Syd

Hosts
_Crocosmia_ spp., _Gladiolus_ spp., _Tritonia_ spp., and _Watsonia_ spp.

Distribution
This rust is apparently indigenous to eastern and southern Africa. It has also been reported from Morocco, southern Europe (questionably from France and Spain, possibly established in Italy, Malta and Portugal) South America (Argentina and Brazil), Martinique, Australia, and New Zealand. It was recently intercepted from Mexico.

Symptoms
Uredinia are round to oblong or irregular and transverse on the leaf surface. They may be found on the upper or lower leaf surface. The uredinia are 0.5 to 1.5 mm long and 0.5 to 2 mm broad. At first they are covered by the blistered epidermis that splits. They are yellowish-orange in color.

_Telia._ Telia are minute, black and remain covered by the epidermis and grouped (small to larger groups). The groups may be scattered, in cavities on the leaf surface and are separated by golden-brown, palisade-like paraphyses (sterile upward growing, basally attached hyphal elements). The paraphyses are 50 to 112.5 μm in diameter and 55 to 75 μm deep with spores in 3 to 4 closely packed rows.

Description
Urediniospores are variable in form and size. They may be ovate, ellipsoidal or oblong and are 14 to 26 x 13 to 25 μm. The cell wall is hyaline and typically 1.5 to 2 μm thick and closely and minutely verruculose. There are germ pores, but they are obscure and 6 to 8 in number and scattered.

_Teliospores._ Teliospores are ovate, ellipsoid or pyriform, and less frequently globose often irregular or angular through mutual pressure. They are light brown, darker (often chestnut brown) near the apex. The apex of the teliospores is rounded, truncate or broadly conical, base usually attenuate, less frequently rounded. They are (17.5 to) 20 to 25 (to 34) x (14 to) 15 to 17.5 (to 21) μm with the cell wall smooth, usually 2 μm thick, 4 to 6 (to 8) μm at the apex. The pedicel is semi-persistent, hyaline, or tinted at the apex and is 45 μm long and 2 μm thick.
Figure 10-14 Uredinia of *Uromyces transversalis*
Figure 10-15 *Uredinia* (across the width of the leaf) and telium (dark) of *Uromyces transversalis*
Figure 10-16 Uredinia, erumpent, across the width of the leaf of *Uromyces transversalis*
Figure 10-17: Uredinia (across the width of the leaf) of *Uromyces transversalis*
Notes
Spermogonia and aecia are unknown.

References

*Uredo gladioli-buettneri* (Federal Quarantine Significant)
In progress.

---

**Circular 17: Diseases of *Dianthus* spp.**

- Carnation Wilt 10-45
- Dianthus Virus Diseases 10-46
- Leaf Rot of Carnation 10-49
Carnation Wilt

Causal Organism

*Phialophora cinerescens* (Wollenw.) Van Beyma

Synonym

*Verticillium cinerescens* Wollenw.

Hosts

*Dianthus* spp. *Dianthus chinensis* L. (Chinese Pink), and *D. barbatus* L (Sweet William) are said to be very susceptible, *D. caryophyllus* L. (Carnation) highly resistant, and *D. deltoides* L. immune. *D. nardiformis*, *D. balbisii*, *D. (hyssopifolius) monspessulanus*, and *D. cinitus* also reported as hosts (RAM 43:760). Hosts in other genera include: *Silene latifilia* spp. alba (Mill.) Greuter and Burdet (*Melandrium album*) (RAM 38:290) and *Saponaria officinalis* L., *Petrocoptis grandifloria*, A. Braun ex Endl., *Viscaria sartorii* and *Silene compacta* Fisch. Ex Hornem. (RAM 43:760).

Distribution

Bulgaria (RPP 61:627); Denmark (RAM 38:389); France (RAM 38:368); Italy (RAM 40:226); Poland - one farm (RAM 45:2860); Netherlands (RAM 38:118); Romania (RPP 63:165); UK (RAM 38:480, 42:26); (RAM 43:2360); Former USSR (RPP 58:3320); and Germany (RAM 41:230).

**NOTICE**

Review of Applied Mycology (RAM); Review of Plant Pathology (RPP).

Symptoms

The leaves of infected plants are wilted, wrinkled and chlorotic. Cross-sections of the stem show brown discoloration of the vascular ring. The foregoing symptoms are similar to those caused by *Fusarium dianthi* Prill. and Del., but the leaf chlorosis caused by *Phialophora cinerescens* is less marked and there is a tendency for localization of the vascular discoloration in the tracheids and vessels. No extensive rotting of the pith and cortex is found. The stems may develop kinks at the nodes and the internodes may be somewhat shortened.

As there are other wilts of Dianthus caused by several species of *Fusarium*, a key devised by Wickens (1935) for separating those diseases follows.

**Key to Wilt and Desiccation of Leaves and Shoots.** 1. Vascular discoloration throughout the collar and wilting shoots—Go to 2.

No extensive vascular discoloration—Go to 3.

2. Vascular discoloration followed by a dry “sheddy” rot of affected wood and cortex—Fusarium wilt (*F. dianthi*)
No later development of tissue rotting—Phialophora wilt (P. cinerescens)

3. Indiscriminate rotting of the collar stem rot—(Fusarium spp., F. culmorum, F. herbarum)

Not as above—other diseases or disorders

Note—Invasion is through the roots from the soil. In experiments, inoculated plants remained apparently healthy for as long as 13 weeks.

References


Dianthus Virus Diseases

Hosts

Dianthus caryophyllus L. (Carnation) and D. barbatus L. (Sweet William)

Etched Ring. Whitish etched necrotic flecks and rings, usually oval or dumbbell shaped, resembling ringspot. May be small irregular rings and streaks on flowers and axillary stems. Some varieties show conspicuous necrotic blotches of irregular shape, usually pale fawn in color with darker brown maroon edges on the leaves; sphere shaped; world wide

---

Figure 10-19 Carnation Etched Ring Virus on Dianthus spp.; atypical; note white lines in first and third leaves
Figure 10-20  Carnation Etched Ring Virus on Dianthus spp.; note typical symptoms showing etched rings in first leaf

Figure 10-21  Carnation Etched Ring Virus on Dianthus spp.; severe symptoms
**Latent.** No symptoms

**Mosaic.** Yellowish to gray brown leaf mottle, coalescence of several spots may be followed by necrosis of centers; plants are stunted and flowers may be striped or spotted.

**Mottle.** Mild mottling or no symptoms; may cause flower breaking in some varieties; sphere shaped; world wide.

**Necrotic Fleck.** 1400 to 1700 nm long; in Japan 1973.

**Ringspot.** Gray rings or irregular chlorotic spots, may be several concentric rings, streaking, reddening, and leaf distortion; sphere shaped; world wide.

**Streak.** Yellowish or reddish spots and streaks, parallel to veins; lower leaves may be heavily spotted and turn yellow.

**Vein Mottle.** Vein clearing in young leaves that may develop into chlorotic spots that follow veins; 790 nm long; world wide.

**Yellows.** Caused by a combination of streak and mosaic viruses; affected plants show both the mottling and spotting characteristics of the two viruses.

---

**NOTICE**

There is still some confusion about the identity, nomenclature, distribution, and symptomatology of these viruses. Combinations of viruses are commonly found in a single plant. The symptoms produced in such cases may **not** be clear cut. Carnation Ringspot Virus, Vein Mottle Virus, and Mottle Virus (event when latent) significantly reduce the yield and quality of flowers in the variety "William Sim."

Available evidence indicates that some of these viruses, especially Etched Ring and Ringspot, are **not** widely distributed in the United States.

Most carnation viruses are sap transmissible and indexing techniques can make positive determination. This procedure, however, is **not** practical for postentry quarantine control.

**References**

Leaf Rot of Carnation

**Causal Organism**

*Heteropatella vallotinensis* (Trav.) Wr.

**Synonyms**

*Excipulina vallotinensis* Trav., *Heteropatella dianthi* Budd & Wakef., and *Pseudodiscosia dianthi* Host & Laub.

**Hosts**

*Dianthus caryophyllus* L. (carnation)

**Distribution**

England, The Netherlands, Germany, Italy, Canada (British Columbia), and U.S.A (Washington)

**Symptoms**

Both surfaces of the leaves show large discolored patches that are soft and brown, or when dry, bright whitish-gray. The patches occur either as transverse bands or extended over the whole terminal part of the leaf, which as a result, becomes withered and cracked. Similarly discolored spots occur frequently on the stems, flower stalks, bracts, and sepals. Very small, round, rather dark grey spots are present in large numbers on both sides of the diseased part of the leaves. These spots are, for the most part, so indistinct as to be hardly recognizable. They are more easily seen if the leaf is held up to the light. They then appear as rather closely grouped circular areas, transparent, and like a spot of grease lying in the leaf, nearly one-half a millimeter in diameter with a more or less distinct point in the middle. This point is frequently covered by a tiny, waxy, whitish or yellowish-gray, wart-shaped or conical granule. When the diseased leaves are placed in a moist chamber, this granule, viewed with a hand lens, is often seen to resemble a longer or shorter tendril-like string of sausages.

Due to the rotting leaves, affected plants have an unhealthy appearance, but healthy leaves are often present scattered about among the decaying ones. The decaying leaves may appear soft and wet, or dry and firm depending on the atmospheric humidity. The infected leaves often crack near the base and may
fall off if the plant is lifted or shaken. The youngest leaves, while still clasped together, may present a pure white color for a considerable length down the leaf. This white color later changes to gray.

References

Circular 18: Diseases of **Dimocarpus** spp.

◆ Witches’ Broom 10-50

**Witches’ Broom**
Feb. 8, 1974; restructured Mar. 1996

**Synonyms**
None

**Hosts**
*Dimocarpus longan* Lour. (Longan), *Litchi chinensis* Sonn. (Lychee), (it is possible to transmit the agent to *L. chinensis* by grafting).

**Distribution**
China, Hong Kong

**Symptoms**
According to a report by Li (1955), the disease was first recognized in 1948 in Southeast China. As far as is known, this is the **only** disease reported on longan fruit trees growing in China and Hong Kong. The longan is cultivated for its fruit; and the wood is a valuable source of timber.

Infected trees observed by Li (1955) usually showed narrow and crinkled leaves with different degrees of yellowing along the veins. These symptoms are especially evident on young leaves. On young twigs, malformed leaves usually fall off prematurely while buds at the basal portion of the same twig soon develop into shoots with very short internodes. These again carry deformed thread-like leaves that also fall of prematurely, leaving a bunch of leafless twigs resembling a witches' broom.

Flowering panicles show a crowded condition of the flowers, which are deformed and soon drop off. The flowerless panicles then resemble a broom. These conditions seriously reduce the production of fruit. So and Zee (1972) report (from Hong Kong) that infected trees show leaves with symptoms of malformation and vein clearing, and accompanied by systemic necrosis and slight blisters. On the new growth, young leaves of diseased trees are smaller than healthy ones, duller in color, and with rolled margins. Although the virus
appears to be systemic, So and Zee (1972) found that not all branches of an infected tree will show symptoms of the disease.

**Transmission**
The agent may be transmitted by grafting and by seed from diseased trees.

**Vector**
The Lychee stink bug is suspected as a vector in the transmission of the virus.

**References**

---

**Circular 19: Diseases of *Diospyros* spp.**

- Circular Leaf Spot of Oriental or Japanese Persimmon (Federal Quarantine Significant) 10-51

**Circular Leaf Spot of Oriental or Japanese Persimmon**

**Synonyms**
None

**Causal organism**
*Myocosphaerella nawae*

**Hosts**
*Diospyros kaki* (Japanese persimmon)

**Distribution**
China, Japan, Korea, Spain

**Symptoms**
Fungus is characterized by circular necrotic spots on the leaves and defoliation. Early fruit maturation and premature abscission are associated with early symptom development in the trees. Fungus is consistently isolated from the margins of leaf lesions.

**References**
Circular 20: Diseases of *Eucalyptus* spp.

- *Pestalotia disseminata* (Federal Quarantine Significant) and Leaf Chlorosis Virus 10-52

**Pestalotia disseminata (Federal Quarantine Significant) and Leaf Chlorosis Virus**

Two diseases of Eucalyptus are Leaf Chlorosis Virus and *Pestalotia disseminata* Thum.

*P. disseminata* is said to cause leaf dropping or blight of infected trees. Any virus disease or any spotting or blight of Eucalyptus leaves with which a Pestalotia is associated should be investigated and called to the attention of the Postentry Quarantine Unit.

Circular 21: Diseases of *Euonymus* spp.

- Euonymus Mosaic (Euonymus-Variegation) Agent (Federal Quarantine Significant) 10-52

**Euonymus Mosaic (Euonymus-Variegation) Agent (Federal Quarantine Significant)**

Revised and restructured Mar. 1996

**Causal Organism**

*Marmor euonymi* Holmes

**Synonyms**

Euonymus infectious chlorosis (virus) Baur

**Hosts**

*Euonymus japonicus* Thunb., *E. fortunei* (Turez.) Hand.-Mazz. (*E. radicans* Sieb.)

**Distribution**

Europe and Japan

**Symptoms**

According to Baur (1908), infected leaves show a rather wide yellow border and the center is mottled green or greenish-yellow; also, young leaves show a yellow venation rather distinctly. As the leaves become older, the discoloration can only be detected by transmitted light. The pattern is like that of the variegated *Euonymus japonica* var. *aureo-marginata* Hort.
Brierley (1944) gives the following description attributing it to Rischkow (1927). “Chlorosis appears as pale streaks, continuous or interrupted, along the veins of young leaves. These mask with further growth of leaf, but pale flecks appear in the mesophyll which persist in fully-expanded leaves.

**NOTICE**

Noninfectious variegated varieties of Euonymus also occur. These show a white or yellow margin surrounding the normal green central portion of the leaf. The distinguishing feature of the infectious variegation is the mottling of the central green area, which is best seen by transmitted light.

**Figure 10-22 Euonymus Mosaic**

**References**

2. Brierley, P. 1944. Viruses described primarily on ornamental or miscellaneous plants. P.D.R. Suppl. 150:145; 150; 184-85; 414; 436-37; 437; 448-49; 475.


Circular 22: Diseases of Fraxinus spp.

- Ash Canker Disease (Federal Quarantine Significant) 10-54
- Fraxinus Other Virus Reports 10-56
- Fraxinus Variegation Virus 10-58

Ash Canker Disease (Federal Quarantine Significant)
Revised and restructured Mar. 1996

Causal Organism
Pseudomonas savastanoi var. fraxini (Brown) Dowson

Synonyms
Pseudomonas fraxini (Brown) Skor., Bacterium savastanoi var. fraxini N.A. Brown

Hosts
Fraxinus spp. including F. ornus L., F. velutina Torr., F. excelsior L., and F. americana L. (A. Alba)

Distribution
Europe

Symptoms
The following description is a slightly condensed version of that given by Skoric (1938): At first, very young cankers show only one or two vertical splits in the periderm and the cell layers below it, but later, cross splits appear and the cankers become open showing the browned and blackened tissues. In later stages, the bark is more and more broken down and blackened and the wood beneath becomes blackish or browned with many cracks or splits. At the same time, the bark at the margin shows intensive growth and hypertrophy, and the annual rings in the vicinity of the canker are enlarged.

The cankers are of two types with occasional intermediate forms. In Yugoslavia, the sunken or depressed type is the most common. The verrucose type described by Van Vliet (1931) occurs but is less prevalent. At a longer or
shorter distance from the old canker there are swellings, usually a few millimeters or at most one centimeter in width, covered by undamaged bark. Beneath the bark the tissue is diseased and discolored.

In the early stages of the disease, young cankers are usually found near leaf scars, but some also develop between the internodes. They often form in a vertical line, which is thought to be due to distribution by rain water running down the trunk or branch. Small cankers of the sunken type develop in one or two years, but large cankers are found only after from ten to thirty years. When infection occurs in young trees dwarfing results, the tree does not grow beyond one or two meters tall.

According to Riggenbach, the first symptom of the bacterial infection is noted as a reddish discoloration of the cortex followed by the development of pale, elliptical spots on the stems and branches. The expansion of the spots is accompanied by an elevation of the center and a rupturing of the surface into longitudinal fissures.

Brown (1932) states, “The cankers of the European ash vary in size from small cracks with thickened margins to irregular fluted outgrowths several inches in length and width, with cavities extending into the wood. They increase in size and number from year to year on both trunk and branches.” Cankers are also said to occur occasionally on the leaves and petioles.

In another description taken from a paper by Van Vliet (1931), some anatomical details not found in those above are included. The cankers are of three forms: verrucose; depressed; and intermediate between the first two types. The verrucose cankers assume the form of large or small protuberances the entire surface of which appears covered with warts. The depressed cankers are holes in the wood surrounded by jagged edges of bark; they are of varying depth, mostly circular, but occasionally much elongated. The transitional forms include on the one hand, depressed cankers with verrucose edges, and on the other, sunken areas with a marked tendency to healing over.

In the verrucose cankers the diseased bark is composed chiefly of brown canker tissue, within which only a narrow strip is healthy. In those of the depressed type the canker tissue is restricted to the inner cortical layers on the edge of the canker. The diseased tissue contains many cork layers running approximately parallel to the cambium and often visible to the naked eye as pale lines. Between the cork layers are cavities filled with bacterial slime. Fungus hyphae and masses of needle crystals may also be present in the cavities. The much-swollen wood below the proliferated cortex is brown and dull, the annual rings are separated from one another by a brown line.
References


Fraxinus Other Virus Reports

Plakidas reported an apparently lethal virus causing a Witches’ Broom of Fraxinus berlandieri in Louisiana. Cuttings from the infected tree failed to root, but the virus was transmitted by inarching. The resulting plants formed abnormal leaves and soon died. The original infected tree was destroyed.

Novak reports from Czechoslovakia that virus symptoms on ash were transmitted to privet.

Rosette of Fraxinus americana was reported from the Botanical Gardens in Minsk, Byelorussia by Kuprevicz (1947). Although transmission tests were not indicated, symptoms consisted of apical rosetting, stunting, underdeveloped stems, deformed leaflets with down-curved margins, and small, necrotic spots. In addition, the root system was poorly developed.

Two viruses of ash have been reported by Ciferri et al. (1961) from Italy. The first, transmissible by chip-budding is named “Necrotic Leaf Curl.” Symptoms consist of vein clearing followed by necrosis, chlorotic spots of the leaf blade that become necrotic, leaf malformations, and aborted Witches’ Brooms. The second disease, named “chlorotic marbling,” is characterized as a chlorotic marbling of the leaves, especially the upper surfaces. Infection is most severe on apical leaflets resulting in some deformations.
Figure 10-23 Witches’ Broom on *F. americana*; healthy (left); foliar chlorosis (right), reduced leaf size and branch proliferation

Figure 10-24 *Fraxinus excelsior* leaflet showing a symptom of Arabis Mosaic Virus
References

1. Brierly, P. 1944. Viruses described primarily on ornamental or miscellaneous plants. P.D.R. Suppl. 150:145; 150; 184-85; 414; 436-37; 437; 448-49; 475.

Fraxinus Variegation Virus

Synonym
Fraxinus Infectious Chlorosis (Baur)

Hosts
Fraxinus spp.

Distribution
Bulgaria, England, and Germany

Symptoms
Systemic Yellow Chlorotic Leaf Spotting

Transmission
Grafting

Circular 23: Diseases of Gladiolus spp.

- Gladiolus Rust (Federal Quarantine Significant) 10-38
- Puccinia gladioli [Castagne] (Federal Quarantine Significant) 10-58
- Puccinia mccleanii [Doidge] (Federal Quarantine Significant) 10-60
- Uromyces gladioli [Henn.] (Federal Quarantine Significant) 10-62
- Uromyces nyikensis [Syd. & P. Syd.] (Federal Quarantine Significant) 10-63

Puccinia gladioli [Castagne] (Federal Quarantine Significant)
August 2005
Synonyms
*Aecidium valerianellae* Biv., *Uredo gladioli* (Duby)

Hosts
*Gladiolus* spp. and *Valerianella* spp.

Distribution
Reported on *Gladiolus* from Europe and Asia. Although telia of *Puccinia gladioli* on *Gladiolus* have not been reported from the U.S., the aecial state (*Aecidium valerianellae*) on *Valerianella* has been reported from the western U.S. as well as Europe and Asia.

Symptoms
*Telia.* Are on reddish spots, sometimes limited by the veins, minute, rounded, and densely crowded to actually running together to form a crust up to 1 cm. long. They can be found on the upper or lower surface of the leaf. They often cover much of the leaf surface and are compact and chestnut brown to black in color. The paraphyses (sterile, upward-growing basally attached, hyphal elements) are cylindric to slightly club shaped, brown, and up to 80 μm long.

Figure 10-25 *Puccinia gladioli* telia

Source: USDA–ARS
**Description**

*Teliospores.* Are ellipsoid to clavate, apex round to acute, slightly constricted at the septum and gradually narrowing below the septum. They are 36 to 60 x 16 to 27 μm. The cell wall is smooth pale brown in color, 2 to 3 μm thick and up to 10 μm at the apex. Sometimes mesospores are present 24 to 40 x 17 to 17 μm. The pedicel is hyaline, persistent, and 10 to 60 μm long.

**Notes**

*Uredinia* are unknown on *Gladiolus* spp. Spermogonia and Aecia are found on *Valerianella* spp.

At this time this rust is not listed in CFR 319.37-2 as a Federal Quarantine Significant disease on Gladiolus. If this rust is added to that the list, the genus *Valerianella* spp. will also be regulated from Europe and Asia.

**References**


*Puccinia mccleanii* [Doidge] (Federal Quarantine Significant)

August 2005

**Synonyms**

None
Hosts
*Gladiolus ludwigii* (Hook)

Distribution
South Africa

Symptoms
*Telia.* Can be scattered or grouped, rounded to oblong, and sub-epidermal with the teliospores bursting through and surrounded by the epidermis thus presenting a powdery appearance. They can be on the upper or lower leaf surface. The telia are located between and sometimes transverse to the veins. When the telia are scattered, each can be up to 0.5 mm long and, when grouped, cover up to 1 cm of leaf surface. They are chestnut brown in color and are without paraphyses (a sterile, upward-growing, basally attached hyphal element).

Figure 10-27 *Puccinia mccleanii* telia on leaf
**Description**
Teliospores are oblong-clavate to oblong, sometimes constricted at the septum. The upper cell of the teliospores is rounded truncate, attenuated or oblique-attenuated at apex, and the lower probasical cell frequently narrower, cinnamon brown, lighter cinnamon brown in color at the base of the spore. The spores are (35 to) 50 to 60 (to 70) x (12.5 to) 14 to 17 (to 20) μm. The cell wall is 1 to 2 μm thick with the apex sometimes thicker at 4 (to 7) μm. The pedicel is up to 45 μm long, easily broken, and light cinnamon in color.

**Notes**
Spermogonia, aecia, and uredinia are unknown.

**References**

**Uromyces gladioli** [Henn.] (Federal Quarantine Significant)
August 2005

**Synonyms**
*Uromyces geissorrhizae* Henn., *U. babianae* (Doidge), *U. romuleae* (Van der Byl and Werderm), *U. romuleae* (Doidge)
Hosts

Distribution
Central and Southern Africa

Symptoms
Uredinia. Can be scattered or in grouped, irregularly round to oblong, often running together measuring up to 0.5 mm in length. They can be on the upper or lower leaf surface. The uredinia are sub-epidermal with the spores bursting through the epidermis and are yellow in color.

Telia. Can be scattered or in linear groups, oval or oblong, often irregular, and up to 1 mm in length. They can be on the upper or lower leaf surface. The telia are sub-epidermal and compact with the spores covered by the epidermis, dark brown to black in color and are without paraphyses (a sterile, upward-growing, basally attached hyphal element).

Description
Urediniospores. Are globose, subglobose or ovate, and subhyaline to pale golden brown in color. These spores are 20 to 25 x 15 to 23 μm. The cell wall is hyaline and 2 to 3.5 μm thick, minutely verrucose with scattered germ pores 6 to 9 (obscure).

Teliospores. Are chestnut brown in color, globose, subglobose, ellipsoid, ovoid, or angular through mutual pressure. The apex is usually rounded, sometimes truncate or conical. The base is round or attenuate. The spores are 20 to 37 (to 40) x 18 to 26 μm. The cell wall is smooth, 2 to 3.5 μm thick, 5 to 9 μm thick at the apex. The pedicel is persistent, brown in color near the apex, and 5 to 7 mm wide up to 75 μm long.

Notes
Spermogonia and aecia are unknown.

References

Uromyces nyikensis [Syd. & P. Syd.] (Federal Quarantine Significant)
In progress.
Circular 24: Diseases of *Humulus* spp.

- Hop Nettlehead Strain of Arabis Mosaic Virus 10-64
- Verticillium Wilt 10-66

**Hop Nettlehead Strain of Arabis Mosaic Virus**

**Synonyms**
*Chlorogenus humuli* (Holmes), Humulus Virus 2, Silly-Hill Disease Virus

**Host**
*Humulus lupulus* L.

**Distribution**
Hop Nettlehead Strain of Arabis Mosaic Virus was first described in 1895. It has been recognized in England for over 50 years. Similar, if not identical, diseases are reported from Czech Republic, Germany, Poland, Bulgaria, Slovakia, Tasmania, and the former U.S.S.R.

Citations may be found in the literature where hop nettlehead strain of Arabis mosaic virus, infectious sterility, and Krauselkrankheit are used synonymously. Present knowledge leaves this open to doubt.

English workers, as reported by Talboys (1964), recognize infectious sterility as being confined to eastern continental Europe. They feel that Krauselkrankheit, reported in Germany and other areas of eastern Europe, may be due to zinc deficiency. Furthermore, they are of the opinion that hop nettlehead strain of Arabis mosaic virus does not occur in continental Europe but is probably present in the United States.

Hoerner (1949,1954) reports virus diseases in New York and on the Pacific coast with symptoms similar to those associated with hop nettlehead strain of Arabis mosaic virus.
Symptoms
(after Blattny 1935, Burgess 1964): Shortly after new growth starts, infected plants are characterized by their many weak vines and nettle-like leaves. Infected plants do not climb well and if severely infected, they are bunched on the lower three to five feet of the support. The stems are spindly, stiff, and short. These symptoms are more evident early in the season while the weather is cool. Symptoms may become masked as the temperature increases.

Leaves are undersized and closer together than normal. Younger leaves may exhibit an upcurling of the margins. There may be a slight vein clearing evident and the leaves may stand out stiffly from the stem.

Cone production is greatly reduced. Blattny (1935) has stated that the only reliable external sign of the disease is the sterility of infected hop plants during three consecutive years.

From reports in the literature it is apparent that symptoms vary from hill to hill, with the time of year observations are made, and with the amount of growth the plant has made.

Transmission
Hop nettlehead strain of Arabis mosaic virus can be transmitted by grafting. Burgess (1964) questions whether or not it might be mechanically transmitted in instances where adjacent vines may rub together. There is also some question as to the virus being soil-borne.

Recent investigations by Legg (1964), and Legg and Ormerod (1964) indicate that Hop Line Pattern Virus predisposes hops to infection by hop nettlehead strain of Arabis mosaic virus or that Hop Line Pattern Virus is a component of hop nettlehead strain of Arabis mosaic virus itself. Further studies revealed that Split Leaf Blotch Virus plus Hop Line Pattern Virus did not produce nettlehead, so evidently Split Leaf Blotch Virus is not a component of nettlehead.

Hop Line Pattern Virus has been proven to be soil-borne. This confirms the earlier theory suggested by Burgess that nettlehead may be soil-borne.

References

**Verticillium Wilt**

**Causal Organism**
A strain of *Verticillium albo-atrum* (Reinke and Barth)

**Synonyms**
*Verticillium albo-atrum* of hops, fluctuating strain, *Verticillium albo-atrum* of hops, progressive strain

**Hosts**
The hop strain can probably parasitize many or most of the same plants as the parent species but to a varying extent.

**Distribution**
England, Germany, New Zealand, and Tasmania

The report from Tasmania names *V. dahliae* as the causal organism, but this species is *not* uniformly treated as distinct from *V. albo-atrum*. The disease caused is similar. The first reports from New Zealand also named *V. dahliae* as the fungus involved, but this was later corrected to *V. albo-atrum*. Present research (Talboys) indicates that morphological characteristics can be used to clearly distinguish between the two species. As a result, more workers are accepting *V. albo-atrum* as the species involved in hop wilt.

**Symptoms**
The virulent or progressive form appears on a few plants. The lower leaves show “first yellowing and then gradual death of more and more leaves on the vines until eventually the whole plant is dead.”

Sometimes the tissue between the veins turns dark brown while that along the veins remains yellow giving a characteristic effect the English call “tiger striping.” The dead leaves fall off leaving the stem bare. In the stem, the vascular tissue becomes brown, at first on one side, but later it may all be involved. The infected plants are doomed. The Fuggle variety is very susceptible. This is one of the most valuable commercial varieties. Some progress has been made in developing resistant varieties.
The fluctuating form of the disease is milder. The leaves show no discoloration, but there is usually swelling in the vines, and browning of the vascular tissue is evident. Although the infected plants may wilt, they eventually recover and are rarely killed.

**References**


---

**Circular 25: Diseases of *Hydrangea* spp.**

- Hydrangea Rust (Federal Quarantine Significant) 10-67

**Hydrangea Rust (Federal Quarantine Significant)**

August 2005

**Causal organism**

*Puccinia glyceriae* S. Ito

**Synonyms**

*Aecidium hydrangeae-paniculatae* (Dietel)

**Hosts**

*Hydrangea paniculata* (Siebold) and *Glyceria* spp.

**Distribution**

Japan

**Symptoms**

Spermogonia located mostly on the upper surface of the leaf and located in orange-yellow lesions.

Aecia located mostly on the lower surface of the leaf are cup shaped and pale yellow in color. The cells of the wall of an aecium are 24 to 32 x 16.5 to 22 μm. The outer wall has a pronounced warty appearance and the inner wall is much less so.

**Description**

Spermatia are yellow to brown in color, sub-epidermal, and flask shaped.

Aeciospores are globose to broadly ellipsoid. They are 19 to 26.5 x 15 to 22 μm with walls 0.7 to 1.2 μm thick and are hyaline and finely verrucose.
Notes
The uredinial and telial stages of this rust are found on species of *Glyceria* (Poaceae).

*Figure 10-29 Puccinia glyceriae*
Circular 26: Diseases of Jasminum spp.

- Bacterial Leaf Spot of Jasmine 10-69
- Chlorotic Ringspot, Phyllody, Yellow Ring Mosaic Disease (Federal Quarantine Significant) 10-70
- Jasmine Variegation Agent (Federal Quarantine Significant) 10-70
- Sampaquita Yellow Ringspot Mosaic Disease (Federal Quarantine Significant) 10-71

Bacterial Leaf Spot of Jasmine

Causal Organism

*Xanthomonas jasminii* (Rangaswami & Erwaran)

Synonyms

None

Hosts

*Jasminum sambac* (L.) Ait.
Distribution
India (Madras State)

Symptoms
The disease first appears as minute water-soaked lesions on the upper leaf surfaces. These lesions soon become yellowish-green in color and enlarge in size. The spots may then coalesce to form linear or irregular spots that give a characteristic mosaic-like appearance to the leaf. On each leaf several spots may be closely crowded, but in some varieties there may be only a few localized spots. In the case of several affected plants, there is defoliation and stunted growth. Transverse sections of the leaves clearly show the presence of bacteria in the infected tissue. No other species appears to be attacked by this bacterium.

References

Chlorotic Ringspot, Phyllody, Yellow Ring Mosaic Disease (Federal Quarantine Significant)
In progress.

Jasmine Variegation Agent (Federal Quarantine Significant)

Synonyms
None

Hosts
Jasminum officinalis L., J. humile var. Revolutum (Sims), J. Stokes, J. resolutum Sim

Distribution
Belgium, Great Britain, and Germany

Symptoms
“Yellow variegation in the leaves and young branches” (Brierley 1944). In 1713, a clergyman, John Lawrence, described it as follows: “You will find here and there some leaves tinged with yellow, even on other branches not inoculated, till by degrees in succeeding years the whole tree, even the very wood of all the branches, shall be most beautifully stripped and dyed with yellow and green intermixed.”

A similar disease, but differing in that ring spots are among the symptoms, has been reported in the Rio Grande Valley of Texas (Hort. Soc. Jour. 14:187-88).
Transmission
By budding and grafting

References
2. Brierley, P. 1944. Viruses described primarily on ornamental or miscellaneous plants. P.D.R. Suppl. 150:145; 150; 184-85; 414; 436-37; 437; 448-49; 475.

Sampaquita Yellow Ringspot Mosaic Disease (Federal Quarantine Significant)
In progress.

Circular 27: Diseases of Juniperus spp.

◆ Douglas Fir Canker (Federal Quarantine Significant) 10-22
◆ Japanese Pear Rust 10-71
◆ Juniper Pear Rust (Federal Quarantine Significant) 10-75
◆ Juniper Rust 10-76
◆ Needlecast Disease (Federal Quarantine Significant) 10-79

Japanese Pear Rust
Revised and restructured Feb. 1996

Causal Organism
Gymnosporangium fuscum R. Hedw. In DC

Synonyms
Gymnosporangium sabinae (Dicks.) Wint., Aecidium cancellatum Pers., Roestellia cancellate Rebent, Uredo cancellate Spring Saccardo or Sydow

Hosts

In addition to the species listed above, the following names have been listed as hosts but Bailey’s *Cyclopedia of Horticulture* does not recognize them or considers that they are synonyms.

Telial. *Juniperus nana* Wild and *J. tripartita* Hort.

Aecial. *Pyrus lidndley* Rehd. and *P. orientalis* Pall.

**Distribution**
Northern Africa, Asia, Europe, United States (CA), and Canada (British Columbia)

**Symptoms and Description**
Telial. Occurs on *Juniperus* spp. in Europe from March to the middle of May. It occurs on the twigs and branches. The infected areas may or may not be slightly swollen. The teliospore stalks are pressed closely together forming small, wart-like bodies, 1 or even 2 cm in length. These are the so-called telial horns. They are rather conspicuous. When moist, they are fleshy-gelatinous in texture. Their color is brown to yellowish-brown. They are peg-shaped, sometimes rather flattened. In dry weather, they deliquesce and the spores horns are greatly shrunken and are dark reddish-brown in color. Teliospores ellipsoid-fusoid 2 celled, slightly constricted tapered or rounded, 42 to 56 x 22 to 34 μm; wall yellowish to cinnamon in color, 5 to 4 μm thick. The fungus is perennial and may kill the infected branch after 3 or 4 years.
Figure 10-31 *Gymnosporangium fuscum* on *Juniperis* spp.; note dark brown telial horns and lack of branch swelling

Figure 10-32 *Gymnosporangium fuscum* on *Juniperis* spp.; telial horns expanded and gelatinized after rain
Pycnial and Aecial. Are formed on the leaves of *Pyrus* spp. The infected leaf tissue is greatly swollen and appears on the upper surface as a zonate spot either yellowish-red, (Sorauer 1932) or yellowish orange (McCain and Rosenberg 1961). These spots appear in late May or June. The pycnia appear on this colored area as minute dots. The undersurface of the spot, which is nearly colorless, bears the aecia. Those are closely crowded, ovate-conical (somewhat lemon-shaped) bodies with walls that show latticed ridges. They do not open at the apex, as is usual with aecia, but split along the sides. They are 2 to 5 mm high by 1 to 3 mm thick, and yellow to rusty brown in color. Aeciospores globose to broadly ellipsoid 23 to 37 μm diameter wall cinnamon 2.5 to 4 μm thick.

References

Juniper Pear Rust (Federal Quarantine Significant)
Revised and restructured Feb. 1996

Causal Organism
Gymnosporangium asiaticum (Miyabe ex Yamada)

Synonyms

Hosts
Telial. Juniperus chinensis. L.


Distribution
Eastern Asia and United States (East and West Coasts)

Symptoms
Pycnial. On the upper surface of the leaves, on spots, first small, punctiform and orange-yellow in color, gregarious in groups 2.5 mm in diameter, few in number, pycnospores small fusoid.

Aecial. On the underside of the leaf opposite the Pyenia on thickened, well-developed, brown spots having a beautiful, yellowish-red margin, very slender, 3 to 6 mm high, cinereous; peridium tubular, not recurved in dehiscence, irregularly torn at the end, liberating reddish-brown aeciospores.

Telial. On the leaves (needles) of Juniperus, forming reddish-brown, gelatinous masses, dark chestnut when dry, pulvinate. It may be added that the telia are small when dry measuring about 2 mm high and 1 mm thick, but when wet, they are swollen to about 15 to 20 mm in length and proportionate width. Good illustrations may be found in Jackson’s (1916) paper.
Description

**Aeciospores.** Globose to broadly ellipsoid, often slightly angular 17 to 25 μm in diameter, the wall is yellow, finely and densely verrucose, 1.5 to 2.5 μm thick, and about 6 to 8 pores, slightly thickened.

**Teliospores.** Broadly to narrowly ellipsoid, 2 celled, slightly constricted, 32 to 47 x 15 to 25 μm. The wall is yellow to cinnamon in color, 1 to 1.5 μm thick, pores 2 per cell by the septum.

References


**Juniper Rust**

December 13, 1965; restructured Feb. 1996
Causal Organism
Gymnosporangium japonicum Syd.

Synonyms
Gymnosporangium photiniae (Kern), Roestelia photiniae P. Henn., R. pourthiaeeae

Hosts
Telial. Juniperus chinensis L., J. chinensis var. pfitzeriana, Spaeth. Possibly others

Aecial and Pycnial. Heteromeles (Photinia) arbutifolia M. Roem., P. villosa (Thunb.) D.C. (Possibly) Pyrus pyrifolia (Burm.f.) Nakai (P. serotina)

Distribution
China, France, Holland, Japan, Korea, Siberia, United States (coastal areas)

Symptoms
Aecial. Described from herbarium material; no published description found. They appear on the upper surface of the leaf as reddish-yellow spots with a darker center. The darkening is caused by the presence of the tiny black pycnia that erupt through the epidermis. The spots are round with an indefinite margin, and measure 2 to 3 mm in diameter. On the lower surface the spots are yellowish to cinnamon-brown in color and are much swollen in the center; the swollen area is occupied by the aecia that are clustered there and appear to the eye as slender, light-colored hairs projecting down and outward. On the specimen examined, they are about 2 mm long.

Telial. The telia are born on the stems and twigs of Juniperus on fusiform swelling or galls. Dried telia are cinnamon-brown in color and appear villous or felty due to the telial horns.
Description

*Aecia hypophyllous*, in crowded or somewhat annular groups on thickened discolored spots, cylindric, 0.4 to 0.5 mm in diameter by 2 to 3 mm high, peridium soon becoming irregularly lacerate and cancellate often to base, erect or slightly spreading; peridial cells seen in both face and side views, broadly lanceolate or oval in face view, 29 to 32 x 64 to 90 μm, oblong in side view, 23 to 32 μm thick, coarsely rugose on both inner and side walls, the ridges becoming much higher on the side walls and extending clear across. Outer wall 1.5 to 2 μm thick, inner and side wall 5 to 7 μm; aeciospores, 18 to 21 x 19 to 23 μm, wall pale cinnamon-brown in color, 1.5 to 2 μm thick, and very finely verrucose.

*Telia caulicolous*, appearing on gradual fusiform enlargements scattered irregularly wedge-shaped, often incised at apex and lacunose below, 3 to 5 μm high, cinnamon-brown in color, teliospores 2-celled ellipsoid, 18 to 22 by 57 to 66 μm, not or very slightly constricted, usually narrowed above and below, wall pale cinnamon-brown, rather thin, 1 to 1.5 μm; pores 2 in each cell, near the septum.

References


**Needlecast Disease (Federal Quarantine Significant)**

Revised and restructured Feb. 1996

**Causal Organism**

*Stigmina deflectens* Karst Ellis

**Synonyms**

*Exosporium deflectens* Karst.

**Hosts**

*Juniperus* spp.

**Distribution**

Austria, Finland, Romania, USA (SD)

**Symptoms**

Minute brownish fruiting bodies of the fungus are arranged along the sides of the median veins of the upper side of the needles, but these fruiting bodies do not appear until the leaves have begun to turn brown.

As both the leaves of Juniperus and the fruiting bodies are very small, and because many other rather similar fungi may also be present on the leaves, it is unlikely the disease can be recognized by the macroscopic symptoms. If there is reason to suspect *S. deflectens* is present, submit for microscopic examination any twigs showing dead brown leaves and needle shedding to the Postentry Quarantine Unit.

**Description**

Stomata up to 200 \( \mu \text{m} \) wide, and dark brown in color. Conidiophores are 6 to 15 x 2.5 to 4 \( \mu \text{m} \) with up to 4 annellations. Conidia are brown in color, verruculose, 2 to 3 septate, 11 to 19 x 4 to 5.5 \( \mu \text{m} \).

**References**

Circular 28: Diseases of Larix spp.

- Douglas Fir Canker (Federal Quarantine Significant) 10-22
- European Larch Canker (Federal Quarantine Significant) 10-80

European Larch Canker (Federal Quarantine Significant)
In progress.

Circular 29: Diseases of Ligustrum spp.

- Ligustrum Mosaic Agent (Federal Quarantine Significant) 10-80

Ligustrum Mosaic Agent (Federal Quarantine Significant)
Revised and restructured Feb. 1996

Synonyms
Ligustrum Variegation Virus, Ligustrum Infectious Chlorosis, Marmor ligustri Holmes

Hosts
Ligustrum vulgare L. (Common Privet)

Distribution
Europe

Symptoms
Clear yellow leaf spotting (Brierly 1944) and systemic chlorotic spotting (Holmes 1939) have been reported. Baur (1907) wrote that the chlorotic plants he produced by budding and grafting had “yellow spotted leaves” as those found on Ligustrum vulgare var. aureovariegatis.
Another virus designated as “crinkle mosaic” (Schmelzer 1962) and regarded as a strain of Arabis mosaic virus was obtained from expressed leaf sap of plants infected by crinkle mosaic. This virus produces marked necrotic symptoms on a number of different hosts.

**NOTICE**

A virus designated as "yellow spot" was investigated more recently by Schmelzer (1962) who reported that it **does not** belong to the ring spot group of viruses. It was transmitted from Ligustrum to Ligustrum by grafting.

Another virus designated as “crinkle mosaic” (Schmelzer 1962) and regarded as a strain of Arabis mosaic virus was obtained from expressed leaf sap of plants infected by crinkle mosaic. This virus produces marked necrotic symptoms on a number of different hosts.

**Transmission**

By budding and grafting; **not** transmitted through the seed.

**References**


3. Brierley, P. 1944. Viruses described primarily on ornamental or miscellaneous plants. P.D.R. Suppl. 150:145; 150; 184-85; 414; 436-37; 437; 448-49; 475.


Circular 30: Diseases of *Litchi* spp.

- *Phytophthora litchii* (Federal Quarantine Significant) 10-82
- Witches’ Broom 10-50

*Phytophthora litchii* (Federal Quarantine Significant)

July 2012

**Synonyms**

*Peronophythora litchii*

**Hosts**

*Dimocarpus longan* (longan); *Litchi chinensis* (litchi/lychee)

**Distribution**

China, Thailand, Vietnam, Taiwan, Japan, and Papua New Guinea

**Symptoms**

Fruit has downy blight; droopy leaves and leaf blight; immature plants present with water-soaked lesions that turn into brown, round, or irregular lesions (approximately 3 to 5 cm long), mature plants present with dark bron lesions on the stem and numerous sporangia on sporangiophores

**References**


Circular 31: Diseases of *Malus* spp. and *Pyrus* spp.

- Apple Branch Canker 10-83
- Apple Canker 10-85
- Apple Mosaic Virus 10-86
Apple Proliferation Phytoplasma (Federal Quarantine Significant) 10-89
Chlorotic Leafspot Virus 10-89
Japanese Pear Rust 10-75
Rough Bark (Phompsis Canker) (Federal Quarantine Significant) 10-90
Rubbery Wood Phytoplasma (Federal Quarantine Significant) 10-92
*Valsa ceratosperma* (V. mali) (Federal Quarantine Significant) 10-92

**Apple Branch Canker**
Revised and restructured Feb. 1996

**Causal Organism**
*Valsa ceratosperma* (Tode ex Fr.) Maire (Perfect state), *Cytospora sacculus* (Schwein.) Gvritischvili (Imperfect state)

**Synonyms**
*Valsa mali* (Miyabe and Yamada)

**Hosts**
*Malus pumila* Mill., M. X. zumi Mats. Rehd. (*Populus nigra* Linn., *Salix sachalinensis* Friedr. Schmidt., *Prunus serrulata* Lindl., and *P. yedoensis* Mats. have been inoculated successfully, but infection died out within one year.)

**Distribution**
Japan, China, and Korea

**Symptoms**
In the early spring, the bark presents a swollen, water-soaked appearance especially when wet. The spots are brownish in color, irregular or nearly oblong in circumference, with gradual drying, the somewhat elevated canker becomes slightly sunken, more or less darkened, and cracked on the surface. Cankers are usually found on the upper side of large limbs of older trees. A large number of small, black pycnidia appear in late May on recent lesions, and spore horns are visible approximately one month later. A girdling type of injury has also been observed on weakened branches and small twigs. Girdling is rare in the first year of infection.
**Description**

Pycnidia and perithecia of the pathogen occur in a stroma in the bark, punctiform or wart-like, of various sizes (in culture 1 to 3 mm in diameter), junction with the sound tissue indefinite, black; pycnidia deeply immersed in the stroma, divided into many irregular chambers (Togashi 1924) flask-shaped (Tanaka 1919), opening by a slender, canal-like neck, 80 to 200 μm in diameter; conidia cylindrical or allantoid, obtuse at both ends, 4 to 10 x 8 to 1.7 μm (Togashi 1924), expelled in yellow (Togashi 1924), buff (Tanaka 1919) cirri; perithecia circinate surrounding the pycnidial cavity, flash-shaped, long-necked, with black walls, the necks thickened above and slightly protruding, 100 to 250 μm in diameter; asci numerous, clavate, often pedicellate, 24 to 42 x 5.5 to 15 μm hyaline, 8-spored, aeparaphysate; ascospores cylindrical, slightly curved continuous, hyaline, 7 to 10 x 1.4 to 2.1 μm.

**Notes**

The disease is reported to have seriously damaged a large number of apple trees in Japan, where it is said to have appeared following the introduction of American apple varieties. Its appearance at that time might be explained either by the introduction of the disease on the American varieties, or by increased virulence of a Japanese fungus on an introduced host. Suggesting the first of these explanations, Togashi (1924) states the Valsa mali corresponds better to the description of the disease described by Leonian (1921) in New Mexico than does V. leucostoma (Pers.) Fr. to which Leonian (1921) attributed it. This statement apparently applies only to the disease caused by the fungus and its visible symptoms as Leonian (1921) did not give the characters of the organism, V. leucostoma, in his paper. The description of the latter fungus (Saccardo 1888) shows differences in the shape of the asci, and in the size of the ascospores.

**References**


**Apple Canker**

**Causal Organism**

*Perfect State.* Physalospora piricola Nose

*Imperfect State.* Macrophoma kuwetsukai Hara

**Hosts**

*Malus sylvestris* Mill. (apple) *Pyrus communis* L. (pear)

**Symptoms**

*On Trunks and Branches.* Lesions are nearly circular to elliptical except when, by coalescence, they become irregular in shape. Separated from the sound tissue by a crack or crevice around the margin, and slightly depressed, brown to gray in color, many fruiting bodies on the surface, which is raised at the center and, at the last, broken open.

*On Leaves.* Brown to dark brown spots are formed that are rather round or elliptical surrounded by a ring, but when the spots become confluent, they take irregular shapes.

**Description**

(after Nose 1933) Perithecia, ostiolate, carbonous, black, spherical or semispherical, 230 to 300 μm high by 130 to 280 μm wide (average 245 x 229 μm); asci 8-spored, several of different ages, develop on the base, long clavate wall rather thin except at the apex, inner wall grooved, 93 to 121.3 x 20.3 to 23.2 μm (average 114.4 x 22.2 μm); ascospores distichous, elliptical, hyaline or greenish-blue in color, continuous, 21.7 to 22.6 x 10.4 to 12.2 μm (average 22.2 x 11.4 μm) no gelatinous sheath; paraphyses many, hyaline, simple, 2.9 to 6.1 μm thick.

Pycnidia submerged, ostiole short, carbonous, dark brown nearly spherical, 170 to 250 high x 200 to 250 μm wide (average 184 to 204 μm); conidiophores lining the whole wall, clavate, hyaline, continuous, simple, 11.6 to 31.9 x 2.9 to 4.4 μm (average 20.30 x 3.19 μm); pseudoparaphyses hyaline, non-septate unbranched 34.8 to 63.8 x 2 to 3.5 μm (average 47 x 2.9 μm); conidia fusoid or long elliptic, hyaline, continuous, 21.8 to 31.9 x 6.7 to 8.7 μm (average 26.5 x 7.5 μm).

Perithecia and pycnidia may be intermixed on the same lesion.
References

Apple Mosaic Virus

Synonyms
Infectious Variegation, Line Patter, Mottle Leaf, Mosaic Chlorosis, Pear, Ring Patter Mosaic, Pyrus Virus 2

Time of Year to Inspect
Within six weeks after leaves are fully out

Symptoms
*Plant.* Somewhat stunted compared to healthy plants of the same age.

*Leaf.* Has many forms of mottling. Small irregular yellow-to-cream spots that stand out vividly against the dark green of normal tissue. Spots turn brown and become necrotic as the season progresses. Bands of yellow may develop along the larger veins.

*Stems.* None

*Fruit.* None

*Flowers.* None

Transmission
Mechanical and grafting

Discussion
There are several strains of Apple Mosaic Virus. In New Zealand tests, severely infected trees, after several years of production, yielded only 33% of the fruit of healthy trees grown under similar situations.

Distribution
Argentina, Australia, Austria, Belgium, Brazil, British Isles, Bulgaria, Canada, Chile, China, Czechoslovakia, Denmark, Finland, France, Germany, Holland, India, Italy, Japan, Kenya, Latvia, New Zealand, Norway, Poland, Rhodesia, Romania, South Africa, Sweden, Switzerland, Turkey, United States, U.S.S.R., and Yugoslavia.
Figure 10-37  Distribution of Apple Mosaic Virus

Figure 10-38  Bark cankers (right) on second-year wood of Pyrus variety of “Winter Nelis” caused by Pear Blister Canker Viroid
Figure 10-39  Roughening, brown mottling and blistering (right) of second-year wood of *Pyrus* spp. “pattern”; symptoms caused by Pear Blister Canker Viroid

References


Apple Proliferation Phytoplasma (Federal Quarantine Significant)

**Causal Organism**

*Candidatus Phytoplasma mali* (Seemuller & Schneider) (Federal Quarantine Significant)

**Host**

*Corylus avellana*

**Symptoms**

Yellowing, sparse foliage, stunting, dieback, and general decline

For further information, *See Apple Proliferation Phytoplasma (Federal Quarantine Significant)* on page 10-29.

**Chlorotic Leafspot Virus**

**Hosts**

*Malus* spp.

**Distribution**

Canada and United States
Symptoms
This is a virus disease of apple that might be confused with Apple Mosaic. In this disease the patterns are quite similar to the line pattern and flecking expressions of Apple Mosaic but the color does not progress to yellow or white. In fresh leaves the lines and flecks are a faint grayish-white in color.

According to Welsh and Keane (1961) “Leaves of infected trees have chlorotic flecks associated with veins and veinlets. These are usually accompanied by leaf puckering and dwarfing. Symptoms are most severe on the leaves that develop early in the season.” Chlorotic leafspot symptoms have also been associated with stem pitting symptoms.

References

Rough Bark (Phomopsis Canker) (Federal Quarantine Significant)
Revised and restructured Mar. 1996

Causal Organism
Perfect state. Diaportle perniciosa Em. Marchal

Imperfect state. Phomopsis mali Roberts

Synonyms
D. eres Nitschke and D. mali Miura

Hosts
Malus spp. and Pyrus spp.

Distribution
Japan, Europe, and North America

Symptoms
Pale, discolored spots are produced on the leaves measuring 1 to 2 cm in diameter. Spotted leaves become curled, and finally fall before their time.
On the fruits, mature spots measure 2 to 8 mm in diameter. They are round, solitary, or irregularly coalescent, more or less sunken, usually deeper in color than the surrounding tissue. The underlying tissue is brown to dark-brown in color, of spongy texture, and has a slightly bitter taste.

**Description**

**D. perniciosa.** Produces perithecia on twigs that are spheroid or oblate spheroidal, 300 to 450 μm in diameter, outer wall intensely black, inner wall light brown, beaks long, conspicuously hairy near the end; asci fusoid, obtuse above, somewhat pedicellate below, 45 to 52 x 5 to 10 μm, 8-spored; ascospores biseriate, fusoid, both ends obtuse, 1-septate, constricted, 2-nucleate in each cell (guttulate?) hyaline, 11 to 13 x 3.5 to 4.5 μm.

**Phomopsis.** Pycnidia of the Phomopsis state on decayed fruit, numerous, irregular, scattered or in concentric zones, later covered by white or olivaceous-white, cottony hyphae, semi-spherical, 70 to 220 x 70 to 130 μm, conidia issuing in a pinkish-brown cirrus or mass, of two kinds A-spores ellipsoidal, acute at both ends, continuous, hyaline, guttulate at both ends, 7 to 9 x 3 to 4 μm; B-spores filiform, slightly curved, or may be hooked near the end cylindrospores are also produced. Chlamydospores in chains, cinereous or greenish, thick-walled, granulate, 10 to 14 x 5 to 8 μm; cylindrospores straight or curved, tapering towards the apex, pale pinkish-brown in mass, colorless or greenish when alone, 2 to 7 septate, occasionally constricted at the septum, 38 to 80 x 3 to 4 μm.

**References**

Rubbery Wood Phytoplasma (Federal Quarantine Significant)

Hosts
Malus spp.

Distribution
Australia, Canada (B.C.), Denmark, England, Italy, New Zealand, Norway, Sweden, Switzerland, The Netherlands, and United States (experimental plantings only)

Symptoms
(after Brase and Gilmer 1959) Affected trees are slightly stunted and their branches and trunks are very definitely rubbery when touched or bent. In each case the side branches developing from the trunk showed the characteristic “bottle-neck” growth habit associated with rubbery wood; that is, thickening at a point near the origin with an abrupt and pronounced taper of the growth from there outward.

Smith (1972) stated that “affected maiden trees frequently develop a vigorous side branch from a point a few inches above ground level and this branch may outstrip the leader.” The wood is not fully lignified as can be seen when a branch is cut across and properly stained. No diagnostic fruit or leaf symptoms have been recognized.

References

Valsa ceratosperma (V. Mali) (Federal Quarantine Significant)
In progress.
Circular 32: Diseases of Mangifera spp.

- *Ceratocystis manginecans* (sudden decline of mango) 10-93
- *Ceratocystis mangicola* (Sordariomycetes: Microascales) 10-94
- *Ceratocystis mangivora* (Sordariomycetes: Microascales) 10-94
- *Fusarium sterilhyphosum* (Federal Quarantine Significant) 10-95
- *Fusarium tupiense* (Sordariomycetes: Hypocreales) 10-96
- *Pseudofusicoccum stromaticum* (Dothideomycetes: Botryosphaeriales) 10-97
- *Xanthomonas campestris* pv. mangiferaeindicae 10-98

### Ceratocystis manginecans (sudden decline of mango)

**Causal Organism**

*Ceratocystis manginecans*

**Synonyms**

Mango killer

**Hosts**

*Mangifera indica*

**Distribution**

Oman, Pakistan, and United Arab Emirates; is now spreading from the eastern region of Sharjah Emirate to the Bathnah, Masafi, Dhena, Dabaa, and Kalbaa regions.

**Symptoms**

Disease characterized by sudden browning and wilting of leaves on mango trees, branches gradually drying out until the whole plant dies.

**Transmission**

The primary insect vectors are fungal-feeding insects (*Nitidulidae, Coleoptera*) not associated with particular plants. Ambrosia beetles such as *Xyleborus* and *Hypocryphalus* species may facilitate the fungal dispersal by tunneling through infested wood and expelling frass with fungal spores.

The pathogen can also be transmitted through various kinds of infected host debris, i.e., infected insect frass and sawdust spread by wind, rain, or running water. The pathogen can also be transferred from wood or wood packaging material on infected insect frass, sawdust, or on cutting tools and other equipment.
Notes
The fungus prevents the movement of water and nutrients from the roots to the branches and twigs of the mango tree. The fungus is currently a reportable, actionable pest. Postentry quarantine status applies to plants being grown for fruit production only.

References
1. Thorpe et al., 2005.
4. 7 CFR 319.37-7(b).

Ceratocystis mangicola (Sordariomycetes: Microascales)
November 22, 2011

Hosts
Mangifera indica (mango)

Distribution
Brazil

Symptoms
Symptoms of mango blight including wilting of stems, leaves, and flowers

Notes
Associated with the wood-boring beetle Hypocryphalus mangiferae (Coleoptera: Curculionidae). Little information is available regarding the host range and distribution. Ceratocystis mangicola (Sordariomycetes: Microascales) is listed as reportable in the PEST ID database.

Reference

Ceratocystis mangivora (Sordariomycetes: Microascales)
November 22, 2011

Hosts
Mangifera indica (mango)

Distribution
Brazil
Symptoms
Symptoms of mango blight including wilting of stems, leaves, and flowers

Notes
Associated with the wood-boring beetle Hypocryphalus mangiferae (Coleoptera: Curculionidae). Little information is available regarding the host range and distribution. Ceratocystis mangivora (Sordariomycetes: Microascales) is listed as reportable in the PEST ID database.

Reference

Fusarium sterilihyphosum (Federal Quarantine Significant)

Causal Organism
Fusarium sterilihyphosum

Synonyms
Mango malformation disease (MMD)

Hosts
Mangifera indica

Distribution
Southern Senegal (Kolda, Sedhion, and Ziguinchor regions), Egypt, and South Africa

Symptoms
Disease characterized by malformation of flowers that prevent fruit from setting by transforming flowers into leaves as well as malformation on seedlings and even on big trees, causing distortion of the apical buds and mummification.

Transmission
The disease is normally spread over long distances by infected seedlings or grafting buds. Locally, infested parts spread the disease to the entire tree or orchard. Flowers, seedlings, branches, and leaves and older trees show symptoms of MMD where fungus develops spores (a primary source of infection) especially during the rainy season. Spores are spread by mango mites or by the wind to infect other trees and orchards.
Notes
There are two additional identified fungus species known to cause MMD: *F. mangiferae* and *F. subglutinans*. There is also another species that has never been identified and reported, but is similar to *F. sterilhypshosum* in outward appearance. Research is being conducted to identify this new species. *F. mangiferae* is reportable/actionable pending APHIS evaluation of implementing official control with input from the National Plant Health Board. Commonwealth regulatory issues may exist. *F. subglutinans* (teleomorph: *Gibberella subglutinans*) is non-quarantine significant.

Within three years MMD could reportedly cause losses of up to 98% of mango production in Senegal, not to mention the probability of affecting the West African region which is already under attack of fruit fly species such as: *Bactrocera invadens*, *B. cucurbite*, *Ceratitis cosyra*, and *C. capitata*.

References
1. International Institute of Tropical Agriculture (IITA)
2. U.S. Department of Agriculture (USDA)
3. International Plant Diagnostic Network (IPDN)
4. Agricultural Services and Producer Organizations Program (PSAOP)
5. Dr. Lamine Senghor, Laboratory of Plant Pathology at the Ministry of Agriculture’s Direction de la Protection des Vegetaux (Crop Protection Directorate (DPV))

**Fusarium tupiense** (*Sordariomycetes: Hypocreales*)
July 2012

**Causal Organism**
*Fusarium tupiense* (*Sordariomycetes: Hypocreales*)

**Symptoms**
Mango malformation disease including vegetative parts and flowers

**Distribution**
Brazil

References
**Pseudofusicoccum stromaticum** (Dothideomycetes: Botryosphaeriales)

September 14, 2011

**Causal Agent**

*Pseudofusicoccum stromaticum* (Dothideomycetes: Botryosphaeriales)

**Hosts**

*Mangifera indica* (mango); *Eucalyptus* spp.; and *Acacia mangium* (black wattle)

**Distribution**

Brazil and Venezuela

**Symptoms**

Dieback

**Notes**

*Pseudofusicoccum stromaticum* (Dothideomycetes: Botryosphaeriales) is not known to occur in the United States.

**References**

Xanthomonas campestris pv. mangiferaeindicae

June 2011

Causal Organism
Xanthomonas campestris pv. mangiferaeindicae (Gammaproteobacteria: Xanthomonadales)

Synonyms
X. citri pv. mangiferaeindicae

Host
Mangifera indica (mango) and Anacardium occidentale (cashew)

Notes
Xanthomonas campestris pv. mangiferaeindicae is an economically important pathogen of mango and Anacardium occidentale (cashew) and is reportable in the PEST ID database.

Symptoms
Raised, angular, black lesions

Distribution
Africa, Asia, Australia, Brazil, Burkina Faso, and New Zealand

References

Circular 33: Diseases of Morus spp.

◆ Mulberry Rust (Federal Quarantine Significant) 10-98
◆ Mulberry Mosaic Agent (Federal Quarantine Significant) 10-99

Mulberry Rust (Federal Quarantine Significant)

Synonyms
Aecidium mori (Barclay) Dietel, Caema mori Barclay, Peridiopsora mori (Barclay) Sacc., Uredo mori (Barclay) K.V. Prasad

Hosts
Broussonetia spp. and Morus spp.
**Distribution**
Afghanistan, China, India, Indonesia, Japan, Korea, Myanmar (Burma), Pakistan, Philippines, Taiwan, Thailand, and Timor-Leste

**Symptoms**
*Aecia*. Located on both the upper and lower surface of the leaf. They can be solitary or in groups, sometimes densely clustered on leaves, buds, and branches, also on the veins and petioles. They can be in elongated clusters up to one centimeter long causing distortion and excessive host tissue growth. The aecia are cup shaped and deeply immersed in the plant tissue.

**Description**
*Aecia*. peridia are prominent, easily splitting vertically with the cells oblong to polygonal, 14 to 31 x 10 to 21 μm the inner wall 0.5 to 1 μm thick and verrucose. The outer wall is 3.5 μm thick, smooth to finely verrucose.

*Aeciospores*. angularly globose to ellipsoid, densely and minutely verrucose, hyaline to pale yellow. They are 11 to 20 x 9 to 17 μm with walls 1.5 μm thick.

**Notes**
Spermogonia, uredinia, and telia are unknown.

**References**

**Mulberry Mosaic Agent (Federal Quarantine Significant)**
Revised and restructured Feb. 1996

**Synonyms**
Mulberry Mosaic, Mulberry Virosis Virus, Mulberry Dwarf Phytoplasma, Mulberry Mosaic Agent

**Hosts**

**Distribution**
China, India, Japan, Korea, Thailand, and former Soviet Union
Symptoms
Chlorotic patches of various sizes and shapes are found on the leaves. Diseased leaves are very much puckered and become papery. Malformation of the leaves is also very characteristic of the disease particularly on the younger leaves. Tu (1932) adds that the plants may be stunted and the leaves mottled. Brierley (1944), crediting Endo and Kurasawa (1937), states that there may be enations on the under surface of the leaves and that rosetting and proliferation of lateral buds may occur. Intracellular bodies occur in epidermal and mesophyll cells.

Transmission
By grafting

References
1. Brierley, P. 1944. Viruses described primarily on ornamental or miscellaneous plants. P.D.R. Suppl. 150:145; 150; 184-85; 414; 436-37; 437; 448-49; 475.
5. CFR 319.37§2.

Circular 34: Diseases of Olea spp.

◆ Olive Latent Ringspot Virus 10-100
◆ Olive Partial Paralysis Virus 10-101
◆ Olive Sickle Leaf Virus 10-102

Olive Latent Ringspot Virus
This virus is naturally occurring and produces no symptoms in Olea. It has been reported from Italy. The virus particle is a sphere of about 28 nm in diameter. The virus was experimentally transmitted by sap inoculation to seven species of common virus indicators. Infection can be determined only by virus indexing.

NOTICE
Additional symptomless infections of Olea are caused by the viruses Arabis Mosaic, Cherry Leaf Roll, and Strawberry Latent Ringspot.
References

Olive Partial Paralysis Virus
Revised and restructured Mar. 1996

Synonyms
None

Hosts
Olea europaea L., Ligustrum sinense Lour.

Distribution
Argentina

Symptoms
The disease known as “partial paralysis” of olive was reported by Nicolini and Traversi (1950) to be of serious concern to olive growers in Argentina.

The first symptoms observed on young plants consist of chlorotic, curled leaves on secondary twigs to which they remain adhering on desiccation. Later the entire branch shrivels from the tip downward. A dark reddish-purple band appears on the bark. Later, other branches manifest this same condition and the plant ultimately dies.

Leaf tips often show a yellow bronzing spreading toward the middle, which terminated abruptly, leaving the rest of the leaf apparently normal. The necrotic area remains firmly attached. Many leaves, especially of the new buds, show a mosaic pattern with darkening of the midrib.

Symptoms vary from year to year depending on growing and climatic conditions. Under favorable conditions, diseased trees appear to recover.

Sections of twigs from diseased plants have a strong fermentation odor. Many rootlets are decayed. Internally there is a progressive disorganization of the cambium and phloem. The thin cambium zone increases in width due to the rapid multiplication of cells. Disorganization of the cambium ensues and may extend, in severe cases, as far as the secondary xylem, which becomes chestnut to nearly black in color. Heavy starch deposits may be found in the palisade and spongy tissues of leaves. The number of chloroplasts is reduced. Malformations are confined to the young cells.
A very similar disease, Progressive Decline of Olive, is reported from Italy by Biraghi and Naldi (1948). It has not been proven that the disease is caused by a virus.

Transmission
The virus was transmitted to privet (*Ligustrum sinense*) by grafting buds or scions.

References

Olive Sickle Leaf Virus
The disease, in a severe form, could be a threat to the olive industry in the United States.

What appears to be the same disease has been reported in Chile, Italy, Greece, Portugal, the United States (CA), and possibly Israel.

Ciferri et al. (1953), McCartney (1973), and Thomas (1958) describe various malformations of olive leaves. The various symptoms include leaves that are sickle-shaped, chlorotic, deformed, blotched, streaked, curved, puckered, and are light-green in color with white markings.

Affected branches may be stunted and the amount of the fruit reduced. The disease appears in individual branches. Diseased plants are bushy in appearance.

References
Circular 35: Diseases of *Passiflora* spp.

- Cucumber Mosaic Virus 10-103
- Passion Fruit (*Passiflora*) Mosaic Virus 10-104
- Passion Fruit (*Passiflora*) Woodiness Virus 10-105

### Cucumber Mosaic Virus

**Synonyms**
*Marmor passiflorae* Holmes., Passionfruit Woodiness Virus, *Passiflora* Virus 1 (Noble) K.M. Smith, Passionfruit Bullet Disease Virus

**Hosts**
*Passiflora caerulea* L., *P. edulis* Sims., alba Link and Otto., *P. foetida* L., *P. suberosa* L. and *P. subpeltata* Ort. (P. Alba)

**Distribution**
On *Passiflora* in Australia (New South Wales and Victoria), Kenya, New Zealand, and USA (CA). The distribution on other hosts is very widespread.

**Symptoms**
The symptoms are most pronounced in the cooler months, sometimes disappearing in the summer. The whole plant or only individual branches may be affected. The first symptom is downward curling of the terminal leaves. This is followed by light-colored spotting or vein clearing of the young leaves. Cleared areas along the veins increase in width until leaves or portions of them become chlorotic. Small, irregular or circular islands of dark-green are sometimes present on such leaves. In subsequent years, symptoms are not so conspicuous, but young leaves show distortion and savoying. Scattered light-colored areas or vein clearing may also be present. Older leaves are crinkled, misshapen, and smaller than normal. Plants are stunted. According to Smith (1972), the stems, particularly in the region of the terminal shoots, may develop mottled dark-green areas that strongly contrast with the normal green of the stems.

The fruits of infected plants are smaller than normal, malformed, and the surface may be roughened and cracked. In contrast to the somewhat ovate normal fruit, they tend to be spherical, hence the name, Bullet Disease. They are hard when cut and sections of the rind are found to be thickened and woody. The contents are either dry or the pulp is reduced and insipid.
It is unlikely that fruits will be found on the plants in detention; therefore, the stem and leaf symptoms will be the most useful.

**NOTICE**

Although Cucumber Mosaic Virus is present in California on *Passiflora* and on other hosts in other states, its destructive nature on *Passiflora* would destroy the usefulness of infected plants for all ordinary purposes.

**References**


**Passion Fruit (*Passiflora*) Mosaic Virus**

**NOTICE**

This disease is not known to be present in the United States.

**Synonyms**

None. However, this disease was confused with Passionfruit Woodiness Virus and discussed under that name by workers in Queensland, Australia.

**Hosts**


**Distribution**

Nigeria and Australia (Queensland)

**Symptoms**

The symptoms are similar to those of Cucumber Mosaic Virus on *Passiflora* spp. Martini (1962) states that leaf mottling is the only reliable symptom. This seems to overlook the fruit symptoms.
Notes
The two diseases can be distinguished, according to Martini (1962), by indexing to various host plants. Passionfruit Mosaic Virus is systemic only in *Passiflora*, and also by the size and shape of the purified virus particles. Neither of these tests can be used in the field. Therefore, the practice should be to destroy plants if found showing these symptoms. If plants imported for scientific purposes should be involved, the case should be referred to the Postentry Quarantine Unit for consideration.

NOTICE
Although Cucumber Mosaic Virus is present in California on *Passiflora* and on other hosts in other States, its destructive nature on *Passiflora* would destroy the usefulness of infected plants for all ordinary purposes.

References

Passion Fruit (*Passiflora*) Woodiness Virus
Revised and restructured Feb. 1996

Hosts

Distribution
Australia (Queensland, New South Wales, and Western Australia) and Surinam

Symptoms
Causes mosaic, ringspots, rugosity and leaf distortion of *P. edulis*. The fruits are frequently distorted and the pericarp hard and thick. The productive life of the plants is greatly decreased. *P. suberosa* is a much more tolerant host.

Description
Virus particles are flexuous rods about 750 x 12 nm.

Transmission
By sap and grafting.

Vectors
In a nonpersistent manner by the aphids *Myzus persicae* (Taylor) and *Aphis gossypii* (Greber).
Notes
Both Passionfruit Woodiness Virus and Cucumber Mosaic Virus (description following) cause leaf mosaic and woody fruit symptoms. Electron microscopy can differentiate between the two since Passionfruit Woodiness Virus is a flexuous rod and Cucumber Mosaic Virus is a spherical particle. However, infection by both can occur. To determine if this has happened, inoculating and reading the resulting symptoms on diagnostic hosts can confirm or deny this occurrence.

References

Circular 36: Diseases of *Philadelphus* spp.

- **Elm Mottle Virus (Federal Quarantine Significant)** 10-106

**Elm Mottle Virus (Federal Quarantine Significant)**
In progress.

Circular 37: Diseases of *Picea* spp.

- **Douglas Fir Canker (Federal Quarantine Significant)** 10-22
- **Rhododendron-Spruce Needle Rust *Chrysomyxa ledi* (Alb. & Schw.) by var. *rhododendri* (DC) Savile (Federal Quarantine Significant)** 10-106
- **Spruce (*Picea*) Needle (Cushion) Rust** 10-106

**Rhododendron-Spruce Needle Rust *Chrysomyxa ledi* (Alb. & Schw.) by var. *rhododendri* (DC) Savile (Federal Quarantine Significant)**
In progress.

**Spruce (*Picea*) Needle (Cushion) Rust**

**Causal Organism**
*Chrysomyxa abietis* (Wallr.) Unger

**Synonyms**
*Barclayella deformans* Diet., *C. deformans* Jacz. (3) (see notes), *Blennoria abietis* Wallr., *Sphaeria navicularis* Wallr., *Caeoma piceum* Hartig, *Uredo epidermoidalis* Hartig
**Hosts**


**Distribution**

Austria, Belgium, Bulgaria, Czech Republic, Denmark, France, Finland, Great Britain, Germany, Hungary, Japan, Norway, Russia, Slovakia, Sweden, Switzerland, and once found in the United States in Louisville, Kentucky where spruce and fir do not occur naturally.

**Symptoms**

The following description is taken chiefly from Sorauer’s (1932) account. On the needles of the current year's growth there appears, by the end of June, at first dull, but later, bright-colored, cross bands. (Some authors say that the cross bands, or spots, are brown at first.) The infected tissue stands out in strong contrast with the healthy tissue, bright yellow against green. In May of the second year, the fungus matures and two orange-red sori develop parallel to each other, but slightly separated. The sori break through the epidermis of the host as they ripen, exposing the spores that are soon scattered. The yellow-spotted needles then wither and fall.

**Description**

The fungus telial sori linear, in rows, waxy, yellowish-red, seated in yellow spots; teliospores cylindric, above slightly thickened (clavate), often branched, sometimes simple, up to 100 mm long by 9 to 12 μm wide, up to 12 cells, wall hyaline, contents yellowish-red in color; basidiospores globose, 4 to 6 μm in diameter, golden-red in color. The above description is according to Saccardo (1888). The description found in Sydow's monograph of the *Urediniales* (1923) gives a slightly different account. A free translation follows. **Telial sori** on the lower side of the leaf, seated on yellow or yellowish-red spots, elongate, 5 to 10 μm long .3 to .5 μm wide, and .5 μm high, golden to reddish brown in color; teliospores in chains reaching 70 to 100 μm long, oblong, smooth, 20 to 3 x 10 to 15 μm, wall hyaline, 1 μm thick.

**NOTICE**

Despite its name, this rust is predominately a disease of *Picea* (spruce) rather than *Abies* (fir). No alternate host is known. In addition to the record of its presence in Louisville, KY, there is a doubtful record that it was present on *Abies canadensis* (*Picea candensis* BSP) in Essex County, MA, in 1883. (Weir 1923).

**References**


Circular 38: Diseases of Pinus spp.

Douglas Fir Canker (Federal Quarantine Significant) 10-22

_Hemicycliophora dhanachandi_ (Hemicycliophoridae) 10-108

Scotch Pine Blister Rust (Federal Quarantine Significant) 10-109

_Hemicycliophora dhanachandi_ (Hemicycliophoridae)

December 2010

Species
Nematode

Synonym
_H. dhanachandi_

Host
_Pinus roxburghii_ (chir pine); but little information is currently available regarding further host range

Distribution
India; but little information is currently known about further distribution

Notes
New nematode species isolated from soil around the roots of _Pinus roxburghii_ (chir pine) plants in India. Nematodes in the genus _Hemicycliophora_ feed on a wide range of plant species, damaging roots, and reducing plant growth. It is listed as reportable in the PEST ID database.
References

Scotch Pine Blister Rust (Federal Quarantine Significant)
Revised and restructured Feb. 1996

Causal Organism
*Cronartium flaccidum* (Alb. & Schw.) Wint.

Synonyms
*Cronartium asclepiadeum* (Willd.) Fries\(^1\), *Peridermium cornui* Rostr. & Kleb. *P. pini* var. *carticola*, *Aecidium paeoniae* Wallr., *Uredo paeoniae* Cast

Hosts
Aecial. *Pinus sylvestris* L., *P. mugo* Turra., *P. pinaster* Ait., *P. tabuliformis* var. *Yunnanesis*

Imported uredial and telial hosts of this rust are not considered as a likely means of introducing the disease since this particular species of *Cronartium* is not systemic on these hosts. Furthermore, these plants, when brought into this country, usually arrive as seeds or nonfoliated dormant plant parts, and for that reason, represent a negligible risk. However, those same plants, when growing in this country, could serve as indicators of the presence of the rust that might have been introduced on pines by accident. For that reason, it is suggested that inspectors look for rusts on the following genera on the chance that the genera might sometime collect *C. flaccidum*.


Distribution
Europe and Asia

\(^1\) Klebahn (1938) maintains that the meager original description of *C. flaccidum* then becomes the valid binomial. Many European mycologists follow this reasoning. Approximately 25 names have been applied to this rust. Those not listed above can be found in Sydow's *Monographia Uredinearum* 3:560-63.
Symptoms
The following quotation is from Massee (1910). “The aecidia appear on bark of Scots fir, Pinus sylvestris, late in the spring, bursting through the outer dead cortex as irregular, inflated, pale yellow sacs, which open by an irregular crack and liberate the powdery, orange spores.” These “sacs” are from 2 to 6 mm long by 2 to 3 mm wide and high and are usually loosely aggregated on the branch, but may be evenly scattered. Description of the pathogen, Cronartium flaccidum (Alb. & Schwein.) Wint. (after Sydow).

Description
Pycnia irregular, yellow in color; aecia on branches, erumpent, large, 2 to 6 mm long by 2 to 3 mm wide and high, mostly loosely aggregated, but may be rather evenly scattered over a large part of a branch, peridium white of 2 or 3 layers of cells, the outer layer of small cells, the inner layers of large warty cells, mostly without rigid hairs; peridial cells rhomboid-ellipsoid up to 80 μm long by 18 to 38 μm wide, warty, membrane 4 to 6 μm thick; aeciospores globose-ellipsoid or polyhedral, verrucose, 22 to 36 x 16 to 24 μm; wall hyaline, 3 to 4 μm thick.

On uredial and telial hosts the uredial sori sparse or aggregated, punctiform .15 to .25 mm in diameter, at last opening by a round pore, wall thin composed of cells up to 25 μm long by 15 μm wide, membrane cellular of almost uniform thickness (2 to 3 μm); uredospores ovate or ellipsoidal, loosely short echinulate, 18 to 30 x 14 to 20 μm, wall hyaline, 1.5 to 2.5 μm thick. The telial sori hypophyllous, sparse or aggregated, cylindrical, straight or curved, 1 to 2 μm long by 50 to 120 μm wide, yellowish-brown or reddish-brown in color; teliospores ellipsoid to oblong, smooth yellowish or yellowish-brown 20 to 60 x 10 to 16 μm, wall hyaline to golden, 1 1/2 μm thick, at the apex, slightly thicker.

References
Circular 39: Diseases of *Populus* spp.

- *Cytospora tritici* (Sordariomycetes: Diaporthales) 10-111
- Poplar (*Populus*) Bacterial Canker (Federal Quarantine Significant) 10-112

**Cytospora tritici** (Sordariomycetes: Diaporthales)

May 17, 2012

**Causal Organism**
Fungus *Cytospora tritici* (Sordariomycetes: Diaporthales)

**Synonyms**
Originally described from *Triticum aestivum* (wheat) in Australia

**Hosts**
*Populus* spp. (poplar) trees

**Distribution**
China

**Symptoms**
Bark cankers and discolored sapwood

---


**NOTICE**
The description of *Melampsora pinitorqua* originally appearing in this circular has been deleted. It is now known that *M. pinitorqua* does not occur in Canada and the reports of its occurrence in British Columbia were based on collections of *M. medusae* (*M. albhtentensis*). *M. medusae* occurs in the Northwestern United States on *Pseudotsuga menziesii* and *Populus tremuloides*. 

---
Notes
Not known to occur in the United States. The genus *Cytospora* is listed as reportable in the PEST ID database.

References

**Poplar (Populus) Bacterial Canker (Federal Quarantine Significant)**
Revised and restructured Jan. 1996

Causal Organisms
*Xanthomonas populi* (Ride) comb. nov.

Synonyms

Hosts
*Populus balsamifera* L. (*P. Candicans*), *P. brabantica* Houtzagers, *P. trichocarpa* Torr. & Gray, and on some varieties of *P. monilifera* Ait., *P. nigra* L.

Distribution
Europe

Symptoms
(After Dowson 1957) This is a serious disease of poplar characterized by die-back and cankers accompanied by a slimy exudation containing bacteria and other organisms. Cankers varying from 1 to 15 cm long develop on the shoots, the branches, and sometimes, the trunk. In early summer many of the young shoots die back and, during wet weather, pearl-like drops of slime exude from the smaller cankers, from the base of dead buds, and from the internodes of the previous season's shoots.

As the buds open, some of the tender young leaves turn black, and later expanded leaves may exhibit blackened areas of varying extent. Small rents, cracks, and depressions develop in the epidermis in the vicinity of the exudate, the cortex beneath which is black. A red layer is always present in the wood of the affected shoots. Two types of cankers can be distinguished. The first,
developing in the current year of infection, takes the form of rough, knotted excrescences, varying in size from a pea to a walnut or more, referred to as closed cankers. The other type is a larger, 1-15 cm, elongated, perennial lesion with raised rim and exposed wood, is designated an open canker. Both types exude slime during wet weather in the spring.

**Notes**
Many fungi have been reported to cause cankers in Populus. In Europe, the most important of these according to Konig (4) are those caused by *Nectria* spp. In the Netherlands, particularly, *Nectria* is very commonly associated with *X. populi* in the same cankers. In France, this association is said to be rare. A canker of purely *Nectria* origin is said to be distinguishable by concentric zonation of the affected bark, by darker color in the first stages, and by the absence of the slimy exudate. *Nectria* cankers develop at a rapid rate in the winter months, while bacterial cankers grow little until spring.

**References**

**Circular 40: Diseases of *Prunus* spp.**
- Apple Proliferation Phytoplasma (Federal Quarantine Significant) 10-89
- European Rusty Mottle of Cherry (Federal Quarantine Significant) 10-113
- Plum Pox Virus (Federal Quarantine Significant) 10-114

**European Rusty Mottle of Cherry (Federal Quarantine Significant)**
June 3, 1963; restructured Mar. 1996
**Synonyms**
None

**Hosts**
*Prunus* spp. (cherry only)

**Distribution**
England, and probably other European countries

**Symptoms**
Symptoms first appear in July in England when groups of fine veins, tertiary or smaller, of mature leaves become yellow. The leaves gradually assume a dull green color in contrast to the bright green of the healthy leaves, and by the end of August, they have a yellowish-green appearance. Rusty red pigment develops on the leaf surface during August, usually, but not invariably, associated with the yellow veinlets. The amount of red coloration varies with the strain of the virus. Neither ring pattern, premature autumn yellowing, nor leaf-fall occurs. The shedding of yellowish-green mottled leaves with green rings in early summer, so characteristic of rusty mottle and mild rusty mottle in North America, does not occur.

Some virus strains have induced conspicuous dark red spotting and vein banding similar to red mottle in pear, while others have induced mainly yellow or pale rust colored pigmentation.

**References**

**Plum Pox Virus (Federal Quarantine Significant)**
Feb. 2000

**Synonyms**
Sharka

**Hosts**
All species of *Prunus* (almond, apricot, cherry, nectarine, peach, and plum) are natural hosts. *P. spinosum* is an important natural source of infection in Europe. Almost all the known apricot, peach, and plum cultivars are susceptible, but some remain symptomless when infected. There are six known strains of Plum Pox Virus (PPV).

Sixty additional host species in eight plant families were found to be possible hosts when experimentally inoculated.
Distribution
Most European countries, Chile, Egypt, India, Syria, and Turkey Recently reported in the United States (PA, MI, and NY)

Symptoms—Leaves

*Apricot.* Chlorotic, pale green lines, rings or spots develop on the leaves during the spring and can be observed until summer (Figure 10-41 on page 10-116).

*Peach.* Some chlorotic lines and small areas can develop on the leaves along the secondary and tertiary veins. These symptoms may be difficult to observe in the field (Figure 10-40 on page 10-116, Figure 10-43 on page 10-117, and Figure 10-44 on page 10-118).

*Plum.* Diffuse, pale green rings, lines or areas develop on the leaves in spring in some cultivars, they disappear in summer (Figure 10-42 on page 10-117).

This virus infects some wild and ornamental *Prunus* without symptoms. Symptoms on cherry are not common. Some varieties may flower during the quarantine period. Fruit symptoms are variable and since postentry plants should be released before fruit is produced, will not be discussed in this circular.

Transmission
Transmission occurs by grafting with infected budwood, and by 10 aphid species in a nonpersistent manner. The most efficient vectors are *Myzus persicae, Brachycaudus helichrysi, B. cardui,* and *Phorodon humuli.* Seed transmission has been reported for some strains of PPV in some hosts.
Figure 10-40  Peach leaves with Plum Pox Virus (PPV) showing vein clearing

Figure 10-41  Apricot *Prunus* spp. with Plum Pox Virus (PPV)
Figure 10-42  Plum fruit with Plum Pox Virus (PPV); schematic drawing of symptoms on leaves and fruit

Figure 10-43  Example of Plum Pox Virus (PPV)-induced color breaking (pink flecks) in certain peach cultivars
Circular 41: Diseases of Pseudolarix spp.

European Larch Canker (Federal Quarantine Significant) 10-80

Circular 42: Diseases of Pseudostuga spp.

Douglas Fir Canker (Federal Quarantine Significant) 10-22

Figure 10-44 Example of Plum Pox Virus (PPV)-induced color breaking (pink flecks) in certain peach cultivars

References

Circular 43: Diseases of *Punica* spp.

- **Bacterial Blight on Pomegranate** 10-119
- ***Xiphinema granatum* (Longidoridea) 10-119

**Bacterial Blight on Pomegranate**

**Synonyms**
None

**Causal organism**
*Xanthomonas axonopodis* pv. *punicae*

**Hosts**
Punica granatum (pomegranate)

**Distribution**
India, Pakistan, and South Africa

**Symptoms**
Disease characteristics include leaf spots, branch, stem, and nodal cankers, and fruit blemishes. Pomegranate trees can die back above the parts on a branch or trunk girdled by the canker. Pomegranate production can be severely affected by high incidences of bacterial blight disease.

**References**

**Xiphinema granatum (Longidoridae)**

June 2012

**Species**
Nematode

**Synonym**
None
Host
*Punica granatum* (pomegranate) trees; but little information is currently available regarding further host range

Distribution
Iran; but little information is currently known about further distribution

Notes
New dagger nematode species isolated from soil around the roots of *Punica granatum* (pomegranate) trees in Iran. *Xiphinema* spp. can also vector nepoviruses. The genus *Xiphinema* is listed as reportable in the PEST ID database.

References

---

**Circular 44: Diseases of *Quercus* spp.**

- White Rot and an Undescribed Gall-Forming Rust (Federal Quarantine Significant) 10-120

**White Rot and an Undescribed Gall-Forming Rust (Federal Quarantine Significant)**

*Quercus* was placed under Postentry regulations because of White rot caused by *Stereum hiugense*, and an Undescribed Gall-Forming Rust. The lack of recent reports regarding *S. hiugense* might signify the name is synonymous with one of the other *Stereum* spp.

---

**Circular 45: Diseases of *Ribes* spp. (*Grossularia*)**

- Black-Currant Reversion Agent (Federal Quarantine Significant) 10-120

**Black-Currant Reversion Agent (Federal Quarantine Significant)**

**Synonyms**
*Ribes* virus 1, *Acrogenus ribes* Holmes

**Hosts**
*Ribes nigrum* (European black currant)
Distribution
Europe and New Zealand

Symptoms
Leaves abnormally narrow and flat, generally smaller in surface area, but thicker and darker after early stages, small veins few, serrations of the leaf fewer and coarser. Wilson (1950) states that the “blossom symptoms can be distinguished in April. The buds of the infected bush are more highly colored than those of a healthy one, due to the absence of a dense mass of hairs, while the flowers which are carried on elongated stalks, appear transparent and more cylindrical than normal. The stigma protrudes above the anthers making pollination virtually impossible and what fruit does set usually drops.” Flowers and small fruits fall. Stems are less woody than normal with a tendency to excessive gum production.

It has been found that many of the symptoms develop so late in the disease cycle that they are of little use in the detection of the disease in the field. For this reason English workers rely on the following leaf symptoms in rouging the plantings. The description is slightly revised from that published by Lees (1935).

If any leaf be examined from the under surface it will be noticed that there are 5 main (primary) veins arising from one point at the extreme base of the leaf. Those veins run to the 5 main points (lobes) of the leaf. Now if the secondary veins arising from the midrib on one side and running to the points on the margin (not counting the secondary veins from the primary veins other than the midrib) be counted it will be found that they number at least 5 in a normal leaf. Sometimes there are 6 to 7 but never less than 5. In a definitely reverted leaf, however, they are less than 5, 3 being a common number in well-developed cases, and in extreme cases they may be reduced to zero.

The second character to observe is the margin. In normal leaves there are numerous fine serrations, many of which do not receive a secondary vein, but receive vein branches of a lower order. In reverted leaves the margin has comparatively few and coarse serrations and only a few fine serrations exist which receive veins of a lower order than secondary.

In applying the foregoing instructions Amos and Hatton (1) stipulate that all but the “one or more leafy vegetative shoots which have developed from buds formed in the previous year's wood” should be ignored. Leaves resembling reverted leaves may be found more or less commonly on the older wood. These may result from injury or in some situations appear to arise normally.
There is also a condition called “false reversion” which simulates the disease. In false reversion the basal leaves show the symptoms, later leaves approach or reach normal. In true reversion all leaves of a shoot are about equally affected.

An English Ministry of Agriculture leaflet has summarized inspection instruction briefly: If less than 5 secondary veins are present on each side of the main vein (midrib) in the central lobe of the leaf, the leaf is reverted if 5 or more, the leaf is probably normal.

If the margins (on both sides of the central lobe) are finely toothed, and if 4 to 8 of these teeth are not reached by a secondary vein, the leaf is almost certainly normal. If, however, this portion of the margin is coarsely-toothed, and if less than 4 of the teeth do not each receive a secondary vein, the leaf is reverted to some degree.

**Transmission**

By grafting. Reversion is not transmitted by expressed juice, nor through the soil, or through the seeds of infected plants.

**Vector**

The mite, *Cecidophyopsis ribis* (*Eriophyes ribis*). This is the mite which causes the condition known as big-bud. Big-bud and reversion, but not invariably, occur on the same plants.

**References**


**Circular 46: Diseases of Rosa spp.**

- *Cytospora rosarum* (Sordariomycetes: Diaporthales) 10-123
- Rose Wilt Agent (Federal Quarantine Significant) 10-123

**Cytospora rosarum (Sordariomycetes: Diaporthales)**

December 01, 2011

Causal Agent
*Cytospora rosarum* (Sordariomycetes: Diaporthales)

Host
*Rosa* spp.

Symptoms
Twig, branch, and bark necrosis

Distribution
Armenia; Greece; India; Iran; Pakistan; Poland; Turkey; Ukraine; and United Kingdom

Notes
*Cytospora rosarum* (Sordariomycetes: Diaporthales) is **not** known to occur in the United States. The genera *Cytospora* and *Valsa* are listed as reportable in the PEST ID database.

Reference

**Rose Wilt Agent (Federal Quarantine Significant)**

Synonym
Marmor flaccumfaciens

Time of Year to Inspect
Spring; up to six weeks after leaves are fully out
Symptoms

Plant. Is wilted. Dieback of young shoots can be seen. Young plants produce pinched, yellowish-green shoots. There may be proliferation of stems from a single bud producing a Witches’ Broom effect. The shoots usually die during the year.

Leaf. Young petioles curve downward (epinasty), leaves are brittle and easily detached by wind or brushing with the hand. They often turn pale green or yellow in color before falling.

Stem. Dieback occurs in the stem. Some mature, but still soft stems may develop purple blotches that are often ring shaped. Scions are broad at the base and rapidly taper toward the tip.

Flowers. None

Transmission

Transmission occurs by grafting, mechanical, and/or insect (*Macrosiphum rosaef, Aphidae*, in Australia).

Discussion

The rootstock of *Rosa multiflora* symptomless carrier of Rose Wilt Agent, consequently the varieties grafted on this rootstock should be inspected for Rose Wilt Agent symptoms. A disease named Rose Leaf Curl and similar to Rose Wilt Agent has been found in California. The agent is latent in antique roses and, therefore, such plants are symptomless. However, it incites symptoms in tea rose hybrids. As of this writing, there is no conclusive evidence that these diseases are caused by the same agent. For quarantine purposes, we presently consider them as distinct.
Disease and Pathogenic Organism Circulars
Circular 47: Diseases of Rubus spp.

Distribution

Figure 10-45 Distribution of Rose Wilt Agent; Australia (including Tasmania), New Zealand, Republic of South Africa; a similar disease occurs in Italy; for quarantine purposes, we will prohibit roses from these countries

References


Circular 47: Diseases of Rubus spp.

- Raspberry Leaf Blotch Virus (RLBV) 10-125
- Rubus Stunt Phytoplasma (Federal Quarantine Significant) 10-126

Raspberry Leaf Blotch Virus (RLVB)
May 2012
**Causal Agent**
Emaravirus raspberry leaf blotch virus (RLBV)

**Hosts**
*Rubus idaeus* cv. Glen Ample (red raspberry) plants

**Symptoms**
Yellow leaf blotches and reduced yield

**Vectors**

**Distribution**
Finland, United Kingdom, and Serbia

**References**

**Rubus Stunt Phytoplasma (Federal Quarantine Significant)**

**Synonyms**

**Hosts**
*Rubus* spp. This agent has been found in all the principal European raspberry varieties, and in many wild blackberry species. It can be experimentally transmitted to *Fragaria vesca* L. and several commercial strawberry varieties.

**Distribution**
Bulgaria, Czech Republic, Denmark, England, Germany, Netherlands, Norway, Poland, Slovakia, and former USSR

**Symptoms**
The disease is of great economic importance because of the severe crop losses that may occur when the disease becomes epidemic.

According to F.A. van der Meer and H.J. de Fluiter (1970) who studied the diseases in the Netherlands, the symptoms are basically alike in all species and varieties. Prentice (1950) states, however, that in raspberry, the symptoms depend to some extent on the variety infected.
Generally there are numerous small, thin, weak canes and excessive lateral branching of the whole plant, together with phyllody and proliferation of the flowers.

Prentice (1950) reports that in the season following the observance of weak canes, they generally fail to flower or produce very few flowers. Some varieties of raspberry have a tendency to produce a proportion of abnormal flowers. Sometimes the sepals are slightly longer than normal or the tips more leafy. According to Prentice (1950) and Putz (1969), in extreme cases, the sepals and carpels develop into leaves.

Prentice (1950) states that fruiting canes tend to have shortened internodes and often more than one bud develops at each node. Sometimes the development of axillary buds near the base of the cane help accentuate the bushy appearance of the plant. In early summer, leaves on infected canes are usually paler in color than normal.

In France, Putz (1969) reported symptoms of virescence on floral parts of “Malling Promise” similar to those of *Rubus* Stunt Phytoplasma, however, the virus has not yet been determined.

According to van der Meer and de Fluiter (1970), the variety “Malling Promise” is tolerant to some extent and on which phyllody is very rare. Other raspberry and blackberry varieties may regenerate to a high degree, consequently such regenerated plants generally do not show flower deformation.

Raspberry plants that are already badly affected by other viruses, such as Mosaic diseases, are more sensitive to *Rubus* Stunt Phytoplasma, and often die within a few years of infection.

Among the great number of shoots formed, some become larger than others and bear normal but small fruits that are difficult to harvest. Fruiting laterals of infected plants are always shorter than those of healthy plants.

In cultivated plantations, many diseased plants die in the shock stage of infection, because they are overgrown by healthy ones. However, raspberry plants grown from diseased root cuttings and planted distant from each other seldom die and may show a certain degree of regeneration.

On *Fragaria* vesca and commercial strawberry varieties, the virus causes Witches’ Broom, phyllody of flowers, and severe growth reduction. Infected strawberry plants usually die within two or three years.
Transmission
The virus is transmitted by grafting. The incubation time for the virus to manifest itself is between 4 to 11 months depending on the season during which the plants are infected.

Vector
The vector is the leaf hopper, *Macropsis fuscula* Zett.

The vector has been reported from several European countries extending from Italy to Norway, Northern Russia, Canada (British Columbia), and United States (State of Washington, several counties).

There are two other probable vectors of the virus within the genus *Macropsis*: *M. brabantica* and *M. scotti*.

![Figure 10-46 First symptoms of Rubus stunt in red raspberry; numerous weak and erect shoots develop from the root buds](Source: USDA Handbook No. 631)
Figure 10-47 Floricane of Rubus stunt-infected blackberry cv. “Thornless Evergreen,” showing witches’ broom growth and yellowing
Figure 10-48  Phyllody of flowers of red raspberry cv. “Norfolk Giant” Sepals, petals, and pistils become leaflike structures; stamens usually remain normal

References


Circular 48: Diseases of *Salix* spp.

- Virus Chlorosis 10-131
- Watermark Disease (Federal Quarantine Significant) 10-131

**Virus Chlorosis**

**Synonyms**
No synonyms are known.

**Hosts**

**Distribution**
Czech Republic, Slovakia, and Hungary

**Symptoms**
The chlorosis (yellowing) occurs between the veins in the blade of the leaf. The leaves may be much reduced in size and drop prematurely. The whole tree may show weak growth, sometimes accompanied by an excessive production of small secondary branches on the shoots, a Witches’ Broom effect.

**Transmission**
It has been transferred by grafting. The symptoms then appear in about 27 days. It can be transferred by sap inoculation but with difficulty. In this case, symptoms take much longer to become visible, about 61 days. An insect vector is believed to be involved in the natural spread of this disease because it may suddenly appear on previously healthy trees.

**References**

**Watermark Disease (Federal Quarantine Significant)**
Revised and restructured July 2005

**Causal Organism**
*Erwinia salicis* (Day) Chester
Synonyms

*Bacterium salicis* Day and *Brenneria salicis* (Day) Hauben et al.

In Holland, a disease of *Salix*, also called “Watermark” is said to be caused by *Pseudomonass saliciperda* (Lindeijer 1932). Lindeijer (1932) states that the symptoms appear to be identical with those of the disease reported in England and holds that the diseases are probably identical. Impure cultures may have caused the discrepancy. Recent English papers continue to use Day's name revised by Chester. With these reservations as to the correct taxonomy we can proceed in postentry work handling Watermark as if one disease is involved. If two, they are visually alike and equally harmful.

Hosts

*Salix alba calva* var. *calva* G.F. Mey., *S. alba* L., *S. purpurea* L., *S. X rubens* Shrank, *S. triandra* L. (*S. Amygdalina*), and *S. viminalis* L.

Distribution

Belgium, England, Germany, Japan, and The Netherlands

Symptoms

(After Dowson 1957) In England the first obvious sign of the disease is the sudden appearance of a bright red color of some of the leaves during hot weather in early summer. The foliage of whole branches may be affected in this way. Shortly afterwards, a bacteria-containing liquid drips in some quantity from the infected shoots. The reddened leaves soon turn brown and wither but do not fall. If infected shoots are cut across, a circular grayish discoloration is visible in the previous season's annual ring, but not in the current season's growth. This is the watermark that extends through the wood of the tree even into the roots. Adventitious shoots are produced numerous. These, being new wood, do not show the watermark when cut. Their presence is an indication of the disease. The “red leaf” branches are seldom killed and they die back, producing a “stag head” appearance of the trees.

In The Netherlands the first symptoms appear in May. The first leaves on a twig turn brown; subsequently the tip and the remaining leaves show signs of wilting. After one to several weeks, the neighboring twigs wither in their turn. Weather conditions largely influence the rapidity of this process.

As a rule, the sudden wilting may occur throughout the summer until September. Adventitious twigs may develop on the infected branches. In places on the infected twigs, exudations, consisting of a clear, sticky liquid that contains large masses of bacteria, may be found from May until the end of August. The color of infected twigs may fade.
The following internal symptoms are of even more importance to the plant quarantine worker who often sees only dormant plants or cuttings. On the freshly cut surface of a diseased twig a liquid mass soon gathers. A more or less large area of the wood has a water-soaked appearance. After having been exposed to the air, this wood turns brown. If a twig has been diseased for some time, the wood shows brown color directly when cut. When a twig is cut lengthwise the brown color appears as continuous streaks. Under the microscope, sections show the vessels swimming with bacteria. Tyloses and gum-like substances also occur in the vessels. Part of the medullary ray cells and the parenchyma cells are dead. No starch is found in the discolored wood. Infected trees are killed in one or two years.

**Transmission**

(The Netherlands) Observation and experiments indicate that the beetle *Cryptorrhynchus lapathi* L. is an important carrier of the disease.

---

**Figure 10-49 Watermark Disease of *Salix* spp.; typical die-back symptoms of this quarantine-significant disease caused by *Erwinia salicis***

**References**

2. Lindeijer, E.J. 1932. De Bacterie-Ziekte Van Den Wilg Veroorzaakt Door Pseudomonas saliciperda n. spp. 8 illus., 82. (English summ.).
Circular 49: Diseases of *Sorbus* spp.

- **Leaf Distortion** 10-134
- **Mountain Ash Variegation Agent (Federal Quarantine Significant)** 10-134
- **Ringspot Mosaic of Sorbus** 10-135

**Leaf Distortion**

**Causal Organism**
*Taphrina piri* Kusano

**Synonyms**
*Exoascus piri* (Kusano) Sacc. & Trott

**Hosts**
*Sorbus alnifolia* (Siebold & Zucc.) C. Koch (*Micromeles alnifolia*), and *Pyrus miyabei* Sarg.

**Distribution**
Australia, China, Japan, New Zealand, Oceania, and The Philippines

**Symptoms**
The infected leaves of *S. alnifolia* show yellowish-green, circular or irregularly shaped leaf spots. The spots bear a pruinose, hoary-white growth on the surface when the fungus matures. This growth is composed of the closely crowded ascus cells of the fungus.

**References**
2. CFR 319.37§2.

**Mountain Ash Variegation Agent (Federal Quarantine Significant)**

**Synonyms**
*Pyrus* virus I (Baur) Smith, Infectious chlorosis (Baur 1907), Infectious chlorosis Hertzsch 1930, and *Pyrus* variegation virus (Atanasoff 1935)

**Host**
*Sorbus aucuparia* L. and *Pyrus aucuparia* Gaertn

**Distribution**
Czech Republic, Denmark, Germany, and Slovakia
Symptoms
The leaves of infected trees have, at first, yellow tips that later become white. In cases of severe infection, the leaves do not show well-defined yellow cones, but become mottled with yellow spots. On some leaves the yellow tissues are limited to the tips. In other cases, there is a clearing of the veins, or alternatively, a yellow band about 2 mm wide may run along the main veins. Chlorotic tissues gradually become white and finally brown.

The above description is that given by Smith (1972) who seems to have used it almost verbatim as written by Atanasoff (1935). Atanasoff’s (1935) sources were Baur, Kranzlin, and Hertzsch (1907). Brierley (1944) has condensed the description to a sentence. “Yellow or white variegation, sometimes vein clearing and vein-banding (Smith 1972).”

Transmission
Transmission occurs by grafting. According to Baur (1907), a variegation not of virus origin also occurs on Sorbus aucuparia Dirkenii aurea. This variegated variety has rather evenly colored yellowish-green older leaves, and young leaves of a pronounced yellow. As it was not transmitted by grafting, Baur concluded that it is a noninfectious variegation.

References
3. Brierley, P. 1944. Viruses described primarily on ornamental or miscellaneous plants. P.D.R. Suppl. 150:145; 150; 184-85; 414; 436-37; 437; 448-49; 475.
5. CFR 319.37§2.

Ringspot Mosaic of Sorbus

Synonyms
None

Hosts
Sorbus aucuparia L.

Distribution
Germany and possibly Finland
Symptoms
The symptoms appear regularly in the years following infection. The incubation time is about 10 months. They appear a few days after the leaves open as spot-like, light-green flecks on the pinnules. Later, they form a number of light-green spots, bands, or rings, the diameter of which is only a few millimeters. In this way, the leaves attain a distinct mottling or streaking. Often, additional light-brown, dark-bordered necrotic spots appear that occasionally become shot holes. The disease may at first be confined to a branch, but in later years spreads to other parts of the crown. Injury is not discussed, but the yellowing and mottling would affect the tree’s value as an ornamental plant.

References

Circular 50: Diseases of Syringa spp.
- Elm Mottle Virus (Federal Quarantine Significant) 10-106

Circular 51: Diseases of Ulmus spp.
- Elm Mottle Virus (Federal Quarantine Significant) 10-106

Circular 52: Diseases of Vaccinium spp.
- Diaporthe australafricana (Sordariomycetes: Diaporthales) 10-136

Diaporthe australafricana (Sordariomycetes: Diaporthales)
March 7, 2012

Causal Agent
Diaporthe australafricana (Sordariomycetes: Diaporthales)

Hosts
Vaccinium corymbosum (blueberry) plants; Vitis vinifera (grape) plants

Symptoms
Exhibit brown to reddish necrotic stem cankers and shoot necrosis.

Distribution
Chile; South Africa; and Australia
Diaporthe australafricana (Sordariomycetes: Diaporthales) has been observed in Chile since 2006. It is not known to occur in the United States. The genus Diaporthe is listed as reportable in the PEST ID database.

References
Latorre, BA, E Elfar, JG Espinoza, R Torres, & GA Diaz. First report of Diaporthe australafricana associated with stem canker on blueberry symptoms in Chile. Plant Disease DOI: 10.1094/PDIS-12-11-1025-PDN.

Circular 53: Diseases of Watsonia spp.

- Gladiolus Rust (Federal Quarantine Significant) 10-38
- Puccinia mccleanii [Doidge] (Federal Quarantine Significant) 10-60
- Uredo gladioli-buettneri (Federal Quarantine Significant) 10-44
- Uromyces gladioli [Henn.] (Federal Quarantine Significant) 10-62

Circular 54: Diseases of Ziziphus spp.

- Longidorus pisi (Longidoridae) 10-137

Longidorus pisi (Longidoridae)
November 02, 2011

Species
Needle nematode

Hosts
Ziziphus jujuba (Chinese date); Z. jujuba var. spinosa (wild jujube); Glycine max (soybean); Vitis vinifera (grape); Zea mays (corn); Oryza sativa (rice); and Pisum sativum (pea)

Distribution
China; Cyprus; Africa; Pakistan; and India

Notes
Longidorus pisi (Longidoridae) was found in soil surrounding Ziziphus jujuba (Chinese date). It is not known to occur in the United States, and is listed as reportable in the PEST ID database.

Reference
# Appendix A

## Directory of PPQ Postentry Quarantine Liaison Officers

### Contents

<table>
<thead>
<tr>
<th>State</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>A-2</td>
</tr>
<tr>
<td>Listings</td>
<td>A-2</td>
</tr>
<tr>
<td>Missouri</td>
<td>A-5</td>
</tr>
<tr>
<td>Montana</td>
<td>A-5</td>
</tr>
<tr>
<td>Alabama</td>
<td>A-2</td>
</tr>
<tr>
<td>Nebraska</td>
<td>A-5</td>
</tr>
<tr>
<td>Alaska</td>
<td>A-2</td>
</tr>
<tr>
<td>Nevada</td>
<td>A-5</td>
</tr>
<tr>
<td>Arizona</td>
<td>A-2</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>A-5</td>
</tr>
<tr>
<td>Arkansas</td>
<td>A-3</td>
</tr>
<tr>
<td>New Jersey</td>
<td>A-5</td>
</tr>
<tr>
<td>California</td>
<td>A-3</td>
</tr>
<tr>
<td>New Mexico</td>
<td>A-5</td>
</tr>
<tr>
<td>Colorado</td>
<td>A-3</td>
</tr>
<tr>
<td>New York</td>
<td>A-5</td>
</tr>
<tr>
<td>Commonwealth of the Northern Mariana Islands (CNMI)</td>
<td>A-3</td>
</tr>
<tr>
<td>Connecticut</td>
<td>A-3</td>
</tr>
<tr>
<td>North Dakota</td>
<td>A-5</td>
</tr>
<tr>
<td>Delaware</td>
<td>A-3</td>
</tr>
<tr>
<td>Ohio</td>
<td>A-5</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>A-3</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>A-6</td>
</tr>
<tr>
<td>Florida</td>
<td>A-3</td>
</tr>
<tr>
<td>Oregon</td>
<td>A-6</td>
</tr>
<tr>
<td>Georgia</td>
<td>A-3</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>A-6</td>
</tr>
<tr>
<td>Guam</td>
<td>A-4</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>A-6</td>
</tr>
<tr>
<td>Hawaii</td>
<td>A-4</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>A-6</td>
</tr>
<tr>
<td>Idaho</td>
<td>A-4</td>
</tr>
<tr>
<td>South Carolina</td>
<td>A-6</td>
</tr>
<tr>
<td>Illinois</td>
<td>A-4</td>
</tr>
<tr>
<td>South Dakota</td>
<td>A-6</td>
</tr>
<tr>
<td>Indiana</td>
<td>A-4</td>
</tr>
<tr>
<td>Tennessee</td>
<td>A-6</td>
</tr>
<tr>
<td>Iowa</td>
<td>A-4</td>
</tr>
<tr>
<td>Texas</td>
<td>A-6</td>
</tr>
<tr>
<td>Kansas</td>
<td>A-4</td>
</tr>
<tr>
<td>Utah</td>
<td>A-6</td>
</tr>
<tr>
<td>Kentucky</td>
<td>A-4</td>
</tr>
<tr>
<td>Vermont</td>
<td>A-6</td>
</tr>
</tbody>
</table>
Introduction

The following list includes contact information for the PPQ Postentry Quarantine Liaison Officers (PEQLO) in both the Eastern and Western regions. Plant Inspection Stations (PIS) should use this list when determining who to contact and to whom PEQ forms and correspondence should be sent, i.e., PPQ Form 236 for the PPQ Liaison Officers. A list of State Plant Regulatory Officials and State PEQ Contacts can be found in Directory of SPROs and State PEQ Contacts on page C-1.

Listings

Table A-1 Directory of PEQ Liaison Officers (page 1 of 6)

<table>
<thead>
<tr>
<th>State:</th>
<th>Contact:</th>
<th>Address:</th>
<th>Phone/FAX:</th>
</tr>
</thead>
<tbody>
<tr>
<td>PEQP</td>
<td>Dave Farmer, National Coordinator</td>
<td>USDA, APHIS, PHP, AQI Venture IV, Suite 200 920 Main Campus Drive Raleigh, NC 27606</td>
<td>P: 919 855-7366</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F: 919 855-7390</td>
</tr>
<tr>
<td>Alabama</td>
<td>Gregory T. Baldwin (<a href="mailto:gregory.t.baldwin@aphis.usda.gov">gregory.t.baldwin@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 334 Business Circle, Suite D Pelham, AL 35124</td>
<td>P: 205 663-9344</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F: 205 663-2783</td>
</tr>
<tr>
<td></td>
<td>Jeffrey Lasiter (<a href="mailto:jeffrey.t.lasiter@aphis.usda.gov">jeffrey.t.lasiter@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 3737 Government Blvd., Suite 517 Mobile, AL 36693</td>
<td>P: 251 661-2742</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F: 251 661-4381</td>
</tr>
<tr>
<td>Alaska</td>
<td>Barbara Chambers (<a href="mailto:barbara.a.chambers@aphis.usda.gov">barbara.a.chambers@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 33400 9th Avenue S., Suite 200 Federal Way, WA 98003</td>
<td>P: 253-944-2040</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F: 253-874-1109</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C: 206-391-3532</td>
</tr>
<tr>
<td>Arizona</td>
<td>Joseph Simmons (<a href="mailto:joseph.l.simmons@aphis.usda.gov">joseph.l.simmons@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 3640 E. Wier Ave, Phoenix, AZ 85040</td>
<td>P: 602 431-3200</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F: 602 414-9870</td>
</tr>
</tbody>
</table>
### Table A-1 Directory of PEQ Liaison Officers (page 2 of 6)

<table>
<thead>
<tr>
<th>State:</th>
<th>Contact:</th>
<th>Address:</th>
<th>Phone/FAX:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arkansas</td>
<td>Thomas Hill (<a href="mailto:thomas.e.hill@aphis.usda.gov">thomas.e.hill@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 1200 Cherry Brook Dr., Suite 100, Little Rock, AR 72211</td>
<td>P: 501 324-5258 F: 501 324-5230</td>
</tr>
<tr>
<td>California</td>
<td>Michael Meadows (<a href="mailto:Michael.E.Meadows@aphis.usda.gov">Michael.E.Meadows@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ Plant Inspection Station 9777 Via de la Amistad, Room 140, San Diego, CA 92154</td>
<td>P: 619 661-3316 F: 619 661-3047</td>
</tr>
<tr>
<td></td>
<td>Musa Abdelshife (<a href="mailto:musa.a.abdelshife@aphis.usda.gov">musa.a.abdelshife@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ Plant Inspection Station 11840 S. La Cienega Blvd., Hawthorne, CA 90250</td>
<td>P: 310 725-1919 F: 310 725-1922</td>
</tr>
<tr>
<td></td>
<td>Fengru Zhang (<a href="mailto:fengru.zhang@aphis.usda.gov">fengru.zhang@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ Plant Inspection Station 389 Oyster Point Blvd., Suite 2, South San Francisco, CA 94080</td>
<td>P: 650 876-9093 F: 650 876-9008</td>
</tr>
<tr>
<td>Colorado</td>
<td>Patrick McPherren (<a href="mailto:patrick.w.mcpherren@aphis.usda.gov">patrick.w.mcpherren@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 3950 N. Lewiston St., Suite 330, Aurora, CO 80011</td>
<td>P: 303 371-3355 F: 303 371-4774</td>
</tr>
<tr>
<td>Commonwealth of the Northern Marian Islands (CNMI)</td>
<td>See Guam on page A-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connecticut</td>
<td>Kate Aitkenhead (<a href="mailto:kate.r.aitkenhead@aphis.usda.gov">kate.r.aitkenhead@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 97 Barnes Road, Unit 200, Wallingford, CT 06492</td>
<td>P: 203 741-5641 F: 203 741-5660</td>
</tr>
<tr>
<td>Delaware</td>
<td>Colleen Kitzmiller (<a href="mailto:colleen.kitzmiller@aphis.usda.gov">colleen.kitzmiller@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 500 W. Loockerman St. #310, Dover, DE 19904</td>
<td>P: 302 678-5868 F: 302 734-7814</td>
</tr>
<tr>
<td></td>
<td>Mark Johnston (<a href="mailto:mark.r.johnston@aphis.usda.gov">mark.r.johnston@aphis.usda.gov</a>)</td>
<td>P: 302 652-1642 F: 302 652-1645</td>
<td></td>
</tr>
<tr>
<td>District of Columbia</td>
<td>See Maryland on page A-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Florida</td>
<td>Metwaly H. Sheta (<a href="mailto:metwaly.h.sheta@aphis.usda.gov">metwaly.h.sheta@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ Plant Inspection Station 3951 Centerport St., Orlando, FL 32827</td>
<td>P: 407 825-4237 F: 407 825-4235</td>
</tr>
<tr>
<td></td>
<td>Leovaldo Castaneda (<a href="mailto:leovaldo.castaneda@aphis.usda.gov">leovaldo.castaneda@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ Plant Inspection Station 3500 NW 62nd Ave., Miami, FL 33122</td>
<td>P: 305 526-3900 F: 305 871-4205</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mail: P.O. Box 660520, Miami, FL 33266</td>
<td></td>
</tr>
<tr>
<td>State</td>
<td>Contact</td>
<td>Address</td>
<td>Phone/FAX</td>
</tr>
<tr>
<td>-----------</td>
<td>--------------------------</td>
<td>--------------------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>Guam</td>
<td>Michael (Troy) Brown</td>
<td>USDA, APHIS, PPQ 17-3306 Neptune Avenue</td>
<td>P:671 475-0854</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:michael.t.brown@aphis.usda.gov">michael.t.brown@aphis.usda.gov</a>)</td>
<td>Barrigada, GU 96913</td>
<td>F:671 475-0853</td>
</tr>
<tr>
<td>Hawaii</td>
<td>Matthew Goo</td>
<td>USDA, APHIS, PPQ Honolulu International Airport</td>
<td>P:808 834-3240</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:matthew.y.goo@aphis.usda.gov">matthew.y.goo@aphis.usda.gov</a>)</td>
<td>300 Rogers Blvd. #58</td>
<td>F:808 861-8500</td>
</tr>
<tr>
<td>Idaho</td>
<td>Rob McChesney</td>
<td>USDA, APHIS, PPQ 9734 W. Blackeagle Dr.</td>
<td>P:208 373-1600</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:rob.r.mcchesney@aphis.usda.gov">rob.r.mcchesney@aphis.usda.gov</a>)</td>
<td>Boise, ID 83709</td>
<td>F:208 378-5794</td>
</tr>
<tr>
<td>Illinois</td>
<td>Laura Ettema-Khan</td>
<td>USDA, APHIS, PPQ 1817 South Neil St.</td>
<td>P:217 398-1698</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:laura.ettema.khan@aphis.usda.gov">laura.ettema.khan@aphis.usda.gov</a>)</td>
<td>Illinois Plaza, Suite 105</td>
<td>F:217 398-1732</td>
</tr>
<tr>
<td>Indiana</td>
<td>Gary W. Simon, SPH</td>
<td>USDA, APHIS, PPQ 1305 Cumberland Ave.</td>
<td>P:765 497-2859</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:gary.w.simon@aphis.usda.gov">gary.w.simon@aphis.usda.gov</a>)</td>
<td>Suite 102 West Lafayette, IN 47906</td>
<td>F:765 497-2879</td>
</tr>
<tr>
<td></td>
<td>Tim Vawryk, PPQ Officer</td>
<td>USDA, APHIS, PPQ 131 East Court Ave. LL1</td>
<td>P:812 282-6370</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:timothy.s.vawryk@aphis.usda.gov">timothy.s.vawryk@aphis.usda.gov</a>)</td>
<td>Jeffersonville, IN 47130</td>
<td>F:312 282-6381</td>
</tr>
<tr>
<td>Iowa</td>
<td>Kevin Connors</td>
<td>USDA, APHIS, PPQ 900 American Blvd., East Nath</td>
<td>P:952 814-1071</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:kevin.j.connors@aphis.usda.gov">kevin.j.connors@aphis.usda.gov</a>)</td>
<td>Building, Suite 204 Bloomington, MN 55420</td>
<td>F:952 814-1073</td>
</tr>
<tr>
<td>Kansas</td>
<td><strong>See Nebraska</strong> on page A-5</td>
<td><strong>See Nebraska</strong> on page A-5</td>
<td><strong>See Nebraska</strong> on page A-5</td>
</tr>
<tr>
<td>Kentucky</td>
<td>Harold F. Hempfling</td>
<td>USDA, APHIS, PPQ P.O. Box 475</td>
<td>P:859-689-2626</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:harold.hempfling@aphis.usda.gov">harold.hempfling@aphis.usda.gov</a>)</td>
<td>Hebron, KY 41048</td>
<td>F:859-689-2001</td>
</tr>
<tr>
<td>Louisiana</td>
<td>Terrence Marler</td>
<td>USDA, APHIS, PPQ 2500 Shreveport Hwy., Rm. 216</td>
<td>P:318 473-7133</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:terrence.c.marler@aphis.usda.gov">terrence.c.marler@aphis.usda.gov</a>)</td>
<td>Pineville, LA 71360</td>
<td>F:318 473-7103</td>
</tr>
<tr>
<td>Maine</td>
<td>Gabrielle (Gidget) Gamester</td>
<td>USDA, APHIS, PPQ 15 Iron Rd., Suite 1</td>
<td>P:207 848-5199</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:gabrielle.gamester@aphis.usda.gov">gabrielle.gamester@aphis.usda.gov</a>)</td>
<td>Hermont, ME 04401</td>
<td>F:207 848-2537</td>
</tr>
<tr>
<td>Maryland</td>
<td>Matthew A. Travis, SPHD</td>
<td>USDA, APHIS, PPQ 2400 Broening Highway, Suite 102</td>
<td>P:410 228-5541</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:matthew.a.travis@aphis.usda.gov">matthew.a.travis@aphis.usda.gov</a>)</td>
<td>Baltimore, MD 21224</td>
<td>F:410 228-5542</td>
</tr>
<tr>
<td>Massachusetts</td>
<td><strong>See Connecticut</strong> on page A-3</td>
<td><strong>See Connecticut</strong> on page A-3</td>
<td><strong>See Connecticut</strong> on page A-3</td>
</tr>
<tr>
<td>Michigan</td>
<td>Gerald Wheeler</td>
<td>USDA, APHIS, PPQ 3260 Eagle Park Dr., Suite 119</td>
<td>P:616 942-6225</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:gerald.wheeler@aphis.usda.gov">gerald.wheeler@aphis.usda.gov</a>)</td>
<td>Grand Rapids, MI 49525</td>
<td>F:616 942-6235</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C:313 475-7907</td>
</tr>
<tr>
<td>Minnesota</td>
<td>Kevin Connors</td>
<td>USDA, APHIS, PPQ 900 American Blvd., East Nath</td>
<td>P:952 814-1071</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:kevin.j.connors@aphis.usda.gov">kevin.j.connors@aphis.usda.gov</a>)</td>
<td>Building, Suite 204 Bloomington, MN 55420</td>
<td>F:952 814-1073</td>
</tr>
<tr>
<td></td>
<td>Pamela Deerwood</td>
<td>USDA, APHIS, PPQ 900 American Blvd., East Nath Building, Suite 204 Bloomington, MN 55420</td>
<td>P:952 814-1079</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:pamela.m.deerwood@aphis.usda.gov">pamela.m.deerwood@aphis.usda.gov</a>)</td>
<td></td>
<td>F:952 814-1076</td>
</tr>
<tr>
<td>State</td>
<td>Contact:</td>
<td>Address:</td>
<td>Phone/FAX:</td>
</tr>
<tr>
<td>---------------</td>
<td>-----------------------------------</td>
<td>------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Mississippi</td>
<td>Miriam L. Allred</td>
<td>USDA, APHIS, PPQ</td>
<td>P: 601 922-1417</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:miriam.l.allred@aphis.usda.gov">miriam.l.allred@aphis.usda.gov</a>)</td>
<td>2159 Henry Hill Dr., Suite 100B</td>
<td>F: 601 922-7648</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Jackson, MS 39204</td>
<td></td>
</tr>
<tr>
<td>Missouri</td>
<td>Larry Trevathan</td>
<td>USDA, APHIS, PPQ</td>
<td>P: 314 389-8420</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:larry.e.trevathan@aphis.usda.gov">larry.e.trevathan@aphis.usda.gov</a>)</td>
<td>4300 Goodfellow Blvd., #102E</td>
<td>F: 314 389-7640</td>
</tr>
<tr>
<td></td>
<td></td>
<td>St. Louis, MO 63120</td>
<td></td>
</tr>
<tr>
<td>Montana</td>
<td>Richard Merenz</td>
<td>USDA, APHIS, PPQ</td>
<td>P: 406 449-5210</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:richard.j.merenz@aphis.usda.gov">richard.j.merenz@aphis.usda.gov</a>)</td>
<td>1220 Cole Ave. Helena, MT 59601</td>
<td>F: 406 449-5212</td>
</tr>
<tr>
<td>Nebraska</td>
<td>Vicki Wohlers</td>
<td>USDA, APHIS, PPQ</td>
<td>P: 402 434-2345</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:vicki.b.wohlers@aphis.usda.gov">vicki.b.wohlers@aphis.usda.gov</a>)</td>
<td>5940 S. 58th St. Lincoln, NE 88516</td>
<td>F: 402 434-2330</td>
</tr>
<tr>
<td>Nevada</td>
<td>Frankie Cervantes,</td>
<td>USDA, APHIS, PPQ</td>
<td>P: 702 436-2510</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:frankie.r.cervantes@aphis.usda.gov">frankie.r.cervantes@aphis.usda.gov</a>)</td>
<td>2008 W. Sunset Rd., # 120</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Henderson, NV 89014</td>
<td></td>
</tr>
<tr>
<td>New Hampshire</td>
<td>Stefan Windler</td>
<td>USDA, APHIS, PPQ</td>
<td>P: 802 828-4545</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:stefan.w.winder@aphis.usda.gov">stefan.w.winder@aphis.usda.gov</a>)</td>
<td>617 Comstock Rd., Suite 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Berlin, VT 05602</td>
<td></td>
</tr>
<tr>
<td>New Jersey</td>
<td>H. Thomas James</td>
<td>USDA, APHIS, PPQ</td>
<td>P: 856 478-9740</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:thomas.james@aphis.usda.gov">thomas.james@aphis.usda.gov</a>)</td>
<td>10 High St. P.O. Box 154</td>
<td>F: 856 478-0128</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mullica Hill, NJ 08062</td>
<td></td>
</tr>
<tr>
<td>New Mexico</td>
<td>Shawn Carson</td>
<td>USDA, APHIS, PPQ</td>
<td>P: 575-527-6985</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:shawn.r.carson@aphis.usda.gov">shawn.r.carson@aphis.usda.gov</a>)</td>
<td>270 South 17th St. Las Cruces, NM 88005</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Robert Alexander</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:robert.w.alexander@aphis.usda.gov">robert.w.alexander@aphis.usda.gov</a>)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>New York</td>
<td>Barbara Hammerstone</td>
<td>USDA, APHIS, PPQ</td>
<td>P: 845 883-6445</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:barbara.j.hammerstone@aphis.usda.gov">barbara.j.hammerstone@aphis.usda.gov</a>)</td>
<td>2044 Route 32, Suite 5</td>
<td>F: 8455 883-6419</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Modena, NY 12548</td>
<td></td>
</tr>
<tr>
<td>North Carolina</td>
<td>Deborah Bivins, PHSS</td>
<td>USDA, APHIS, PPQ</td>
<td>P: 919 583-0033</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:deborah.bivins@aphis.usda.gov">deborah.bivins@aphis.usda.gov</a>)</td>
<td>508 Highway 581 South Goldsboro, NC 27530</td>
<td>F: 919 583-0035</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Darlene Brown, PHSS</td>
<td>USDA, APHIS, PPQ</td>
<td>P: 910 815-4678</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:darlene.d.brown@aphis.usda.gov">darlene.d.brown@aphis.usda.gov</a>)</td>
<td>1815 Gardner Dr. Wilmington, NC 28405</td>
<td>F: 910 815-4964</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>William Torres, PHSS</td>
<td>USDA, APHIS, PPQ</td>
<td>P: 704 424-1014</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:william.o.torres@aphis.usda.gov">william.o.torres@aphis.usda.gov</a>)</td>
<td>1809-C Associates Ln. Charlotte, NC 28217</td>
<td>F: 704 357-1667</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patrick Dubois, PHSS</td>
<td>USDA, APHIS, PPQ</td>
<td>P: 919 855-7600</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:patrick.r.dubois@aphis.usda.gov">patrick.r.dubois@aphis.usda.gov</a>)</td>
<td>930 Main Campus Dr., #200</td>
<td>F: 919 835-0317</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Raleigh, NC 27606</td>
<td></td>
</tr>
<tr>
<td>North Dakota</td>
<td>David Hirsch</td>
<td>USDA, APHIS, PPQ</td>
<td>P: 701 250-4473</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:david.c.hirsch@aphis.usda.gov">david.c.hirsch@aphis.usda.gov</a>)</td>
<td>3509 Miriam Ave., Suite A</td>
<td>F: 701 250-4640</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bismarck, ND 58501</td>
<td></td>
</tr>
<tr>
<td>Ohio</td>
<td>John Michael Burch</td>
<td>USDA, APHIS, PPQ</td>
<td>P: 614-322-4700</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:john.m.burch@aphis.usda.gov">john.m.burch@aphis.usda.gov</a>)</td>
<td>8995 East Main St. Reynoldsburg, OH 43068</td>
<td>F: 614-322-4704</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>State</td>
<td>Contact:</td>
<td>Address:</td>
<td>Phone/FAX:</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>Everett Dale (<a href="mailto:everett.dale@aphis.usda.gov">everett.dale@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 301 N.W. 6th St., Suite 101</td>
<td>P:405 609-8840</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oklahoma City, OK 73102</td>
<td>F:405 609-8841</td>
</tr>
<tr>
<td>Oregon</td>
<td>Gary Brown, Domestic Program Coordinator (<a href="mailto:gary.w.brown@aphis.usda.gov">gary.w.brown@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 6135 NE 80th Ave., Suite A-5</td>
<td>P:503 326-2814 ext. 239</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Portland, OR 97218</td>
<td>F:503 326-2969</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Michele McDonald, PHSS (<a href="mailto:michele.l.mcdonald@aphis.usda.gov">michele.l.mcdonald@aphis.usda.gov</a>) Tim Staude, SITC Officer (<a href="mailto:timothy.p.staude@aphis.usda.gov">timothy.p.staude@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 1383 Arcadia Rd. #223 Lancaster, PA 17601</td>
<td>P:717 574-2882</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>P:215 768-4841</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>Wilfredo Garcia (<a href="mailto:wilfredo.garcia@aphis.usda.gov">wilfredo.garcia@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ Airport Station P.O. Box 37521 San Juan, PR 00937-0521</td>
<td>P:787 253-4699</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F:787 253-7837</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>See Connecticut on page A-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>South Carolina</td>
<td>Gilbert Rowe (<a href="mailto:gilbert.e.rowe@aphis.usda.gov">gilbert.e.rowe@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 137 Airport Ct., Suite F Mullins, SC 29574</td>
<td>P:843 423-2967</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F:843 423-5612</td>
</tr>
<tr>
<td>South Dakota</td>
<td>Amy Mesman (<a href="mailto:amy.mesman@aphis.usda.gov">amy.mesman@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 314 South Henry, Suite 200 P.O. Box 250 Pierre, SD 57501-0250</td>
<td>P:605 224-1713</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F:605 224-0172</td>
</tr>
<tr>
<td>Tennessee</td>
<td>Paul Allyn (<a href="mailto:paul.d.allyn@aphis.usda.gov">paul.d.allyn@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 1410 Kensington Square Ct., Suite 101 Murfreesboro, TN 37130</td>
<td>P: 615-907-7804</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F: 615-907-8168</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>C: 615-566-1204</td>
</tr>
<tr>
<td>Texas</td>
<td>Justin Wall (<a href="mailto:justin.b.wall@aphis.usda.gov">justin.b.wall@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 903 San Jacinto Blvd., Suite 270 Austin, TX 78701</td>
<td>P:512 916-5241</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F:512 916-5243</td>
</tr>
<tr>
<td>Utah</td>
<td>Gregory Abbott (<a href="mailto:gregory.c.abbott@aphis.usda.gov">gregory.c.abbott@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 65 South 100 East Richfield, UT 84701</td>
<td>P:435 896-4772</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F:435 896-8164</td>
</tr>
<tr>
<td>Vermont</td>
<td>Stefan Windler (<a href="mailto:stefan.w.windler@aphis.usda.gov">stefan.w.windler@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 617 Comstock Rd., Suite 3 Berlin, VT 05602</td>
<td>P:802 828-4545</td>
</tr>
<tr>
<td>Virginia</td>
<td>Susan Murphy (<a href="mailto:susan.g.murphy@aphis.usda.gov">susan.g.murphy@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 200 Granby Mall Federal Bldg., Rm. 331 Norfolk, VA 23510</td>
<td>P:757 441-3211</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F:757 441-6267</td>
</tr>
<tr>
<td>Washington</td>
<td>Ayalew Assefaa (<a href="mailto:alew.assefa@aphis.usda.gov">alew.assefa@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 835 S.192nd St., Suite 1600 Seatac, WA 98148</td>
<td>P:206 878-6600</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>F:206 870-8043</td>
</tr>
<tr>
<td>West Virginia</td>
<td>Justin Thaxton (<a href="mailto:justin.b.thaxton@aphis.usda.gov">justin.b.thaxton@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 1900 Kanawha Blvd., East Charleston, WV 25305</td>
<td>P:304 343-8585</td>
</tr>
<tr>
<td></td>
<td>Jason Watkins (<a href="mailto:jason.j.watkins@aphis.usda.gov">jason.j.watkins@aphis.usda.gov</a>)</td>
<td></td>
<td>F:304 343-8586</td>
</tr>
</tbody>
</table>
### Table A-1 Directory of PEQ Liaison Officers (page 6 of 6)

<table>
<thead>
<tr>
<th>State</th>
<th>Contact</th>
<th>Address</th>
<th>Phone/FAX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wisconsin</td>
<td>JoAnn Cruse (<a href="mailto:joann.m.cruse@aphis.usda.gov">joann.m.cruse@aphis.usda.gov</a>) Susan Emmert (<a href="mailto:susan.y.emmert@aphis.usda.gov">susan.y.emmert@aphis.usda.gov</a>)</td>
<td>USDA, APHIS, PPQ 1 Gifford Pinchot Dr. Building 1, Room 229 Madison, WI 53726</td>
<td>P: 608 231-9545 F: 608 231-9581</td>
</tr>
<tr>
<td>Wyoming</td>
<td>Larry Cain</td>
<td>USDA, APHIS, PPQ 504 West 17th St., Suite 200 Cheyenne, WY 82001-4348</td>
<td>P: 307 772-2323 F: 307 772-2780</td>
</tr>
</tbody>
</table>
## Listings

**Table B-1 Directory of Plant Inspection Stations (page 1 of 2)**

<table>
<thead>
<tr>
<th>Region:</th>
<th>Address:</th>
<th>Phone/FAX:</th>
</tr>
</thead>
</table>
| Eastern | USDA, APHIS, PPQ  
Miami Plant Inspection Station  
P.O. Box 660520  
Miami, FL 33266 | Phone:305 526-3900  
FAX:305 871-4205 |
|         | USDA, APHIS, PPQ  
Plant Inspection Station  
3951 Centerport St.  
Orlando, FL 33122 | Phone:407 825-4237  
FAX:407 825-4235 |
|         | USDA, APHIS, PPQ  
Plant Inspection Station  
Hartsfield Perishable Complex  
1270 Woolman Pl.  
Atlanta, GA 30354 | Phone:404 564-2176  
FAX:404 564-2312 |
|         | USDA, APHIS, PPQ  
Memorial Inspection Station  
2500 Brunswick Ave., Bldg. G  
Linden, NJ 07036 | Phone:908 862-2012  
FAX:908 862-2095 |
|         | USDA, APHIS, PPQ  
Plant Inspection Station  
230-59 International Airport Centers Blvd.  
Building C-Suite 100-Room 109  
Jamaica, NY 11413 | Phone:718 553-3500  
FAX:718 553-3510 |
|         | USDA, APHIS, PPQ  
Plant Inspection Station  
150 Central Sector, Bldg. C2, Warehouse #3  
Carolina, PR 00979 | Phone:787 253-7850  
FAX:787 253-4514 |
### Table B-1  Directory of Plant Inspection Stations (page 2 of 2)

<table>
<thead>
<tr>
<th>Region:</th>
<th>Address:</th>
<th>Phone/FAX:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Western</td>
<td>USDA, APHIS, PPQ&lt;br&gt;Plant Inspection Station&lt;br&gt;9 North Grand Ave., Room 120&lt;br&gt;Nogales, AZ 85621</td>
<td>Phone: 520 287-6463&lt;br&gt;FAX: 520 397-0138</td>
</tr>
<tr>
<td></td>
<td>USDA, APHIS, PPQ&lt;br&gt;Plant Inspection Station&lt;br&gt;11840 S. La Cienga Blvd.&lt;br&gt;Hawthorne, CA 90250</td>
<td>Phone: 310 725-1910&lt;br&gt;FAX: 310 725-1947</td>
</tr>
<tr>
<td></td>
<td>USDA, APHIS, PPQ&lt;br&gt;Plant Inspection Station&lt;br&gt;9777 Via de la Amistad, Rm. 140&lt;br&gt;San Diego, CA 92154</td>
<td>Phone: 619 661-3316&lt;br&gt;FAX: 619 661-3047</td>
</tr>
<tr>
<td></td>
<td>USDA, APHIS, PPQ&lt;br&gt;Plant Inspection Station&lt;br&gt;389 Oyster Point Blvd., Suite 2&lt;br&gt;South San Francisco, CA 94080</td>
<td>Phone: 650 876-9093&lt;br&gt;FAX: 650 876-9008</td>
</tr>
<tr>
<td></td>
<td>USDA, APHIS, PPQ&lt;br&gt;Plant Inspection Station&lt;br&gt;17-3306 Neptune Avenue&lt;br&gt;Barigada, GU 96913</td>
<td>Phone: 671 475-1427&lt;br&gt;FAX: 671 477-9487</td>
</tr>
<tr>
<td></td>
<td>USDA, APHIS, PPQ&lt;br&gt;Plant Inspection Station&lt;br&gt;300 Rodgers Blvd., #58&lt;br&gt;Honolulu, HI 96819</td>
<td>Phone: 808 861-8492, 8494&lt;br&gt;FAX: 808 861-8499</td>
</tr>
<tr>
<td></td>
<td>USDA, APHIS, PPQ&lt;br&gt;Plant Inspection Station&lt;br&gt;900 E. Airline Hwy., Service Rd. A&lt;br&gt;Kenner, LA 70063&lt;br&gt;Mail: P.O. Box 20114&lt;br&gt;New Orleans, LA 70141-0114</td>
<td>Phone: 504 464-0430&lt;br&gt;FAX: 504 465-0968</td>
</tr>
<tr>
<td></td>
<td>USDA, APHIS, PPQ&lt;br&gt;Plant Inspection Station&lt;br&gt;19581 Lee Rd.&lt;br&gt;Humble, TX 77338</td>
<td>Phone: 281 233-7100&lt;br&gt;FAX: 281 230-7223</td>
</tr>
<tr>
<td></td>
<td>USDA, APHIS, PPQ&lt;br&gt;Plant Inspection Station (Brownsville)&lt;br&gt;P.O. Drawer 393&lt;br&gt;100 Los Indios Blvd.&lt;br&gt;Los Indios, TX 78567</td>
<td>Phone: (956) 399-2085&lt;br&gt;FAX: (956) 399-4001</td>
</tr>
<tr>
<td></td>
<td>USDA, APHIS, PPQ&lt;br&gt;Plant Inspection Station&lt;br&gt;835 S. 192nd St., Suite 1600&lt;br&gt;SeaTac, WA 98148</td>
<td>Phone: 206 878-6600&lt;br&gt;FAX: 206 870-8043</td>
</tr>
</tbody>
</table>
### Directory of SPROs and State PEQ Contacts

#### Contents

<table>
<thead>
<tr>
<th>State</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>C-2</td>
</tr>
<tr>
<td>National Plant Board</td>
<td>C-2</td>
</tr>
<tr>
<td>What is the National Plant Board?</td>
<td>C-2</td>
</tr>
<tr>
<td>Purpose</td>
<td>C-2</td>
</tr>
<tr>
<td>The National Plant Board Members</td>
<td>C-3</td>
</tr>
<tr>
<td>Listings</td>
<td>C-3</td>
</tr>
<tr>
<td>Alabama</td>
<td>C-3</td>
</tr>
<tr>
<td>Alaska</td>
<td>C-3</td>
</tr>
<tr>
<td>Arizona</td>
<td>C-4</td>
</tr>
<tr>
<td>Arkansas</td>
<td>C-4</td>
</tr>
<tr>
<td>California</td>
<td>C-4</td>
</tr>
<tr>
<td>Colorado</td>
<td>C-4</td>
</tr>
<tr>
<td>Commonwealth of the Northern Mariana Islands (CNMI)</td>
<td>C-4</td>
</tr>
<tr>
<td>Connecticut</td>
<td>C-4</td>
</tr>
<tr>
<td>Delaware</td>
<td>C-4</td>
</tr>
<tr>
<td>District of Columbia</td>
<td>C-4</td>
</tr>
<tr>
<td>Florida</td>
<td>C-4</td>
</tr>
<tr>
<td>Georgia</td>
<td>C-4</td>
</tr>
<tr>
<td>Guam</td>
<td>C-4</td>
</tr>
<tr>
<td>Michigan</td>
<td>C-5</td>
</tr>
<tr>
<td>Minnesota</td>
<td>C-6</td>
</tr>
<tr>
<td>Mississippi</td>
<td>C-6</td>
</tr>
<tr>
<td>Missouri</td>
<td>C-6</td>
</tr>
<tr>
<td>Montana</td>
<td>C-6</td>
</tr>
<tr>
<td>Nebraska</td>
<td>C-6</td>
</tr>
<tr>
<td>Nevada</td>
<td>C-6</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>C-6</td>
</tr>
<tr>
<td>New Jersey</td>
<td>C-6</td>
</tr>
<tr>
<td>New Mexico</td>
<td>C-6</td>
</tr>
<tr>
<td>New York</td>
<td>C-6</td>
</tr>
<tr>
<td>North Carolina</td>
<td>C-6</td>
</tr>
<tr>
<td>North Dakota</td>
<td>C-7</td>
</tr>
<tr>
<td>Ohio</td>
<td>C-7</td>
</tr>
<tr>
<td>Oklahoma</td>
<td>C-7</td>
</tr>
<tr>
<td>Oregon</td>
<td>C-7</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>C-7</td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>C-7</td>
</tr>
<tr>
<td>Rhode Island</td>
<td>C-7</td>
</tr>
</tbody>
</table>
Introduction

The following list includes contact information for State and Territory Plant Regulatory Officials (SPRO) and State PEQ Contacts. Plant Inspection Stations (PIS) should use this list when determining who to contact and to whom PEQ forms and correspondence should be sent, i.e., PPQ Form 236 for the State Contacts (copies number 3, 4, 5, and 6). A list of PPQ Liaison Officers for each State can be found in the Directory of PPQ Postentry Quarantine Liaison Officers on page A-1.

National Plant Board

What is the National Plant Board?¹

The National Plant Board is a nonprofit organization of the plant pest regulatory agencies of each of the states and Commonwealth of Puerto Rico. Member agencies must be members in good standing of the regional plant board in which their state or commonwealth is located.

Purpose²

Purposes of the National Plant Board as stated in its Articles of Incorporation include:

---

¹ This information was retrieved from the National Plant Board Web site.
² Id.
1. To provide national representation for the Eastern Plant Board, the Southern Plant Board, the Central Plant Board, and the Western Plant Board, and to receive, consider and implement to the extent possible, all regional plant board recommendations.

2. To foster effective and harmonized plant health programs; to act as an information clearinghouse on plant pest prevention and regulatory matters; to provide for a discussion of principles, policies and methods; and to make recommendations to the regional boards for the promotion of efficiency, harmony and uniformity in and among the states in the field of plant pest prevention and regulation.

3. To collaborate and communicate effectively with public and private agencies and organizations on plant health and plant pest regulatory issues which affect the states.

4. To protect agriculture, horticulture, forestry, and the environment on state, national and international levels.

**The National Plant Board Members**

Membership of the National Plant Board is made up of the principal plant pest regulatory officials of each member commonwealth and state. This person is usually the administrator of the section of his or her state's Department of Agriculture which deals with pest prevention. Such units usually carry titles such as Plant Industry, Plant Health, Entomologist, State Plant Pathologist, etc. In some states the function is in an agency other than the department of agriculture.

**Listings**

Table C-1 Directory of State Plant Regulatory Officials and State PEQ Contacts (page 1 of 6)

<table>
<thead>
<tr>
<th>State</th>
<th>Contact:</th>
<th>Address:</th>
<th>Phone/FAX:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alabama</td>
<td>Dennis Barclift, SPRO (<a href="mailto:dennis.barclift@agi.alabama.gov">dennis.barclift@agi.alabama.gov</a>)</td>
<td>P.O. Box 3336 Montgomery, AL 36109-0336</td>
<td>P: 334 240-7225 F: 334 240-7168</td>
</tr>
<tr>
<td></td>
<td>Tim Johnson Plant Protection Inspector (<a href="mailto:ptimjohn@aol.com">ptimjohn@aol.com</a>)</td>
<td>P.O. Box 764 Moulton, AL 35650</td>
<td>P:334 850-7736 F:None</td>
</tr>
<tr>
<td>Alaska</td>
<td>Douglas Warner (<a href="mailto:douglas.warner@alaska.gov">douglas.warner@alaska.gov</a>)</td>
<td>Alaska Department of Natural Resources Division of Agriculture 1800 Glenn Hwy, Suite 12 Palmer, AK 99645-0949</td>
<td>P:671 688-6029 F:671 647-6029</td>
</tr>
</tbody>
</table>

3 *Id.*
<table>
<thead>
<tr>
<th>State:</th>
<th>Contact:</th>
<th>Address:</th>
<th>Phone/FAX:</th>
</tr>
</thead>
</table>
| Arizona                    | Jamie Legg (jlegg@azda.gov)                       | Arizona Department of Agriculture Plant Services Division1688 West Adams St. Phoenix, AZ 85007 | P:602 542-7184  
                               |                                                   |                                                            | F:602 542-1004 |
| Arkansas                   | Paul Shell (paul.shell@aspb.ar.gov)               | 1 Natural Resources Dr. P.O. Box 1069 Little Rock, AR 72203                | P:501 225-1598  
                               |                                                   |                                                            | F:501 225-3590 |
| California                 | Kevin Masuhara (kevin.masuhara@cdfa.ca.gov)       | CDFA Permits & Regulations 1220 N St., Room 210 Sacramento, CA 95814       | P:916 654-1017  
                               |                                                   |                                                            | F:916 654-1018 |
| Colorado                   | Mitch Yergert (mitchell.yergert@ag.state.co.us)   | Division of Plant Industry Colorado Department of Agriculture 700 Kipling St., Suite 4000 Lakewood, CO 80215-5894 | P:303 239-4140  
                               |                                                   |                                                            |                |
| Commonwealth of the Northern Marianas Islands (CNMI) | Michael (Troy) Brown (michael.t.brown@aphis.usda.gov) | USDA, APHIS, PPQ 17-3306 Neptune Avenue Barrigada, GU 96913                  | P:671 475-0854  
                               |                                                   |                                                            | F:671 475-0853 |
| Connecticut                | Victoria Smith (victoria.smith@ct.gov)            | The Connecticut Agricultural Experiment Station 123 Huntington St. New Haven, CT 06511 | P: 203-974-8474  
                               |                                                   |                                                            |                |
| Delaware                   | Faith Kuehn, SPRO (faith.kuehn@state.de.us)       | Delaware Dept. of Agriculture Plant Industries Section 2320 South DuPont Hwy. Dover, DE 19901 | P:302 698-4500  
                               | Jeff Brothers, Supervisor Nursery Inspection (jeffrey.brothers@state.de.us) |                                                            | F: 302 697-6287 |
| District of Columbia       | Matthew A. Travis, SPHD (matthew.a.travis@aphis.usda.gov) | USDA, APHIS, PPQ 2200 Broening Highway, Suite 140 Baltimore, MD 21224 | P:410 631-0073  
                               |                                                   |                                                            | F:410 631-0069  
                               |                                                   |                                                            | C:410 977-7214  |
| Florida                    | Stephen A. Hildebrandt, Certification Specialist (Stephen.hildebrandt@freshfromflorida.com) | Division of Plant Industry P.O. Box 147 1911 Southwest 34th St. Gainesville, FL 32614-7100 | P:352 395-4714  
                               |                                                   |                                                            | F: 352 395-4618 |
| Georgia                    | Alan Lowman (lowman@agr.state.ga.us)              | Georgia Dept. of Agriculture Plant Protection Division 19 Martin Luther King, Jr. Dr., SW Room 243 Atlanta, GA 30334 | P:404 651-9486  
                               |                                                   |                                                            | F:404 656-3644  
                               |                                                   |                                                            | C:404 535-0008  |
| Guam                       | Dr. Russell Campbell (guament@teleguam.net)       | Guam Department of Agriculture 17-3306 Neptune Avenue Barrigada, GU 96913 | P:671 475-1427  
                               |                                                   |                                                            | F: 671 477-9487 |
| Hawaii                     | Leslie Iseke (leslie.h.iseko@hawaii.gov)           | Hawaii Dept. of Agriculture 1849 Auki St. Honolulu, HI 96819              | P:808 832-0574  
                               |                                                   |                                                            | F:808 832-0584  |
### Table C-1 Directory of State Plant Regulatory Officials and State PEQ Contacts (page 3 of 6)

<table>
<thead>
<tr>
<th>State:</th>
<th>Contact:</th>
<th>Address:</th>
<th>Phone/FAX:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idaho</td>
<td>Michael Cooper  &lt;br/&gt; (<a href="mailto:mike.cooper@agri.idaho.gov">mike.cooper@agri.idaho.gov</a>)</td>
<td>Division of Plant Industries  &lt;br/&gt; Idaho State Dept. of Agriculture  &lt;br/&gt; P.O. Box 790  &lt;br/&gt; Boise, ID 83701-0790</td>
<td>P:208 332-8620</td>
</tr>
<tr>
<td>Illinois</td>
<td>Mark Cinnamon, Supervisor  &lt;br/&gt; (<a href="mailto:michael.cinnamon@dnr.state.il.us">michael.cinnamon@dnr.state.il.us</a>)</td>
<td>Illinois Dept. of Agriculture  &lt;br/&gt; Bureau of Environmental Programs  &lt;br/&gt; CMS North Suburban, Room A 169  &lt;br/&gt; 9511 Harrison St.  &lt;br/&gt; Des Plaines, IL 60016</td>
<td>P:847 294-4343</td>
</tr>
<tr>
<td>Indiana</td>
<td>Philip T. Marshall  &lt;br/&gt; (<a href="mailto:pmarshall@dnr.in.gov">pmarshall@dnr.in.gov</a>)</td>
<td>Indiana Dept. of Natural Resources  &lt;br/&gt; Division of Entomology and Plant Pathology  &lt;br/&gt; 402 West Washington St., Room 290W  &lt;br/&gt; Indianapolis, IN 46204</td>
<td>P:317 232-4189 &lt;br/&gt; F:317-232-2649 &lt;br/&gt; C:812 595-2740</td>
</tr>
<tr>
<td>Iowa</td>
<td>Robin Pruisner  &lt;br/&gt; (<a href="mailto:robin.pruisner@iowaAgriculture.gov">robin.pruisner@iowaAgriculture.gov</a>)</td>
<td>Iowa Dept. of Agriculture and Land Stewardship  &lt;br/&gt; State Entomologist  &lt;br/&gt; 2230 South Ankeny Blvd.  &lt;br/&gt; Ankeny, IA 50023</td>
<td>P:515-725-1470</td>
</tr>
<tr>
<td>Kansas</td>
<td>Jeff Vogel</td>
<td>Kansas Dept. of Agriculture  &lt;br/&gt; Plant Protection and Weed Control  &lt;br/&gt; Forbes Field, Bldg. 282  &lt;br/&gt; P.O. Box 19282  &lt;br/&gt; Topeka, KS 66619</td>
<td>P:785 862-2180 &lt;br/&gt; F:785 862-2182</td>
</tr>
<tr>
<td>Kentucky</td>
<td>Joe Collins  &lt;br/&gt; (<a href="mailto:joe.collins@uky.edu">joe.collins@uky.edu</a>)</td>
<td>University of Kentucky  &lt;br/&gt; Department of Entomology  &lt;br/&gt; Agricultural Science Bldg. N, Rm. S225  &lt;br/&gt; Lexington, KY 40546</td>
<td>P:859 257-5838 &lt;br/&gt; F:859 257-3807</td>
</tr>
<tr>
<td>Louisiana</td>
<td>Tad Hardy  &lt;br/&gt; (<a href="mailto:tad_h@ldaf.state.la.us">tad_h@ldaf.state.la.us</a>)  &lt;br/&gt; Richard Miller  &lt;br/&gt; (<a href="mailto:rj.miller@ldaf.state.la.us">rj.miller@ldaf.state.la.us</a>)</td>
<td>Louisiana Dept. of Agriculture and Forestry  &lt;br/&gt; P.O. Box 91081  &lt;br/&gt; Baton Rouge, LA 70821-9081</td>
<td>P:225 952-8100 &lt;br/&gt; F:225 925-3760</td>
</tr>
<tr>
<td>Maine</td>
<td>Sarah Scally  &lt;br/&gt; (<a href="mailto:sarah.h.scally@maine.gov">sarah.h.scally@maine.gov</a>)</td>
<td>Maine Dept. of Agriculture  &lt;br/&gt; 28 State House Station  &lt;br/&gt; Augusta, ME 04333</td>
<td>P:207 287-3891 &lt;br/&gt; F:207 287-7548</td>
</tr>
<tr>
<td>Maryland</td>
<td>Robert B. Trumbule  &lt;br/&gt; (<a href="mailto:robert.trumbule@maryland.gov">robert.trumbule@maryland.gov</a>)</td>
<td>Maryland Dept. of Agriculturer  &lt;br/&gt; Plant Protection and Weed Mgmt.  &lt;br/&gt; 10300 Baltimore Ave.  &lt;br/&gt; Bldg. 308, Room 305, BARC-E  &lt;br/&gt; Beltsville, MD 20705</td>
<td>P:301 982-3224</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>Lee Corte-Real  &lt;br/&gt; (<a href="mailto:lee.corte-real@state.ma.us">lee.corte-real@state.ma.us</a>)</td>
<td>Massachusetts Dept. of Agricultural Resources  &lt;br/&gt; 251 Causeway St., Suite 500  &lt;br/&gt; Boston, MA 02114</td>
<td>P:517 337-5091 &lt;br/&gt; F:517 337-5094</td>
</tr>
<tr>
<td>Michigan</td>
<td>Richard C. Kaitany, Ph.D.  &lt;br/&gt; (<a href="mailto:kaitanyr@michigan.gov">kaitanyr@michigan.gov</a>)</td>
<td>MDA and Rural Development  &lt;br/&gt; Geagley Laboratory Building  &lt;br/&gt; 615 South Harrison Rd.  &lt;br/&gt; East Lansing, MI 48823</td>
<td>P:517 337-5091 &lt;br/&gt; F:517 337-5094</td>
</tr>
</tbody>
</table>
## Table C-1 Directory of State Plant Regulatory Officials and State PEQ Contacts (page 4 of 6)

<table>
<thead>
<tr>
<th>State</th>
<th>Contact</th>
<th>Address</th>
<th>Phone/FAX:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minnesota</td>
<td>Mark Schreiber (<a href="mailto:mark.schreiber@state.mn.us">mark.schreiber@state.mn.us</a>)</td>
<td>Minnesota Dept. of Agriculture Plant Protection Division Orville Freeman Office Building 625 Robert St. North St. Paul, MN 55155-2538</td>
<td>P:651 201-6388 F:651 201-6108</td>
</tr>
<tr>
<td>Mississippi</td>
<td>Mississippi Dept. of Agriculture and Commerce (<a href="mailto:Kenneth@mdac.state.ms.us">Kenneth@mdac.state.ms.us</a>)</td>
<td>Bureau of Plant Industry P.O. Box 5207 Mississippi State, MS 39762</td>
<td>P:662 325-7765 F:662 325-0397</td>
</tr>
<tr>
<td>Missouri</td>
<td>Collin Wamsley, State Entomologist (<a href="mailto:collin.wamsley@mda.mo.gov">collin.wamsley@mda.mo.gov</a>)</td>
<td>Missouri Dept. of Agriculture P.O. Box 630 Jefferson City, MO 65102</td>
<td>P:573 751-5505 F:573 751-0007</td>
</tr>
<tr>
<td>Montana</td>
<td>Elizabeth (Beth) Eiring (<a href="mailto:eeiring@mt.gov">eeiring@mt.gov</a>)</td>
<td>Montana Department of Agriculture P.O. Box 200201 Helena, MT 59620-0201</td>
<td>P:406-444-9066 F:406 444-5409</td>
</tr>
<tr>
<td>Nebraska</td>
<td>Julie Van Meter</td>
<td>P.O. Box 94756 Lincoln, NE 68509</td>
<td>P:402 471-2394 F:402 471-6892</td>
</tr>
<tr>
<td>Nevada</td>
<td>Dawn Rafferty (<a href="mailto:rafferty@agri.nv.gov">rafferty@agri.nv.gov</a>)</td>
<td>Nevada Dept. of Agriculture Plant Industry 350 Capital Hill Ave. Reno, NV 89502-2992</td>
<td>P:775 688-1182 F:775 688-1178</td>
</tr>
<tr>
<td>New Hampshire</td>
<td>Chris Rallis (<a href="mailto:crallis@agr.state.nh.us">crallis@agr.state.nh.us</a>)</td>
<td>New Hampshire Dept. of Agriculture, Markets, and Food State Laboratory Building D 6 Hazen Dr. Concord, NH 03301</td>
<td>P:603 271-3691 F:603 271-3692</td>
</tr>
<tr>
<td>New Jersey</td>
<td>Carl Schulze, Director (<a href="mailto:carl.schulze@ag.state.nj.us">carl.schulze@ag.state.nj.us</a>)</td>
<td>Division of Plant Industry New Jersey Dept. of Agriculture P.O. Box 330 Trenton, NJ 08625</td>
<td>P:609 292-5440</td>
</tr>
<tr>
<td>New Mexico</td>
<td>Brad Lewis, Bureau Chief (<a href="mailto:blewis@nmda.nmsu.edu">blewis@nmda.nmsu.edu</a>)</td>
<td>Bureau of Entomology and Nursery Industries New Mexico Dept. of Agriculture P.O. Box 30005 MSC 3BA Las Cruces, NM 88003-0005</td>
<td>P:505 646-3207</td>
</tr>
<tr>
<td>New York</td>
<td>Margaret Kelly, Assistant Director (<a href="mailto:margaret.kelly@agriculture.ny.gov">margaret.kelly@agriculture.ny.gov</a>)</td>
<td>Division of Plant Industry New York Dept. of Agriculture and Markets 10 B Airline Dr. Albany, NY 12235</td>
<td>P:518 457-5985 F:518 457-1204</td>
</tr>
<tr>
<td></td>
<td>Western NC: Jim Corbin (<a href="mailto:jim.corbin@ncagr.gov">jim.corbin@ncagr.gov</a>)</td>
<td>North Carolina Dept. of Agriculture and Consumer Services 89 Oakwood Lane Sylva, NC 28779</td>
<td>C: 828-421-5445</td>
</tr>
<tr>
<td>State:</td>
<td>Contact:</td>
<td>Address:</td>
<td>Phone/FAX:</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------------------</td>
<td>-----------------------------------------------</td>
<td>--------------------</td>
</tr>
<tr>
<td>North Dakota</td>
<td>Judy Carlson, SPRO</td>
<td>North Dakota Dept. of Agriculture</td>
<td>P: 701 328-4997</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:jcarlson@nd.gov">jcarlson@nd.gov</a>)</td>
<td>600 East Boulevard Ave., Dept. 602</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bismark, ND 58505-0020</td>
<td></td>
</tr>
<tr>
<td>Ohio</td>
<td>Dan Kenny</td>
<td>Ohio Dept. of Agriculture Plant Pest Control</td>
<td>P: 614 728-6400</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:dkenny@agri.ohio.gov">dkenny@agri.ohio.gov</a>)</td>
<td>Section 8995 East Main St.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Reynoldsburg, OH 43068</td>
<td></td>
</tr>
<tr>
<td>Oklahoma</td>
<td>Jeanetta Cooper</td>
<td>2800 North Lincoln Blvd.</td>
<td>P: 405 522-5971</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:cooper@oda.state.ok.us">cooper@oda.state.ok.us</a>)</td>
<td>Oklahoma City, OK 73105</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oregon</td>
<td></td>
<td>Plant Division</td>
<td>P: 503 986-4644</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Oregon Dept. of Agriculture</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>635 Capital St., NE</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Salem, OR 97310-0110</td>
<td></td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>Dana Rhodes</td>
<td>Bureau of Plant Industry</td>
<td>P: 717 772-5205</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:danrhodes@pa.gov">danrhodes@pa.gov</a>)</td>
<td>Pennsylvania Dept. of Agriculture</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2301 North Cameron St.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Harrisburg, PA 17110</td>
<td></td>
</tr>
<tr>
<td>Puerto Rico</td>
<td>Nilda Perez</td>
<td>Puerto Rico Dept. of Agriculture</td>
<td>P: 787 724-4627</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:sanidadvegetal@prtc.net">sanidadvegetal@prtc.net</a>)</td>
<td>P.O. Box 10163</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>San Juan, PR 00908-1163</td>
<td></td>
</tr>
<tr>
<td>Rhode Island</td>
<td>Ken Ayars</td>
<td>RI DEM Division of Agriculture</td>
<td>P: 401-222-2781 ext. 4500</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:ken.ayars@dem.ri.gov">ken.ayars@dem.ri.gov</a>)</td>
<td>235 Promenade St., Rm. 370</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Providence, RI 02908</td>
<td></td>
</tr>
<tr>
<td>South Carolina</td>
<td>Thad Raymond</td>
<td>Dept. of Plant Industry</td>
<td>P: 803 874-2354</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:theodoj@clemson.edu">theodoj@clemson.edu</a>)</td>
<td>904 F R Huff Drive, Suite 101</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>P.O. Box 161</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>St. Matthews, SC 29135</td>
<td></td>
</tr>
<tr>
<td>South Dakota</td>
<td>Kevin Fridley, Director</td>
<td>Plant Industry Program</td>
<td>P: 605 773-3796</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:kevin.fridley@state.sd.us">kevin.fridley@state.sd.us</a>)</td>
<td>Division of Regulatory Services</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>South Dakota Dept. of Agriculture</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>523 E. Capitol</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pierre, SD 57501-3185</td>
<td></td>
</tr>
<tr>
<td>Tennessee</td>
<td>Anni Self</td>
<td>Ellington Agricultural Center</td>
<td>P: 615 837-5313</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:anni.self@state.tn.us">anni.self@state.tn.us</a>)</td>
<td>P.O. Box 40627</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Melrose Station 440 Hogan Rd., Porter Bldg.</td>
<td>F: 615 837-5246</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nashville, TN 37204</td>
<td></td>
</tr>
<tr>
<td>Texas</td>
<td>Awinash Bhatkar</td>
<td>Texas Dept. of Agriculture</td>
<td>P: 512 463-5025</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:awinash.bhatkar@tda.state.tx.us">awinash.bhatkar@tda.state.tx.us</a>)</td>
<td>P.O. Box 12847</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Austin, Texas 78711</td>
<td>F: 888 215-5385</td>
</tr>
<tr>
<td>Utah</td>
<td>Clint Burfitt</td>
<td>Utah Dept. of Agriculture and Food Plant</td>
<td>P: 801 538-7184</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:c.burfitt@utah.gov">c.burfitt@utah.gov</a>)</td>
<td>Industry 350 North Redwood Rd.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>P.O. Box 146500</td>
<td>F: 801 538-7126</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Salt Lake City, UT 84116-6500</td>
<td></td>
</tr>
<tr>
<td>Vermont</td>
<td>Tim Schmalz, VT Plant Pathologist</td>
<td>Lab Division</td>
<td>P: 802 241-3544</td>
</tr>
<tr>
<td></td>
<td>(<a href="mailto:tim.schmalz@state.vt.us">tim.schmalz@state.vt.us</a>)</td>
<td>103 South Main St.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Waterbury, VT 05676</td>
<td>F: 802 241-3008</td>
</tr>
<tr>
<td>State</td>
<td>Contact</td>
<td>Address</td>
<td>Phone/FAX</td>
</tr>
<tr>
<td>-------------</td>
<td>--------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td>-----------</td>
</tr>
</tbody>
</table>
| Virginia    | Larry Nichols (larry.nichols@vdacs.virginia.gov) | Virginia Dept. of Agriculture and Consumer Services  
P.O. Box 1163  
Richmond, VA 23218 | P:804 786-3515 |
| Washington  | Tom Wessels (twessels@agr.wa.gov) | Washington State Dept. of Agriculture  
P. O. Box 42560  
Olympia, WA 98504-2560 | P:360 902-2062  
F:360 902-2094 |
| West Virginia | Sherrie Hutchinson (shutchinson@ag.state.wv.us) | WVDA—Plant Industries Division  
1900 Kanawha Blvd. East Charleston, WV 25305-0191 | P:304 558-2212  
F:304 558-2435 |
| Wisconsin   | Ellen Hermanson (ellen.hermanson@wisconsin.gov) | Wisconsin Dept. of Agriculture, Trade, & Consumer Protection  
P.O. Box 8911  
Madison, WI 53708-8911 | P:608 224-4576  
F:608 224-4656 |
| Wyoming     | Hank Uhden, Technical Service Manager (hank.uhden@wyo.gov) | Wyoming Dept. of Agriculture  
2219 Carey Ave.  
Cheyenne, WY 82002-0100 | P:307 777-6574  
F:307-777-6593 |
Roles in Handling and Documenting Violations

This appendix details what the State Cooperator, Postentry Quarantine Liaison Officer, Representative of the Postentry Quarantine Program (PEQP), local Investigative and Enforcement Services (IES) Investigator, and State Plant Health Director (SPHD) do when a State Cooperator detects a violation of the Postentry Growing Agreement (PPQ Form 546).

**CAUTION**

The SPHD and/or the PEQP decides whether to request that the permit unit revoke a company’s or individual’s postentry permit. Moreover, the SPHD decides, with input from the Liaison Officer, IES Enforcement Operations, and State Cooperator, whether it is more appropriate to issue a warning letter or pursue prosecution.

1. The State Cooperator detects the violation. The following are violations of the Postentry Growing Agreement (PPQ Form 546):

   A. The cooperator finds plants growing on premises not controlled by the person or company who signed the Agreement. If there was approval from the State and the National Coordinator for Postentry Quarantine in Beltsville, MD, or, for Hawaii, Guam, and CNMI, the Postentry Coordinator in Honolulu, HI to move the plants, no violation occurred.

   B. The person who signed the Postentry Growing Agreement, or a representative of the company signing the Agreement, refuses to allow a cooperator on the premises during the cooperator’s normal business hours.

   C. The cooperator finds quarantined plant(s) or any material propagated from these plants unlabeled or with inappropriate labeling. The label
must show the plant name, the port accession number, and the importation date.

D. The cooperator finds other postentry genera or domestic plants of the same genus planted within 3 meters (approximately 10 feet) of the postentry plants.

E. The cooperator learns that postentry plants have been propagated by seed or other propagules (e.g., air layers, cuttings, flowers, plants, or suckers) taken from the quarantined plants when there was no prior written approval by the State and the National Coordinator for Postentry Quarantine or, for Hawaii, Guam, and CNMI, the Postentry Coordinator.

F. The person who signed the Postentry Growing Agreement, or a representative of the company signing the Agreement, refuses to apply a treatment prescribed by the cooperator to eliminate pests on the quarantined plant material. Treatment may include destruction of the quarantined plant material when prescribed by the cooperator as the only way to eliminate pests.

G. The cooperator, using his or her best professional judgment, believes the person who signed the Postentry Growing Agreement, or a representative of the company signing the Agreement, failed to notify the State or Liaison Officer when that person had an opportunity to report a conspicuous abnormality in the plant material. The importer must also report the death of a plant or plants to the cooperator.

H. The cooperator learns that the person who signed the Postentry Growing Agreement, or a representative of the company signing the Agreement, failed to report an address change to the PEQP.

I. The cooperator finds plants of Rubus spp. from Europe growing outside or growing in an indoor facility with mesh larger than 16 mesh per inch, or finds Chrysanthemum or Dianthus growing outside an enclosed building.

J. The cooperator finds some or all of the plants are unaccounted for before release at 6 months for Chrysanthemum, 1 year for Dianthus, or 2 years for the remaining postentry genera.

K. The cooperator detects any violations of restrictions listed in the permit.

2. If the State Cooperator detects an apparent pest risk, he or she eliminates the risk immediately. Such actions may include prescribing a treatment or supervising the destruction of the infested or infected plants.

3. The State Cooperator reports the violation and any action taken to eliminate pest risk to the Liaison Officer within 1 work day or the discovery of the violation.
4. The Liaison Officer informs the SPHD and either one will then issue an EAN (PPQ Form 523).

**CAUTION**

This is a good time for the Liaison Officer, with input from the State Cooperator, to prepare PPQ Form 518—Report of Violations for a case file. Directions for completing this form and forwarding paperwork are found on PPQ 518 Report of Violation on page F-8.

5. The Liaison Officer and the IES Investigator meet with the State Cooperator to review the details of the violation. It would be favorable for the Liaison Officer, the State Cooperator, and the IES Investigator to visit the premises where the violation occurred.

6. Having the details of the violation, the Liaison Officer contacts the PEQP to give details of the incident.

7. The IES Investigator assembles a case file that includes affidavits from the State Cooperator, witnesses, and violator.

8. Once the case file is completed, the IES investigator writes a cover letter to transmit a copy of that file to the SPHD. The original investigative case file will be sent to the IES headquarters office in Riverdale, Maryland for review.

9. Following the guidelines of the Civil Penalty Action Team, the reviewer at the IES headquarters staff will submit an e-mail to the Coordinator, Postentry Quarantine Program and SPHD with a projected recommendation. The following are actions that may be appropriate forms of action:

   A. Official Warning Letter (APHIS Form 7060)
   B. Civil penalty
   C. Revocation of the Controlled Import Permit for Postentry Quarantine (CIP)
   D. Innovative terms (suspend a portion of the civil penalty provided training is provided by the violator)
**Instructions for Completing a Report of Violation (PPQ Form 518)**

While completing the form, the Liaison Officer will interview the State Cooperator to obtain a statement of the facts surrounding the alleged violation. The IES Investigator will interview all other parties including the violator and witnesses.

<table>
<thead>
<tr>
<th>Block</th>
<th>Instructions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Date Violation Discovered</td>
<td>Enter the date the State Cooperator discovered the violation</td>
</tr>
<tr>
<td>2. Reg/Compl. Agreement Violated</td>
<td>Enter the regulation violated. If it is a violation of the Postentry Growing Agreement, enter 7 CFR 319.37-7</td>
</tr>
<tr>
<td>3. Where Intercepted</td>
<td>Enter the city and State where the violation was detected</td>
</tr>
<tr>
<td>4. Origin of Article</td>
<td>Fill in the name of the country where the postentry material was originally grown</td>
</tr>
<tr>
<td>5. Article Moved in Violation of Regulations</td>
<td>Enter “Material grown under postentry quarantine”</td>
</tr>
<tr>
<td>6. Identity of Article</td>
<td>Enter the number and identity of the plants associated with the violation. If available, fill in both common and scientific name. Always enter the scientific name</td>
</tr>
<tr>
<td>7. Name and Business Address of Violator</td>
<td>Fill in the violator’s name—usually this will be the name of the person who signed the Postentry Growing Agreement (in parentheses after the name, give the person’s position (e.g., owner, nurseryman, grower, salesperson)) and if appropriate, enter the violator’s business address</td>
</tr>
<tr>
<td>8. Violator Had/If No, Violator was Aware of Regulation</td>
<td>Check and fill in as appropriate</td>
</tr>
<tr>
<td>9. Violator Had/If No, Violator was Aware of Regulation</td>
<td>If the name of the violator and the name of the person signing the Postentry Growing Agreement are the same, check “Yes”</td>
</tr>
<tr>
<td>10. Violator Had/If No, Violator was Aware of Regulation</td>
<td>Write, “(name of violator) signed a Postentry Growing Agreement on (date signed) a copy of which is on file”</td>
</tr>
<tr>
<td>11. Carrier Information</td>
<td>Draw a diagonal line through</td>
</tr>
<tr>
<td>12. Carrier Information</td>
<td>Draw a diagonal line through</td>
</tr>
<tr>
<td>13. Name and Business Address of Consignee</td>
<td>Cross out “NAME AND BUSINESS ADDRESS OF CONSIGNEE” and write, “ADDRESS OR LOCATION WHERE MATERIAL IS BEING GROWN”—ill in the complete address or, as accurate, a description of the property as practicable</td>
</tr>
<tr>
<td>14. Disposition of Pest Risk</td>
<td>Fill in the action(s) taken to eliminate the pest risk, e.g., “the plants were rouged and incinerated,” or, “the plants were sprayed with (description of pesticide and how applied)—if applicable, include the Emergency Action Notice as an attachment and reference in the Officer’s Statement</td>
</tr>
<tr>
<td>15. Remarks</td>
<td>Fill in any pertinent remarks or the information from the continuation of another Block</td>
</tr>
<tr>
<td>16. Violator or Carrier’s Statement of Violation</td>
<td>The IES Investigator will obtain an affidavit or statement from the violator and all other subjects once the investigation is underway</td>
</tr>
</tbody>
</table>
Table D-1 Instructions for completing a Report of Violation (PPQ Form 518) (page 2 of 2)

<table>
<thead>
<tr>
<th>Block:</th>
<th>Instructions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>17. Liaison Officer’s Statement</td>
<td>Together with your State Cooperator, describe the violation on a separate sheet of paper; give this statement an exhibit number. A State Cooperato and/or a Liaison Officer’s Statement must be written and accompany each PPQ Form 518 submitted. Describe all the facts associated with the violation of the Postentry Growing Agreement. Write down all the facts including who, what, when, where, and how. Include the information in Figure D-1 on page D-6 when appropriate—Sign and date the Liaison Officer’s Statement (only this person signs). If more than one officer was involved in the violation, each officer must write a separate statement.</td>
</tr>
<tr>
<td>18. Signatures and Dates</td>
<td>Fill in as appropriate</td>
</tr>
<tr>
<td>19. Signatures and Dates</td>
<td>Fill in as appropriate</td>
</tr>
<tr>
<td>20. Signatures and Dates</td>
<td>Fill in as appropriate</td>
</tr>
</tbody>
</table>
| 21. Officer in Charge Comments| SPHD should fill in any additional information that may help to substantiate the case: e.g., specify any previous warning letters and the dates sent; list any known previous civil penalties, case numbers, dates, and amounts of penalties assessed—word this information as follows: “Case #RSS-CP-45-95 fined $1,000 on 03/07/06.” Recommend the appropriate action. Limit your recommendations to the following actions:  
  ◆ No action  
  ◆ Letter of warning  
  ◆ Civil penalty  
  ◆ Innovative terms  
  ◆ Revocation of the Controlled Import Permit for Postentry Quarantine (CIP) |
LIAISON OFFICER’S STATEMENT PREPARATION

Officer’s Statement Should Contain the following:

<table>
<thead>
<tr>
<th>Your identity</th>
<th>The violator’s identity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full name</td>
<td>Full name(s)</td>
</tr>
<tr>
<td>Work address</td>
<td>Address</td>
</tr>
<tr>
<td>Phone number</td>
<td>Phone Number</td>
</tr>
<tr>
<td>Badge number</td>
<td></td>
</tr>
</tbody>
</table>

Capture information on everyone involved i.e. State inspector.

WHAT HAPPENED?
Provide a full explanation of what happened. It is easiest to prepare the statement in chronological order, providing a step-by-step account of events. Consider the following questions:

- What commodity or organisms was involved
- What was the nature of the alleged violation?
- Are there records that show what happened?
- Are there any photographs to support your statement?

WHEN DID THIS OCCUR?
It is important to record the time/date of each event.

WHERE DID THIS OCCUR?
Give location details
- Physical addresses
- Mailing addresses

WHY DID THIS HAPPEN?
If able to determine, describe why. Examples:

- Not knowing the regulations
- Oversight
- Record what you know and what was said, not what you suspect

HOW?

- How did you discover the alleged violation(s)?
- How did the alleged violation(s) occur based upon observation or evidence?
- Be specific
- Avoid assumptions unless circumstantial evidence supports them.

IT’S CRUCIAL TO BE SPECIFIC ON ALL DETAILS:

Can someone else reading your narrative fully understand and explain what happened?

Figure D-1 Liaison Officer’s Statement Preparation
Instructions for Conducting an Investigation and Assembling a Case File

The purpose of conducting an investigation is to substantiate that a violation took place. The Office of the General Counsel (OGC) will decide whether to prosecute a violation based on the results of the investigation and how well the case file was prepared. Only a sound investigation and well-prepared case file will result in a successful prosecution!

During the investigation, do not discuss any phase of the investigation with unauthorized persons (non-APHIS personnel) except for the State Cooperator(s) who initially detected the violation.

Once the PPQ Form 518 has been prepared, the officer’s statement and any associate evidence (invoices, sales receipts/records, packing lists, photographs, Emergency Action Notification, Compliance Agreement, and any other pertinent records) should be submitted to the local IES investigator. Also, provide Postentry Permit copies, Postentry growing agreements (PPQ Form 546) and Notices of Arrival (PPQ Form 236).

Once a violation has been noted, always document what transpired. Collect evidence to corroborate the violation. If germane to your case, take photographs. Photographs make forceful evidence. When submitting photographs, write the date, description, and photographer's name on the back of the photograph or on a piece of paper onto which the photograph is mounted. Physical evidence such as counterfeit or forged labels on postentry plants, samples of propagules collected from postentry plants without permission, etc. should be assembled. If the physical evidence presents a risk, submit it so as to prevent disease dissemination—put it in a tightly closed plastic bag.

The IES investigator can obtain a statement or prepare an affidavit to enter as evidence for the investigative case report. The investigator will also obtain written statements from all persons who have knowledge of the violation.

IES Distribution of the Case File
When the IES investigator sends the case file to the IES staff in Riverdale, MD, he or she will make a copy for the SPHD.
## Table D-2 Case File Responsibilities

<table>
<thead>
<tr>
<th>If you are a:</th>
<th>Then:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liaison Officer</td>
<td>REPORT serious violations to the PEQU in Beltsville, MD within 1 work day of notification by the State Cooperator</td>
</tr>
<tr>
<td></td>
<td>GIVE or SEND the originals of the evidence directly to the IES investigator or through your local SPHD</td>
</tr>
<tr>
<td>State Plant Health Director (SPHD)</td>
<td>If you have additional information on earlier violations or anything else germane to this case, give a statement to the IES investigator</td>
</tr>
<tr>
<td></td>
<td>SEND a copy of the case file to the National Coordinator at the PEQU in Beltsville, MD</td>
</tr>
<tr>
<td>The National Coordinator of the PEQP</td>
<td>REVIEW the case file</td>
</tr>
<tr>
<td></td>
<td>NOTIFY the Permit Unit in Riverdale, MD</td>
</tr>
<tr>
<td></td>
<td>SERVE as advisor on the case to the IES staff in Riverdale, MD</td>
</tr>
</tbody>
</table>
Appendix E

Plant Genera Subject to Postentry Quarantine

Contents

Categories of Postentry Plants

Plant Genera That MUST ALWAYS Be Grown Under Postentry

Plants that MUST be Grown Under Postentry ONLY if Grown for Their Edible Fruit or Nut

Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA)

Plant Genera Subject to PEQ

Categories of Postentry Plants

Plant Genera That MUST ALWAYS Be Grown Under Postentry

These are postentry genera if they are from designated countries or localities listed in 319.37-7(a).

These entries are not shaded.

**EXAMPLE**  All species and varieties falling under the genus *Actinidia*, when from designated countries, would be subject to postentry.

Plants that MUST be Grown Under Postentry ONLY if Grown for Their Edible Fruit or Nut

These plants are subject to postentry quarantine only if they will be grown for fruit or nut production.

Entries that are shaded indicate that the plants fall under the fruit or nut category listed in 319.37-7(b). The last column in the row identifies the common name (both English and other languages) of the edible fruit or nut. The approved common names appear in boldfaced text.
Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA)

A new category for imported plants for planting lists taxa of plants whose importation is not authorized pending pest risk analysis (NAPPRA). NAPPRA allows APHIS–PPQ to take prompt action on evidence the importation of a taxon of plants for planting may pose risk and allows public participation in the process.

A notice will be published in the Federal Register announcing the determination that a taxon is a quarantine pest or is a host of a quarantine pest, citing the scientific evidence APHIS–PPQ considered in making the determination and giving the opportunity for the public to comment on the determination. If no comments are received that change PPQ’s determination, the taxon will be added to the new category NAPPRA.

If petitioned to consider a taxon for importation that has been added to NAPPRA, PPQ will conduct a pest risk analysis (PRA). After the PRA has been completed, PPQ will do one of the following:

- Allow the taxon’s importation subject to specific restrictions
- Prohibit its importation
- Remove the taxon from the category (NAPPRA) and allow its importation subject to general requirements

Federal Orders issued to prohibit or restrict certain harmful plant pests and host plant material may add not enterable pending pest risk analysis (NAPPRA) to some or all of the host plant material listed in the Federal Order or may remove host plant material that were placed on NAPPRA.
**Germplasm**
Applications for permits to import small quantities of germplasm from taxa whose importation is not authorized pending pest risk analysis (on the NAPPRA list) for experimental or scientific purposes under controlled conditions will be considered. See *Importation of Plants for Planting NAPPRA* for more information.

---

**Plant Genera Subject to PEQ**

**Table E-1  Plant Genera Subject to Postentry Quarantine (page 1 of 21)**

<table>
<thead>
<tr>
<th>Plant material:</th>
<th>Prohibited from:</th>
<th>Postentry from:</th>
<th>Common name:</th>
<th>Requirements or authority:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Abelmoschus</em> spp.</td>
<td>Africa, Bangladesh, Brazil, India, Iraq, Ivory Coast, Nigeria, Papua New Guinea, Sri Lanka, Trinidad, and Tobago</td>
<td>All other countries <strong>except</strong> Canada</td>
<td>Okra</td>
<td></td>
</tr>
<tr>
<td><em>Acacia</em> spp.</td>
<td>Australia, Oceania</td>
<td>All other countries <strong>except</strong> Canada</td>
<td>Acacia</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td><em>Acer</em> spp.</td>
<td>Europe and Japan (<em>Acer palmatum</em> or <em>A. japonicum</em>) (prohibited from The Netherlands if <strong>not</strong> accompanied by a phyto with an additional declaration identifying the shipment as a nonvariegated variety of these species)</td>
<td>All other countries or regions <strong>except</strong> Canada; and, postentry from The Netherlands if accompanied by a phyto with an additional declaration identifying the shipment as a nonvariegated variety of these species <em>Acer japonicum</em> and <em>A. palmatum</em></td>
<td>Maple</td>
<td></td>
</tr>
<tr>
<td><em>Achras</em> spp. (see <em>Manilkara jaimiqui</em> subsp. <em>emarginata</em> (<em>Achras sapota</em>, <em>M. bahamensis</em>, <em>Minusops emarginata</em>, and <em>Sloanea emarginata</em>))</td>
<td>All countries <strong>except</strong> Canada</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table E-1  Plant Genera Subject to Postentry Quarantine (page 2 of 21)

<table>
<thead>
<tr>
<th>Plant material:</th>
<th>Prohibited from:</th>
<th>Postentry from:</th>
<th>Common name:</th>
<th>Requirements or authority:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actinidia spp.</td>
<td>All countries</td>
<td></td>
<td>Chinese gooseberry, kiwi</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td>Aesculus spp.</td>
<td></td>
<td>Canada</td>
<td>Horse-chestnut</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td>Althaea spp.</td>
<td>All other countries except Canada</td>
<td></td>
<td>Althaea, hollyhock</td>
<td></td>
</tr>
<tr>
<td>Anacardium occidentale</td>
<td>All countries except Canada</td>
<td></td>
<td>Cashew (also acaju-baum, anacardier, anacardo, caju, cashew nut, gajus, jacote maranon, kaju, kaschubaum, maranon, nieren-baum, pajuil, pomme cajou, and pomme d’acajou)</td>
<td></td>
</tr>
<tr>
<td>Annona cherimola (A. pubescens and A. tripetala)</td>
<td>All countries except Canada</td>
<td></td>
<td>Custard apple and cherimoya (also anone, cherimala, cherimola, cherimoli-lier, cherimoyer, chirimo-nya, and chirimuya)</td>
<td></td>
</tr>
<tr>
<td>Annona diversifolia</td>
<td>All countries except Canada</td>
<td></td>
<td>llama (also anona blanca, llama, papauce, perpauce, and white anonna)</td>
<td></td>
</tr>
<tr>
<td>Annona glabra (A. palustris)</td>
<td>All countries except Canada</td>
<td></td>
<td>Alligator apple, custard apple, and pond apple (also annone des marais, anon liso, baga, cork-wood, corossolier des marais, custard apple, palo bobo, and wasserapfel)</td>
<td></td>
</tr>
<tr>
<td>Plant material:</td>
<td>Prohibited from:</td>
<td>Postentry from:</td>
<td>Common name:</td>
<td>Requirements or authority:</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>------------------</td>
<td>-----------------------</td>
<td>------------------------------------------------------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Annona montana (A. marcgravii)</td>
<td>All countries</td>
<td><strong>except</strong> Canada</td>
<td>Mountain soursop (also corossolier batard, guana bana cimarrona, and schleimapfel)</td>
<td></td>
</tr>
<tr>
<td>Annona muricata (A. macrocarpa)</td>
<td>All countries</td>
<td><strong>except</strong> Canada</td>
<td>Prickly custard apple, guanabana, and soursop (also cachiman epineux, corossol enineux, graviola, guanaba, guanabano, nanqka, sauersack, stachel-annone, and zapote agrio)</td>
<td></td>
</tr>
<tr>
<td>Annona purpurea</td>
<td>All countries</td>
<td><strong>except</strong> Canada</td>
<td>Suncoya (also anona rosada, atier, cataguire, manirote, tete de negre, toreta, and turagua)</td>
<td></td>
</tr>
<tr>
<td>Annona reticulata</td>
<td>All countries</td>
<td><strong>except</strong> Canada</td>
<td>Bullock’s heart and custard apple (also anona, anonacolorado, anona corazón, anonas, annone reticulee, cachiman, cachiman caeur-de-baeuf, coracao debei, corazón, corazon de buey, coeur de boeuf, maman, netzannone, nona, ochseherz, and ramphal)</td>
<td></td>
</tr>
<tr>
<td>Annona senegalensis</td>
<td>All countries</td>
<td><strong>except</strong> Canada</td>
<td>Wild custard apple (also pomme canelle du Senegal)</td>
<td></td>
</tr>
<tr>
<td>Annona squamosa (A. asiatica)</td>
<td>All countries</td>
<td><strong>except</strong> Canada</td>
<td>Custard apple, sugar apple, and sweetsop (also anon, annone ecailleuse, anona, anona blanca, ata, atta, atte, atis, chirimoya, fruta del conde, pinha, pomme-canelle, rahmapfel, schuppenannone, sharifa, sitaphal, susack, and zucherapfel)</td>
<td></td>
</tr>
</tbody>
</table>
### Table E-1 Plant Genera Subject to Postentry Quarantine (page 4 of 21)

<table>
<thead>
<tr>
<th>Plant material:</th>
<th>Prohibited from:</th>
<th>Postentry from:</th>
<th>Common name:</th>
<th>Requirements or authority:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Artocarpus altilis</em> (<em>A. communis</em> and <em>A. incisus</em>)</td>
<td>All countries except Canada</td>
<td></td>
<td>Breadfruit (also albero del pane, arbol del pan, arbre a pain, avore do pao, breadnut, brotfruchtbaum, fruit a pain, fruta de pan, frutapao, masa pan, pana, rima, tipoli, ulu, and uko)</td>
<td></td>
</tr>
<tr>
<td><em>Artocarpus heterophyllus</em> (<em>A. integer</em> and <em>A. integrifolius</em>)</td>
<td>All countries except Canada</td>
<td></td>
<td>Jackfruit (also arbol del pan, breadfruit langlea, jaca, jack, Jackfrucht-baum, jackfruit, jacque, jacquier, jak, jakfruit, jaqueiro, kantaka, kanthal, kathal, Nangka, panasa, and tsjaka)</td>
<td></td>
</tr>
<tr>
<td><em>Averrhoa carambola</em></td>
<td>All countries except Canada</td>
<td></td>
<td>Carambola (also balimbing, blimbing country gooseberry, caramba, caramblier, carambolo, country gooseberry, kamranga, kamrakh, karambole, karmara, starfruit, sternfrucht, and yongt’o)</td>
<td></td>
</tr>
<tr>
<td><em>Berberis</em> spp.</td>
<td>All countries when destined to a State that has an eradication program against Black Stem Rust and is on the list of rust-resistant <em>Berberis</em>, <em>Mahoberberis</em>, and <em>Mahonia</em> plants (CO, IL, IN, IA, KS, MI, MN, MO, MT, NE, ND, OH, SD, WV, WI, and WY)</td>
<td>All countries when destined to a State that <em>does not</em> have an eradication program against Black Stem Rust and is on the list of rust-resistant <em>Berberis</em>, <em>Mahoberberis</em>, and <em>Mahonia</em> plants</td>
<td>Barberry</td>
<td></td>
</tr>
<tr>
<td><em>Blighia sapida</em></td>
<td>Ivory Coast and Nigeria</td>
<td>All other countries except Canada</td>
<td>Ake</td>
<td></td>
</tr>
<tr>
<td><em>Bromeliaceae</em> (family of Bromeliads)</td>
<td></td>
<td>All countries when destined to Hawaii</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table E-1  Plant Genera Subject to Postentry Quarantine (page 5 of 21)

<table>
<thead>
<tr>
<th>Plant material:</th>
<th>Prohibited from:</th>
<th>Postentry from:</th>
<th>Common name:</th>
<th>Requirements or authority:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Brugmansia</em> spp.</td>
<td>Colombia and India</td>
<td>All other countries except Canada</td>
<td>Angel’s trumpet, borrachero, culebra, floripondia, and toe</td>
<td></td>
</tr>
<tr>
<td><em>Carica papaya</em> (C. peltata, C. posoposa and <em>Papaya carica</em>)</td>
<td>All countries except Canada</td>
<td>Papaya, paw paw (also ababai, fruta de bomba, lechosa, mamao, mamon, melon tree, melon zapote, melonenbaum, papaia, papa-jabaum, papajapflanze, papaye, papayer, papayero papeya, papia, and tree melon)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Carica pubescens</em> (C. candamarcensis, C. cestriflora, C. cundinamarcensis, <em>Vasconcellea cestriflora</em> and <em>V. pubescens</em>)</td>
<td>All countries except Canada</td>
<td>Mountain papaya (also bergpapaya, chamburo, cham-buru, chiluacan, papaya de tierra fria, and papayer de montagne)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Carissa macrocarpa</em> (Arduina grandiflora, A. macrocarpa, and C. grandiflora)</td>
<td>All countries except Canada</td>
<td>Natalplum (also amatungula, amatungulu, big num-num, carissa, carisse, and cereza de Natal)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Cedrus</em> spp.</td>
<td>Europe</td>
<td>All other countries except Canada</td>
<td>Cedar</td>
<td></td>
</tr>
<tr>
<td><em>Ceratonia siliqua</em> Fabaceae</td>
<td>All countries except Canada</td>
<td>St. John’s bread (also alfarrobeira, algarroba, carob, caroba, caroube, caroubier, johannis-brotbraum, and locust bean)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Chaenomeles</em> spp.</td>
<td>All countries when not appropriately certified</td>
<td>Belgium, France, Germany, Netherlands, and Great Britain when appropriately certified</td>
<td>Flowering quince</td>
<td></td>
</tr>
<tr>
<td>Plant material:</td>
<td>Prohibited from:</td>
<td>Postentry from:</td>
<td>Common name:</td>
<td>Requirements or authority:</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------</td>
<td>---------------------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Chrysanthemum spp.</td>
<td>Argentina, Brazil, Canary Islands, Colombia, Chile, Europe, Mexico, Republic of</td>
<td>All other countries except Canada when appropriately</td>
<td>Chrysanthemum</td>
<td></td>
</tr>
<tr>
<td>(Dendranthemum)</td>
<td>South Africa, Uruguay, Venezuela, and all countries located in part or entirely</td>
<td>certified</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>between 90° and 180° east longitude</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chrysobalanus icaco</td>
<td></td>
<td>All countries except Canada</td>
<td>Coco plum (also biruela de</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>algodon, hicaco, icacer, icaco,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>icacopflaume, icaquier, jicaco,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>prune colon, and uajuru)</td>
<td></td>
</tr>
<tr>
<td>Chrysophyllum albidum</td>
<td></td>
<td>All countries except Canada</td>
<td>White star-apple</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chrysophyllum cainito</td>
<td></td>
<td>All countries except Canada</td>
<td>Star-apple (also caimite,</td>
<td></td>
</tr>
<tr>
<td>(C. bicolor)</td>
<td></td>
<td></td>
<td>caimiter, cai-mito, and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Sternapfel)</td>
<td></td>
</tr>
<tr>
<td>Chrysophyllum delevoyi</td>
<td></td>
<td>All countries except Canada</td>
<td>African star-apple (also cola-</td>
<td></td>
</tr>
<tr>
<td>(C. bicolor)</td>
<td></td>
<td></td>
<td>do-obo and manzana africana)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chrysophyllum olivi-</td>
<td></td>
<td>All countries except Canada</td>
<td>Wild star-apple (also cai</td>
<td></td>
</tr>
<tr>
<td>forme</td>
<td></td>
<td></td>
<td>mitillo, damson plum, and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>satinleaf)</td>
<td></td>
</tr>
<tr>
<td>Corylus spp. (nut</td>
<td></td>
<td>All countries except Canada</td>
<td>Filbert, hazel, and hazelnut</td>
<td></td>
</tr>
<tr>
<td>bearing)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corylus avellana (C.</td>
<td>Europe and Turkey</td>
<td>All other countries except Canada</td>
<td>Cobnut (also aveleira,</td>
<td></td>
</tr>
<tr>
<td>heterophylla)</td>
<td></td>
<td></td>
<td>avelinier, avellano, coudrier,</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>European filbert, European</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>hazel, and hazelnut)</td>
<td></td>
</tr>
<tr>
<td>Crataegus spp. (fruit-</td>
<td></td>
<td>All countries except Canada</td>
<td>Haw, hawthorn, haw happle, and</td>
<td></td>
</tr>
<tr>
<td>bearing)</td>
<td></td>
<td></td>
<td>thornapple</td>
<td></td>
</tr>
<tr>
<td>Crataegus monogyna</td>
<td>Europe</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table E-1 Plant Genera Subject to Postentry Quarantine (page 7 of 21)

<table>
<thead>
<tr>
<th>Plant material:</th>
<th>Prohibited from:</th>
<th>Postentry from:</th>
<th>Common name:</th>
<th>Requirements or authority:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Crocosmia</em> spp. (except bulbs)</td>
<td>Africa, Argentina, Brazil, France, Italy, Malta, Mauritius, Portugal, Uruguay, also Luxembourg or Spain when <em>not</em> appropriately certified</td>
<td>All other countries except Canada</td>
<td>Montebretia</td>
<td></td>
</tr>
<tr>
<td><em>Cydonia</em> spp.</td>
<td>All countries when <em>not</em> appropriately certified</td>
<td>Belgium, France, Germany, The Netherlands, and Great Britain when appropriately certified</td>
<td>Quince</td>
<td></td>
</tr>
<tr>
<td><em>Datura</em> spp. (woody species only) (see <em>Brugmansia</em> spp.)</td>
<td>Colombia and India</td>
<td>All other countries except Canada</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Dianthus</em> spp., <em>Dendranthema</em> spp., (see <em>Chrysanthemum</em> spp. (Dendranthema))</td>
<td>United Kingdom and The Netherlands <em>unless</em> certified per 7 CFR 319.37-5(d) and all other countries except Canada¹</td>
<td>Carnation, sweet-William, and pink</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Dimocarpus longan</em> (Euphoria longan, <em>E. longana</em>, <em>Nephelium longana</em>, and <em>N. longana</em>)</td>
<td>All countries except Canada</td>
<td>Longan (also beilde-dragon, lingeng, long an, longanier, longanbaum, longan-beere, longyen, lung an, mata kucing, and oeil de dragon)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Diospyros blancoi</em> (Cavanilea philippensis, <em>D. discolor</em>, and <em>D. philippensis</em>)</td>
<td>All countries except Canada</td>
<td>Mabolo (also cama-gon, mabola-tree, mabolo, pecego-de-India, pommier velours, velvet-apple, velvet persimmon, and yi se shi)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Diospyros digyna</em></td>
<td>All countries except Canada</td>
<td>Black persimmon (also barbaquis, black sapote, Ebenholzbaum, sapote negro, schwarze Sapote, and zapote negro)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

¹ Includes tumultuous Montebretia.
Table E-1 Plant Genera Subject to Postentry Quarantine (page 8 of 21)

<table>
<thead>
<tr>
<th>Plant material:</th>
<th>Prohibited from:</th>
<th>Postentry from:</th>
<th>Common name:</th>
<th>Requirements or authority:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diospyros kaki (D. chinensis, D. roxburghii, and D. schitse)</strong></td>
<td>All countries except Canada</td>
<td></td>
<td>Kaki (also caqui, Chinese date plum, Chinese persimmon, date plum, Japanese persimmon, kaki del Japon, kaki persimmon, Kaki Baum, Kakipflaume, key fig, Oriental persimmon, pisang kaki, placa minera, plaquemine, raque mine, and shi tze)</td>
<td></td>
</tr>
<tr>
<td><strong>Diospyros lotus</strong></td>
<td>All countries except Canada</td>
<td></td>
<td>Lotus persimmon (also caqui, date-plum, faux lotier, guiaca, guiacana, guyac de Tadone, guayacan africano, jun quian zi, lotus pfauenbaum, lotustree, mamegaki, and plaqueminier lotier)</td>
<td></td>
</tr>
<tr>
<td><strong>Diospyros texana</strong></td>
<td>All countries except Canada</td>
<td></td>
<td>Black Mexican and Texas persimmon (also chapote)</td>
<td></td>
</tr>
<tr>
<td><strong>Diospyros virginiana (D. mosieri)</strong></td>
<td>All countries except Canada</td>
<td></td>
<td>Persimmon (also American persimmon, caqui de Virginia, caqui silvestre, Persimone, and plaqueminier d’Amerique)</td>
<td></td>
</tr>
<tr>
<td><strong>Durio zibethinus</strong></td>
<td>All countries except Canada</td>
<td></td>
<td>Durian (also dorian, dourian, duren, duri-anbaum, durião, durion, durivan, durivan, and stinkfrucht)</td>
<td></td>
</tr>
<tr>
<td><strong>Eriobotrya japonica (Mespilus japonica and Photinia japonica)</strong></td>
<td>All countries except Canada</td>
<td></td>
<td>Loquat, Japanese medlar, and Japanese plum (also bibace, bibacier, bibassier, biwa, japnische mispel, lukwat, neflier du Japon, nespereira, nespola giaponese, nispolero, nispero del Japon, and pi-pa)</td>
<td></td>
</tr>
</tbody>
</table>
### Table E-1  Plant Genera Subject to Postentry Quarantine (page 9 of 21)

<table>
<thead>
<tr>
<th>Plant material:</th>
<th>Prohibited from:</th>
<th>Postentry from:</th>
<th>Common name:</th>
<th>Requirements or authority:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Eucalyptus</em> spp.</td>
<td>Europe, Sri Lanka, and Uruguay</td>
<td>All other countries <em>except</em> Canada</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Eugenia</em> spp. (see <em>Syzygium</em> aqueum)</td>
<td></td>
<td>All countries <em>except</em> Canada</td>
<td>Curacao-apple, java plum, maylay-apple, and roseapple</td>
<td></td>
</tr>
<tr>
<td><em>Euonymus</em> spp.</td>
<td>Europe and Japan</td>
<td>All other countries <em>except</em> Canada</td>
<td>Euonymus</td>
<td></td>
</tr>
<tr>
<td><em>Euphoria</em> spp. (see <em>Dimocarpus</em> longan (<em>Euphoria</em> longan, <em>Nephelium</em> longan, and <em>N. longana</em>))</td>
<td></td>
<td>All countries <em>except</em> Canada</td>
<td>Longan</td>
<td></td>
</tr>
<tr>
<td><em>Feijoa</em> sellowiana (<em>Acca</em> sellowiana and <em>Orthostemon</em> sellowianus)</td>
<td></td>
<td>All countries <em>except</em> Canada and New Zealand</td>
<td>Feijoa and pineapple guava (<em>also</em> goiaba-do-campo, goiabeira-serrana, guayaba chilen, and guayabo del pais)</td>
<td></td>
</tr>
<tr>
<td><em>Ficus</em> carica</td>
<td></td>
<td>All countries <em>except</em> Canada</td>
<td>Fig (<em>also</em> echte Feige, fico, fig tree, figuier commun, feigenbaum, figueira, higo, and higuera comun)</td>
<td></td>
</tr>
<tr>
<td><em>Fraxinus</em> spp.</td>
<td>Europe</td>
<td>All other countries <em>except</em> Canada</td>
<td>Ash</td>
<td></td>
</tr>
<tr>
<td><em>Garcinia</em> dulcis (<em>Xanthochymus</em> dulcis)</td>
<td></td>
<td>All countries <em>except</em> Canada</td>
<td>Gourka</td>
<td></td>
</tr>
<tr>
<td><em>Garcinia</em> livingstonei</td>
<td></td>
<td>All countries <em>except</em> Canada</td>
<td>African mangosteen (<em>also</em> imbe)</td>
<td></td>
</tr>
<tr>
<td><em>Garcinia</em> mangostana</td>
<td></td>
<td>All countries <em>except</em> Canada</td>
<td>Mangosteen (<em>also</em> king’s-fruit, manggis, manggigan, mangga, manggis, mangostan, mangostanbaum, mangostane, mangostao, mangoustan, mangoustanier, mangouste, and mangoustier)</td>
<td></td>
</tr>
<tr>
<td><em>Gladiolus</em> spp. (<em>except</em> bulbs)</td>
<td>Africa, Argentina, Brazil, France, Italy, Malta, Mauritius, Portugal, Uruguay, also Mexico, Luxembourg, or Spain when not appropriately certified</td>
<td>All other countries <em>except</em> Canada</td>
<td>Gladiolus</td>
<td></td>
</tr>
</tbody>
</table>
### Table E-1 Plant Genera Subject to Postentry Quarantine (page 10 of 21)

<table>
<thead>
<tr>
<th>Plant material:</th>
<th>Prohibited from:</th>
<th>Postentry from:</th>
<th>Common name:</th>
<th>Requirements or authority:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Hibiscus</em> spp.</td>
<td>Africa, Brazil, and India</td>
<td>All other countries except Canada</td>
<td>Kenaf, hibiscus, and rose mallow</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td><em>Humulus</em> spp.</td>
<td></td>
<td>All countries</td>
<td>Hops</td>
<td></td>
</tr>
<tr>
<td><em>Hydrangea</em> spp.</td>
<td>Japan</td>
<td>All other countries except Canada</td>
<td>Hydrangea</td>
<td></td>
</tr>
<tr>
<td><em>Jasminum</em> spp.</td>
<td>Belgium, Germany, Great Britain, India, Philippines</td>
<td>All other countries except Canada</td>
<td>Jasmine</td>
<td></td>
</tr>
<tr>
<td><em>Juglans</em> spp.</td>
<td></td>
<td>All countries except Canada</td>
<td>Walnut</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td><em>Juglans ailantifolia</em> var. cordiformis (J. coarctat, J. cordiformis, J. lavallei, J. sieboldiana var. cordiformis, and J. subcordiformis)</td>
<td></td>
<td>All countries except Canada</td>
<td>Heartnut (also himegurami, Japanese walnut, onogurumi, and Siebold walnut)</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td><em>Juglans x bisbyi</em> = <em>J. ailantifolia</em> x <em>J. cinerea</em> (<em>J. ailantifolia</em>)</td>
<td></td>
<td>All countries except Canada</td>
<td>Butternut (also butter-nutbaum, nogal ceniciento, noyer cedre, and white walnut)</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td><em>Juglans cinerea</em></td>
<td></td>
<td>All countries except Canada</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Juglans x intermedia</em> = <em>J. nigra</em> x <em>J. regia</em> (<em>J. intermedia</em>)</td>
<td></td>
<td>All countries except Canada</td>
<td>Regranut (also intermediate walnut and reginigra walnut)</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
</tbody>
</table>
### Table E-1  Plant Genera Subject to Postentry Quarantine

<table>
<thead>
<tr>
<th>Plant material:</th>
<th>Prohibited from:</th>
<th>Postentry from:</th>
<th>Common name:</th>
<th>Requirements or authority:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Juglans jamaicensis</em></td>
<td>All countries except Canada</td>
<td><em>Nogal, West Indian Walnut (also ESA-E)</em></td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRRA) effective May 20, 2013</td>
<td></td>
</tr>
<tr>
<td><em>Juniperus spp.</em></td>
<td>Europe</td>
<td>All other countries except Canada</td>
<td><em>Juniper</em></td>
<td></td>
</tr>
<tr>
<td><em>Lansium domesticum</em></td>
<td>All countries except Canada</td>
<td><em>Langsat (also arbol de lanz, arbol-dolanz, ayer-ayer, duku, lansa, langsep, lanseh, Lansibaum, lansiun, lansone, lanson, lanson, and lanuts)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Larix spp.</em></td>
<td>Europe, Japan, and Provinces of New Brunswick and Nova Scotia in Canada</td>
<td>All other countries except Canada</td>
<td><em>Larch</em></td>
<td></td>
</tr>
<tr>
<td><em>Leucanthemella serotina</em></td>
<td>Argentina, Brazil, Canary Islands, Colombia, Chile, Europe, Mexico, Republic of South Africa, Uruguay, Venezuela, and all countries located in part or entirely between 90° and 180° east longitude</td>
<td>All other countries except Canada</td>
<td><em>Giant daisy (also high daisy and moon daisy)</em></td>
<td></td>
</tr>
<tr>
<td><em>Ligustrum spp.</em></td>
<td>Europe</td>
<td>All other countries except Canada</td>
<td><em>Privet</em></td>
<td></td>
</tr>
<tr>
<td><em>Litchi chinensis</em></td>
<td>All countries except Canada</td>
<td><em>Leechee and lychee (also cerisier de Chine, laichi, lichee, lichi, lici, litchee, litchi, litchi de Chine, litchia, litchibaum, and litchipflanze)</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant material:</td>
<td>Prohibited from:</td>
<td>Postentry from:</td>
<td>Common name:</td>
<td>Requirements or authority:</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------</td>
<td>----------------</td>
<td>--------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td><em>Macadamia integrifolia</em></td>
<td>All countries except Canada</td>
<td>Macadamia nut and Queensland nut (<em>also</em> Australia nut, glattschalige macadamia, macadamia, macadamia-nut, macadamier, nogueira-do-havai, noix du Queensland, and smooth-shell Queensland nut)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Macadamia tetraphylla</em></td>
<td>All countries except Canada</td>
<td>Macadamia nut and Queensland nut (<em>also</em> Australia nut, macadamia-nut, macadamier, nogal de Australia, nuez australiana, rauh-schalige macadamia, roughshell macadamia nut, and roughshell Queensland nut)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Mahoberberis</em> spp.</td>
<td>All countries when destined to a State <strong>with</strong> an eradication program against Black Stem Rust (CO, IL, IN, IA, KS, MI, MN, MO, MT, NE, ND, OH, SD, WV, WI, and WY)</td>
<td>All countries when destined to a State <strong>without</strong> an eradication program against Black Stem Rust and is on the list of rust-resistant <em>Berberis, Mahoberberis</em>, and <em>Mahonia</em> plants</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Mahonia</em> spp.</td>
<td>All countries when destined to a State <strong>with</strong> an eradication program against Black Stem Rust (CO, IL, IN, IA, KS, MI, MN, MO, MT, NE, ND, OH, SD, WV, WI, and WY)</td>
<td>All countries when destined to a State <strong>without</strong> an eradication program against Black Stem Rust and is on the list of rust-resistant <em>Berberis, Mahoberberis</em>, and <em>Mahonia</em> plants</td>
<td><em>Mahonia</em></td>
<td></td>
</tr>
<tr>
<td><em>Malpighia emarginata</em> (<em>M. glabra</em> and <em>M. punicifolia</em>)</td>
<td>All countries except Canada</td>
<td>Barbados cherry (<em>also</em> acerola, Barbarados-kirsche, cerejeira-das-Atilhas, West Indian cherry, and westindische Kirsche)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plant Genera Subject to Postentry Quarantine</td>
<td>Plant material:</td>
<td>Prohibited from:</td>
<td>Postentry from:</td>
<td>Common name:</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>----------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Malus spp.</td>
<td>All countries when not appropriately certified</td>
<td>Belgium, France, Germany, The Netherlands, and Great Britain when appropriately certified</td>
<td>Apple and crabapple</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td>Mamea africanus (Ochrocarpos africanus)</td>
<td>All countries except Canada</td>
<td>Mammeapple (also abricot d’Afrique, African-apple, African-apricot, bastard-mahogany, and obota)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mamea americana (M. emarginata)</td>
<td>All countries except Canada</td>
<td>Mammeapple and mamey (also abrico do Para, abricot d’Amerique, abricot des Antilles, abricoque, apricot de Saint Domingue, mamey apple, mamey de Santo Domingo, mamee, mamee-apple, Mammiapfel, mammmy-apple, memey, South American apricot, and tropical apricot)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mangifera foetida</td>
<td>All countries except Canada</td>
<td>Bachang and gray mango</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mangifera indica</td>
<td>All countries except Canada</td>
<td>Mango (also amba, manga, man-gay, mangga, mangobaum, mangopalme, mangue, manguier, manguiera, and man-kay)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mangifera odorata</td>
<td>All countries except Canada</td>
<td>Saipan mango (also bembem, kuini, kuweni, kuwini, kweni, and manguier odorant)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manilkara jaimiqui subsp. emarginata (Achras sapota, M. bahamensis, Minusops emarginata, and Sloanea emarginata)</td>
<td>All countries except Canada</td>
<td>Wild Sapodilla (also wild dilly)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table E-1 Plant Genera Subject to Postentry Quarantine

<table>
<thead>
<tr>
<th>Plant material</th>
<th>Prohibited from:</th>
<th>Postentry from:</th>
<th>Common name:</th>
<th>Requirements or authority:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Manilkara zapota</em> (Achras mamosa, A. sapota, A. zapotilla, Acradelpha mammossa, Calocarpum mammossa, Lucuma mammossa, M. achras, M. zapotilla, Sapota achras, and S. zapotilla)</td>
<td>All countries <strong>except</strong> Canada</td>
<td></td>
<td>Sapodilla (also breiapfelbaum, chiku, chicle, chico sapote, chicozapote, chiku, kaugummi-baum, naseberry, nispero, sabojira, sapodilbaum, sapote, sapoti, sapotier, sapotilha, sapotilier, ya, zapote, and zapotilla)</td>
<td></td>
</tr>
<tr>
<td><em>Melicoccus bijugatus</em></td>
<td>All countries <strong>except</strong> Canada</td>
<td></td>
<td>Genip, honey berry, mamoncilla, and Spanish lime (also genipe, honigbeere, kenepe, kenepier, kinipe berry, mamon, quenepa, and quenette)</td>
<td></td>
</tr>
<tr>
<td><em>Mespilus germanica</em></td>
<td>All countries when <strong>not</strong> appropriately certified</td>
<td>Belgium, France, Germany, Great Britain, and The Netherlands when appropriately certified</td>
<td>Medlar</td>
<td></td>
</tr>
<tr>
<td><em>Morus spp.</em></td>
<td>Armenia, Azerbaijan, Belarus, Estonia, Georgia, India, Japan, Kazakhstan, Korea, Kyrgyzstan, Latvia, Lithuania, People’s Republic of China, Rep. of Moldova, Russia, Tajikistan, Thailand, Turkmenistan, Ukraine, and Uzbekistan</td>
<td>All other countries <strong>except</strong> Canada</td>
<td>Mulberry</td>
<td></td>
</tr>
<tr>
<td><em>Nephelium cuspidatum var. robustum</em> (N. robustum)</td>
<td>All countries <strong>except</strong> Canada</td>
<td></td>
<td>Giant rambutan</td>
<td></td>
</tr>
<tr>
<td><em>Nephelium lappaceum</em> (Dimocarpus crinita, Euphoria glabra, E. nephelium, and N. glabrum)</td>
<td>All countries <strong>except</strong> Canada</td>
<td></td>
<td>Rambutan (also litchi chevelu, ramboetan, rambotang ramboutan, rambustan, and rambut)</td>
<td></td>
</tr>
<tr>
<td><em>Nephelium ramboutanke</em> (Litchi ramboutanaki and N. mutabile)</td>
<td>All countries <strong>except</strong> Canada</td>
<td></td>
<td>Pulassan (also capulasan, kapoelasan, and pulassan)</td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Plant material:</th>
<th>Prohibited from:</th>
<th>Postentry from:</th>
<th>Common name:</th>
<th>Requirements or authority:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Nipponanthemum nipponicum</em></td>
<td>Argentina, Brazil, Canary Islands, Colombia, Chile, Europe, Mexico, Republic of South Africa, Uruguay, Venezuela, and all countries located in part or entirely between 90° and 180° east longitude</td>
<td>All other countries <em>except</em> Canada</td>
<td>Nippon daisy</td>
<td></td>
</tr>
<tr>
<td><em>Olea europaea</em> subsp. <em>cuspidata</em> (<em>O. africana, O. chrysophylia, O. cuspidata, O. europea</em> subsp. <em>africana, O. ferruginea, and O. verrucosa</em>)</td>
<td></td>
<td>All countries <em>except</em> Canada</td>
<td>Brown olive and wild olive</td>
<td></td>
</tr>
<tr>
<td><em>Olea europaea</em> subsp. <em>europaea</em></td>
<td></td>
<td>All countries <em>except</em> Canada</td>
<td>Olive (<em>also</em> aceituno, mu xi lian, olbaum, olivenbaum, olivier, aliviera, and olivo)</td>
<td></td>
</tr>
<tr>
<td><em>Passiflora</em> spp.</td>
<td></td>
<td>All countries <em>except</em> Canada</td>
<td>Passion fruit, granadilla</td>
<td></td>
</tr>
<tr>
<td><em>Persea americana</em> var. <em>americana</em> (<em>Laurus persea, P. gratis-sima, P. leiogyna, and P. persea</em>)</td>
<td></td>
<td>All countries <em>except</em> Canada</td>
<td>Avocado, alligator pear (<em>also</em> abacate, abokado, advogado, aguacate, avocado pear, avocadobaum, avocadoalme, avocatier, cura, pahuá, palta, palto, trap avocado, and West Indian avocado)</td>
<td></td>
</tr>
<tr>
<td><em>Persea americana</em> var. <em>drymifolia</em> (<em>P. drymifolia</em>)</td>
<td></td>
<td>All countries <em>except</em> Canada</td>
<td>Mexican avocado</td>
<td></td>
</tr>
<tr>
<td><em>Persea americana</em> var. <em>nubigena</em></td>
<td></td>
<td>All countries <em>except</em> Canada</td>
<td>Guatemalan avocado (<em>also</em> avocatier du Guatemala)</td>
<td></td>
</tr>
<tr>
<td><em>Philadelphus</em> spp.</td>
<td>Europe</td>
<td>All other countries <em>except</em> Canada</td>
<td>Mock orange</td>
<td></td>
</tr>
</tbody>
</table>
### Table E-1  Plant Genera Subject to Postentry Quarantine (page 16 of 21)

<table>
<thead>
<tr>
<th>Plant material:</th>
<th>Prohibited from:</th>
<th>Postentry from:</th>
<th>Common name:</th>
<th>Requirements or authority:</th>
</tr>
</thead>
</table>
| *Phyllanthus acidus*  
(Cicca disticha, *C. nodiflora*, and *P. distichus*) | All countries except Canada | Otaheite gooseberry (also cerejeirado-Taiti, cerisier de Tahiti, gooseberry-tree, grosellero, guinda, Indian gooseberry, and surette) | Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013 |
| *Picea* spp. | Europe, Japan, and Siberi | All other countries except Canada | Spruce | Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013 |
| *Pinus* spp. (2- or 3-leaved) | Europe and Japan | All other countries except Canada | Pine | Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013 |
| *Pistacia chinensis*  
subsp. *chinensis* (*P. philippinensis*) | All countries except Canada | Chinese pistachio | | |
<p>| <em>Pistacia mexicana</em> | All countries except Canada | Mexican pistachio | | |
| <em>Pistacia vera</em> | All countries except Canada | Pistachio (<em>also</em> alfoncigo, green almond, pistache, pistachero, pistachier culture, pistazie, pistazienbaum, and pisutachio) | | |
| <em>Populus</em> spp. | Europe | All other countries except Canada | Aspen, cottonwood and poplar | |
| <em>Prunus</em> spp. | All countries when not appropriately certified | Belgium, France, Germany, The Netherlands, and Great Britain when appropriately certified | Almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, and prune | Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013 |
| <em>Pseudolarix</em> spp. | Europe, Japan, and Provinces of New Brunswick and Nova Scotia in Canada | All other countries except other provinces of Canada | Golden larch | |
| <em>Pseudotsuga</em> spp. | Europe | All other countries except Canada | Douglas fir | |</p>
<table>
<thead>
<tr>
<th>Plant material</th>
<th>Prohibited from</th>
<th>Postentry from</th>
<th>Common name</th>
<th>Requirements or authority</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Psidium cattleianum</em> var. <em>cattleianum</em> (P. <em>coriaceum</em> var. <em>longipes</em>, and <em>P. littorale</em> var. <em>longipes</em>)</td>
<td>All countries except Canada</td>
<td>Cattley, purple, purple strawberry, red strawberry, strawberry, and yellow strawberry guavas (<em>also</em> erdbeerguava, goyave fraise, and guayabo pequeno)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Psidium cattleianum</em> var. <em>littorale</em> (P. <em>littorale</em>)</td>
<td>All countries except Canada</td>
<td>Chinese strawberry, strawberry, yellow Cattley, yellow strawberry guavas, and waiawi</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Psidium freidrichsthalianum</em> (Calypttopsidium friedrichsthalianum)</td>
<td>All countries except Canada</td>
<td>Costa Rican guava (<em>also</em> arayan, cas acida, goyavier de Costa Rica, and guayaba de choco)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Psidium guajava</em></td>
<td>All countries except Canada</td>
<td>Guava and guayaba (<em>also</em> amrud, banjiro, goiaba, goiabeiro, goyave, goyavier, guajava, guave, guavenbaum, guayabo, guayala, guayave, lemon guava, and safari am)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Psidium guineense</em> (P. <em>araca</em>)</td>
<td>All countries except Canada</td>
<td>Brazilian and Guinea guava (<em>also</em> aracazedo, goyavier du Bresil, and guayaba agria)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Psidium montanum</em></td>
<td>All countries except Canada</td>
<td>Mountain and spice guava</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Punica granatum</em></td>
<td>All countries except Canada</td>
<td>Granada and pomegranate (<em>also</em> anar, darimba, granado, granatapfel-baum, granatapfel-strachgrenadier, julnar, mangrano, roma, roman, romanheiro, rumman, and zakuro)</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
<td></td>
</tr>
</tbody>
</table>
Table E-1  Plant Genera Subject to Postentry Quarantine (page 18 of 21)

<table>
<thead>
<tr>
<th>Plant material:</th>
<th>Prohibited from:</th>
<th>Postentry from:</th>
<th>Common name:</th>
<th>Requirements or authority:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Punica protopunica</em></td>
<td></td>
<td>All countries except Canada</td>
<td>Socotra pomegranate</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td><em>Pyronia</em> spp. (Cydonia oblong x Pyrus communis)</td>
<td></td>
<td>All countries except Canada</td>
<td>Quincepear</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td><em>Pyrus</em> spp.</td>
<td>All countries when not appropriately certified</td>
<td>Belgium, France, Germany, The Netherlands, and Great Britain when appropriately certified</td>
<td>Pear</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td><em>Quercus</em> spp.</td>
<td>Japan</td>
<td>All other countries except Canada</td>
<td></td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td><em>Rhodomyrtus tomentosa</em> (Myrtus tomentosa)</td>
<td></td>
<td>All countries except Canada</td>
<td>Hill gooseberry and rose myrtle (also Ceylon hill-cherry, downy myrtle, guayabillo forastero, and hill guava)</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td><em>Ribes</em> spp.</td>
<td>Europe and New Zealand</td>
<td>All other countries except Canada</td>
<td>Currant and gooseberry</td>
<td></td>
</tr>
<tr>
<td><em>Rosa</em> spp.</td>
<td>Australia, Bulgaria, Italy, and New Zealand</td>
<td>All other countries except Canada</td>
<td>Rose</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td><em>Rubus</em> spp.</td>
<td>Europe if not appropriately certified</td>
<td>All other countries except Canada if appropriately certified</td>
<td>Cloudberry, blackberry, boysenberry, dewberry, loganberry, and raspberry</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td>Plant material:</td>
<td>Prohibited from:</td>
<td>Postentry from:</td>
<td>Common name:</td>
<td>Requirements or authority:</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------</td>
<td>-----------------</td>
<td>--------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Salix spp.</td>
<td>Belgium, Great Britain, Germany, Japan, and The Netherlands</td>
<td>Europe excluding Belgium, Germany, Great Britain, and The Netherlands</td>
<td>Willow</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td>Sorbus spp.</td>
<td>Czech Republic, Denmark, Federal Germany, and Slovakia</td>
<td>All other countries except Canada</td>
<td>Mountain ash</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
</tr>
<tr>
<td>Spondias mombin (S. aurantica, S. axillaris, S. brasiliensis, S. lucida, S. lutea, S. myrobalan, S. pseudomyro-balan, and Mauria juglandifolia)</td>
<td>All countries except Canada</td>
<td>Hog plum and yellow mombin (also gelbe mombin-pflaume, gelbptflaume, imbu, Jamaica-plum, jobo, jobo gusanero, mombin, mombin jaune, mombin rouge, prunier d’Espagne, prunier mombin, prunier rouge, siniqueles, tepereba, and ubos)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spondias purpurea</td>
<td>All countries except Canada</td>
<td>Hog plum and red mombin (also ciruela espanola, ciruelo, imbu, imbueiro, mombin rouge, jacote, prune d’Espagne, purple mombin, rote mombin-pflaume, and Spanish-plum)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spondias tuberosa</td>
<td>All countries except Canada</td>
<td>Hog plum (also imbu and umbu)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Syringa spp.</td>
<td>Europe (Syringa spp. from The Netherlands when appropriately certified)</td>
<td>All other countries except Canada</td>
<td>Lilac</td>
<td></td>
</tr>
<tr>
<td>Syzygium aqueum</td>
<td>All countries except Canada</td>
<td>Watery rose apple (also bellfruit, jambo ayer, jambu air, perita costena, tambis, wasserjam-buse, and water-apple)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table E-1 Plant Genera Subject to Postentry Quarantine (page 20 of 21)

<table>
<thead>
<tr>
<th>Plant material:</th>
<th>Prohibited from:</th>
<th>Postentry from:</th>
<th>Common name:</th>
<th>Requirements or authority:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Syzygium cumini</em> (Eugenia cumini, <em>Myrtus cumini</em>, and <em>S. jambolanum</em>)</td>
<td>All countries except Canada</td>
<td>Java plum (also black plum, duhat, guayabo pesgua, jaman, jambolan, jambolana-pflaume, jambolaner, jambool, jambu, jamel-ongue, wachsjambuse, and yambolana)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Syzygium jambos</em> (Caryophyllus jambos, Eugenia jambos, <em>E. melaccensis</em>, <em>Jambosa jambosa</em>, and <em>J. vulgaris</em>)</td>
<td>All countries except Canada</td>
<td>Curacao apple and rose apple (also, curacao appel, gulab-jaman, jambos, jambosier, jambu, Malabar-plum, manzana rose, pomarrosa, pommereose, rosenapfelbaum, and yambola)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Syzygium mala-cense</em> (Caryophyllus malaccensis, <em>Eugenia malaccensis</em>, and <em>Jambosa mallaccensis</em>)</td>
<td>All countries except Canada</td>
<td>Malayapple and rose apple (also jambois-sier rouge, jabu bol, jamelac, large fruited rose-apple, malakka-apfel, malayapfel, manzana de agua, mountain apple, ohia, otahete-apple, pamarrosa de Malaca, poirier de Malaque, pomerac jambos, and pomme malac)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Ulmus spp.</em></td>
<td>Europe, <strong>including</strong> seeds</td>
<td>All other countries except Canada, <strong>excluding</strong> seeds</td>
<td>Elm</td>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPRA) effective May 20, 2013</td>
</tr>
<tr>
<td><em>Vaccinium spp.</em> (fruit bearing)</td>
<td>All countries except Canada</td>
<td>Blueberry, cranberry</td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Watsonia spp.</em> (except bulbs)</td>
<td>Africa, Argentina, Brazil, France, Italy, Malta, Mauritius, Portugal, Uruguay, also Luxembourg or Spain when not appropriately certified</td>
<td>All other countries except Canada</td>
<td>Bugle lily</td>
<td></td>
</tr>
<tr>
<td>Plant Genera Subject to Postentry Quarantine (page 21 of 21)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Table E-1</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Plant material:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Prohibited from:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Postentry from:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Common name:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Requirements or authority:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ziziphus jujuba (Rhamnus zizyphus, Z. sativa, Z. spinosa, Z. vulgaris, and Z. zyzphus)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All countries except Canada</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jujube (also acofeifeira, azufaifo, brusbeerbaum, Chinese date, Chinese jujuba, Chinesische dattle, common jujube, and jujubier common)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ziziphus lotus (Rhamnus lotus)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All countries except Canada</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wild jujube (also acufeifa-menor, azufaifo, jujubier de berberie, jujubier sauvage, lotus, and lotustree)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ziziphus mauritiana (Rhamnus jujuba, R. zizyphus, Z. jujuba, Z. sativus, and Z. vulgaris)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All countries except Canada</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jujube (also anab, azufaifo africano, ber beri, bor, Chinese date, jujube, Chinese jujube, cottony jujube, filzblattrige, Indian cherry, Indian jujube, Indian plum, jujuba, jujubier, nab-bak-el-fil, tsao, and unnab)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plants NOT Authorized Pending Pest Risk Analysis (NAPPRA) effective May 20, 2013</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 NOTE regarding *Dianthus* spp. only: for exemption from postentry quarantine for Great Britain and The Netherlands, the phytosanitary certificate must have an additional declaration certifying articles were grown in accordance with 7 CFR 319.37-5(d). PIM letter OC 20090803 NL, effective August 15, 2009; *Dendranthema* spp. and *Chrysanthemum* are not exempted from postentry quarantine.
Contents

APHIS 7060, Official Warning, Violation of Federal Regulations  F-2
PPQ 236 Notice of Shipment and Report of Imported Plants to be Grown Under Postentry Quarantine  F-3
Routing and Distribution of PPQ Form 236  F-5
PPQ Form 391 Specimens for Determination  F-5
PPQ 518 Report of Violation  F-8
PPQ 546 Agreement for Postentry Quarantine—State Screening Notice (7 CFR 319.37)  F-9
Routing and Distribution of PPQ Form 546  F-12
PPQ Form 547 Postentry Quarantine Tag  F-13
PPQ Form 569 Release from Postentry Quarantine  F-14
PPQ Form 587 Application for Permit to Import Plants or Plant Products  F-15
PPQ Controlled Import Permit for Postentry Quarantine  F-17
Witness Statements  F-21
The Department of Agriculture has evidence that on or about ____________, 19__ you or your organization committed the following violation of Federal Regulations:

Titles 7 & 9 Code of Federal Regulations were promulgated to help prevent the spread of animal and plant pests and diseases and assure the humane treatment of animals. Since violations of the regulations can have serious and costly impact detrimental to the public interest, you are warned of this violation. Any further violation of these regulations may result in the assessment of a civil penalty or criminal prosecution. If you have any questions concerning this warning or violation, please contact the listed APHIS Official.

Figure F-1 APHIS 7060, Official Warning, Violation of Federal Regulations
# PPQ 236 Notice of Shipment and Report of Imported Plants to be Grown Under Postentry Quarantine

**U.S. DEPARTMENT OF AGRICULTURE**  
ANIMAL AND PLANT HEALTH INSPECTION SERVICE  
PLANT PROTECTION AND QUARANTINE

**NOTICE OF SHIPMENT AND REPORT OF INSPECTION OF IMPORTED PLANTS TO BE GROWN UNDER POSTENTRY QUARANTINE**

<table>
<thead>
<tr>
<th>1. INSPECTION STATION</th>
<th>2. POSTENTRY PERMIT NO.</th>
<th>3. INSPECTION STATION REFERENCE NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**4. NAME AND MAILING ADDRESS OF PERMITTEE (Include Zip code)**

**ACTION**  
**DATE**  
**TIME**

<table>
<thead>
<tr>
<th>5. RECEIVED</th>
<th>6. INSPECTED</th>
<th>7. RELEASED</th>
<th>8. FORWARDED</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Permittee should notify Plant Protection and Quarantine of change of mailing address, or if shipment is to be grown at an approved growing site other than location show in Item 4 or 9.

**9. APPROVED GROWING SITE IF DIFFERENT FROM ITEM 4 (Specify if "Same")**

<table>
<thead>
<tr>
<th>10. PLANTS IMPORTED (Number and kind)</th>
<th>11. ORIGIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td></td>
</tr>
<tr>
<td>D.</td>
<td></td>
</tr>
<tr>
<td>E.</td>
<td></td>
</tr>
<tr>
<td>F.</td>
<td></td>
</tr>
<tr>
<td>G.</td>
<td></td>
</tr>
<tr>
<td>H.</td>
<td></td>
</tr>
<tr>
<td>I.</td>
<td></td>
</tr>
<tr>
<td>J.</td>
<td></td>
</tr>
</tbody>
</table>

**12. CONDITION OF PLANTS ON ARRIVAL**

**13. INSECTS INTERCEPTED**

**14. DISEASES INTERCEPTED**

**15. TREATMENT**

**16. REMARKS (No. of postentry tags forwarded, method of transportation, certification, packing material, etc.)**

**17. SIGNATURE OF PLANT PROTECTION AND QUARANTINE OFFICER**

---

*Figure F-2  Example of PPQ Form 236, Notice of Shipment and Report of Imported Plants to be Grown Under Postentry Quarantine (page 1 of 2)*
Figure F-3 Example of PPQ Form 236, Notice of Shipment and Report of Imported Plants to be Grown Under Postentry Quarantine (page 2 of 2)
Routing and Distribution of PPQ Form 236

Figure F-4 Routing and Distribution of PPQ Form 236

PPQ Form 391 Specimens for Determination
This report is authorized by law (7 U.S.C. 147a). While you are not required to respond your cooperation is needed to make an accurate record of plant pest conditions.

**Sender and Origin**

1. **Collection Number**
2. **Date**
3. **State Cooperator**
4. **PPQ**
5. **Other**

**Reason for Identification**

A. Biological Control (Target Pest Name)
B. Damaging Crops/Plants
C. Suspected Pest of Regulatory Concern
D. Stored Product Pest
E. Livestock, Domestic Animal Pest
F. Possible Immigrant (Explain in Remarks)
G. Survey (Explain in Remarks)
H. Other (Explain in Remarks)

**Host Data**

1. **Name of Sender**
2. **Type of Property** (Farm, Feedmill, Nursery, etc.)
3. **Address of Sender**
4. **Reason for Identification**
   - A. Biological Control
   - B. Damaging Crops/Plants
   - C. Suspected Pest of Regulatory Concern
   - D. Stored Product Pest
   - E. Livestock, Domestic Animal Pest
   - F. Possible Immigrant
   - G. Survey
   - H. Other
5. **Name and Address of Property or Owner**
6. **Address of Sender**
7. **State**
8. **County**
9. **ZIP**
10. **Interception Site**
11. **Country**
12. **Reason for Identification** (All Applicable Items)

**Plant Pathology**

13. **Number of Plants Affected**
14. **Plant Symptoms**
   - Isolated
   - General (describe symptoms)
15. **Host Information**
16. **Plant Distribution**
   - Limited
   - Scattered
   - Widespread
17. **Plant Parts Affected**
   - Leaves, Upper Surface
   - Leaves, Lower Surface
   - Petiole
   - Stem
   - Trunk/Trunk Bark
   - Branches
   - Growing Tips
   - Roots
   - Bulbs, Tubers, Corms
   - Seeds
   - Buds
   - Flowers

**Insects**

18. **Number of Plants Affected**
19. **Insects**
20. **Nematodes**
21. **Mollusks**

**Sampling Method**

22. **Sampling Method**
23. **Type of Trap and Lure**
24. **Trap Number**

**Remarks**

25. **Remarks**
26. **Tentative Determination**
27. **Determinations and Notes**

---

**Figure F-5 Example of PPQ Form 391 Specimens for Determination** (page 1 of 2)
**OMB Information**

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0579-0010. The time required to complete this information collection is estimated to average .25 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

**Instructions**

Use PPQ Form 391, Specimens for Determination, for domestic collections (warehouse inspections, local and individual collecting, special survey programs, export certification).

<table>
<thead>
<tr>
<th>BLOCK</th>
<th>INSTRUCTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1. Assign a number for each collection beginning the year, followed by the collector’s initials and collector’s number.</td>
</tr>
<tr>
<td></td>
<td><strong>EXAMPLE</strong> In 2001, Brian K. Long collected his first specimen for determination of the year. His first collection number is 01-BLK-001</td>
</tr>
<tr>
<td>2</td>
<td>Enter the collection number</td>
</tr>
<tr>
<td>3</td>
<td>Enter date</td>
</tr>
<tr>
<td>4</td>
<td>Check block to indicate Agency submitting specimens for identification</td>
</tr>
<tr>
<td>5</td>
<td>Enter name of sender</td>
</tr>
<tr>
<td>6</td>
<td>Enter type of property specimen obtained from (farm, nursery, feedmill, etc.)</td>
</tr>
<tr>
<td>7</td>
<td>Enter address</td>
</tr>
<tr>
<td>8A-8L</td>
<td>Enter name and address of property owner</td>
</tr>
<tr>
<td>9</td>
<td>Leave Blank</td>
</tr>
<tr>
<td>10</td>
<td>Enter scientific name of host, if possible</td>
</tr>
<tr>
<td>11</td>
<td>Enter quantity of host and plants affected</td>
</tr>
<tr>
<td>12</td>
<td>Check block to indicate distribution of plant</td>
</tr>
<tr>
<td>13</td>
<td>Check appropriate blocks to indicate plant parts affected</td>
</tr>
<tr>
<td>14</td>
<td>Check block to indicate pest distribution</td>
</tr>
</tbody>
</table>
| 15    | • Check appropriate block to indicate type of specimen  
|       | • Enter number specimens submitted under appropriate column |
| 16    | Enter sampling method |
| 17    | Enter type of trap and lure |
| 18    | Enter trap number |
| 19    | Enter X in block to indicate isolated or general plant symptoms |
| 20    | Enter X in appropriate block for weed density |
| 21    | Enter X in appropriate block for weed growth stage |
| 22    | Provide a brief explanation if Prompt or URGENT identification is requested |
| 23    | Enter a tentative determination if you made one |
| 24    | Leave blank |

**Distribution of PPQ Form 391**

Distribute PPQ Form 391 as follows:

1. Send Original along with the sample to your Area Identifier.
2. Retain and file a copy for your records.

---

**NOTICE**

The above form **must** accompany any disease specimen for identification sent to the Postentry Quarantine Unit by State Cooperators or local PPQ identifiers.
### PPQ 518 Report of Violation

<table>
<thead>
<tr>
<th>SERIAL NO.</th>
<th>74353</th>
</tr>
</thead>
</table>

#### Fields

1. **DATE VIOLATION DISCOVERED**
2. **VIOLATED - REG./COMPL. AGREEMENT**
3. **WHERE INTERCEPTED** (City or Port, and State, also county if domestic)
4. **ORIGIN OF ARTICLE** (Include county if domestic)
5. **ARTICLE MOVED IN VIOLATION OF REGULATIONS**
6. **IDENTITY OF ARTICLE** (Serial No., Warelift No., description, etc.)
7. **NAME AND BUSINESS ADDRESS OF VIOLATOR** (Shipper, carrier, cleaner, garbage handler, servicing agent, broker, ship’s agent, etc. Identify which)
8. **VIOLATOR HAD** Compliance agreement? Yes | No | Permit? | Yes | No
9. **IF NO, VIOLATOR WAS AWARE OF REGULATION** Yes | No | Unknown
   If "Yes" - how informed and when?
10. **NAME AND BUSINESS ADDRESS OF CARRIER**
11. **CARRIER WAS AWARE OF REGULATION** Yes | No | Unknown
   If "Yes" - how informed and when?
12. **IDENTITY OF CARRIER**
   - Plane: Air., No.
   - Ship: Flag,
   - Road Vehicle: License No.
13. **NAME AND BUSINESS ADDRESS OF CONSIGNEE**
14. **DISPOSITION OF PEST RISK** (i.e., articles named in Item 5 were fumigated, destroyed, etc.)
15. **REMARKS** (Attach additional sheet, if needed)
16. **VIOLATOR OR CARRIER’S STATEMENT OF VIOLATION** (Attach additional sheet, if needed identify who gave statement)
17. **OFFICER’S STATEMENT** Must attach a detailed, signed and dated statement. State how the action violated the regulations or compliance agreement cited in Item 2. Describe fully the facts of the violation from discovery through disposition of pest risk including when, who, what, and where.
18. **SIGNATURE OF INITIATING OFFICER**
19. **PRINTED NAME OF OFFICER AND WORK UNIT**
20. **DATE REPORT COMPLETED**
21. **OFFICER IN CHARGE COMMENTS** (Attach additional sheet, if needed)
   - List Previous Violations:
   - Recommendations:
22. **SIGNATURE OF OFFICER IN CHARGE**
23. **PRINTED NAME OF OFFICER IN CHARGE AND WORK UNIT**
24. **DATE SIGNED**

---

Figure F-7 Example of PPQ Form 518 Report of Violation
## PPQ 546 Agreement for Postentry Quarantine—State Screening Notice (7 CFR 319.37)

### AGREEMENT FOR POSTENTRY QUARANTINE

#### STATE SCREENING NOTICE (7 CFR 319.37)

**1. Name and Address of Applicant**

**2. Scientific Name of Plant**

**3. Quantity**

**4. Country of Origin**

**Telephone No.**

**5. ACTUAL LOCATION WHERE MATERIAL WILL BE GROWN, INCLUDING COUNTRY (Please be specific. Show street address of property, or if no number, describe location of property in relation to roads and/or landmarks. Do NOT use post office box numbers.**

**AGREEMENT**

As a condition of importing nursery stock governed by postentry quarantine provisions of the Nursery Stock Plants regulation (7 CFR 319.37-7), the following requirements must be met.

- a. All plant material will be grown on premises supervised and controlled by me, located as specified in the Growing Locations section, and will not be moved or distributed without prior written permission of the appropriate State or Territory Official and the Coordinator, Postentry Quarantine Program, Riverdale, MD.

- b. Property identified officers, either Federal and/or State, will be given access to the premises listed in the Growing Locations section during regular business hours.

- c. No increase of these plants by cutting, grafting, suckers, flowers, seeds, or air layers will be made; there will be no distribution of the plant or increase; and no cutting of flowers for sale will be made until the plants are released from postentry quarantine, or written permission of the (as in the first condition above).

- d. The plant material and all increase there from will be labeled by specific plant name, port accession number, and date of importation.

- e. The plant material will be separated from domestic stock of the same genus including such stock on adjoining premises, by no less than 3 meters (approximately 10 feet); and will be separated from other imported plants by the same distance.

- f. Any treatments prescribed by the officer including destruction of the quarantined plant material or other plants growing on the premises will be completed to prevent the dissemination of a plant pest.

- g. The appropriate State or Territory Official will be notified in writing within 30 days when any abnormality is noticed in the plant material or if the plant material dies. Dead plants will be retained and collected by the officer for analysis.

- h. Notification of change of address will be sent to the appropriate State or Territory Official and the Coordinator, Postentry Quarantine Program, Riverdale, MD.

- i. Plants of Rubus spp. from Europe will be grown in a greenhouse (16 mesh per inch minimum), plants of Chrysanthemum spp., Dendranthema spp., Leucanthemella sericata, Nipponanthemum nipponicum, Dianthus spp., and Hydrangea spp. will be grown in a greenhouse or other enclosed building.

- j. The postentry requirements will be applied to Chrysanthemum spp. for 6 months after importation, to Dianthus spp. for 1 year after importation, to Hydrangea spp. for 9 months after importation, to Humulus spp. (hops), a meristem culture of the imported plant will be observed for 6 months, and the original plant will be destroyed after the meristem culture is established. After the 6-month observation, the meristem culture-generated plant must remain in postentry quarantine for an additional year. All other plants under the postentry quarantine program will be observed and grown for 2 years after importation.

1. as the responsible agent, have read this agreement and agree to the above conditions, and understand that violation of this agreement will result in the cancellation of my postentry permit.

**6. SIGNATURE OF APPLICANT**

**7. DATE SIGNED**

**SECTION B: TO BE COMPLETED BY STATE OFFICIAL**

**8. SITE**

- [ ] APPROVED
- [ ] DISAPPROVED (If Disapproved State Reason Below)
- [ ] NOT SCREENED

**9. SIGNATURE OF STATE OFFICIAL**

**10. DATE SIGNED**

**State Official:** Forward this application to:

U.S. Department of Agriculture, APHIS

Plant Protection and Quarantine

4700 River Road, Unit 136

Riverdale, Maryland 20737-1236

Warning: Any alteration, forgery, or unauthorized use of this document is subject to civil penalties of up to $250,000 (7 U.S.C. 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. 1001)

---

**Figure F-8 Example of PPQ Form 546 Agreement for Postentry Quarantine—State Screening Notice (7 CFR 319.37) (page 1 of 2)**
Instruction for Completing PPQ Form 546
Agreement for Postentry Quarantine State Screening Notice

Note: Please TYPE or PRINT legibly to complete this form.

1. Enter the name of the company representative who is responsible for the shipment, the company name, and a street address. If you have a Post Office box for mail deliveries, add this to the street address in this box.

2. Enter the scientific (Latin) name of each plant you wish to import. If you do not know the scientific name(s), enter the English common name(s).

3. Enter the maximum number of plants/cuttings you and the State inspector consider appropriate for the growing you have selected during the quarantine period for the genus or genera you are importing.

4. Enter the country or countries from which the product is originally being shipped.

5. Enter the specific location – street address (if available), city, county, and State – where the plant material will be grown for the duration of the quarantine period. If no street address is available, you and the State inspector must determine how to describe the location in detail (GPS coordinates can be used).

STOP. Contact your State Plant Regulatory Official to set up an appointment for a site inspection. See the National Plant Board website at http://www.nationalplantboard.org/ for contact information for your State’s Regulatory Official.

6. After the site inspection and consultation, the person named in Block 1 must sign the application.

7. Enter the date the application was completed and signed.

The State Regulatory Official will complete the form and submit it to USDA, APHIS, Plant Protection and Quarantine (full address on bottom of form).

Figure F-9 Example of PPQ Form 546 Agreement for Postentry Quarantine—State Screening Notice (7 CFR 319.37) (page 2 of 2)
NOTICE

Sets of PPQ 546 dated prior to January 1998 are obsolete and **MUST** be discarded. The State should contact the SPHD to order new forms, or download from the Web site.
Routing and Distribution of PPQ Form 546

Applicant completes and signs Section A of PPQ Form 546

Applicant forwards copies 1, 2, and 3 to the State official

State official completes Section B of PPQ Form 546

State forwards copies 1 and 2 to Permit Unit, Riverdale, MD and retains copy 3

If the State approved the site, the Permit Unit will issue PPQ Form 587 (original copy to the applicant; copies to the State)

If the State disapproved the site, the Permit Unit will inform the applicant of the reason(s)

Permit Unit retains a file copy of PPQ Form 587 and PPQ Form 546

Permit Unit forwards a copy of PPQ Form 587 to PEQU with copy 2 of PPQ Form 546

Permit Unit forwards a copy of PPQ Form 587 to importer and appropriate inspection stations

Figure F-10 Routing and Distribution of PPQ Form 546
PPQ Form 547 Postentry Quarantine Tag

Figure F-11 Example of PPQ Form 547 Postentry Quarantine Tag
PPQ Form 569 Release from Postentry Quarantine

**NOTICE**
This form is **only** issued by the National Coordinator, PEQP and the PEQ Coordinator for Hawaii, Guam, and CNMI in Honolulu, HI.
PPQ Form 587 Application for Permit to Import Plants or Plant Products

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number. The valid OMB control numbers for this information collection are 0579-0049, 0172, 0173, and 0319. The time required to complete this information collection is estimated to average 0.5 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

U.S. DEPARTMENT OF AGRICULTURE
ANIMAL AND PLANT HEALTH INSPECTION SERVICE
PLANT PROTECTION AND QUARANTINE
APPLICATION FOR PERMIT TO IMPORT PLANTS OR PLANT PRODUCTS

INSTRUCTIONS: PLEASE TYPE OR PRINT CLEARLY. PERMITS ARE NOT ISSUED TO P.O. BOXES. READ THE ENTIRE APPLICATION BEFORE COMPLETING. ATTACH ADDITIONAL SHEETS OF PAPER IF MORE SPACE IS NEEDED.

FORWARD COMPLETED APPLICATION TO: USDA-APHIS-PPQ
Permit Unit
4700 River Road, Unit 133
Riverdale, MD 20737-1236
1-877-770-5990; FAX: (301) 734-5786

1. NAME AND UNITED STATES ADDRESS OF U.S. RESIDENT/LEGAL ALIEN:
   APPLICANT’S NAME:
   ORGANIZATION NAME:
   U.S. ADDRESS (Include City, State, and ZIP Code):
   PHONE: FAX:
   E-MAIL:
   MAILING ADDRESS (if different than physical address):

2. PLANTS OR PLANT PRODUCTS TO BE IMPORTED:
   Country of Origin (Province or territory, if applicable)
   Scientific Names of Plants or Plant Products
   Plant Parts (seeds, cuttings, rhizomes, plants, bulbs, fruits, etc.)
   U.S. Port or Ports of Arrival

3. INTENDED USE: □ Plants/parts for planting (Nursery stock) □ Small lots of seed □ Fruit and vegetables □ Other

4. MEANS OF IMPORTATION: □ Mail or Express carrier □ Cargo shipment □ Personal baggage or car

5. SIGNATURE OF APPLICANT:

6. PRINTED NAME OF APPLICANT:

7. DATE:

PPQ FORM 587 (MD)
JUL 2009
WARNING: Any alteration, forgery, or unauthorized use of this document is subject to civil penalties of up to $250,000 (7 U.S.C. 7734(b)) or punishable by a fine of not more than $10,000, or imprisonment of not more than 5 years, or both (16 U.S.C. 1901).

Figure F-12  Example of PPQ Form 587 Application for Permit to Import Plants or Plant Products (page 1 of 2)
Instructions for completing PPQ Form 587
Application for Permit to Import Plants or Plant Products

Please TYPE or PRINT legibly to complete. You must complete all of the boxes.

1. Enter the name and street address of the person responsible for the importation. The applicant must be a United States resident. Enter the organization or company name, if applicable. A physical address of the facility or business is required. You may include a post office box address in addition to the street address for mailing purposes. Enter your daytime telephone number, including the Area Code. Enter your facsimile number, including the Area Code. Enter your e-mail address if applicable.

2. In the first column, enter a country or countries (if from Canada include Province, if from Mexico include State) from which you want to import the plants or plant products (the term “various” will not be accepted). In the second column, enter the scientific (Latin) name of each plant. If you do not know the scientific name(s), try to find out from the exporter. As a last resort, enter the English common name(s). In the third column, enter the type of plant parts you plan to import for each species. In the fourth column, enter the City and State of the preferred port(s) of arrival. If you do not know the port, enter “N/A.” (Check your permit when you receive it for the approved ports.)

3. Check the appropriate box. Select “Plants for planting”, if the plants/plant parts you want to import will be planted or sold for planting. Select “Small lots of seed” if you want to import under the small lots of seed program (see below). Select “Fruits and Vegetables” if you are importing fruits and vegetables for consumption or resale. Select “Other” if the article you want to import does not fall into any of the other categories. List the category or additional information needed to describe the article (i.e., Cut flowers, broomcorn, etc…). * Special instructions for small lots of seed: Small lots of eligible seed may be imported without a phytosanitary certificate with a written permit. See the permit unit website (http://www.aphis.usda.gov/import_export/plants/plant_imports/smalllots_seed.shtml) for help in determining eligibility. In part #2 list the seed species and countries from which you want to ship each species. If the list of species and/or countries of origin is long, you may enter “eligible taxa.” By using this option, you are accepting responsibility for determining the eligibility of the seeds. A permit is issued for taxa that are enterable with no restrictions beyond port of entry inspection. If port of entry inspectors find prohibited or restricted seeds in your shipment, they will remove the ineligible kinds.

4. Check the appropriate box or boxes that apply to the means of importation.

5. The applicant named in box #1 must sign the form.

6. Printed name of person who signed the form.

7. Enter the date the form is completed and signed.

If you attach additional sheets of paper, type or print PPQ Form 587, the applicant’s name, and the company name at the top of each page.

Send the completed application by facsimile to (301) 734-5786, or mail to:

USDA-APHIS-PPQ
Permit Unit
4700 River Road, Unit 133
Riverdale, MD 20737-1238

Call our automated phone number at 1-877-770-5990 if you have questions.

Figure F-13  Example of PPQ Form 587 Application for Permit to Import Plants or Plant Products (page 2 of 2)

NOTICE

This application is for all genera that are not prohibited or Postentry Quarantine.
United States Department of Agriculture
Animal and Plant Health Inspection Service
4700 River Road
Riverdale, MD 20737

Controlled Import Permit for Postentry Quarantine
Regulated by 7 CFR 319.37-7 and 319.6

This permit was generated electronically via the ePermits system.

PERMITTEE NAME: Jane Doe
COMPANY: Doe Growers, Inc.
ADDRESS: 12345 Main St.
Anytown, USA 12345
PHONE: (800) 888-5555
FAX: (800) 888-5555

DATE ISSUED: 06/2013
DATE AMENDED: 06/01/2016
EXPIRES: 06/2016

DESIGNATED PLANT INSPECTION STATIONS: AZ, Nogales; CA, Hawthorne; CA, San Diego; CA, San Francisco; FL, Miami; FL, Orlando; GA, Atlanta; GU, Agana; HI, Honolulu; MD, Beltsville; NJ, Linden; NY, Jamaica; PR, Carolina; TX, Humble; TX, Los Indios; WA, SeaTac

Under the conditions specified, this permit authorizes the following:

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Country(ies) of Origin</th>
<th>Maximum Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acer</td>
<td>New Zealand</td>
<td>1000</td>
</tr>
</tbody>
</table>

Approved Growing Locations
Address: 12345 Main St.
City, State: Anytown, USA
County: Washington
Latitude:
Longitude:
Growing Location Description:

SPECIAL INSTRUCTIONS TO INSPECTORS
See permit conditions below

PERMIT CONDITIONS

THIS PERMIT AUTHORIZES THE IMPORTATION OF THE FOLLOWING POSTENTRY GENERA.

Please note that the import requirements listed below are subject to change at any time during the duration of this permit. Please refer to the Nursery Stock Restrictions (Plants for Planting) Manual at http://www.aphis.usda.gov/import_export/plants/manuals/ports/index.shtml for the current import requirements for the commodities you are importing.

Any person who violates the Plant Protection Act (PPA) of the United States, individuals or corporations who fail to comply with these conditions and authorizations, or who forge, counterfeit, or deface permits may be criminally or administratively prosecuted and found guilty of a misdemeanor which can result in penalties, a one-year prison term, or both. Additionally, any person violating the PPA may be assessed civil penalties of up to $250,000 per violation or twice the gross gain or gross loss for a violation that results in the person deriving pecuniary gain or a

Permit Number PE-XX-XXXXX
DATE
06/01/2013

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)

Page 1 of 4
pecuniary loss to another, whichever is greater. In addition, all current permits may be cancelled and future permit applications denied.

This APHIS-issued import permit only covers compliance with APHIS regulations and requirements. Therefore, this APHIS permit for the commodity to be imported does not reduce or eliminate the permittee's legal duty and responsibility to likewise comply with all other Federal and State regulatory requirements applicable to the commodity to be imported.

1. All plant material will be grown on premises supervised and controlled by me, located as specified in the Growing Locations section, and will not be moved or distributed without prior written permission of the appropriate State or Territory Official and the Coordinator, Postentry Quarantine Program, Riverdale, MD.

2. Properly identified officers, either Federal and/or State, will be given access to the premises listed in the Growing Locations section during regular business hours.

3. No increase of these plants by cuttings, grafting, suckers, flowers, seeds or air layers will be made; there will be no distribution of the plants or increase; and no cutting of flowers for sale will be made until the plants are released from postentry quarantine, or written permission of the (as in the first condition above).

4. The plant material and all increase there from will be labeled by specific plant name, port accession number, and date of importation.

5. The plant material will be separated from domestic stock of the same genus including such stock on adjoining premises, by no less than 3 meters (approximately 10 feet); and will be separated from other imported plants by the same distance.

6. Any treatments prescribed by the officer including destruction of the quarantined plant material or other plants growing on the premises will be complied with to prevent the dissemination of a plant pest.

7. The appropriate State or Territory Official will be notified in writing within 30 days when any abnormality is noticed in the plant material or if the plant material dies. Dead plants will be retained and collected by the officer for analysis.

8. Notification of change of address will be sent to the appropriate State or Territory Official and the Coordinator, Postentry Quarantine Program, Riverdale, MD.

9. Plants of Rubus spp. from Europe will be grown in a screenhouse (16 mesh per inch minimum); plants of Chrysanthemum spp. Dendranthema spp., Leucanthemella serotina, Nipponanthemum nipponicum, Dianthus spp., and Hydrangea spp. will be grown in a greenhouse or other enclosed building.

10. The postentry requirements will be applied to Chrysanthemum spp. for 6 months after importation, to Dianthus spp. for 1 year after importation, to Hydrangea spp. for 9 months after importation, to Humulus spp. (hops), a meristem culture of the imported plant will be observed for 6 months, and the original plant will be destroyed after the meristem culture is established. After the 6-month observation, the meristem culture-generated plant must remain in postentry quarantine for an additional year. All other plants under the postentry quarantine program will be observed and grown for 2 years after importation.

11. APHIS will consider authorizing release of restricted plant materials in postentry quarantine before the end of 2 consecutive calendar years under the following conditions:

1) All restricted plant materials under PEQ targeted for release shall meet the inspection and testing requirements for the plant pests and pathogen(s) of concern and must complete 2 sequential growing season inspections occurring within 2 consecutive calendar years;
2) The results of the inspections and testing shall be negative for the plant pests and pathogen(s) of concern; and
3) The request shall be accompanied by a written recommendation from the SPRO or their designated representative.

12. POSTENTRY PLANT MATERIAL LISTED BELOW
(SPECIAL PROVISIONS MAY APPLY)

The plant material (listed above) you wish to import under postentry quarantine is to be grown at (site listed above) in accordance with the agreement dated June 25, 2013.
13. Under the Plant Protection Act, individuals or corporations who fail to comply with the following conditions
and authorizations, or who forge, counterfeit, or deface permits or shipping labels may receive civil or criminal
penalties, and may have all current permits cancelled and future permit applications denied. Additionally, the
permittee is responsible for ensuring that plant materials imported under this permit comply with all applicable
requirements stated in Title 7 Code of Federal Regulations Part 319.37.

14. A phytosanitary certificate must accompany all propagative material imported under this permit.

15. Immediately upon arrival of the plant material at the port of entry, the importer will notify Plant Protection and
Quarantine of the arrival using a manifest, customs entry document, commercial invoice, waybill, brokers document,
or PPQ Form 368 which is available on this website:

16. A typed or legibly printed list/invoice must accompany each shipment, and must include the name of the
collector/shipper, the botanical names (genus and species) listed alphabetically, as well as the country of origin, and
country shipped from, for each taxon.

17. The permittee must instruct the supplier to label each container with the genus and species name of plants
within. For containers holding more than one species, each species must be labeled separately.

18. If the plant material shipped under the Postentry Quarantine (PEQ) program is delivered to the permit holder or
to the approved PEQ site/facility prior to PPQ inspection AND is not accompanied by one postentry yellow tag (PPQ
Form 547) and twist tie per plant genus, and is not accompanied by the PPQ Form 236 from the USDA Plant
Inspection Station, the permit holder is required to immediately:

a) Hold and properly safeguard the entire plant shipment, including any other non-postentry required plants in its
original package/container; and

b) Contact one of the following immediately for instructions in order to obtain proper clearance of the shipment: State
Department of Agriculture officials, the nearest USDA Plant Inspection Station, or the USDA APHIS PPQ postentry
liaison. Contact information can be found by accessing the Postentry Quarantine Manual Appendix A,B & C through
the link provided below. Plant shipments will be sent either to a designated PIS or the nearest PIS at the importer's
expense. Failure to comply with this and any other USDA regulations and permit conditions as specified may result
in the revocation of the permit and civil penalties.


19. Permit holder shall ensure that this permit is valid while each imported plant shipment is in postentry quarantine
until its final release and PPQ form 569 is issued by the PEQ National Coordinator.

20. The shipment must be free from soil, other foreign matter or debris, prohibited plants, noxious weed seeds,
and living organisms such as parasitic plants, pathogens, insects, snails, and mites. Material found to be commingled with
prohibited or infested material will be subject to the same action (i.e. re-export, destruction, etc...) as the prohibited or
infested material.

21. Plants for planting which have been wrapped, coated, dipped, or sprayed, or otherwise packaged in plastic, or
other impermeable material that may prevent adequate inspection or treatment may be refused entry.

22. All wood packing material (WPM) present with this shipment must meet the requirements of the importing and
destination country and is subject to ISPM 15 treatment and IPPC stamp requirements and enforcement as stated in
7CFR 319.40-3(b).

23. USDA, APHIS, PPQ and CBP-AS have the option, based on its inspection findings, to order treatment,
re-exportation or destruction of a shipment, or a portion of a shipment.
24. When shipments are to be imported by mail, the permittee should request a green and yellow mailing label for each parcel. Instructions for its use appear on the reverse side of the label. If you are importing plants and seeds by mail (including express carrier parcel shipments), please instruct your supplier to attach to your parcel(s) the green and yellow labels provided with your permit. It is especially important that the permittee's name, address, telephone number, and permit number be enclosed with each parcel. Instruct your supplier to place only green and yellow labels, and NOT your name or address, on the outside of the parcel. Green and yellow labels should be used only for mail importation. You may request for PPQ Form 508 (Green/Yellow labels) on-line through ePermits under the “My Shipments/Labels” feature. Otherwise, send your request to GreenandYellowPlantslabelrequest@aphis.usda.gov. Specify the approved port(s) listed on the permit where you wish the plant materials sent and the total number of labels needed in a multiple of eight. The requested permit labels will be sent to you through a bonded carrier.

25. If the shipment is to be delivered by an express carrier, such as DHL, FedEx, UPS, etc., the recipient's name and address must be the same as the name and address on the PPQ permit label. In addition, please include inside the box a U.S. domestic shipping label from the express carrier of your choice with your shipping account number. These actions will help to ensure your package arrives at your designated final destination after the USDA Plant Inspection Station has inspected and cleared the package.

26. Shipments must be imported and presented for inspection at a USDA Plant Inspection Station (PIS) at a designated port listed on the permit or the green and yellow label, if applicable or required. If a shipment arrives at a port without a plant inspection station, any subsequent movement to a plant inspection station, or any transfer and/or transloading, must be approved by the USDA and/or CBP.

27. All costs and arrangements are the responsibility of the importer.

28. This permit must be utilized solely by the permittee. You must keep your permit valid for the duration that plant materials are in your possession. If the permit holder leaves the institution, a new individual who assumes responsibility for continued maintenance should obtain a permit prior to the permittee's departure. If any information changes (i.e. telephone number or address), you must notify our office immediately with the changes.

END OF PERMIT CONDITIONS
Witness Statements

I, __________________________ voluntarily make the following statement to __________________________, who has identified himself/herself to me as a Federal officer of the Animal and Plant Health Inspection Service, U.S. Department of Agriculture, knowing that it may be used as evidence.

Statement — use as many pages as necessary)

(NOTE: Do not use the following paragraph if the statement is handwritten, only use if the statement is typed.)

I have read the foregoing statement and vouch that the information contained therein is true to the best of my knowledge. I have been offered an opportunity to add to, delete from, or change anything herein that I feel is erroneous or incorrect. I have been offered no remuneration for making this statement and make it of my own free will.

Signature of PPQ Officer

Signature of Person Making Statement

Address

Figure F-18 Example of a Witness Statement
(a) The following restricted articles, from the designated countries and localities, and any increase therefrom must be grown under postentry quarantine conditions specified in paragraphs (c) and (d) of this section, and may be imported or offered for importation into the United States only:

(1) If destined for a State that has completed a State postentry quarantine agreement in accordance with paragraph (c) of this section;

(2) If a postentry quarantine growing agreement has been completed and submitted to Plant Protection and Quarantine in accordance with paragraph (d) of this section. The agreement must be signed by the person (the importer) applying for a written permit for importation of the article in accordance with §319.37-3; and,

(3) If Plant Protection and Quarantine has determined that the completed postentry quarantine growing agreement fulfills the applicable requirements of this section and that services by State inspectors are available to monitor and enforce the postentry quarantine.

(c) State Postentry quarantine agreement. (1) Articles required to undergo postentry quarantine in accordance with this section may only be imported if destined for postentry quarantine growing in a State which has entered into a written agreement with the Animal and Plant Health Inspection Service, signed by the Administrator or his or her designee and by the State Plant Regulatory Official. In accordance with the laws of individual States, inspection and other postentry quarantine services provided by a State may be subject to charges imposed by the State.

(1) The following States have entered into a postentry quarantine agreement in accordance with this paragraph:

[Reserved]

(2) In any such written agreement, the State shall agree to:
(i) Establish State regulations and requirements prior to the effective date of the agreement and enforce such State and Postentry Quarantine Manual regulations and requirements necessary to inspect sites and plants growing in postentry quarantine and to monitor and enforce compliance with postentry quarantine growing in accordance with this section;

(ii) Review pending permit applications for articles to be grown under postentry quarantine conditions in the States, upon request of Plant Protection and Quarantine, and report to the Permit Unit of Plant Protection and Quarantine whether the State would be able to provide inspection and monitoring services for the proposed postentry quarantine.

(iii) Provide the services of State inspectors to: inspect sites to be used for postentry quarantine; report to the Permit Unit of Plant Protection and Quarantine whether the site is of adequate size to contain the number of plants proposed for importation, including potential increase if increase is allowed; inspect plants for evidence of exotic pests at least once during the first year and once during the second year for plants required to be grown in postentry quarantine for 2 years, and at least once for plants required to be grown in quarantine for less than 2 years and monitor and enforce compliance with the requirements of this section during the use of the sites for postentry quarantine;

(iv) Report to the Postentry Quarantine Unit of Plant Protection and Quarantine any evidence of plant pests that are not known to exist in the United States and that are found at a postentry quarantine site by State inspectors; recommend to Plant Protection and Quarantine safeguards or mitigation measures to control the pests; and supervise the application of safeguards or mitigation measures approved by Plant Protection and Quarantine; and

(v) Report to the Postentry Quarantine Unit of Plant Protection and Quarantine any propagation or increase in the number of plants that occurs during postentry quarantine.

(3) In any such written agreement, the Administrator shall agree to:

(i) Seek State review of permit applications for postentry quarantine material in that State, and issue permits only after determining that State services are available to monitor the postentry quarantine;

(ii) Upon request of the State, provide training, technical advice, and pest identification services to State officials involved in providing postentry quarantine services in accordance with this section;
(iii) Notify State officials, in writing and within ten days of the arrival, when plant material destined for postentry quarantine in their State arrives in the United States, and notify State officials in writing when materials in postentry quarantine may be released from quarantine in their State.

(4) **Termination of State postentry quarantine agreement.** A State postentry quarantine agreement may be terminated by either the Administrator or the State Plant Regulatory Official by giving written notice of termination to the other party. The effective date of the termination will be 60 days after the date of actual receipt of notice, with regard to future importation to that State of articles requiring postentry quarantine in accordance with this section. When a postentry quarantine agreement is terminated by either the State Plant Regulatory Official or the Administrator, APHIS and the affected State shall continue to provide postentry quarantine services in accordance with the postentry quarantine agreement, until the time the plant material is eligible to be released from quarantine, for all postentry quarantine material already in the State, and for all postentry quarantine material that arrives in the State prior to the effective date of termination.

(d) **Postentry quarantine growing agreements.** Any restricted article required to be grown under postentry quarantine conditions, as well as any increase therefrom, shall be grown in accordance with a postentry quarantine growing agreement signed by the person (the importer) applying for a written permit in accordance with §319.37-3 for importation of the article and submitted to Plant Protection and Quarantine. On each postentry quarantine growing agreement, APHIS shall also obtain the signature of the State Plant Regulatory Official for the State in which regulated articles covered by the agreement will be grown. The postentry quarantine growing agreement shall specify the kind, number, and origin of plants to be imported, and shall certify to APHIS and to the State in which the articles are grown that the signed of the agreement will comply with the following conditions for the period of time specified below:

(1) To grow such article or increase therefrom only on specified premises owned, rented, or otherwise in possession of the importer, within a space of dimensions designated by an inspector, and to move, propagate, or allow propagation of the article or increase therefrom or parts thereof only with the written permission of the National Coordinator for postentry quarantine in Beltsville, MD or the Coordinator of postentry quarantine for Hawaii, Guam, and CNMI in Honolulu, HI after approval by the State Plant REgulatory Officer or representative:

(2) To permit an inspector to have access to the specified premises for inspection of such article during regular business hours;
(3) To keep the article and any increase therefrom identified with a label showing the name of the article, port accession number, and date of importation;

(4) To keep the article separated from any domestic plant or plant product of the same genus by no less than 3 meters (approximately 10 feet); and from any other imported plant or plant product by the same distance;

(5) To allow or apply remedial measures (including destruction) determined by an inspector to be necessary to prevent the spread of an injurious plant disease, injurious insect pest, or other plant pest;

(6) To notify an inspector, orally or in writing, within 30 days of the time the importer or the person in charge of the growing site finds any abnormality of the article, or the article dies or is killed by the importer, the person in charge of the growing site, or any other person; to retain the abnormal or dead article for at least 60 days following that date of notification; an to give the abnormal or dead article to an inspector upon request;

(7) To grow the article or increase therefrom, if an article or Rubus spp. (cloudberry, blackberry, boysenberry, dewberry, loganberry, raspberry) from Europe, only in a screenhouse with screening of a minimum of 16 mesh per inch;

(8) To grow the article or increase therefrom, if an article of Chrysanthemum spp. (chrysanthemum) or Dianthus spp. (carnation, sweet-william), only in a greenhouse or other enclosed building; and

(9) To comply with the above conditions for a period of 6 months after importation for an article of Chrysanthemum spp. (chrysanthemum), for a period of 1 year after importation for an article of Dianthus spp. (carnation, sweet-william), and for a period of 2 years after importation for any other such articles.

(e) A completed postentry quarantine agreement (PPQ form 546) signed by both the applicant and the State Plant Regulatory Officer or representative must be forwarded to the Permits Unit in Riverdale, MD to obtain a written permit for an article required to be grown under postentry quarantine conditions.

(f) Inspector-ordered disposal, movement, or safeguarding of restricted articles; costs and charges, civil and criminal liabilities.

(1) Growing at unauthorized sites. If an inspector determines that any article subject to the postentry quarantine growing requirements of this section, or any
appropriately authorized increase therefrom, is being grown at an unauthorized site, the inspector may file an emergency action notification (PPQ Form 523) with the owner of the article or the person who owns or is in possession of the site on which the article is being grown. The person named in the form 523 must, within the time specified in form 523, sign a postentry quarantine growing agreement, destroy, ship to a point outside the United States, move to an authorized postentry quarantine site, and/or apply treatments or other safeguards to the article, the increase therefrom, or any portion of the article or the increase therefrom, as prescribed by an inspector to prevent the introduction of plant pests into the United States. In choosing which action to order and in setting the time limit for the action, the inspector shall consider the degree of pest risk presented by the plant pest(s) associated with the kind of article (including increase therefrom), the types of other host materials for the pest in or near the growing site, the climate and season at the site in relation to the pest's survival, and the availability of treatment facilities.

(2) Growing at authorized sites. If an inspector determines that any article, or any increase therefrom, grown at a site specified in an authorized postentry quarantine growing agreement is being grown contrary to the provisions of this section, including in numbers greater than the number approved by the postentry quarantine growing agreement, or in a manner that otherwise presents a risk of introducing plant pests into the United States, the inspector shall issue an emergency action notification (PPQ form 523) to the person who signed the postentry quarantine growing agreement. That person shall be responsible for carrying out all actions specified in the emergency action notification. The emergency action notification may extend the time for which the articles and the increase therefrom must be grown under the postentry quarantine conditions specified in the authorized postentry quarantine growing agreement, or may require that the person named in the notification must destroy, ship to a point outside the United States, or apply treatments or other safeguards to the article, the increase therefrom, or any portion of the article or the increase therefrom, within the time specified in the emergency action notification. In choosing which action to order and in setting the time limit for the action, the inspector shall consider the degree of pest risk presented by the plant pest(s) associated with the kind of article (including increase therefrom), the types of other host materials for the pest in or near the growing site, the climate and season at the site in relation to the pest's survival, and the availability of treatment facilities.

(3) Costs and charges. All costs pursuant to any action ordered by an inspector in accordance with this section shall be borne by the person who signed the postentry quarantine growing agreement (PPQ form 546) covering the site where the articles were grown, or if no such agreement was signed, by the owner of the articles at the growing site.
(4) Civil and criminal liabilities. Any person who moves an article subject to postentry quarantine growing requirements from the site specified for that article in an authorized postentry quarantine growing agreement, or who otherwise handles such an article contrary to the requirements of this section, shall be subject to such civil penalties and such criminal liabilities as are provided by 18 U.S.C. 1001, 7 U.S.C. 150gg and 163, or other applicable Federal statutes.

(g) State. As used in this section, “State” means each of the 50 States of the United States, the District of Columbia, Guam, Northern Mariana Islands, Puerto Rico, the Virgin Islands, of the United States, and all other territories and possessions of the United States.

(Approved by the Office of Management and Budget under control number 0579-0049)
Contents

Introduction  H-1
Inspection Aid for Plants Growing in Postentry Quarantine  H-1

Introduction

Use Table H-1 to determine when to look for symptoms of infections caused by bacteria, viruses, fungi, and cankers.

Table H-1  Causal Agent and Onset of Symptoms

<table>
<thead>
<tr>
<th>If the causal agent is likely:</th>
<th>Then look for symptoms at this time of year:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bacteria</td>
<td>Spring and early summer</td>
</tr>
<tr>
<td>Viruses</td>
<td>Cool weather (when leaves are first expanding)</td>
</tr>
<tr>
<td>Cankers</td>
<td>Year long</td>
</tr>
<tr>
<td>Fungi including leaf spots</td>
<td>Mid-summer to fall</td>
</tr>
</tbody>
</table>

Table H-2  Inspection Aid for Plants Growing in Postentry Quarantine (page 1 of 18)

<table>
<thead>
<tr>
<th>Host group:</th>
<th>Pathogen or disease:</th>
<th>Preferred inspection period:</th>
<th>Symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Abelmoschus</em> spp.</td>
<td>Cotton Leaf Curl Agent</td>
<td>After leaves are fully opened</td>
<td><strong>Leaves:</strong> Conspicuous net-veinenations; on severely affected plants, leaves are small, thick, and curled down-wards; also, on severely affected plant, may have “bunchy-top” appearance</td>
</tr>
<tr>
<td><em>(okra)</em></td>
<td></td>
<td>until 6 weeks after</td>
<td></td>
</tr>
<tr>
<td>*Uromycladium teperia-</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>num</em> <em>(Sacc.) McAlp.</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>(rust)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Acacia</em> spp.</td>
<td></td>
<td>Throughout growing season</td>
<td><strong>Leaves:</strong> Gall–like masses along entire length</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>Branches:</strong> Large rounded galls or areas coated with brown, powdery spores</td>
</tr>
</tbody>
</table>
### Table H-2 Inspection Aid for Plants Growing in Postentry Quarantine (page 2 of 18)

<table>
<thead>
<tr>
<th>Host group:</th>
<th>Pathogen or disease:</th>
<th>Preferred inspection period:</th>
<th>Symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Acer</em> spp. (maple)</td>
<td><em>Xanthomonas acerion</em> (Ogawa) Burk (leaf disease)</td>
<td>After leaves are fully opened until autumn</td>
<td><strong>Leaves</strong>: Irregular, water-soaked spotting; spots later turn pale gray to black; leaves turn black and shrivel.</td>
</tr>
<tr>
<td></td>
<td>Maple-Variegation Agent</td>
<td>After leaves are fully opened until 6 weeks after</td>
<td><strong>Leaves</strong>: Yellow mottle mosaic peppered with very small, round, light-green spots; spots may coalesce to give chlorotic appearance.</td>
</tr>
<tr>
<td><em>Actinidia</em> spp. (kiwi–fruit)</td>
<td><em>Puccineastrum actinidiae</em> Hiratusuka (rust)</td>
<td>After leaves are fully opened</td>
<td><strong>Leaves</strong>: Spots on lower surface, grouped or scattered on yellow or yellowish-brown discolored areas; mature pustules yellowish-brown to brown in color.</td>
</tr>
<tr>
<td><em>Aesculus</em> spp. (horsechestnut)</td>
<td>Horsechestnut- Variegation Agent</td>
<td>After leaves are fully opened until they color in autumn</td>
<td><strong>Leaves</strong>: Yellow variegation.</td>
</tr>
<tr>
<td><em>Althaea</em> spp. (hollyhock)</td>
<td>Hibiscus Yellow Vein Mosaic Agent</td>
<td>When leaves are developing until leaves are fully opened</td>
<td><strong>Leaves</strong>: Faint vein clearing (of young leaves) followed by swelling of the veins at several points on the underside of the leaves; swelling gradually extends to nearly all veins. As leaves grow, the swelling thickens and becomes twisted; thickened veins are deep green in color and appear opaque when seen against the light.</td>
</tr>
<tr>
<td><em>Anacardium occidentale</em> (fruit and nut list)</td>
<td>Inspect for any potential exotic pathogen</td>
<td>Various times of the year</td>
<td>See Plant Genera Subject to Postentry Quarantine on page E-1.</td>
</tr>
<tr>
<td><em>Annona</em> spp. (fruit and nut list)</td>
<td>Inspect for any potential exotic pathogens</td>
<td>Various times of the year</td>
<td>See Plant Genera Subject to Postentry Quarantine on page E-1.</td>
</tr>
<tr>
<td><em>Artocarpus</em> spp.</td>
<td>Inspect for any potential exotic pathogens</td>
<td>Various times of the year</td>
<td>See Plant Genera Subject to Postentry Quarantine on page E-1.</td>
</tr>
<tr>
<td><em>Averrhoa carambola</em> (fruit and nut List)</td>
<td>Inspect for any potential exotic pathogens</td>
<td>Various times of the year</td>
<td>See Plant Genera Subject to Postentry Quarantine on page E-1.</td>
</tr>
<tr>
<td><em>Averrhoa</em> spp.</td>
<td>Inspect for any potential exotic pathogens</td>
<td>Various times of the year</td>
<td>See Plant Genera Subject to Postentry Quarantine on page E-1.</td>
</tr>
<tr>
<td><em>Berberis</em> spp. (barberry)</td>
<td><em>Puccinia graminis</em> Pers. (Black Stem Rust)</td>
<td>Between 5 and 9 weeks after leaves are fully opened</td>
<td><strong>Leaves</strong>: Small, circular, yellowish to orange spots (up to 2 to 5 mm) on upper side; usually on the lower side are groups of orange-yellow horn or cup-like projections.</td>
</tr>
<tr>
<td>Host group:</td>
<td>Pathogen or disease:</td>
<td>Preferred inspection period:</td>
<td>Symptoms:</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------</td>
<td>-----------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Blighia sapida (akee)</td>
<td>Okra Mosaic Virus</td>
<td>When leaves are developing until leaves are fully opened</td>
<td>Leaves: Chlorosis of the leaf veins and chlorosis of the lamina leaving thin, dark-green bands along the small leaf veins</td>
</tr>
<tr>
<td>Bromeliaceae (pine-apple family) (Postentry in HI only)</td>
<td>Puccinia pitcairniae Lagh.</td>
<td>All season</td>
<td>Leaves: Scattered or compact cinnamon-brown to blackish-brown lesions</td>
</tr>
<tr>
<td></td>
<td>Puccinia tillandsiae Cummins and Pollack</td>
<td>All season</td>
<td>Leaves: Lesions in clusters yellow to golden-brown</td>
</tr>
<tr>
<td></td>
<td>Uredo nidularii P. Henn.</td>
<td>All season</td>
<td>Leaves: Yellowish to cinnamon-brown lesions arranged in rows in groups</td>
</tr>
<tr>
<td></td>
<td>Ustilago tillandsiae Patterson</td>
<td>During flowering period</td>
<td>Inflorescences: Powdery black sori destroying inflorescences</td>
</tr>
<tr>
<td>Brugmansia spp.</td>
<td>Datura Colombian Virus</td>
<td>Spring and early summer</td>
<td>Leaves: 1) Veinbanding or chlorotic flecking followed by mottling; 2) may become rugose and slightly distorted</td>
</tr>
<tr>
<td>Carica spp.</td>
<td>Inspect for any potential exotic pathogen</td>
<td>Various times of year</td>
<td>See Plant Genera Subject to Postentry Quarantine on page E-1</td>
</tr>
<tr>
<td>Cedrus spp. (cedar)</td>
<td>Phacidiopycnis pseudotsuga (M. Wils.) Hahn (Douglas Fir Canker)</td>
<td>All season</td>
<td>Terminal buds and shoots: Die-back branches or trunk: Girdling up to 6 inches wide</td>
</tr>
<tr>
<td>Ceratonia siliqua</td>
<td>Inspect for any potential exotic pathogen</td>
<td>Various times of year</td>
<td>See Plant Genera Subject to Postentry Quarantine on page E-1</td>
</tr>
</tbody>
</table>
### Table H-2 Inspection Aid for Plants Growing in Postentry Quarantine (page 4 of 18)

<table>
<thead>
<tr>
<th>Host group:</th>
<th>Pathogen or disease:</th>
<th>Preferred inspection period:</th>
<th>Symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chaenomeles spp. (flowering quince)</strong></td>
<td>Quince Sooty Ringspot Agent</td>
<td>Up to 6 weeks after leaves are fully opened</td>
<td>Young leaves: 1) Show epinasty (curled sharply downwards); 2) Veinlets-necrosis and short lengths become blackened; black pigments develop in cuticle bordering veins or around pale yellow spots giving superficial appearance of “sooty mold”; 3) Vein clearing and yellowing</td>
</tr>
<tr>
<td></td>
<td>Quince Yellow Blotch Agent</td>
<td>Up to 6 weeks after leaves are fully opened</td>
<td>Leaves: Large chlorotic blotches</td>
</tr>
<tr>
<td></td>
<td>Quince Stunt Agent</td>
<td>Up to 6 weeks after leaves are fully opened</td>
<td>Leaves: Reduced in size, puckered, and marked by translucent chlorotic spots; Plants: Show no growth; also, show various degree of die-back (Smith)</td>
</tr>
<tr>
<td></td>
<td>Gymnosporangium asiaticum Miyabe ex Yamada (rust)</td>
<td>After leaves are fully opened</td>
<td>Leaves: Upper surface: orange–yellow spots; Lower surface: brown spots with yellowish-red margins; telia occur on juniperus needles</td>
</tr>
<tr>
<td></td>
<td>Apple Ring Spot Agent</td>
<td>When fruits are about 3 cm in diameter until harvest</td>
<td>Occurs only on fruits: Starts as small, brown areas; develops into irregular patches of varying shades of brown (to reddish brown) with rough russeted surface (sometimes intersected by little cracks) and scaly margin. As fruit ripens, a brown halo, or a series of concentric rings, forms around lesions. The skin around the halo (or rings) is light-green or yellow even on red fruits</td>
</tr>
<tr>
<td><strong>Chrysanthemum spp. (Dendranthema spp.)</strong></td>
<td>Puccinia horiana P. Henn. (White Rust of Chrysanthemum)</td>
<td>When leaves are fully out. Spring: 3 to 6 weeks after planting and again later in the season; summer</td>
<td>Leaves: Upper surface—greenish-yellow spots. Lower surface—raised, waxy, whitish-yellow to pink pustules. <strong>Young shoots:</strong> Wilt and die</td>
</tr>
<tr>
<td><strong>Chrysobalanus icaco</strong></td>
<td>Inspect for any potential exotic pathogen</td>
<td>Various times of year</td>
<td>See Plant Genera Subject to Postentry Quarantine on page E-1</td>
</tr>
<tr>
<td><strong>Chrysophyllum spp.</strong></td>
<td>Inspect for any potential exotic pathogen</td>
<td>Various times of year</td>
<td>See Plant Genera Subject to Postentry Quarantine on page E-1</td>
</tr>
<tr>
<td><strong>Corylus spp. (except C. avellana)</strong></td>
<td>Inspect for any potential exotic pathogen</td>
<td>Various times of year</td>
<td>See Plant Genera Subject to Postentry Quarantine on page E-1</td>
</tr>
</tbody>
</table>
### Table H-2  Inspection Aid for Plants Growing in Postentry Quarantine (page 5 of 18)

<table>
<thead>
<tr>
<th>Host group:</th>
<th>Pathogen or disease:</th>
<th>Preferred inspection period:</th>
<th>Symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corylus Avellana (hazelnut)</td>
<td>Apple Proliferation Phytoplasma</td>
<td>Starting in the spring and throughout the season</td>
<td>General yellowing, weak growth, and dieback</td>
</tr>
<tr>
<td>Crataegus monogyna (English hawthorn)</td>
<td>Gymnosporangium spp. (rust)</td>
<td>After leaves are fully opened</td>
<td><strong>Leaves</strong>: Brownish spots</td>
</tr>
<tr>
<td>Crataegus spp. (fruit bearing)</td>
<td>Gymnosporangium spp. (rust) and Monilina fructigena (Aderh. &amp; Ruhl.) Honey (Brown Rot of Fruit)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crocosmia spp.</td>
<td><em>Puccinia mccleanii</em></td>
<td>When leaves are out</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Uredo gladioli-buettneri</em> Bub. (rust)</td>
<td>When leaves are out</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Uromyces gladioli</em> P. Henn. (rust)</td>
<td>When leaves are out</td>
<td><strong>Leaves</strong>: Telia in small, brown sori crowded together to form a crust</td>
</tr>
<tr>
<td></td>
<td><em>Uromyces nyikensis</em> Syd. (rust)</td>
<td>When leaves are out</td>
<td><strong>Leaves</strong>: Telia in small, cinna-mon-brown sori along veins sometimes on chlorotic spots</td>
</tr>
<tr>
<td></td>
<td><em>Uromyces transversalis</em></td>
<td>When leaves are out</td>
<td><strong>Leaves</strong>: Uredinia appear as powdery bright-orange sori on both leaf surfaces in linear series transversely across the leaf; telia initially surround the uredinia and are dark brown</td>
</tr>
<tr>
<td>Host group:</td>
<td>Pathogen or disease:</td>
<td>Preferred inspection period:</td>
<td>Symptoms:</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------</td>
<td>-------------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td><em>Cydonia</em> spp. (quince)</td>
<td><em>Guignardia piricola</em> (Nose) Yamamoto (leaf, branch, and fruit disease)</td>
<td>Spring to early summer for leaves; summer for fruit (if fruiting)</td>
<td><strong>Branches or trunk:</strong> Lesions are round to elliptical, separated from healthy tissue by a crack or crevice around margin, and brown to gray. <strong>Fruit:</strong> Spots are brown and depressed and sometimes with brownish ring.</td>
</tr>
<tr>
<td></td>
<td>Quince Sooty Ringspot Agent</td>
<td>Up to 6 weeks after leaves are fully opened</td>
<td><strong>Young leaves:</strong> 1) Show epinasty (curled sharply downwards); 2) Veinlets-necrosis and short lengths become blackened; lack pigments develop in cuticle bordering veins or around pale yellow spots giving superficial appearance of “sooty mold”; 3) Vein clearing and yellowing.</td>
</tr>
<tr>
<td></td>
<td>Quince Yellow Blotch Agent</td>
<td>Up to 6 weeks after leaves are fully opened</td>
<td><strong>Leaves:</strong> Large chlorotic blotches.</td>
</tr>
<tr>
<td></td>
<td>Quince Stunt Agent</td>
<td>Up to 6 weeks after leaves are fully opened</td>
<td><strong>Leaves:</strong> Reduced in size, puckered, and marked by translucent chlorotic spots; Plants: Show no growth; also, show various degree of dieback (Smith).</td>
</tr>
<tr>
<td></td>
<td><em>Gymnosporangium asiaticum</em> Miyabe ex Yamada (rust)</td>
<td>After leaves are fully opened</td>
<td><strong>Leaves:</strong> Upper surface: orange-yellow spots; lower surface: brown spots with yellowish-red margins; telia occur on juniperus needles.</td>
</tr>
<tr>
<td></td>
<td>Apple Ring Spot Agent</td>
<td>When fruits are about 3 cm in diameter until harvest</td>
<td><strong>Occurs only on fruits:</strong> Starts as small, brown areas. Develops into irregular patches of varying shades of brown (to reddish brown) with rough, russeted surface (sometimes intersected by little cracks) and scaly margin. As fruit ripens, a brown halo, or a series of concentric rings, forms around lesions. The skin around the halo (or rings) is light green or yellow even on red fruits.</td>
</tr>
</tbody>
</table>
Table H-2 Inspection Aid for Plants Growing in Postentry Quarantine (page 7 of 18)

<table>
<thead>
<tr>
<th>Host group:</th>
<th>Pathogen or disease:</th>
<th>Preferred inspection period:</th>
<th>Symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Datura</em> spp. (thornapple)</td>
<td>Datura Colombian Virus</td>
<td>Spring and early summer</td>
<td><em>Leaves:</em> 1) Veinbanding or chlorotic flecking followed by mottling; 2) may become rugose and slightly distorted</td>
</tr>
</tbody>
</table>
|                                 | Datura Distortion or Enation Mosaic Virus | Spring and early summer      | *Leaves:* 1) First symptoms—pronounced vein clearing, curling or margins and upward folding of youngest leaf near its base followed by discoloration; 2) symptoms become more prominent and color gradually turns lighter green with few dark-green spots; 3) subsequent leaves show pronounced margin curling and almost double folding upwards; 4) severe malformation (distortion)—reduction of laminae to midrib only resulting in a shoestring (tendril-like) effect  
*Flowers and buds:* Severe distortion and malformation, whorls imperfectly developed and corolla and calyx rupturing |
| *Dendranthema* spp. (see *Chrysanthemum* spp. on page H-4) |                                |                              |                                                                           |
| *Dianthus* spp. (pink)          | Carnation Etched Ring Virus    | Spring and early summer      | *Leaves:* Oval- to dumbbell-shaped whitish necrotic flecks and rings with dark brown–maroon edges |
|                                 | Carnation Necrotic Fleck Virus | Spring and early summer      | *Leaves:* Grayish white or reddish-purple flecks                          |
|                                 | Carnation Streak Agent         | Spring and early summer      | *Leaves:* Yellowish or reddish spots parallel to veins. Lower surface may be heavily spotted and turn yellow |
|                                 | *Phialophora cinerescens* (Wr.) van Beyma (=*Verticillium cinerescens* Wr.) | Any time                     | *Leaves:* Wilted, wrinkled, and chlorotic; vascular ring discoloration  
*Stems:* May have “kinks” at nodes and internodes shortened |
### Table H-2 Inspection Aid for Plants Growing in Postentry Quarantine (page 8 of 18)

<table>
<thead>
<tr>
<th>Host group (Common name)</th>
<th>Pathogen or disease (Scientific name)</th>
<th>Preferred inspection period</th>
<th>Symptoms</th>
</tr>
</thead>
</table>
| *Eucalyptus* spp. (Australian gum) | Leaf Chlorosis Agent | After leaves are fully opened until 6 weeks later | **Leaves:** Chlorosis and size reduction.  
**Plants:** Die in full sunlight; less chlorotic plants may live for some years, but growth is retarded.  
**Pestalotia disseminata** Thuem. (Parasitic Leaf Fungus) | From full leaf maturity and thereafter | **Leaves:** Premature drop; blight |
| *Euonymus* spp. (spindle tree) | *Euonymus* Mosaic Agent | After leaves are fully opened until 6 weeks later | **Leaves:** Wide yellow border and center are mottled green or greenish-yellow; young leaves show yellow veination.  
**Pseudomonas savastanoi** var. *fraxini* (Brown) Dowson (Canker and Dwarfing Disease) | All season | **Young trees:** Dwarfed  
**Branches and trunk:** Cankers and discoloration of tissue beneath bark |
| *Fraxinus* spp. (ash) | **Uredinales** | All season | **Leaves:** Small, brown-black pustules crowded together to form a crust.  
**Uromyces transversalis** (Thuem.) Wint. (rust) | When leaves are out | **Leaves:** Powdery, bright orange pustules on both surfaces in linear series perpendicular to veination |
| *Gladiolus* spp. (corn flag, sword lily) | **Uredinales** | When leaves are out | **Leaves:** Small, brown-black pustules crowded together to form a crust.  
**Uromyces gladioli** P. Henn. (rust) | When leaves are out | **Leaves:** Powdery, bright orange pustules on both surfaces in linear series perpendicular to veination  
**Uredosporium gladioli** Bub. (rust) | When leaves are out | **Leaves:** Powdery, bright orange pustules on both surfaces in linear series perpendicular to veination |
| | | | **Leaves:** Powdery, bright orange pustules on both surfaces in linear series perpendicular to veination |
| | | | **Leaves:** Powdery, bright orange pustules on both surfaces in linear series perpendicular to veination |
### Table H-2  Inspection Aid for Plants Growing in Postentry Quarantine (page 9 of 18)

<table>
<thead>
<tr>
<th>Host group:</th>
<th>Pathogen or disease:</th>
<th>Preferred inspection period:</th>
<th>Symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hibiscus (see Abelmoschus spp. (okra) on page H-1)</td>
<td>Cotton Leaf-Curl Agent</td>
<td>After leaves are fully opened until 6 weeks after</td>
<td><strong>Leaves:</strong> Conspicuous net-veinenations; on severely affected plant, leaves are small, thick, and curled downwards; also, on severely affected plants, may have “bunchy-top” appearance</td>
</tr>
<tr>
<td></td>
<td><strong>Hibiscus</strong> Yellow Vein Mosaic Agent</td>
<td>When leaves are developing until leaves are fully opened</td>
<td><strong>Leaves:</strong> Vein chlorosis; chlorotic areas yellowish green around leaf tissues to bright yellow near veins. Lower leaf surfaces: veins swollen (thickened), brittle and dark green; vein thickening causes leaf to curl downwards</td>
</tr>
<tr>
<td>Okra Mosaic Virus</td>
<td>Spring and early summer</td>
<td></td>
<td><strong>Youngest leaves:</strong> 7 to 8 days after inoculation: light-green mosaic or regular chlorosis of veins <strong>Next two to three leaves produced:</strong> one or more principal veins bordered by broad chlorotic bands <strong>Later leaves:</strong> no symptoms</td>
</tr>
<tr>
<td>Humulus spp. (hop)</td>
<td>Hop Nettlehead Strain of Arabis Mosaic Virus</td>
<td>After leaves are fully opened until 6 weeks after</td>
<td><strong>Plant:</strong> Poor growth and degeneration of plant; reduction of both number and weight of cones</td>
</tr>
<tr>
<td>Hydrangea spp.</td>
<td><em>Puccinia glyceriae</em> S. Ito (<em>Aecidium hydrangea</em>)</td>
<td>When leaves are out</td>
<td><strong>Leaves:</strong> Orange-yellow lesions on the upper surface (spermogonia); aecia on the lower surface of the leaf are cup shaped and pale yellow in color</td>
</tr>
<tr>
<td>Jasminum spp. (jasmine)</td>
<td>Jasmine Variegation Agent</td>
<td>After leaves are fully opened until 6 weeks later</td>
<td>Leaves and young branches: Yellowish variegation</td>
</tr>
<tr>
<td>Juniperus spp. (juniper)</td>
<td><em>Stigmina deflectans</em> (Karst) Ellis (Needlecast Disease)</td>
<td>When needles are turning brown</td>
<td><strong>Needles:</strong> Minute brownish fruiting bodies along the median veins of the upper side of needles</td>
</tr>
<tr>
<td></td>
<td><em>Phacidiofucis pseudot-suga</em> (M. Wilts.) Hahn (Douglas Fir Canker)</td>
<td>Throughout growing season</td>
<td><strong>Branches and trunk:</strong> cankers; often exude abundance of resin; fungus not perennial, therefore, isolated cankers may heal over</td>
</tr>
</tbody>
</table>
### Table H-2  Inspection Aid for Plants Growing in Postentry Quarantine (page 10 of 18)

<table>
<thead>
<tr>
<th>Host group:</th>
<th>Pathogen or disease:</th>
<th>Preferred inspection period:</th>
<th>Symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Larix</em> spp. (larch)</td>
<td><em>Phacidioptyna pseudot-suga</em> (M. Wils.) Hahn (Douglas Fir Canker)</td>
<td>Throughout growing season</td>
<td>Branches and trunk: cankers; often exude abundance of resin; fungus not perennial, therefore, isolated cankers may heal over</td>
</tr>
<tr>
<td></td>
<td><em>Lachnellula wilkommii</em> (Hartig) Dennis (European Larch Canker)</td>
<td>Throughout growing season</td>
<td>Branches and trunk: cankers causing girdling dieback</td>
</tr>
<tr>
<td><em>Leucanthemella serotina</em></td>
<td><em>Puccinia horiana</em> P. Henn. (White Rust of Chrysanthemum)</td>
<td>When leaves are fully out; spring: 3 to 6 weeks after planting and again later in the season; summer</td>
<td>Leaves: Upper surface—greenish-yellow spots. Lower surface—raised, waxy, whitish-yellow to pink pustules. Young shoots: Wilt and die</td>
</tr>
<tr>
<td><em>Ligustrum</em> spp. (privet)</td>
<td>Ligustrum Mosaic Agent</td>
<td>After leaves are fully opened until 6 weeks after</td>
<td>Leaves: Clear yellow spots</td>
</tr>
<tr>
<td><em>Litchi chinensis</em> (fruit and nut List)</td>
<td>Inspect for any potential exotic pathogen</td>
<td>Various times of year</td>
<td>See Plant Genera Subject to Postentry Quarantine on page E-1</td>
</tr>
<tr>
<td><em>Mahoberberis</em> (<em>Berberis</em> x <em>Mahonia</em> hybrid)</td>
<td><em>Puccinia graminis</em> Pers. (Black Stem Rust)</td>
<td>Between 5 to 9 weeks after leaves are fully opened</td>
<td>Leaves: Rust appears first on upper surface as yellowish round spots with brighter yellow or reddish-purple margins; later, discolored, slightly thickened spots appear on lower surface (this stage also appears on stem and fruit)</td>
</tr>
<tr>
<td><em>Mahonia</em> spp. (Oregon grape, holly grape)</td>
<td><em>Puccinia graminis</em> Pers. (Black Stem Rust)</td>
<td>Between 5 to 9 weeks after leaves are fully opened</td>
<td>Leaves: Rust appears first on upper surface as yellowish round spots with brighter yellow or reddish-purple margins; later, discolored, slightly thickened spots appear on lower surface (this stage also appears on stem and fruit)</td>
</tr>
</tbody>
</table>
### Table H-2  Inspection Aid for Plants Growing in Postentry Quarantine (page 11 of 18)

<table>
<thead>
<tr>
<th>Host group</th>
<th>Pathogen or disease</th>
<th>Preferred inspection period</th>
<th>Symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Malus</em> spp. (apple)</td>
<td><em>Apple Proliferation Phytoplasma</em></td>
<td>Late summer and fall—opening of blossoms on infected branches; fall—growth of axillary buds (Witches’ Broom); spring—early leafing out</td>
<td><em>Buds and leaves</em>: 1) first symptoms—reddening of leaves and late growth of terminal buds; 2) second symptom—Witches’ Broom may appear in the same or later years; 3) infested plants may become symptomless after 2 to 3 years of acute reaction</td>
</tr>
</tbody>
</table>
|                                     | *Diaporthe mali* Bres. (leaf, branch, and fruit fungus) | Spring and early summer | *Leaves*: Pale, discolored spots; may curl and drop prematurely  
*Young shoots*: Irregular, brownish canker about 6 inches below tip; twig surface gradually dries and cracks causing death of shoot |
|                                     | *Apple Branch Canker* (Valsa Canker) (*Valsa ceratosperma*; Gvritschvili) | Spring (more likely to see during a wet period) | *Bark*: Swollen, water-soaked lesions; small black pycnidia appear in the lesions later and spore horns approximately 1 month after that; cankers (usually on older plants) on the upper side of limbs; a girdling type of injury may be observed on weakened branches and twigs. These signs will probably be found only during the second growing season inspection |
|                                     | *Guignardia piricola* (Nose) Yamamoto (leaf, branch, and fruit disease) | Spring and summer | *Leaves*: Brown to dark brown spots surrounded by a ring  
*Branches and trunk*: Round oval lesions; infected and healthy tissues separated by a crack or crevice; lesion surface depressed, brown in color with many fruiting bodies in center |
|                                     | *Valsa ceratosperma* (Tode ex Fr.) Maire (*V. mali*) (Apple Branch Canker) | Throughout growing season | *Bark*: On the upper side of limbs the bark appears swollen and water soaked especially when wet. The resultant canker becomes sunken, darker, and cracked on the surface. Black pycnidia appear in the canker in late spring and spore horns about 1 month later. These signs will probably be found only during the second growing season inspection |
### Table H-2 Inspection Aid for Plants Growing in Postentry Quarantine (page 12 of 18)

<table>
<thead>
<tr>
<th>Host group:</th>
<th>Pathogen or disease:</th>
<th>Preferred inspection period:</th>
<th>Symptoms:</th>
</tr>
</thead>
</table>
| *Mespilus germanica* (mediar) | *Gymnosporangium fuscum* D.C.       | Late spring to early summer  | **Leaves:** Upper surface: yellowish red or yellow orange spots  
Lower surfaces: yellow, lemon-shaped spots                                    |
| *Morus* spp. (mulberry)      | Mulberry Dwarf Phyto-plasma         | Late spring to early summer  | **Leaves:** Normal leaves are produced at the beginning if winter temperatures were below 20°C; check leaves produced later after causal agent had moved from the roots and multiplied in newly growing shoots; chlorosis of leaves  
**Branches:** Proliferation (Witches' Broom)                                    |
|                              | Mulberry Curly Little Leaf Agent    | Spring to early summer       | **Leaves:** Deformed; retards growth in general and development of root system |
|                              | Mulberry Mosaic Agent               | Up to 6 weeks after leaves are fully opened | **Leaves:** Typical mosaic mottling, occasionally accompanied by slight curling and puckering; no noticeable reduction in leaf size |
|                              | *Aecidium mori* (Barclay) Dietel (Mulberry Rust) | Late spring to early summer for your geographical location | Aecia with spores on upper and lower surfaces of the leaf. They are solitary or in groups on leaves, buds, leaf veins, and petioles. Can be in elongated clusters up to 1 cm. Long causing distortion and excessive host tissue growth |
| *Nipponanthemum nipponicum*  | *Puccinia horiana* P. Henn. (White Rust of Chrysanthemum) | When leaves are fully out; spring: 3 to 6 weeks after planting and again later in the season; summer | **Leaves:** Upper surface—greenish-yellow spots. Lower surface—raised, waxy, whitish-yellow to pink pustules  
**Young shoots:** wilt and die                                                   |
<table>
<thead>
<tr>
<th>Host group</th>
<th>Pathogen or disease</th>
<th>Preferred inspection period</th>
<th>Symptoms:</th>
</tr>
</thead>
</table>
| *Olea europaea* (olive) | Olive Partial Paralysis Virus | After leaves are fully opened until 6 weeks later | **Leaves:** Chlorotic, curled leaves on secondary twigs or mosaic pattern with midrib darkening  
**Twigs:** The entire branch shrivels from the tip downward; a dark reddish-purple band appears on the bark; sections of twigs may have a strong fermentation odor |
| | Olive Sickle Leaf Virus | After leaves are fully opened until 6 weeks later | **Leaves:** Chlorotic, blotched, streaked, are sickle-shaped, curved, puckered or otherwise deformed; they are light green with white markings  
**Branches:** May be stunted and may appear only in individual branches; diseased plants appear bushy |
| *Passiflora* spp. (passion fruit) | Passion Fruit Woodiness Virus | During spring growth and early summer | **Leaves:** *P. edulis*; mosaic, distortion, and crinkles, with yellow spots on older leaves  
*P. edulis f. flavicarpa* and hybrids; Pale-green to yellowish ringspots and leaf mosaic on spring growth |
| *Philadelphus* spp. (mock orange) | Elm Mottle Virus | After leaves are fully opened until 6 weeks after | **Leaves:** Chlorotic ringspot, mottling, and line pattern |
| *Picea* spp. (spruce) | *Chrysomyxa ledi* (Alb. & Schw.) d By var. *rhododendri* (DC) Savile (rhododendron—Spruce Needle Rust) | Fall | **Leaves:** Premature defoliation of heavily infected needles  
**Branches and trunk:** girdling up to 6 inches wide  
**Large branches and trunk:** cankers; isolate cankers may heal over as fungus is not perennial on bark |
| | *Phacidiopycnis pseudot-suga* (M. Wils.) Hahn (Douglas Fir Canker) | Throughout growing season | **Branches and trunk:** girdling up to 6 inches wide  
**Large branches and trunk:** cankers; isolate cankers may heal over as fungus is not perennial on bark |
| *Pinus* spp. (two- or three-leaved) (pine) | *Cronartium flaccidium* (Alb. & Schw.) Wint. (rust causing serious stunting of hard pines) | Late spring to early summer | **Bark:** Irregular, ballooned, pale, yellow sacs containing powdery, orange spores |
| | | | **Gall forming rust** |
| *Populus* spp. (poplar, aspen, cottonwood) | *Xanthomonas populi* Ride (canker) | Spring and early summer | **Leaves:** young leaves turn black  
**Shoots:** presence of canker and slime exude (especially during wet weather); slime exude also from base of dead buds and at internodes |
Plants Growing in Postentry Quarantine
Inspection Aid for Plants Growing in Postentry Quarantine

### Table H-2 Inspection Aid for Plants Growing in Postentry Quarantine (page 14 of 18)

<table>
<thead>
<tr>
<th>Host group:</th>
<th>Pathogen or disease:</th>
<th>Preferred inspection period:</th>
<th>Symptoms:</th>
</tr>
</thead>
</table>
| *Prunus* spp. (stone fruit) | Plum Pox (=Sharka) Virus                                                           | When leaves are fully opened, until six weeks after | Plum: *Leaves*: severe diffused olive-green rings or mottling  
Fruit: skin with dark colored rings; flesh with brown or red discoloration  
Seed: brown spots  
Peach: *Leaves*: vein yellowing, chlorotic spotting, and distortion  
*Flowers*: some varieties will show color breaking symptoms  
Apricot: *Leaves*: diffused pale-green rings and lines  
*Seed*: yellow rings |
|                    | Apple Proliferation Phytoplasma in *P. armeniaca* (apricot); *P. avium* (cherry); and *P. domestica* (plum) | Spring and summer                                   | *Leaves*: wilting to leading to leaf death  
Branches and trunk: necrosis visible when cut across and longitudinally  
*Flowers*: become necrotic |
|                    | Cherry Leaf Roll Virus                                                              | Spring and summer                                   | Spring: Delayed leafing and flowering  
Summer: 1) Margins of leaf roll upwards and, in some varieties, leaf turns purple; 2) infected tree declines in vigor and gum exudes from splits in bark |
|                    | Cherry Rusty Mottle (European) Agent                                                 | Late summer                                         | *Leaves*: Rust-colored pigmentation |
### Table H-2 Inspection Aid for Plants Growing in Postentry Quarantine (page 15 of 18)

<table>
<thead>
<tr>
<th>Host group:</th>
<th>Pathogen or disease:</th>
<th>Preferred inspection period:</th>
<th>Symptoms:</th>
</tr>
</thead>
</table>
| *Prunus* spp. (stone fruit) (continued) | European Stone Fruit Yellows Phytoplasma | Spring and summer | **Early symptoms:** leaf rolling and yellowing  
**Later symptoms:** shoot proliferation and unseasonal growth (during winter)  
Characteristic disease symptoms: presence of weak shoot with small leaves among normal shoots and irregularly distributed dried twigs on branches |
| Plum Bark Split Strain of Apple Chlorotic Leaf Spot Virus | Throughout growing season | **Bark:** formation of reddish-brown areas that become sunken, hard, and usually split; splits increase and are flanked by sunken areas of dead bark with wavy margin |
| Arabis Mosaic Virus and its strains | For Chlorotic symptoms, not more than 6 weeks after leaves are fully opened | **Plants:** dwarfing from slight stunting to extreme miniaturization (extreme miniaturization condition—leaves are twisted, cupped, crinkled, or deformed)  
**Leaves:** chlorosis between veins and in irregular blotches or yellowing of whole leaves or leaf edges |
| Raspberry Ringspot Virus and its strains | Up to 6 weeks after leaf is fully opened | **Leaves:** "rasp-leaf" condition |
| Tomato Blackring Virus and its strains | Spring and early summer | **Peach:** shoot stunting  
**Almond:** leaf enations |
| Strawberry Latent Ringspot Virus and its strains | Spring and early summer | **Peach:** causes dwarfing  
**Cherry:** vein chlorosis and reddening of leaves |
| *Pseudolarix* spp. (golden larch) | *Lachnellula wilkommii* (Hartig) Dennis (European Larch Canker) | Throughout growing season | **Branches and trunks:** cankers causing girding dieback |
| *Pseudotsuga* spp. (Douglas fir) | *Phacidioptinus pseudotsuga* (M. Wils.) Hahn (Douglas Fir Canker) | Throughout growing season | **Terminal buds and shoots:** die-back  
**Branches or trunk:** girdling up to 6 inches wide  
**Larger branches or trunk:** cankers; isolated cankers may heal over as fungus is not perennial on bark |
### Table H-2 Inspection Aid for Plants Growing in Postentry Quarantine (page 16 of 18)

<table>
<thead>
<tr>
<th>Host group:</th>
<th>Pathogen or disease:</th>
<th>Preferred inspection period:</th>
<th>Symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Pyrus</em> spp. (pear)</td>
<td><em>Guignardia piricola</em> (Nose) Yamamoto (leaf, branch, and fruit disease)</td>
<td>Spring and summer</td>
<td>Leaves: brown to dark-brown spots surrounded by a ring. Branches or trunk: round oval lesions, infected and healthy tissues separated by a crack or crevice; lesion surface depressed, brown in color and with many fruiting bodies in center.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Bud grafts: reddening of leaves and late growth of terminal buds the second year of growth.</td>
</tr>
<tr>
<td></td>
<td><em>Apple Proliferation Phytoplasma</em></td>
<td>First-year growth of scion wood and second-year growth of buds. Witches’ Broom</td>
<td>Stems: Small blisters appear in early spring. Later, splits and cracks appear and coalesce to form cankers; may kill young trees.</td>
</tr>
<tr>
<td></td>
<td><em>Pear Bud Drop Agent</em></td>
<td>Early spring</td>
<td>Leaves: upper surfaces: small, orange-yellow spots. Lower surfaces: brown spots with yellowish-red margins.</td>
</tr>
<tr>
<td></td>
<td><em>Gymnosporangium asiaticum</em> Miyabe ex. Yamada (rust)</td>
<td>After leaves are fully out</td>
<td>Bark: swollen, water-soaked lesions; small black pycnidia appear in the lesions later and spore horns approximately 1 month after that; cankers (usually on older plants) on the upper side of limbs; a girdling type of injury may be observed on weakened branches and twigs.</td>
</tr>
<tr>
<td></td>
<td><em>Valsa ceratosperma</em> (Tode:Fr.) Mair (anamorph: <em>Cytospora sacculus</em> (Schwein.) Gvritischvili) (Valsa Canker)</td>
<td>Spring (more likely to see during a wet period)</td>
<td>Mature fruit: small, light-brown areas, varying in size and shape. Ripened fruit: distinct, reddish spots intersected by little cracks; spots develop a broom halo or series of concentric rings.</td>
</tr>
<tr>
<td></td>
<td><em>Apple Ring Spot Agent</em></td>
<td>Before and at fruit harvest</td>
<td></td>
</tr>
</tbody>
</table>
Table H-2 Inspection Aid for Plants Growing in Postentry Quarantine (page 17 of 18)

<table>
<thead>
<tr>
<th>Host group:</th>
<th>Pathogen or disease:</th>
<th>Preferred inspection period:</th>
<th>Symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Quercus</em> spp. (oak)</td>
<td><em>Stereum hirugense</em> Imazeki (White Rot)</td>
<td>Throughout growing season</td>
<td><strong>Stems and branches</strong>: most likely a wound parasite causing decay of the wood; wood turn dark brown, some forming dark-brown streaks</td>
</tr>
<tr>
<td><em>Ribes</em> spp.</td>
<td>Black Currant Reversion Virus</td>
<td>During blossom period, late spring, and early summer</td>
<td><strong>Buds</strong>: smooth and brightly colored as compared with hairy and grey normal bud; flower may be malformed and “double”&lt;br&gt;<strong>Leaves</strong>: flatter than normal; number reduced and chlorotic during blossom period</td>
</tr>
<tr>
<td><em>Rosa</em> spp. (rose)</td>
<td>Rose Wilt Agent</td>
<td>After leaves are fully opened until 6 weeks later</td>
<td><strong>Plants</strong>: wilted; pinched, yellowish-green shoots and eventually die-back and death; also, stems proliferation&lt;br&gt;<strong>Leaves</strong>: epinasty; turn pale green or yellow; brittle and easily detached</td>
</tr>
<tr>
<td><em>Rubus</em> spp. (bramble)</td>
<td>Rubus stunt phytoplasm</td>
<td>Early summer</td>
<td><strong>Leaves</strong>: on infected cane, paler than normal&lt;br&gt;<strong>Canes</strong>: small, thin, and weak; also excessive lateral branching (bushy appearance)&lt;br&gt;<strong>Flowers</strong>: green, leaf-like petals; also excessive proliferation of flowers</td>
</tr>
<tr>
<td><em>Salix</em> spp. (willow)</td>
<td><em>Erwinia salicis</em> (Day) Chester (Brenneria salicis) (Watermark Disease)</td>
<td>Throughout growing season</td>
<td><strong>Leaves</strong>: turn bright red in early summer during hot weather; remain on stem&lt;br&gt;<strong>Shoots</strong>: show bacteria containing liquid drips; grayish discoloration inside shoot when cut</td>
</tr>
<tr>
<td><em>Sorbus</em> spp. (mountain ash)</td>
<td>Mountain Ash Variegation Agent</td>
<td>After leaves are fully opened until 6 weeks later</td>
<td><strong>Leaves</strong>: yellow or white variegation, sometimes vein-clearing and vein-banding</td>
</tr>
<tr>
<td></td>
<td><em>Taphrina piri</em> Kusano (Leaf Distortion Fungus)</td>
<td>Throughout growing season</td>
<td><strong>Leaves</strong>: yellowish-green spots; later spots show pruinose, hairy–white growth on surface</td>
</tr>
<tr>
<td><em>Syringa</em> spp. (lilac)</td>
<td>Elm Mottle Virus</td>
<td>After leaves are fully opened until 6 weeks later</td>
<td><strong>Leaves</strong>: chlorotic ringspots and line pattern</td>
</tr>
<tr>
<td><em>Ulmus</em> spp. (elm)</td>
<td>Elm Mottle Virus</td>
<td>After leaves are fully opened until 6 weeks later</td>
<td><strong>Leaves</strong>: chlorotic ringspots and line pattern</td>
</tr>
</tbody>
</table>
### Table H-2 Inspection Aid for Plants Growing in Postentry Quarantine (page 18 of 18)

<table>
<thead>
<tr>
<th>Host group:</th>
<th>Pathogen or disease:</th>
<th>Preferred inspection period:</th>
<th>Symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Watsonia spp.</td>
<td><em>Puccinia mccleanii</em> Doidge (rust)</td>
<td>When leaves are out</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Uredo gladioli-buettneri</em> Bub. (rust)</td>
<td>When leaves are out</td>
<td></td>
</tr>
<tr>
<td></td>
<td><em>Uromyces gladioli</em> gladioli P. Henn (rust)</td>
<td>When leaves are out</td>
<td>Leaves: small, brown-black pustules crowded together to form a crust</td>
</tr>
<tr>
<td></td>
<td><em>Uromyces transversalis</em> (Thuem.) Wint. (rust)</td>
<td>When leaves are out</td>
<td>Leaves: powdery, bright orange pustules on both surfaces in linear series perpendicular to veination</td>
</tr>
</tbody>
</table>
Precautions

Practice the following safety precautions:

1. Check container markings, labels, and accompanying documents to learn if the seed was treated. If the accompanying documents indicate that the seed was treated, skip to Step 3. If the documents tell you nothing, go to Step 2.

2. If you didn't learn anything from the labels or accompanying documents, carefully examine the container and the seed for pesticide residue. If you detect a chemical odor, suspect the seed was treated. If pesticides are suspected, recheck the documentation and labeling to learn the name of the pesticide. By knowing what the pesticide is, you can take the most appropriate action if pesticide poisoning occurs.

3. Don't breathe the air around the open container or the treated seed. Work in a well-ventilated area.

4. If it is necessary for you to touch the seed, wear latex gloves. To increase your protection, handle the seed as little as possible.

5. Once you complete your inspection, appropriately discard the latex gloves. Wash your hands with soap and water.

6. If the seed showed evidence of having been treated but was not so marked, mark the documents and container. Mark them to alert other people who may have to handle the shipment.
Glossary

Use this glossary to find the meaning of specialized words, abbreviations, acronyms, and terms used in regulating postentry quarantine materials. To locate where in the manual a given definition, term, or abbreviation is mentioned, refer to the index.

Definitions, Terms, and Abbreviations

advisories. important information throughout the manual brought to the user’s attention

aecium. cuplike structure of some rust fungi that contains chains of aeciospores

APHIS. Animal and Plant Health Inspection Service

APHIS Form 7060. Official Warning Violation of Federal Regulations

blight. any of numerous plant diseases resulting in sudden conspicuous wilting and dying of affected parts, especially young, growing tissues

cancellate. to make in a crisscross pattern

cankers. (a) localized diseased or necrotic area on a plant part, especially on a trunk, branch, or twig of a woody plant, usually caused by fungi or bacteria; (b) any of several diseases of plants characterized by the presence of such lesions

character. a structure, function, or attribute determined by a gene or group of genes

chlorosis. yellowing or whitening of normally green plant tissue because of a decreased amount of chlorophyll, often as a result of disease or nutrient deficiency

clavate. having one end thickened; club-shaped

deliquesce. (a) to branch out into numerous subdivisions that lack a main axis, as the stem of an elm; (b) to become fluid or soft on maturing, as certain fungi
**dieback.** gradual dying of plant shoots, starting at the tips, as a result of various diseases or climatic conditions

**eruption.** bursting through or as if through a surface or covering

**girdle.** to remove a band of bark and cambium from the circumference of (a tree) usually in order to kill it

**graft.** (a) to unite (a shoot or bud) with a growing plant by insertion or by placing in close contact; (b) to join (a plant or plants) by such union

**host.** animal or plant on which or in which another organism lives

**hyaline.** resembling glass, as in translucence or transparency; glassy

**lacerate.** having jagged, deeply cut edges

**necrosis.** death of cells or tissues through injury or disease, especially in a localized area of the body

**paraphysis.** one of the erect sterile filaments often occurring among the reproductive organs of certain fungi, algae, and mosses

**pedicel.** small stalk or stalk-like part bearing a single flower in an inflorescence

**pedicellate.** having or supported by a pedicel

**PEQ.** Postentry Quarantine

**PEQLO.** PPQ Postentry Quarantine Liaison Officer

**PEQP.** Postentry Quarantine Program

**PEQU.** Postentry Quarantine Unit

**peridium.** covering of the spore-bearing organ in many fungi

**PIS.** Plant Inspection Station

**PPQ Form 236.** Notice of Shipment and Report of Inspection of Imported Plants to be Grown Under Postentry Quarantine

**PPQ Form 391.** Specimens for Determination
PPQ Form 518. Report of Violation

PPQ Form 546. Agreement for Postentry Quarantine—State Screening Notice (7 CFR 319.37)

PPQ Form 569. Release From Postentry Quarantine

PPQ Form 587. Application for Permit to Import Plants or Plant Products

PPQ Form 597. Import Permit for Plants and Plant Products

pruinose. having a white, powdery covering or bloom

pulvinate. having a swelling at the base. Used of a leafstalk

pyriform. shaped like a pear

roguse. having a rough, wrinkled surface, as in certain prominently veined leaves

sorus. reproductive structure in certain fungi and lichens (pl: sori).

SPHD. State Plant Health Director

SPRO. State Plant Regulatory Official

striate. marked with atriae; striped, grooved, or ridged

telium. pustule-like sorus formed on the tissue of a plant infected by a rust fungus and producing teliospores

USDA. United States Department of Agriculture

vector. an organism that carries disease-causing microorganisms from one host to another

verrucose. covered with warts or wart-like projections

xylem. supporting and water-conducting tissue of vascular plants, consisting primarily of tracheids and vessels; woody tissue

zonate. Having zones; belted, striped, or ringed
Index

Postentry Quarantine

Numerics
7 CFR 319.37 1-3, G-1
A
Abelmoschus spp. (okra)
diseases of
cotton anthocyanosis agent 9-2, 10-4
cotton curliness on hibiscus 10-5
cotton leaf curl agent 10-5
hibiscus leaf curl agent on hibiscus 10-8
okra mosaic virus 10-8
okra yellow leaf curl agent 10-8
growing in PEQ H-1
organisms of 9-2
prohibited commodity from
Africa E-3
Bangladesh E-3
Brazil E-3
India E-3
Iraq E-3
Ivory Coast E-3
Nigeria E-3
Papua New Guinea E-3
Sri Lanka E-3
Tobago E-3
Trinidad E-3
subject to PEQ E-3
Abelmoschus spp. (okra)
diseases of
bhendi yellow vein-mosaic agent 10-2
acacia rust
disease of Acacia spp. (acacia) 10-8
Acacia spp. (acacia)
diseases of
acacia rust 10-8
Uromycladium tepperianum H-1
 growing in PEQ H-1
prohibited commodity from
Australia E-3
Oceania E-3
subject to PEQ E-3
Acer spp. (maple)
diseases of
Xanthomonas acernea H-2
growing in PEQ H-2
prohibited commodity from
Europe E-3
Japan E-3
subject to PEQ E-3
Achras spp.
subject to PEQ E-3
actinidia rust
disease of Actinidia spp. (Chinese gooseberry, kiwi) 10-11, E-4, H-2
Actinidia spp. (Chinese gooseberry, kiwi)
diseases of
 actinidia rust 10-11, E-4, H-2
advisories
definition of Glossary-1
Aecidium mori
disease of Morus spp. (mulberry) H-12
aecium
definition of Glossary-1
Aesculus spp. (horse chestnut)
diseases of
horse chestnut-variegation virus 10-14
 growing in PEQ H-2
subject to PEQ E-4
Africa
prohibited plants from
Abelmoschus spp. (okra) E-3
Althaea spp. (althaea, hollyhock) E-4
Crocosmia spp. (montbretia) E-9
Gladiolus spp. (gladiolus) E-11
Hibiscus spp. (kenaf, hibiscus, rose mallow) E-12
Watsonia spp. (bugle lily) E-22
African mangosteen (Garcinia livingstonei)
subject to PEQ E-11
African star-apple (Chrysophyllum kellicotti)
subject to PEQ E-8
akee (see Blighia sapida) E-6, H-3
Alabama
PEQ liaison officers A-2
State plant regulatory officials (SPROs) C-3
Alaska
PEQ liaison officers A-2
State plant regulatory officials (SPROs) C-3
alligator apple (Annona glabra)
subject to PEQ E-4
alligator pear (Persea americana var. americana)
subject to PEQ E-17
almond (see Prunus spp.) 9-7, 9-9, 10-29, 10-113, 10-114, E-18, H-14, H-15
Althaea spp. (althaea, hollyhock)
diseases of
bhendi yellow vein-mosaic agent 10-2
cotton anthocyanosis agent 10-4
cotton curliness on hibiscus 10-5
cotton leaf curl agent 10-5
hibiscus leaf curl agent on hibiscus 10-8
hibiscus yellow vein mosaic agent 10-8
okra mosaic virus 10-8
okra yellow leaf curl agent 10-8
growing in PEQ H-2
prohibited commodity from
Africa E-4
Bangladesh E-4
India E-4
Sri Lanka E-4
subject to PEQ E-4
Anacardium occidentale (cashew)
growing in PEQ H-2
subject to PEQ E-4
angel’s trumpet (see Brugmansia spp.) 10-19, 10-20, E-7, H-3
Annona cherimola (custard apple, cherimoya)
subject to PEQ E-4
Annona diversifolia (llama)
subject to PEQ E-4
Annona glabra (alligator apple, custard apple, pond apple)
subject to PEQ E-4
Annona montana (mountain soursop)
subject to PEQ E-5
Annona muricata (prickly custard apple, guanabana, soursop)
subject to PEQ E-5
Annona purpurea (suncaya)
subject PEQ E-5
Annona reticulata (Bullock’s heart, custard apple)
subject to PEQ E-5
Annona senegalensis (wild custard apple)
subject to PEQ E-5
Annona spp.
growing in PEQ H-2
Annona squamosa (custard apple, sugar apple, sweetsop)
subject to PEQ E-5
APHIS
definition of Glossary-1
apple (see Malus spp.) 9-9, 10-83, 10-85, 10-86, 10-89, 10-90, 10-92, E-15, H-11
apple branch canker
disease of
Malus spp. (apple, crabapple) 10-83, H-11
Pyrus spp. (pear) 10-83
apple canker
disease of
Malus spp. (apple, crabapple) 10-85
Pyrus spp. (pear) 10-85
apple chat fruit agent
disease of Malus spp. (apple, crabapple) 9-9
apple chlorotic leaf spot virus
disease of
Chaenomeles spp. (flowering quince) 9-4
Malus spp. (apple, crabapple) 9-9
apple green crinkle agent
disease of Malus spp. (apple, crabapple) 9-9
apple mosaic virus
disease of
Malus spp. (apple, crabapple) 10-86
Pyrus spp. (pear) 10-86
apple proliferation phytoplasma
disease of
Corylus avellana (hazelnut) H-5
Corylus spp. (filbert, hazel, hazelnut) 10-29
Malus spp. (apple, crabapple) 10-89, H-11, H-16
Prunus spp. (almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, prune, stone fruit) H-14
Pyrus spp. (pear) 10-89
apple ringspot agent
disease of
Chaenomeles spp. (flowering quince) 9-4, H-4
Cydonia spp. (quince) H-6
Malus spp. (apple, crabapple) 9-9
Pyrus spp. (pear) 9-10, H-16
apricot (see Prunus spp.) 9-7, 9-9, 10-29, 10-113, 10-114, H-14, H-15
arabis mosaic virus
disease of Prunus spp. (almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, prune) 9-9, H-15
Argentina
prohibited plants from
Chrysanthemum spp. (chrysanthemum) E-8
Crocosmia spp. (montbretia) E-9
Gladiolus spp. (gladiolus) E-11
Leucanthemella serotina (giant daisy) E-13
Nipponanthemum nipponicum (Nippon daisy) E-17
Watsonia spp. (bugle lily) E-22
Arizona
PEQ liaison officers A-2
plant inspection station B-2
State plant regulatory officials (SPROs) C-4
Arkansas
PEQ liaison officers A-3
State plant regulatory officials (SPROs) C-4
Armenia
prohibited plants from
Morus spp. (mulberry) E-16
Artocarpus altiss (breadfruit)
subject to PEQ E-6
Artocarpus heterophyllus (jackfruit)
subject to PEQ E-6
Artocarpus spp.
growing in PEQ H-2
ash (see Fraxinus spp.) 10-54, 10-56, 10-58, E-11, H-8
ash canker disease
disease of Fraxinus spp. (ash) 10-54
Aspen (see Populus spp.) 10-112, E-18, H-13
A

Austria
prohibited plants from
Acacia spp. (acacia) E-3
Rosa spp. (rose) E-20
Averrhoa carambola (carambola)
growing in PEQ H-2
subject to PEQ E-6
Averrhoa spp.
growing in PEQ H-2
avocado (Persea americana var. americana)
subject to PEQ E-17

Azerbaijan
prohibited plants from
Morus spp. (mulberry) E-16

B

bachang (Mangifera foetida)
subject to PEQ E-15
bacterial blight on pomegranate
disease of Punica spp. 10-119
bacterial leaf spot of jasmine
disease of Jasminum spp. (jasmine) 10-69

Bangladesh
prohibited plants from
Abelmoschus spp. (okra) E-3
Althaea spp. (althaea, hollyhock) E-4

Barbados cherry (Malpighia emarginata)
subject to PEQ E-14
barberry (see Berberis spp.) 10-17, E-6, H-2
Belarus
prohibited plants from
Morus spp. (mulberry) E-16

Belgium
postentry plants from
Chaenomeles spp. (flowering quince) E-7
Cydonia spp. (quince) E-9
Malus spp. (apple, crabapple) E-15
Mespilus germanica (medlar) E-16
Prunus spp. (almond, apricot, cherry,
cherry laurel, English laurel,
nectarine, peach, plum, prune,
stone fruit) E-18
Pyrus spp. (pear) E-20
prohibited plants from
Jasminum spp. (jasmine) E-12
Salix spp. (willow) E-21

Berberis spp. (barberry)
diseases of
black stem rust 10-17
Puccinia graminis H-2
growing in PEQ H-2
subject to PEQ E-6

bhendi yellow vein-mosaic agent
disease of
Abelmoschus spp. (okra) 10-2
Althaea spp. (althaea, hollyhock) 10-2
Hibiscus spp. (kenaf, hibiscus, rose mallow) 10-2
black currant reversion agent
disease of Ribes spp. (currant, gooseberry)
10-120, H-17

black Mexican (Diospyros texana)
subject to PEQ E-10
black persimmon (Diospyros digyna)
subject to PEQ E-9
black stem rust
disease of
Berberis spp. (barberry) 10-17
Mahonia spp. (mahonia, holly grape, Oregon grape) 10-17
X Mahoberberis spp. 10-17
black stem rust eradication program
Colorado E-6, E-14
Illinois E-6, E-14
Indiana E-6, E-14
Iowa E-6, E-14
Kansas E-6, E-14
Michigan E-6, E-14
Minnesota E-6, E-14
Missouri E-6, E-14
Montana E-6, E-14
Nebraska E-6, E-14
North Dakota E-6, E-14
Ohio E-6, E-14
South Dakota E-6, E-14
West Virginia E-6, E-14
Wisconsin E-6, E-14
Wyoming E-6, E-14

black persimmon (Diospyros digyna)
subject to PEQ E-9
black stem rust
disease of
Berberis spp. (barberry) 10-17
Mahonia spp. (mahonia, holly grape, Oregon grape) 10-17
X Mahoberberis spp. 10-17
black stem rust eradication program
Colorado E-6, E-14
Illinois E-6, E-14
Indiana E-6, E-14
Iowa E-6, E-14
Kansas E-6, E-14
Michigan E-6, E-14
Minnesota E-6, E-14
Missouri E-6, E-14
Montana E-6, E-14
Nebraska E-6, E-14
North Dakota E-6, E-14
Ohio E-6, E-14
South Dakota E-6, E-14
West Virginia E-6, E-14
Wisconsin E-6, E-14
Wyoming E-6, E-14

Brazil
prohibited plants from
Abelmoschus spp. (okra) E-3
Chrysanthemum spp. (chrysanthemum) E-8
Crocosmia spp. (montbretia) E-9
Gladiolus spp. (gladiolus) E-11
Hibiscus spp. (kenaf, hibiscus, rose mallow) E-12
Leucanthemella serotina (giant daisy) E-13
Nipponanthemum nipponicum (Nippon daisy) E-17
Watsonia spp. (bugle lily) E-22
Brazilian guava (Psidium guineense)
subject to PEQ E-19
breadfruit (Artocarpus altilis)
subject to PEQ E-6
**Brenneria salicis** *(watermark disease)*  
- disease of *Salix* spp. (willow) 10-131, H-17

**Bromeliaceae**  
- diseases of  
  - *Puccinia pitcairniae* H-3  
  - *Puccinia tillandsiae* H-3  
  - *Uredo nidulans* 9-2, H-3  
  - *Ustilago tillandsiae* 9-2, H-3  
- growing in PEQ H-3  
- organisms of 9-2  
- *P. tillandsiae* 9-2  
- subject to PEQ E-6

brown olive *(Olea europaea subsp. cuspidata)*  
- subject to PEQ E-17

**Brugmansia** spp. *(angel's trumpet, borrachero, culebra, floripondia, toe)*  
- diseases of  
  - *Colombian datura virus* 10-19  
  - datura shoestring virus 10-20  
- growing in PEQ H-3  
- prohibited commodity from  
  - Colombia E-7  
  - India E-7  
- subject to PEQ E-7

buartnut *(Juglans x bisbyi = J. ailantifolia x J. cinera)*  
- subject to PEQ E-12

California  
- PEQ liaison officers A-3  
- plant inspection station B-2  
- State plant regulatory officials (SPROs) C-4

**Canary Islands**  
- prohibited plants from  
  - *Carica papaya* (papaya, paw paw)  
  - *Carica pubescens* (mountain papaya)  
- subject to PEQ E-6

Carica spp.  
- diseases of  
  - papaya leaf reduction virus 10-21  
  - growing in PEQ H-3

**Carissa macrocarpa** *(natalplum)*  
- subject to PEQ E-7

**Carya** spp.  
- disease of  
  - *witches' broom* 9-3  
- organisms of 9-3  
- *cashew* *(Anacardium occidentale)*  
  - growing in PEQ H-2  
  - subject to PEQ E-4

**Chaenomeles** spp.  
- organsisms of  
  - *apple chlorotic leaf spot virus* 9-4  
  - apple ring spot agent 9-4  
  - quince sooty ringspot agent 9-4  
  - quince stunt agent 9-4

**Chaenomeles** spp. *(flowering quince)*  
- diseases of  
  - quince sooty ringspot agent H-4  
  - quince stunt agent H-4  
  - quince yellow blotch agent H-4  
- growing in PEQ H-4  
- postentry commodity from  
  - Belgium E-7  
  - France E-7  
  - Germany E-7  
  - Great Britain E-7  
  - Netherlands E-7  
- subject to PEQ E-7, H-4

**Carnation** *(see *Dianthus* spp.)*  
- disease of  
  - *carnation etched ring virus*  
  - *carnation necrotic fleck virus*  
  - *carnation streak agent*  
  - *carnation wilt*  
- growing in PEQ H-7  
- disease of  
  - *Dianthus* spp. (carnation, pink, sweet William) H-7

California  
- PEQ liaison officers A-3  
- plant inspection station B-2  
- State plant regulatory officials (SPROs) C-4

**Canary Islands**  
- prohibited plants from  
  - *Carica papaya* (papaya, paw paw)  
  - *Carica pubescens* (mountain papaya)  
- subject to PEQ E-6
cherimoya (Annona cherimola) subject to PEQ E-4
cherry (see Prunus spp.) 9-7, 9-9, 10-29, 10-113, 10-114, H-14, H-15
cherry laurel (see Prunus spp.) 9-7, 9-9, 10-29, 10-113, 10-114, E-18, H-14, H-15
Chile
prohibited plants from
Chrysanthemum spp. (chrysanthemum) E-8
Leucanthemella serotina (giant daisy) E-13
Nipponanthemum nipponicum (Nippon daisy) E-17
China (People’s Republic of)
prohibited plants from
Morus spp. (mulberry) E-16
Chinese gooseberry (see Actinidia spp.) 10-11, E-4, H-2
Chinese pistachio (Pistacia chinensis subsp. chinensis) subject to PEQ E-18
Chinese strawberry (Psidium chinensis var. littorale) subject to PEQ E-19
chlorosis definition of Glossary-1
chlorotic leafspot virus disease of
Malus spp. (apple, crabapple) 10-89
Pyrus spp. (pear) 10-89
chlorotic ringspot disease of Jasminum spp. (jasmine) 10-70
chlorotic ringspot yellow ring mosaic disease disease of Jasminum spp. (jasmine) 9-7
chrysanthemum (see Chrysanthemum spp.) 10-25, E-8, H-4
Chrysanthemum spp. (chrysanthemum)
diseases of
chrysanthemum white rust 10-25
Puccinia horiana H-4
growing in PEQ H-4
prohibited commodity from
Argentina E-8
Brazil E-8
Canary Islands E-8
Chile E-8
Colombia E-8
Europe E-8
Mexico E-8
South Africa (Republic of) E-8
Uruguay E-8
Venezuela E-8
subject to PEQ E-8
chrysanthemum white rust disease of
Chrysanthemum spp. (chrysanthemum) 10-25
Leucanthemella serotina (giant daisy) 10-25
Chrysobalanus icaco (coco plum)
growing in PEQ H-4
subject to PEQ E-8
Chrysomyxa ledi var. rhododendri disease of Picea spp. H-13
Chrysophyllum albidum (white star-apple) subject to PEQ E-8
Chrysophyllum cainito (star-apple) subject to PEQ E-8
Chrysophyllum oliviforme (wild star-apple) subject to PEQ E-8
Chrysophyllum spp.
growing in PEQ H-4
clavate definition of Glossary-1
cloudberry (see Rubus spp.) E-20, H-17
CNMI
PEQ liaison officers A-3
cobnut (see Corylus avellana) E-8, H-5
coco plum (see Chrysobalanus icaco) E-8, H-4
Colombia prohibited plants from
Brugmansia spp. (angel’s trumpet, borrachero, culebra, floripondia, toe) E-7
Chrysanthemum spp. (chrysanthemum) E-8
Datura spp. E-9
Leucanthemella serotina (giant daisy) E-13
Nipponanthemum nipponicum (Nippon daisy) E-17
Colombian datura virus disease of Brugmansia spp. (angel’s trumpet, borrachero, culebra, floripondia, toe) 10-19
Colorado black stem rust eradication program E-6, E-14
PEQ liaison officers A-3
State plant regulatory officials (SPROs) C-4
Columbia datura virus disease of Datura spp. 10-19
Connecticut
PEQ liaison officers A-3
State plant regulatory officials (SPROs) C-7
conventions of manual
boldfacing 1-5
bullets 1-5
chapters 1-5
heading levels 1-6
indentions 1-7
numbering scheme 1-7
Corylus avellana (cobnut)
growing in PEQ H-5
prohibited commodity from
Europe E-8
Turkey E-8
subject to PEQ E-8
Corylus avellana (hazelnut) diseases of
apple proliferation phytoplasma H-5
Index

Corylus spp. (filbert, hazel, hazelnut)
  diseases of
    apple proliferation phytoplasma 10-29
    filbert blight 10-36
  growing in PEQ H-4
  subject to PEQ E-8
Costa Rican guava (Psidium freidrichsthalianum)
  subject to PEQ E-19
Cotton anthocyanosisin agent
  disease of
    Abelmoschus spp. (okra) 9-2, 10-4
    Althaea spp. (althaea, hollyhock) 10-4
    Hibiscus spp. (kenaf, hibiscus, rose mallow) 9-6, 10-4
Cotton curliness on hibiscus
  disease of
    Abelmoschus spp. (okra) 10-5
    Althaea spp. (althaea, hollyhock) 10-5
    Hibiscus spp. (kenaf, hibiscus, rose mallow) 10-5
Cotton leaf curl agent H-1
  disease of
    Abelmoschus spp. (okra) 10-5
    Althaea spp. (althaea, hollyhock) 10-5
    Hibiscus spp. (kenaf, hibiscus, rose mallow) 10-5
Cottonwood (see Populus spp.) 10-112, E-18, H-13
  subject to PEQ E-18, H-13
  subject to PEQ E-9
Crataegus monogyna (English hawthorn)
  diseases of
    Gymnosporangium spp. (rust) H-5
    growing in PEQ H-5
    postentry commodity from Europe E-8
    subject to PEQ E-8
Crataegus monogyna (Shading1) English hawthorn
  disease of
    Crataegus spp. (haw, hawthorn, haw apple, thornapple) 10-38
    Crataegus spp. (haw, hawthorn, haw apple, thornapple)
      diseases of
        Crataegus monogyna 10-38
        Gymnosporangium spp. (rust) H-5
        Mespilus germanica 10-38
        Monilina fructigena H-5
    growing in PEQ H-5
    subject to PEQ E-8
Crataegus wattina
  organisms of 9-4
Crocosmia spp. (montbretia)
  diseases of
    gladiolus rust 10-38
    Puccinia mccleanii 10-38
    Uredo gladioli-buettneri 10-44, H-5
    Uromyces gladioli H-5
    Uromyces niakensis H-5
    Uromyces transversalis H-5
    growing in PEQ H-5
    organisms of 9-5
    prohibited commodity from
    Africa E-9
    Argentina E-9
    Brazil E-9
    France E-9
    Italy E-9
    Luxembourg E-9
    Malta E-9
    Mauritius E-9
    Portugal E-9
    Spain E-9
    Uruguay E-9

Cronartium flaccidium
  disease of Pinus spp. (pine) H-13
Cronartium ribicola
  disease of Pinus spp. (pine) 9-9
Cucumber mosaic virus
  disease of Passiflora spp. (passion fruit, granadilla) 10-103
  culebra (see Brugmansia spp.) 10-19, 10-20, E-7, H-3
  curacao apple (Eugenia spp.)
  subject to PEQ E-11
  curacao apple (Syzygium jambos)
  subject to PEQ E-22
  currant (see Ribes spp.) 10-120, E-20, H-17
  custard apple (Annona cherimola)
  subject to PEQ E-4
  custard apple (Annona reticulata)
  subject to PEQ E-5
  custard apple (Annona squamosa)
  subject to PEQ E-5
Cydonia spp. (quince)
  diseases of
    Guignardia piricola H-6
    Gymnosporangium asiaticum H-6
    quince sooty ringspot agent 9-5, H-6
    quince stunt agent H-6
    quince yellow blotch agent H-6
    postentry commodity from
    Belgium E-9
    France E-9
    Germany E-9
    Great Britain E-9
    Netherlands E-9
    subject to PEQ E-9, H-6
Czech Republic
  prohibited plants from
    Sorbus spp. (mountain ash) E-21
D
Datura Colombian virus
  disease of
    Brugmansia spp. (angel’s trumpet, bor- rachero, culebra, floripondia, toe) H-3
Datura spp. H-7
Datura distortion or enation mosaic virus
  disease of Datura spp. H-7
Datura shoestring virus
disease of
  Brugmansia spp. (angel’s trumpet, borrachero, culebra, floripondia, toe) 10-20
  Datura spp. 10-20
Datura spp.
diseases of
  Colombian datura virus 10-19
  datura distortion or enation mosaic virus H-7
  datura shoestring virus 10-20
  growing in PEQ H-7
  prohibited commodity from
  Colombia E-9
  India E-9
  subject to PEQ E-9

Delaware
PEQ liaison officers A-3
State plant regulatory officials (SPROs) C-4

deliquesce
definition of Glossary-1
Dendranthema spp.
growing in PEQ H-7

Denmark
prohibited plants from
  Sorbus spp. (mountain ash) E-21
dewberry (see Rubus spp.) E-20, H-17
Dianthus spp. (carnation, pink, sweet William)
diseases of
  carnation etched ring virus H-7
  carnation necrotic fleck virus H-7
  carnation streak agent H-7
  carnation wilt 10-45
  Dianthus virus diseases 10-46
  leaf rot of carnation 10-49
  Phialophora cinereascens H-7
  growing in PEQ H-7
  postentry commodity from
  Netherlands E-9
  United Kingdom E-9
  subject to PEQ E-9
Dianthus virus diseases
disease of Dianthus spp. (carnation, pink, sweet William) 10-46

Diaportha mali
disease of Malus spp. (apple, crabapple) H-11
dieback
definition of Glossary-2
Dimocarpus longan (longan)
subject to PEQ E-9, E-11

Dimocarpus spp.
diseases of
  witches’ broom 10-50
Diospyros blancoi (mabolo)
subject to PEQ E-9
Diospyros digyna (black persimmon)
subject to PEQ E-9
Diospyros kaki (kaki)
subject to PEQ E-10
Diospyros lotus (lotus persimmon)
subject to PEQ E-10

Diospyros texana (black Mexican, Texas persimmon)
subject to PEQ E-10
Diospyros virginiana (persimmon)
subject to PEQ E-10
disposal procedures 3-5, 3-7

District of Columbia
PEQ liaison officers A-3
State plant regulatory officials (SPROs) C-4
Douglas fir (see Pseudostuga spp.) 10-22, E-18, H-15
Douglas fir canker
disease of
  Juniperus spp. (juniper) 10-22
  Larix spp. (larch) 10-22
  Picea spp. (spruce) 10-22
  Pinus spp. (pine) 10-22
  Pseudostuga spp. (Douglas fir) 10-22
durian (see Durio zibethinus) E-10
Durio zibethinus (durian)
subject to PEQ E-10

elm (see Ulmus spp.) 9-10, 10-106, E-22, H-17
elm mottle virus 9-10
disease of
  Philadelphus spp. (mock orange) 9-9, 10-106, H-13
  Syringa spp. (lilac) 10-106, H-17
  Ulmus spp. (elm) 10-106, H-17

English hawthorn (see Crataegus monogyna) E-8, H-5
English laurel (see Prunus spp.) 9-7, 9-9, 10-29, 10-113, 10-114, E-18, H-14, H-15
Eriobotrya japonica (loquat, Japanese medlar, Japanese plum)
subject to PEQ E-10
eruption
definition of Glossary-2
Erwinia salicis
disease of Salix spp. (willow) 9-10

Estonia
prohibited plants from
  Morus spp. (mulberry) E-16

Eucalyptus spp. (eucalyptus)
diseases of
  leaf chlorosis virus 10-52
  Pestalotia disseminata 10-52, H-8
  growing in PEQ H-8
  prohibited commodity from
  Europe E-11
  Sri Lanka E-11
  Uruguay E-11
  subject to PEQ E-11
Eugenia spp. (curacao apple, java plum, Maylay-apple, roseapple)
subject to PEQ E-11

Euonymus mosaic (Euonymus-variegation) agent
disease of Euonymus spp. 10-52
Euonymus mosaic agent
disease of Euonymus spp. H-8
**Euonymus** spp.  
*Euonymus* mosaic (*Euonymus*-variegation) agent 10-52  
*Euonymus* mosaic agent H-8  
Growing in PEQ H-8  
Prohibited commodity from  
Europe E-11  
Japan E-11  
Subject to PEQ E-11  
*Euphoria* spp. (longan)  
Subject to PEQ E-11  
**Europe**  
Postentry plants from  
*Crataegus monogyna* (English hawthorn) E-8  
*Saliis* spp. (willow) E-21  
Prohibited plants from  
*Acer* spp. (maple) E-3  
*Cedrus* spp. (cedar) E-7  
*Chrysanthemum* spp. (chrysanthemum) E-8  
*Corylus avellana* (cobnut) E-8  
*Eucalyptus* spp. (eucalyptus) E-11  
*Euonymus* spp. E-11  
*Fraxinus* spp. (ash) E-11  
*Juniperus* spp. (juniper) E-13  
*Leucahthermella* serotina (Giant daisy) E-13  
*Legiistrum* spp. (privet) E-13  
*Nipponanthemum* nipponicum (Nippon daisy) E-17  
*Phaladelfius* spp. (mock orange) E-17  
*Picea* spp. (spruce) E-18  
*Pinus* spp. (pine) E-18  
*Populus* spp. (Aspen, cottonwood, popular) E-18  
*Pseudolarix* spp. (golden larch) E-18  
*Pseudostuga* spp. (Douglas fir) E-18  
*Ribes* spp. (currant, gooseberry) E-20  
*Rubus* spp. (blackberry, claduberry, boysenberry, dewberry, loganberry, raspberry) E-20  
*Syriuga* spp. (illic) E-21  
*Ulmus* spp. (elm) E-22  
**European larch canker** (*Lachnellula* wilkommii) disease of  
*larix* spp. (larch) 10-80  
*Pseudolarix* spp. (golden larch) 10-80  
Organism of  
*larix* spp. (larch) 9-9  
*Pseudolarix* spp. (golden larch) 9-10  
**F**  
Feijoa (See *Feijoa sellowiana*) E-11  
*Feijoa sellowiana* (feijoa, pineapple guava) subject to PEQ E-11  
*Ficus* carica (fig)  
Subject to PEQ E-11  
Fig (See *Ficus carica*) E-11  
Filbert (See *Corylus* spp.) 10-29, 10-36, E-8, H-4  
Filbert blight  
Disease of *Corylus* spp. (filbert, hazel, hazelnut) 10-36  
**Florida**  
PEQ liaison officers A-3  
Plant inspection station B-1  
State plant regulatory officials (SPROs) C-4  
Floripendia (See *Brugmansia* spp.) 10-19, 10-20, E-7, H-3  
Flowering quince (See *Chaenomeles* spp.) E-7, H-4  
Forms F-1  
PPQ 236, Notice of shipment and report of imported plants to be grown under postentry quarantine F-3  
PPQ 391, Specimens for determination F-5  
PPQ 518, Report of violations instructions D-4  
PPQ 546, Agreement for postentry quarantine—state screening notice F-9  
PPQ 547, Postentry quarantine tag F-13  
PPQ 569, Release from postentry quarantine F-14  
Witness statement F-21  
**France**  
Postentry plants from  
*Chaenomeles* spp. (flowering quince) E-7  
*Cydonia* spp. (quince) E-9  
*Malus* spp. (apple, crabapple) E-15  
*Mespilus* germanica (medlar) E-16  
*Prunus* spp. (almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, prune, stone fruit) E-18  
*Pyrus* spp. (pear) E-20  
Prohibited plants from  
*Crocosmia* spp. (montbretia) E-9  
*Gladiolus* spp. (gladiolus) E-11  
*Watsonia* spp. (bugle lily) E-22  
**Fraxinus other virus reports**  
Disease of *Fraxinus* spp. (ash) 10-56  
**Fraxinus** spp. (ash)  
Diseases of  
Ash canker disease 10-54  
Fraxinus other virus reports 10-56  
Fraxinus variegation virus 10-58  
*Pseudomonas* savastanoi var. *fraxini* H-8  
Growing in PEQ H-8  
Prohibited commodity from Europe E-11  
Subject to PEQ E-11  
**Fraxinus variegation virus**  
Disease of *Fraxinus* spp. (ash) 10-58  
**Fusarium fuliginosporum**  
Disease of *Cedrus* spp. (cedar) 9-3  
**Fusarium sterilisphytosum**  
Disease of *Mangifera* spp. 10-95  
**G**  
Gall forming rust  
Disease of *Pinus* spp. (pine) H-13  
*Garcinia* dulcis (gourka)  
Subject to PEQ E-11
Garcinia livingstonei (African mangosteen) subject to PEQ E-11
Garcinia mangostana (mangosteen) subject to PEQ E-11
genip (Melicoccus bijugatus) subject to PEQ E-16
genip (Mespilus germanica) subject to PEQ E-16
Georgia (country of) prohibited plants from Morus spp. (mulberry) E-16
Georgia (State of) PEQ liaison officers A-3 plant inspection station B-1 State plant regulatory officials (SPROs) C-4
Germany postentry plants from Chaenomeles spp. (flowering quince) E-7
Cydonia spp. (quince) E-9
Malus spp. (apple, crabapple) E-15
Mespilus germanica (medlar) E-16
Prunus spp. (almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, prune, stone fruit) E-18
Pyrus spp. (pear) E-20
prohibited plants from Jasminum spp. (jasmine) E-12
Salix spp. (willow) E-21
Germany (Federal) prohibited plants from Sorbus spp. (mountain ash) E-21
giant daisy (see Leucanthemella serotina) 10-25, E-13, H-10
giant rambutan (Nephelium cuspidatum var. robustum) subject to PEQ E-16
girdle definition of Glossary-2
gladiolus (see Gladiolus spp.) 10-58, E-11, H-8
Gladiolus rust disease of Crocosmia spp. (montbretia) 10-38
Watsonia spp. (bugle lily) 10-38
Gladiolus spp. (gladiolus) diseases of Puccinia gladioli 10-58
Puccinia mccleanii H-8
Uredo gladioli-buettneri H-8
Uromyces gladioli H-8
Uromyces transversalis H-8
growing in PEQ H-8
prohibited commodity from Africa E-11
Argentina E-11
Brazil E-11
France E-11
Italy E-11
Luxembourg E-11
Malta E-11
Mauritius E-11
Mexico E-11
Portugal E-11
Spain E-11
Uruguay E-11
subject to PEQ E-11
Gladiolus spp. (quince) 9-6
glossary Glossary-1
golden larch (see Pseudolarix spp.) 9-10, 10-80, E-18, H-15
gooseberry (see Ribes spp.) 10-120, E-20, H-17
gournka (Garcinia dulcis) subject to PEQ E-11
graft definition of Glossary-2
granada (Punica granatum) subject to PEQ E-19
granadilla (see Passiflora spp.) 10-103, 10-104, 10-105, E-17, H-13
Great Britain postentry plants from Chaenomeles spp. (flowering quince) E-7
Cydonia spp. (quince) E-9
Malus spp. (apple, crabapple) E-15
Mespilus germanica (medlar) E-16
Prunus spp. (almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, prune, stone fruit) E-18
Pyrus spp. (pear) E-20
prohibited plants from Jasminum spp. (jasmine) E-12
Salix spp. (willow) E-21
growing site
approval 3-1
inspection waiver of 3-5
Guam PEQ liaison officers A-4 plant inspection station B-2 State plant regulatory officials (SPROs) C-4
guanabana (Annona muricata) subject to PEQ E-5
Guatemalan avocado (Persea americana var. nubigeria) subject to PEQ E-17
guava (Psidium guajava) subject to PEQ E-19
guayaba (Psidium guajava) subject to PEQ E-19
Guignardia piricola disease of Cydonia spp. (quince) H-6
Pyrus spp. (pear) H-16
Guinea guava (Psidium guineense) subject to PEQ E-19
Gymnosporangium asiaticum disease of Cydonia spp. (quince) H-6
Pyrus spp. (pear) H-16
Gymnosporangium fuscum disease of Mespilus germanica (medlar) H-12
Gymnosporangium spp. (rust)
   disease of
   Crataegus monogyna (English hawthorn)
   H-5

H

haw (see Crataegus spp.) 10-38, E-8, H-5
haw apple (see Crataegus spp.) 10-38, E-8, H-5
Hawaii
   PEQ liaison officers A-4
   plant inspection station B-2
   State plant regulatory officials (SPROs) C-4
   hawthorn (see Crataegus spp.) 10-38, E-8, H-5
   hazel (see Corylus spp.) 10-29, 10-36, E-8, H-4
   hazelnut (see Corylus avellana) H-5
   hazelnut (see Corylus spp.) 10-29, 10-36, E-8, H-4
   heartnut (Juglans ailantifolia var. cordiformis)
   subject to PEQ E-12
   hibiscus (see Hibiscus spp.) 9-6, 10-2, 10-4, 10-5, 10-8, E-12, H-9
   hibiscus leaf curl agent
   disease of Hibiscus spp. (kenaf, hibiscus, rose mallow) 9-6, E-12, H-9
   hibiscus leaf curl agent on hibiscus
disease of
   Abelmoschus spp. (okra) 10-8
   Althaea spp. (althaea, hollyhock) 10-8
   Hibiscus spp. (kenaf, hibiscus, rose mallow) 10-8

Hibiscus spp. (kenaf, hibiscus, rose mallow)
diseases of
   bhendi yellow vein-mosaic agent 10-2
   cotton anthocyanosis agent 9-6, 10-4
   cotton curliness on hibiscus 10-5
   cotton leaf curl agent 10-5
   hibiscus leaf curl agent 9-6, E-12, H-9
   hibiscus leaf curl agent on hibiscus 10-8
   hibiscus yellow vein mosaic agent H-9
   okra mosaic virus 10-8, H-9
   okra yellow leaf curl agent 10-8
   growing in PEQ H-9
   prohibited commodity from
   Africa E-12
   Brazil E-12
   India E-12
   subject to PEQ E-12
   hibiscus virus
   disease of Hibiscus spp. (kenaf, hibiscus, rose mallow) 10-8
   hibiscus yellow vein mosaic agent
disease of
   Althaea spp. (althaea, hollyhock) H-2
   Hibiscus spp. (kenaf, hibiscus, rose mallow) H-9
   hill gooseberry (Rhodomyrtus tomentosa)
   subject to PEQ E-20
   hog plum (Spondias mombin, Spondias pupurea, Spondias tuberosa)
   subject to PEQ E-21
   holly grape (see Mahonia spp.) 10-17, H-10
   hollyhock (see Althaea spp.) 10-2, 10-4, 10-5, 10-8, E-4, H-2
   honeyberry (Melicoccus bijugatus)
   subject to PEQ E-16
   hop nettlehead strain of arabis mosaic virus
disease of
   Humulus spp. (hops) 10-64, H-9
   hops (see Humulus spp.) 9-7, 10-64, 10-66, E-12, H-9
   horse chestnut (see Aesculus spp.) 10-14, E-4, H-2
   horse chestnut variegation virus H-2
   disease of Aesculus spp. (horse chestnut) 10-14
   host
definition of Glossary-2
   Humulus spp. (hops)
diseases of
   hop nettlehead strain of arabis mosaic virus 10-64, H-9
   verticillium wilt 10-66
   organisms of 9-7, E-12, H-9
   hyaline
   definition of Glossary-2
   hydrangea (see Hydrangea spp.) 10-67, E-12, H-9
   hydrangea rust
disease of
   Hydrangea spp. (hydrangea) 10-67, H-9
   Hydrangea spp. (hydrangea)
diseases of
   hydrangea rust 10-67, H-9
   growing in PEQ H-9
   prohibited commodity from Japan E-12
   subject to PEQ E-12

I

Idaho
   PEQ liaison officers A-4
   State plant regulatory officials (SPROs) C-5
   IES investigator
   handling violations D-1

Illinois
   black stem rust eradication program E-6, E-14
   PEQ liaison officers A-4
   State plant regulatory officials (SPROs) C-5

India
   prohibited plants from
   Abelmoschus spp. (okra) E-3
   Althaea spp. (althaea, hollyhock) E-4
   Brugmansia spp. (angel’s trumpet, bor-racher, culebra, floripondia, toe) E-7
   Datura spp. E-9
   Hibiscus spp. (kenaf, hibiscus, rose mallow) E-12
   Jasminum spp. (jasmine) E-12
   Morus spp. (mulberry) E-16

Indiana
   black stem rust eradication program E-6, E-14
   PEQ liaison officers A-4
   State plant regulatory officials (SPROs) C-5
   inspection
cautions and warnings 2-6
tools and equipment 2-5
inspections warnings 2-6
Iowa
black stem rust eradication program E-6, E-14
PEQ liaison officers A-4
State plant regulatory officials (SPROs) C-5

Iraq
prohibited plants from
Abelmoschus spp. (okra) E-3

Italy
prohibited plants from
Crocosmia spp. (montbretia) E-9
Gladiolus spp. (gladiolus) E-11
Rosa spp. (rose) E-20
Watsonia spp. (bugle lily) E-22

Ivory Coast
prohibited plants from
Abelmoschus spp. (okra) E-3
Blighia sapida (akee) E-6

J
Jackfruit (Artocarpus heterophyllus)
subject to PEQ E-6

Japan
prohibited plants from
Acer spp. (maple) E-3
Euonymus spp. E-11
Hydrangea spp. (hydrangea) E-12
Larix spp. (larch) E-13
Morus spp. (mulberry) E-16
Picea spp. (spruce) E-18
Pinus spp. (pine) E-18
Pseudolarix spp. (golden larch) E-18
Quercus spp. (oak) E-20
Salix spp. (willow) E-21

Japanese medlar (Eriobotrya japonica)
subject to PEQ E-10

Japanese pear rust
disease of Juniperus spp. (juniper) 10-71

Japanese plum (Eriobotrya japonica)
subject to PEQ E-10

jasmine (see Jasminum spp.) 9-7, 10-69, 10-70, 10-71, 1-12, H-9

jasmine variegation agent
disease of Jasminum spp. (jasmine) 10-70, H-9

Jasminum spp. (jasmine)
diseases of
bacterial leaf spot of jasmine 10-69
chlorotic ringspot 10-70
chlorotic ringspot yellow ring mosaic disease 9-7
jasmine variegation agent 10-70, H-9
phyllody 10-70
sampaquita yellow ringspot mosaic disease 9-7, 10-71
yellow ring mosaic disease 10-70
growing in PEQ H-9
prohibited commodity from
Belgium E-12
Germany E-12
Great Britain E-12
India E-12
Philippines E-12
subject to PEQ E-12

Java plum (Eugenia spp.)
subject to PEQ E-11

Java plum (Syzygium comini)
subject to PEQ E-22

Juglans ailantifolia var. cordiformis (heartnut)
subject to PEQ E-12

Juglans cinerea (butternut)
subject to PEQ E-12

Juglans jamaicensis (nogal, West Indian walnut)
subject to PEQ E-13

Juglans spp. (walnut)
subject to PEQ E-12

Juglans x bissyi = J. ailantifolia x J. cinerea (buartnut)
subject to PEQ E-12

Juglans x intermedia = J. nigra x J. regia (regranut)
subject to PEQ E-12

jujube (Ziziphus jujuba, Ziziphus mauritiana)
subject to PEQ E-23

jujube (Ziziphus mauritiana)
subject to PEQ E-23

Juniperus spp. (juniper)
seasonal disease E-10

Juniperus spp. (juniper)
disease of Juniperus spp. (juniper) 10-76

Juniperus spp. (juniper)
diseases of
Douglas fir canker 10-22
Japanese pear rust 10-71
juniper rust 10-75
needlecast disease 10-79
Phacidypycnis pseudostug a H-9
Stigmina deflectans H-9
growing in PEQ H-9
prohibited commodity from Europe E-13
subject to PEQ E-13

K
Kaki (Diospyros kaki)
subject to PEQ E-10

Kansas
black stem rust eradication program E-6, E-14
State plant regulatory officials (SPROs) C-5

Kazakhstan
prohibited plants from
Morus spp. (mulberry) E-16

Kenyaf (see Hibiscus spp.) 9-6, 10-2, 10-4, 10-5, 10-8, E-12, H-9

Kentucky
PEQ liaison officers A-4
State plant regulatory officials (SPROs) C-5

Korea
prohibited plants from
Morus spp. (mulberry) E-16

Kyrgyzstan
prohibited plants from
Morus spp. (mulberry) E-16
Lacerate

definition of Glossary-2

Lachnellula 9-9

Lachnellula wilkommii (European larch canker) disease of

Larix spp. (larch) H-10

Pseudolarix spp. (golden larch) H-15

langsat (see Lansium domesticum) E-13

Lansium domesticum (langsat) subject to PEQ E-13

larch (see Larix spp.) 9-9, 10-22, 10-80, E-13, H-10

Larix spp. (larch)

diseases of

Douglas fir canker 10-22

European larch canker (Lachnellula wilkommii) 10-80

Phacidiopticnes pseudostugua H-10

growing in PEQ H-10

organisms of 9-9

prohibited commodity from

Europe E-13

Japan E-13

New Brunswick, Canada E-13

Nova Scotia, Canada E-13

subject to PEQ E-13

Latvia

prohibited plants from

Morus spp. (mulberry) E-16

leaf chlorosis agent

disease of Eucalyptus spp. (eucalyptus) H-8

leaf chlorosis virus

disease of Eucalyptus spp. (eucalyptus) 10-52

leaf rot of carnation

disease of Dianthus spp. (carnation, pink, sweet William) 10-49

leechee (see Litchi chinensis) E-13, H-10

Leucanthemella serotina (giant daisy)

diseases of

chrysanthemum white rust 10-25

Puccinia horiana H-10

growing in PEQ H-10

prohibited commodity from

Argentina E-13

Brazil E-13

Canary Islands E-13

Chile E-13

Colombia E-13

Europe E-13

Mexico E-13

South Africa (Republic of) E-13

Uruguay E-13

Venezuela E-13

subject to PEQ E-13

daimy officer

directory of A-1

example of statement preparation D-6

handling violations D-1

responsibilities 6-1

Ligustrum spp. (privet)

diseases of

Ligustrum mosaic agent 10-80

growing in PEQ H-10

prohibited commodity from Europe E-13

subject to PEQ E-13

Ligustrum mosaic agent
disease of Ligustrum spp. (privet) 10-80, H-10

lilac (see Syringa spp.) 9-10, 10-106, E-21, H-17

Litchi chinensis (leechee, lychee) subject to PEQ E-13, H-10

Litchi spp.

diseases of witches’ broom 10-50

Lithuania

prohibited plants from

Morus spp. (mulberry) E-16

llama (Annona diversifolia) subject to PEQ E-4

loganberry (see Rubus spp.) 10-126, E-20, H-17

longan (Dimocarpus longan) subject to PEQ E-9, E-11

longan (Euphoria spp.) subject to PEQ E-11

loquat (Eriobotrya japonica) subject to PEQ E-10

lotus persimmon (Diospyros lotus) subject to PEQ E-10

Louisiana

PEQ liaison officers A-4

plant inspection station B-2

State plant regulatory officials (SPROs) C-5

Luxembourg

prohibited plants from

Crocosmia spp. (montbretia) E-9

Gladiolus spp. (gladiolus) E-11

Watsonia spp. (bugle lily) E-22

lychee (see Litchi chinensis) E-13, H-10

Mabolo (Diospyros blancoi) subject to PEQ E-9

Macadamia integrifolia (macadamia nut, Queensland nut) subject to PEQ E-14

macadamia nut (see Macadamia integrifolia) E-14

macadamia nut (see Macadamia tetraphylla) E-14

Macadamia tetraphylla (macadamia nut, Queensland nut) subject to PEQ E-14

Mahoberberis spp.

diseases of

Puccinia graminis H-10

growing in PEQ H-10

subject to PEQ E-14

mahonia (see Mahonia spp.) 10-17, E-14, H-10

Mahonia spp. (mahonia, holly grape, Oregon grape)

diseases of

black stem rust 10-17

Puccinia graminis H-10

growing in PEQ H-10

subject to PEQ E-14
Maine
PEQ liaison officers A-4
State plant regulatory officials (SPROs) C-5
malayapple (Syzygium malacense) subject to PEQ E-22
Malpighia emarginata (Barbados cherry) subject to PEQ E-14
Malta
prohibited plants from
Crocosmia spp. (montbretia) E-9
Gladiolus spp. (gladiolus) E-11
Watsonia spp. (bugle lily) E-22
Malus spp. (apple, crabapple)
diseases of
apple branch canker 10-83, H-11
apple canker 10-85
apple mosaic virus 10-86
apple proliferation phytoplasma 10-89
chlorotic leafspot virus 10-89
Diaporthe mali H-11
rough bark (phomopsis canker) 10-90
rubbery wood phytoplasma 10-92
Valsa ceratosperma 10-92
growing in PEQ H-11
organisms of 9-9
postentry commodity from
Belgium E-15
France E-15
Germany E-15
Great Britain E-15
Netherlands E-15
subject to PEQ E-15
mamey (Mammea africanus, Mammea americana) subject to PEQ E-15
Mammea africanaus (mameeapple) subject to PEQ E-15
Mammea americana (mameeapple, mamey) subject to PEQ E-15
mameeapple (Mammea africanaus, Mammea americana) subject to PEQ E-15
mamoncilla (Melicoccus bijugatus) subject to PEQ E-16
Mangifera foetida (bachang) subject to PEQ E-15
Mangifera indica (mango) subject to PEQ E-15
Mangifera odorata (Saipan mango) subject to PEQ E-15
Mangifera spp.
diseases of
Fusarium sterilhyphosum 10-95
mango (Mangifera indica) subject to PEQ E-15
mangosteen (Garcinia mangostana) subject to PEQ E-11
Manilkara jaimique subsp. emarginata (wild sapodilla) subject to PEQ E-15
Manilkara zapota (sapodilla) subject to PEQ E-16
Manila
PEQ liaison officers A-4
State plant regulatory officials (SPROs) C-5
maple (see Acer spp.) E-3, H-2
maple variegation agent H-2
Maryland
PEQ liaison officers A-4
State plant regulatory officials (SPROs) C-5
Massachusetts
PEQ liaison officers A-4
State plant regulatory officials (SPROs) C-5
Mauritius
prohibited plants from
Crocosmia spp. (montbretia) E-9
Gladiolus spp. (gladiolus) E-11
Watsonia spp. (bugle lily) E-22
Maylay-apple (Eugenia spp.) subject to PEQ E-11
medlar (Mespilus germanica) subject to PEQ E-16
medlar (see Mespilus germanica) H-12
Melicoccus bijugatus (genip, honeyberry, mamoncilla, Spanish lime) subject to PEQ E-16
Mespilus germanica (medlar)
disease of Crataegus spp. (haw, hawthorn, haw apple, thornapple) 10-38
diseases of
Gymnosporangium fuscum H-12
growing in PEQ H-12
postentry commodity from
Belgium E-16
France E-16
Germany E-16
Great Britain E-16
Netherlands E-16
subject to PEQ E-16
Mexican avocado (Persea americana var. drymifolia) subject to PEQ E-17
Mexican pistacio (Pistacia mexicana) subject to PEQ E-18
Mexico
prohibited plants from
Chrysanthemum spp. (chrysanthemum) E-8
Gladiolus spp. (gladiolus) E-11
Leucanthemella serotina (giant daisy) E-13
Nipponanthemum nipponicum (Nippon daisy) E-17
Michigan
black stem rust eradication program E-6, E-14
PEQ liaison officers A-4
State plant regulatory officials (SPROs) C-5
Minnesota
black stem rust eradication program E-6, E-14
PEQ liaison officers A-4
State plant regulatory officials (SPROs) C-6
Mississippi
PEQ liaison officers A-5
State plant regulatory officials (SPROs) C-6
Monilina fructigena

mountain ash variegation agent

Montana

black stem rust eradication program E-6, E-14
PEQ liaison officers A-5
State plant regulatory officials (SPROs) C-6
mock orange (see Philadelphus spp.) 9-9, 10-106, E-17, H-13
Moldova (Republic of)
prohibited plants from
Morus spp. (mulberry) E-16

Morus spp. (mulberry)
diseases of
Aecidium mori H-12
mulberry curly little leaf agent H-12
mulberry dwarf phytoplasma H-12
mulberry mosaic agent 10-99, H-12
mulberry rust 10-98
growing in PEQ H-12
organism of
mulberry dwarf phytoplasma 9-9
organisms of 9-9
prohibited commodity from
Armenia E-16
Azerbaijan E-16
Belarus E-16
China (People's Republic of) E-16
Estonia E-16
Georgia (country of) E-16
India E-16
Japan E-16
Kazakhstan E-16
Korea E-16
Kyrgyzstan E-16
Latvia E-16
Lithuania E-16
Moldova (Republic of) E-16
Russia E-16
Tajikistan E-16
Thailand E-16
Turkmenistan E-16
Ukraine E-16
Uzbekistan E-16
subject to PEQ E-16
mountain ash (see Sorbus spp.) 10-134
mountain ash (see Sorbus spp.) 10-134
mountain ash (see Sorbus spp.) 10-135
mountain ash (see Sorbus spp.) E-21, H-17
mountain ash variegation agent
disease of
Sorbus spp. (mountain ash) 10-134, H-17
mountain guava (Psidium montanum)
subject to PEQ E-19

mountain papaya (Carica pubescens)
subject to PEQ E-7
mountain sour sop (Annona montana)
subject to PEQ E-5
mulberry (see Morus spp.) 9-9, 10-98, 10-99, E-16, H-12
mulberry curly little leaf agent
disease of Morus spp. (mulberry) H-12
mulberry dwarf phytoplasma
disease of Morus spp. (mulberry) H-12
organism of Morus spp. (mulberry) 9-9
mulberry mosaic agent
disease of Morus spp. (mulberry) 10-99, H-12
mulberry rust
disease of Morus spp. (mulberry) 10-98

N

natalplum (Carissa macrocarpa)
subject to PEQ E-7

Nebraska
black stem rust eradication program E-6, E-14
PEQ liaison officers A-5
State plant regulatory officials (SPROs) C-6
necrosis
development of Glossary-2
nectarine (see Prunus spp.) 9-7, 9-9, 10-29, 10-113, 10-114, E-18, H-14, H-15
needlecast disease
disease of Juniperus spp. (juniper) 10-79
Nepheleum cuspidatum var. robustum (giant rambutan)
subject to PEQ E-16
Nepheleum lappaceum (rambutan)
subject to PEQ E-16
Nepheleum ramboutanke (pulassan)
subject to PEQ E-16

Netherlands
postentry plants from
Chaenomeles spp. (flowering quince) E-7
Cydonia ssp. (quince) E-9
Dianthus spp. (carnation, pink, sweet William) E-9
Malus spp. (apple, crabapple) E-15
Mesplius germanica (medlar) E-16
Prunus spp. (almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, prune, stone fruit) E-18
Pyrus spp. (pear) E-20
prohibited plants from
Salix spp. (willow) E-21
Syringa spp. (lilac) E-21

Nevada
PEQ liaison officers A-5
State plant regulatory officials (SPROs) C-6

New Brunswick, Canada
prohibited plants from
Larix spp. (larch) E-13
Pseudolarix spp. (golden larch) E-18

New Hampshire
PEQ liaison officers A-5
State plant regulatory officials (SPROs) C-6
Index

New Jersey
PEQ liaison officers A-5
plant inspection station B-1
State plant regulatory officials (SPROs) C-6

New Mexico
PEQ liaison officers A-5
State plant regulatory officials (SPROs) C-6

New York
PEQ liaison officers A-5
plant inspection station B-1
State plant regulatory officials (SPROs) C-6

New Zealand
prohibited plants from
Ribes spp. (currant, gooseberry) E-20
Rosa spp. (rose) E-20

Nigeria
prohibited plants from
Abelmoschus spp. (okra) E-3
Blighia sapida (akee) E-6

Nippon daisy (see Nipponanthemum nipponicum) E-17, H-12
Nipponanthemum nipponicum (Nippon daisy)
diseases of
Puccinia horiana H-12
growing in PEQ H-12
prohibited commodity from
Argentina E-17
Brazil E-17
Canary Islands E-17
Chile E-17
Colombia E-17
Europe E-17
Mexico E-17
South Africa (Republic of) E-17
Uruguay E-17
Venezuela E-17
subject to PEQ E-17

north Carolina
PEQ liaison officers A-5
State plant regulatory officials (SPROs) C-6

North Dakota
black stem rust eradication program E-6, E-14
PEQ liaison officers A-5
State plant regulatory officials (SPROs) C-7

Nova Scotia, Canada
prohibited plants from
Larix spp. (larch) E-13
Pseudolarix spp. (golden larch) E-18

okra (see Abelmoschus spp.) 9-2, 10-2, 10-4, 10-5, 10-8, E-3, H-1
okra mosaic virus 9-2, H-3
disease of
Abelmoschus spp. (okra) 10-8
Althea spp. (althaea, hollyhock) 10-8
Blighia spp. 9-2, 10-19
Hibiscus spp. (kenaf, hibiscus, rose mallow) H-9
okra yellow leaf curl agent
disease of
Abelmoschus spp. (okra) 10-8
Althea spp. (althaea, hollyhock) 10-8
Hibiscus spp. (kenaf, hibiscus, rose mallow) 10-8

Olea europaea (olive)
diseases of
olive partial paralysis virus H-13
olive sicle leaf virus H-13
Olea europaea subsp. cuspidata (brown olive, wild olive)
subject to PEQ E-17
Olea europaea subsp. europaea (olive)
subject to PEQ E-17
Olea europea (olive)
growing in PEQ H-13
Olea spp.
diseases of
olive latent ringspot virus 10-100
olive partial paralysis virus 10-100
olive sicle leaf virus 10-102
olive (see Olea europaea subsp. europaea) E-17
olive (see Olea europaea) H-13
olive latent ringspot virus
disease of Olea spp. 10-100
olive partial paralysis virus
disease of
Olea europaea (olive) H-13
Olea spp. 10-100
olive sicle leaf virus
disease of
Olea europaea (olive) H-13
Olea spp. 10-102

Olea europaea
subject to PEQ E-18

Oregon grape (see Mahonia spp.) 10-17, H-10

P
P. armeniaca
disease of
Prunus spp. (almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, prune, stone fruit) H-14
P. avium
disease of
Prunus spp. (almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, prune, stone fruit) H-14

O

Oak (see Quercus spp.) 10-120, E-20, H-17

Oceania
prohibited plants from
Acacia spp. (acacia) E-3

Ohio
black stem rust eradication program E-6, E-14
PEQ liaison officers A-5
State plant regulatory officials (SPROs) C-7

Oklahoma
PEQ liaison officers A-6
State plant regulatory officials (SPROs) C-7

subject to PEQ E-17

okra mosaic virus 9-2, H-3
disease of
Abelmoschus spp. (okra) 10-8
Althea spp. (althaea, hollyhock) 10-8
Blighia spp. 9-2, 10-19
Hibiscus spp. (kenaf, hibiscus, rose mallow) H-9
okra yellow leaf curl agent
disease of
Abelmoschus spp. (okra) 10-8
Althea spp. (althaea, hollyhock) 10-8
Hibiscus spp. (kenaf, hibiscus, rose mallow) 10-8

Olea europaea (olive)
diseases of
olive partial paralysis virus H-13
olive sicle leaf virus H-13
Olea europaea subsp. cuspidata (brown olive, wild olive)
subject to PEQ E-17
Olea europaea subsp. europaea (olive)
subject to PEQ E-17
Olea europea (olive)
growing in PEQ H-13
Olea spp.
diseases of
olive latent ringspot virus 10-100
olive partial paralysis virus 10-100
olive sicle leaf virus 10-102
olive (see Olea europaea subsp. europaea) E-17
olive (see Olea europaea) H-13
olive latent ringspot virus
disease of Olea spp. 10-100
olive partial paralysis virus
disease of
Olea europaea (olive) H-13
Olea spp. 10-100
olive sicle leaf virus
disease of
Olea europaea (olive) H-13
Olea spp. 10-102

Olea europaea
subject to PEQ E-18

Oregon grape (see Mahonia spp.) 10-17, H-10

P
P. armeniaca
disease of
Prunus spp. (almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, prune, stone fruit) H-14
P. avium
disease of
Prunus spp. (almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, prune, stone fruit) H-14
P. domestica
disease of
Prunus spp. (almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, prune, stone fruit) H-14

P. tillandsiae
organism of Bromeliaceae 9-2
papaya (Carica papaya)
subject to PEQ E-7
papaya leaf reduction virus
disease of Carica spp. 10-21
Papua New Guinea
prohibited plants from Abelmoschus spp. (okra) E-3
paraphysis
definition of Glossary-2
Passiflora spp. (passion fruit, granadilla)
diseases of
cucumber mosaic virus 10-103
passion fruit mosaic virus 10-104
passion fruit woodiness virus 10-105, H-13
growing in PEQ H-13
subject to PEQ E-17
passion fruit (see Passiflora spp.) 10-103, 10-104, 10-105, E-17, H-13
passion fruit mosaic virus
disease of Passiflora spp. (passion fruit, granadilla) 10-104
passion fruit woodiness virus
disease of
Passiflora spp. (passion fruit, granadilla) H-13
disease of Passiflora spp. (passion fruit, granadilla) 10-105
paw paw (Carica papaya)
subject to PEQ E-7
peach (see Prunus spp.) 9-7, 9-9, 10-29, 10-113, 10-114, E-18, H-14, H-15
pear (see Pyrus spp.) 9-10, 10-83, 10-85, 10-86, 10-89, 10-90, 10-92, E-20, H-16
pear blister canker viroid
disease of Pyrus spp. (pear) 9-10, H-16
pear bud drop agent
disease of Pyrus spp. (pear) 9-10, H-16
pedicel
definition of Glossary-2
pedicellate
definition of Glossary-2
Pennsylvania
PEQ liaison officers A-6
State plant regulatory officials (SPROs) C-7
PEQ (see postentry quarantine)
PEQ infections
symptoms of
bacteria H-1
cankers H-1
fungi H-1
viruses H-1
PEQ liaison officers
Alabama A-2
Alaska A-2
Arizona A-2
Arkansas A-3
California A-3
CNMI A-3
Colorado A-3
Connecticut A-3
Delaware A-3
District of Columbia A-3
Florida A-3
Georgia (State of) A-3
Guam A-4
Hawaii A-4
Idaho A-4
Illinois A-4
Indiana A-4
Iowa A-4
Kentucky A-4
Louisiana A-4
Maine A-4
Maryland A-4
Massachusetts A-4
Michigan A-4
Minnesota A-4
Mississippi A-5
Missouri A-5
Montana A-5
Nebraska A-5
Nevada A-5
New Hampshire A-5
New Jersey A-5
New Mexico A-5
New York A-5
North Carolina A-5
North Dakota A-5
Ohio A-5
Oklahoma A-6
Oregon A-6
Pennsylvania A-6
Puerto Rico A-6
Rhode Island A-6
South Carolina A-6
South Dakota A-6
Tennessee A-6
Texas A-6
Utah A-6
Vermont A-6
Virginia A-6
Washington A-6
West Virginia A-6
Wisconsin A-7
Wyoming A-7
PEQLO (see postentry quarantine liaison officer)
PEQP (see postentry quarantine program)
PEQU (see postentry quarantine unit)
peridium
definition of Glossary-2
permits F-1
Persea americana var. americana (avocado, alligator pear)
subject to PEQ E-17
Persea americana var. drymifolia (Mexican avocado)
subject to PEQ E-17
Persea americana var. nubigeria (Guatemalan avocado)
subject to PEQ E-17

Persimmon (Diospyros virginiana)
subject to PEQ E-10

pest identification
procedures 4-7
submitting invertebrate
arthropods 4-8
nematodes 4-10

Pestalotia disseminata
disease of Eucalyptus spp. (eucalyptus) 10-52, H-8

pesticide safety
precautions I-1

Phacidiopycnis pseudostuga
disease of
CEDrus spp. (cedar) H-3
Juniperus spp. (juniper) H-9
Larix spp. (larch) H-10
Picea spp. (spruce) H-13
Pseudostuga spp. (Douglas fir) H-15

Phipolophora cinereascens
disease of Dianthus spp. (camation, pink, sweet William) H-7

Philadelphus spp. (mock orange)
diseases of
elm mottle virus 9-9, 10-106, H-13
growing in PEQ H-13
organisms of 9-9
prohibited commodity from Europe E-17
subject to PEQ E-17

Philippines
prohibited plants from
Jasminum spp. (jasmine) E-12

Phyllanthus acidus (ootaheite gooseberry)
subject to PEQ E-18

phyllody
disease of Jasminum spp. (jasmine) 10-70

Picea spp. (spruce)
diseases of
Chryomyxa ledi var. rhododendri 9-9, H-13
Douglas fir canker 10-22
Phacidiopycnis pseudostuga H-13
rhododendron-spruce needle rust 10-106
spruce needle (cushion) rust 10-106
growing in PEQ H-13
organisms of 9-9
prohibited commodity from Europe E-18
Japan E-18
Siberia E-18
subject to PEQ E-18
pine (see Pinus spp.) 9-9, 10-22, 10-109, E-18, H-13
pink (see Dianthus spp.) 10-45, 10-46, 10-49, E-9, H-7

Pinus spp. (pine)
diseases of
Douglas fir canker 10-22
Scotch pine blister rust 10-109
growing in PEQ H-13
organisms of 9-9
prohibited commodity from
Europe E-18
Japan E-18
subject to PEQ E-18

PIS (see plant inspection station)
pistachio (Pistacia vera)
subject to PEQ E-18

Pistacia chinesis subsp. chinesis (Chinese pistachio)
subject to PEQ E-18

Pistacia mexicana (Mexican pistachio)
subject to PEQ E-18

Pistacia vera (pistachio)
subject to PEQ E-18

plant disease
identification of 4-11
seasonal occurrence of 4-2
symptoms of 4-2

plant genera
subject to postentry quarantine E-3

plant inspection stations (PIS)
directory of B-1
guidelines 4-5
inspections 2-8

plant regulatory officials
directory of C-1

plum (see Prunus spp.)
9-7, 9-9, 10-29, 10-113, 10-114, E-18, H-14, H-15

plum pox virus
disease of Prunus spp. (almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, prune, stone fruit) H-14
synonym of 10-114

pomegranate (Punica granatum)
synonym of PEQ E-19

pond apple (Annona glabra)
subject to PEQ E-4

poplar (see Populus spp.)
10-112, E-18, H-13

poplar bacterial canker
disease of Populus spp. (Aspen, cottonwood, poplar) 10-112

Populus spp. (Aspen, cottonwood, poplar)
diseases of
poplar bacterial canker 10-112
Xanthomonas populi H-13
prohibited commodity from Europe E-18
subject to PEQ E-18

Portugal
prohibited plants from
Crocosmia spp. (montbretia) E-9
Gladiolus spp. (gladiolus) E-11
Watsonia spp. (bugle lily) E-22

postentry plants
categories of E-1

postentry quarantine
postentry quarantine liaison officer
postentry quarantine program
liaison officers and federal officials A-2
representative
handling violations D-1
postentry quarantine unit
prickly custard apple (*Annona muricata*)
subject to PEQ E-5
privet (see *Ligustrum* spp.) 10-80, E-13, H-10
procedures
disposal 3-5, 3-7
pruinose
definition of Glossary-3
prune (see *Prunus* spp.) 9-7, 9-9, 10-29, 10-113, 10-114, E-18, H-14, H-15
*Prunus* spp. (almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, prune, stone fruit)
diseases of
apple proliferation phytoplasma H-14
European stone fruit yellows phytoplasma 9-9
*P. armeniaca* H-14
*P. avium* H-14
*P. domestica* H-14
plum pox virus H-14
postentry commodity from
Belgium E-18
France E-18
Germany E-18
Great Britain E-18
Netherlands E-18
*Pseudolarix* spp. (golden larch)
diseases of
European larch canker (*Lachnellula wilkommii*) 10-80
growing in PEQ H-15
organisms of 9-10
prohibited commodity from
Europe E-18
Japan E-18
New Brunswick, Canada E-18
Nova Scotia, Canada E-18
subject to PEQ E-16
*Pseudomonas savastanoi* var. *fraxini*
disease of *Fraxinus* spp. (ash) H-8
*Pseudostuga* spp. (Douglas fir)
diseases of
Douglas fir canker 10-22
*Phacidiopycnis pseudostuga* H-15
growing in PEQ H-15
prohibited commodity from Europe E-18
subject to PEQ E-18
*Psidium cattleianum* var. *cattleianum* (cattley, purple, purple strawberry, red strawberry, yellow strawberry guava)
subject to PEQ E-19
*Psidium chinensis* var. *littorale* (Chinese strawberry, strawberry, yellow cattley, yellow strawberry guava, walau)
subject to PEQ E-19
*Psidium freidrichsthalianum* (Costa Rican guava)
subject to PEQ E-19
*Psidium guajava* (guava, guayaba)
subject to PEQ E-19
*Psidium guineense* (Brazilian guava, Guinea guava)
subject to PEQ E-19
*Psidium montanum* (mountain guava, spice guava)
subject to PEQ E-19
*Puccinia gladioli* disease of *Gladiolus* spp. (gladiolus) 10-58
*Puccinia graminis* disease of
*Berberis* spp. (barberry) H-2
*Mahoberberis* spp. H-10
*Mahonia* spp. (mahonia, holly grape, Oregon grape) H-10
*Puccinia horiana* disease of
*Chrysanthemum* spp. (chrysanthemum) H-4
*Leucanthemella* *serotina* (giant daisy) H-10
*Nipponanthemum* *nipponicum* (Nippon daisy) H-12
*Puccinia mccleanii* disease of
*Crocospia* spp. (mompsonietia) H-5
*Gladiolus* spp. (gladiolus) H-8
*Watsonia* spp. (bugle lily) H-18
*Puccinia pitcairniae* disease of Bromeliaceae H-3
*Puccinia tillandsiae* disease of Bromeliaceae H-3
*Puerto Rico*
PEQ liaison officers A-6
plant inspection station B-1
State plant regulatory officials (SPROs) C-7
*pulassan* (*Nephelium ramboutanke*)
subject to PEQ E-16
*pulvinate*
definition of Glossary-3
*Punica granatum* (granada, pomegranate)
subject to PEQ E-19
*Punica protopunica* (Socotra pomegranate)
subject to PEQ E-20
*Punica spp.*
diseases of
bacterial blight on pomegranate 10-119
purple (*Psidium cattleianum* var. *cattleianum*)
subject to PEQ E-19
purple strawberry (*Psidium cattleianum* var. *cattleianum*)
subject to PEQ E-19
*Pyrus* spp. (pear)
diseases of
apple branch canker 10-83
apple canker 10-85
apple mosaic virus 10-86
apple proliferation phytoplasma 10-89
apple ringspot agent H-16
chlorotic leaf spot virus 10-89
*Guignardia* *piricola* H-16
*Gymnosporangium* *asiaticum* H-16
pear blister canker viroid 9-10, H-16
pear bud drop agent 9-10
pear pear bud drop agent H-16
rough bark (phomopsis canker) 10-90
rubbery wood phytoplasma 10-92
\textit{Valsa ceratosperma} 10-92, H-16
growing in PEQ H-16
organisms of 9-10
postentry commodity from
Belgium E-20
France E-20
Germany E-20
Great Britain E-20
Netherlands E-20
subject to PEQ E-20

\textbf{Q}
Queensland nut (see \textit{Macadamia integrifolia}) E-14
Queensland nut (see \textit{Macadamia tetraphylla}) E-14
\textit{Quercus} spp. (oak)
diseases of
\textit{Stereum hiugense} H-17
undescribed gall-forming rust 10-120
white rot 10-120
growing in PEQ H-17
prohibited commodity from Japan E-20
subject to PEQ E-20
quince (see \textit{Cydonia} spp.) E-9, H-6
quince sooty ringspot agent 9-5
disease of
\textit{Chaenomeles} spp. (flowering quince) 9-4, H-4
\textit{Cydonia} spp. (quince) 9-5, H-6
quince stunt agent
disease of
\textit{Chaenomeles} spp. (flowering quince) 9-4, H-4
\textit{Cydonia} spp. (quince) 9-5, H-6
quince yellow blotch agent
disease of
\textit{Chaenomeles} spp. (flowering quince) H-4
\textit{Cydonia} spp. (quince) 9-5, H-6
quincepear (\textit{Pyronia} spp.)
subject to PEQ E-20

\textbf{R}
rambutan (\textit{Nephelium lappaceum})
subject to PEQ E-16
raspberry (see \textit{Rubus} spp.) E-20, H-17
raspberry ringspot virus 9-9
disease of \textit{Prunus} spp. (almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, prune) H-15
red strawberry (\textit{Psidium cattleianum} var. cattleianum)
subject to PEQ E-19
regranut (\textit{Juglans x intermedia = J. nigra x J. regia})
subject to PEQ E-12
release procedures
healthy material 5-1
Rhode Island
PEQ liaison officers A-6
rubberdendron-spruce needle rust
disease of \textit{Picea} spp. (spruce) 10-106
\textit{Rhodomyrtus tomentosa} (hill gooseberry, rose myrtle)
subject to PEQ E-20
\textit{Ribes} spp. (currant, gooseberry)
diseases of
black currant reversion agent 10-120, H-17
growing in PEQ H-17
prohibited commodity from
Australia E-20
Bulgaria E-20
Italy E-20
New Zealand E-20
subject to PEQ E-20
rogue
definition of Glossary-3
\textit{Rosa} spp. (rose)
diseases of
rose wilt agent 10-123, H-17
growing in PEQ H-17
prohibited commodity from
Australia E-20
Bulgaria E-20
Italy E-20
New Zealand E-20
subject to PEQ E-20
rose (see \textit{Rosa} spp.) 10-123, E-20, H-17
rose apple (\textit{Syzygium jambos})
subject to PEQ E-22
rose apple (\textit{Syzygium malacense})
subject to PEQ E-22
rose apple (\textit{Syzygium jambos})
subject to PEQ E-22
rose apple (\textit{Syzygium malacense})
subject to PEQ E-22
rose mallow (see \textit{Hibiscus} spp.) 9-6, 10-2, 10-4, 10-5, 10-8, E-12, H-9
rose myrtle (\textit{Rhodomyrtus tomentosa})
subject to PEQ E-20
rose wilt agent
disease of \textit{Rosa} spp. (rose) 10-123, H-17
roseapple (\textit{Eugenia} spp.)
subject to PEQ E-11
rough bark (phomopsis canker)
disease of
\textit{Malus} spp. (apple, crabapple) 10-90
\textit{Pyrus} spp. (pear) 10-90
rubbery wood phytoplasma
disease of
\textit{Malus} spp. (apple, crabapple) 10-92
\textit{Pyrus} spp. (pear) 10-92
\textit{Rubus} spp. (blackberry, cloudberry, boysenberry, dewberry, loganberry, raspberry)
diseases of
\textit{Rubus} stunt phytoplasma 10-126, H-17
growing in PEQ H-17
prohibited commodity from Europe E-20
subject to PEQ E-20
\textit{Rubus} stunt phytoplasma
disease of
\textit{Rubus} spp. (blackberry, cloudberry, boysenberry, dewberry, loganberry, raspberry) 10-126, H-17
disease of \textit{Rubus} spp.) 10-126
Russia
prohibited plants from
\textit{Morus} spp. (mulberry) E-16
Saipan mango (Mangifera odorata) subject to PEQ E-15

Salix spp. (willow) diseases of
Brenneria salicis (watermark disease) 10-131, H-17
virus chlorosis 10-131
 growing in PEQ H-17
organisms of 9-10
postentry commodity from Europe E-21
prohibited commodity from Belgium E-21
Germany E-21
Great Britain E-21
Japan E-21
Netherlands E-21
subject to PEQ E-21
sampaquita yellow ringspot mosaic disease of Jasminum spp. (jasmine) 9-7, 10-71
sapodilla (Manilkara zapota) subject to PEQ E-16
Scotch pine blister rust disease of Pinus spp. (pine) 10-109
Siberia prohibited plants from Picea spp. (spruce) E-18
site inspection
cold-call 2-2
orientation 2-2
Slovakia prohibited plants from Sorbus spp. (mountain ash) E-21
Socotra pomegranate (Punica protopunica) subject to PEQ E-20
Sorbus spp. (mountain ash) diseases of
mountain ash variegation agent 10-134, H-17
Taphrina pirit 10-134, 10-135, H-17
growing in PEQ H-17
prohibited commodity from Czech Republic E-21
Denmark E-21
Germany (Federal) E-21
Slovakia E-21
subject to PEQ E-21
sorus definition of Glossary-3
soursop (Annona muricata) subject to PEQ E-5
South Africa (Republic of) prohibited plants from
Chrysanthemum spp. (chrysanthemum) E-8
Leucanthemella serotina (giant daisy) E-13
Nipponanthemum nipponicum (Nippon daisy) E-17
South Carolina
PEQ liaison officers A-6
State plant regulatory officials (SPROs) C-7
South Dakota black stem rust eradication program E-6, E-14
PEQ liaison officers A-6
State plant regulatory officials (SPROs) C-7
Spain prohibited plants from Crocosmia spp. (montbretia) E-9
Gladiolus spp. (gladiolus) E-11
Watsonia spp. (bugle lily) E-22
Spanish lime (Melicoccus bijugatus) subject to PEQ E-16
SPHD (see State Plant Health Director)
spruce guas (Psidium montanum) subject to PEQ E-19
Spondias mombin (hog plum, yellow mombin) subject to PEQ E-21
SPRO (see State Plant Regulatory Official)
spruce (Picea spp.) 9-9, 10-22, 10-106, E-18, H-13
spruce needle (cushion) rust disease of Picea spp. (spruce) 10-106
Sri Lanka prohibited plants from
Abelmoschus spp. (okra) E-3
Althaea spp. (althea, hollyhock) E-4
Eucalyptus spp. (eucalyptus) E-11
St. John’s bread (Ceratonia siligua)
growing in PEQ H-3
subject to PEQ E-7
star-apple (Chrysophyllum cainito) subject to PEQ E-8
State and Federal forms 2-3
APHIS Form 7060 2-5
PPQ Form 236 2-3
PPQ Form 391 2-3
PPQ Form 518 2-4
PPQ Form 546 2-4
PPQ Form 569 2-5
PPQ Form 587 2-5
State nursery inspection forms 2-3
State quarantine notice forms 2-3
State and territory plant regulatory officials directory of C-1
State cooperators handling violations D-1
State inspector responsibilities 6-2
State Plant Health Director
State plant regulatory officials (SPROs)
Alabama C-3
Alaska C-3
Arizona C-4
Arkansas C-4
California C-4
Colorado C-4
Connecticut C-7
Delaware C-4
District of Columbia C-4
Florida C-4
Georgia (State of) C-4
Index

Guam C-4
Hawaii C-4
Idaho C-5
Illinois C-5
Indiana C-5
Iowa C-5
Kansas C-5
Kentucky C-5
Louisiana C-5
Maine C-5
Maryland C-5
Massachusetts C-5
Michigan C-5
Minnesota C-6
Mississippi C-6
Missouri C-6
Montana C-6
Nebraska C-6
Nevada C-6
New Hampshire C-6
New Jersey C-6
New Mexico C-6
New York C-6
North Carolina C-6
North Dakota C-7
Ohio C-7
Oklahoma C-7
Oregon C-7
Pennsylvania C-7
Puerto Rico C-7
South Carolina C-7
South Dakota C-7
Tennessee C-7
Texas C-7
Utah C-7
Vermont C-7
Virginia C-8
Washington C-8
West Virginia C-8
Wisconsin C-8
Wyoming C-8
Stereum hirugense
  disease of Quercus spp. (oak) H-17
Stigmina deflectans
  disease of Juniperus spp. (juniper) H-9
strawberry latent ringspot virus 9-9
  disease of Prunus spp. (almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, prune) H-15

striate
  definition of Glossary-3
sugar apple (Annona squamosa)
  subject to PEQ E-5
suncoya (Annona purpurea)
  subject to PEQ E-5
sweet William (see Dianthus spp.) 10-45, 10-46, 10-49, E-9, H-7
sweetsop (Annona squamosa)
  subject to PEQ E-5

symptoms
  of bacteria 2-7
  of fungi 2-7

of nematodes 2-7
of viral diseases 2-7
Syringa spp. (lilac)
  diseases of
    elm mottle virus 10-106, H-17
    growing in PEQ H-17
    organisms of 9-10
    prohibited commodity from
      Europe E-21
      Netherlands E-21
subject to PEQ E-21
Syzygium aqueum (watery rose apple)
  subject to PEQ E-21
Syzygium comini (java plum)
  subject to PEQ E-22
Syzygium jambos (curacao apple, rose apple)
  subject to PEQ E-22
Syzygium malacense (malayapple, rose apple)
  subject to PEQ E-22

T
Tajikistan
  prohibited plants from
    Morus spp. (mulberry) E-16
Taphrina piri
  disease of Sorbus spp. (mountain ash) 10-134, 10-135, H-17
telium
  definition of Glossary-3
Tennessee
  PEQ liaison officers A-6
  State plant regulatory officials (SPROs) C-7
Texas
  PEQ liaison officers A-6
  plant inspection station B-2
  State plant regulatory officials (SPROs) C-7
Texas persimmon ( Diospyros texana )
  subject to PEQ E-10
Thailand
  prohibited plants from
    Morus spp. (mulberry) E-16
thornapple (see Crataegus spp.) 10-38, E-8, H-5
Tobago
  prohibited plants from
    Abelmoschus spp. (okra) E-3
toe (see Brugmansia spp.) 10-19, 10-20, E-7, H-3
tomato blackring virus 9-9
  disease of Prunus spp. (almond, apricot, cherry, cherry laurel, English laurel, nectarine, peach, plum, prune) H-15
Trinidad
  prohibited plants from
    Abelmoschus spp. (okra) E-3
Turkey
  prohibited plants from
    Corylus avellana (cobnut) E-8
Turkmenistan
  prohibited plants from
    Morus spp. (mulberry) E-16
Index

<table>
<thead>
<tr>
<th>U.S. plant inspection stations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arizona B-2</td>
</tr>
<tr>
<td>California B-2</td>
</tr>
<tr>
<td>Florida B-1</td>
</tr>
<tr>
<td>Georgia (State of) B-1</td>
</tr>
<tr>
<td>Guam B-2</td>
</tr>
<tr>
<td>Hawaii B-2</td>
</tr>
<tr>
<td>Louisiana B-2</td>
</tr>
<tr>
<td>New Jersey B-1</td>
</tr>
<tr>
<td>New York B-1</td>
</tr>
<tr>
<td>Puerto Rico B-1</td>
</tr>
<tr>
<td>Texas B-2</td>
</tr>
<tr>
<td>Washington B-2</td>
</tr>
</tbody>
</table>

Ukraine
prohibited plants from
Morus spp. (mulberry) E-16

Ulmus spp. (elm)
diseases of
elm mottle virus 10-106, H-17
growing in PEQ H-17
organisms of 9-10
prohibited commodity from Europe E-22
subject to PEQ E-22

undescribed gall-forming rust 10-120
disease of Quercus spp. (oak) 10-120

United Kingdom
postentry plants from
Dianthus spp. (carnation, pink, sweet
William) E-9

United States Department of Agriculture (USDA)
Uredo gladioli-buettneri
disease of
Crocosmia spp. (montbretia) 9-5, 10-44, H-5
Gladiolus spp. (gladiolus) 9-6, H-8
Watsonia spp. (bugle lily) 9-10, 10-44, H-18

Uredo nidularii
disease of
Bromeliaceae 9-2, H-3

Uromyces gladioli
disease of
Crocosmia spp. (montbretia) H-5
Gladiolus spp. (gladiolus) H-8
Watsonia spp. (bugle lily) H-18

Uromyces nyikensis
disease of
Crocosmia spp. (montbretia) 9-5, H-5
Watsonia spp. (bugle lily) 9-10

Uromycladium transversalis
disease of
Crocosmia spp. (montbretia) H-5
Gladiolus spp. (gladiolus) H-8
Watsonia spp. (bugle lily) H-18

Uromycladium tepperianum
disease of Acacia spp. (acacia) H-1

Uruguay
prohibited plants from
Chrysanthemum spp. (chrysanthemum) E-8
Crocosmia spp. (montbretia) E-9

Eucalyptus spp. (eucalyptus) E-11
Gladiolus spp. (gladiolus) E-11
Leucanthemella serotina (giant daisy) E-13
Nipponanthemum nipponicum (Nippon daisy) E-17
Watsonia spp. (bugle lily) E-22

USDA (see United States Department of Agriculture)

Ustilago tillandsiae
disease of Bromeliaceae 9-2, H-3

Utah
PEQ liaison officers A-6
State plant regulatory officials (SPROs) C-7

Uzbekistan
prohibited plants from
Morus spp. (mulberry) C-7

Vaccinium spp. (blueberry, cranberry)
subject to PEQ E-22

Valsa ceratosperrma
disease of
Malus spp. (apple, crabapple) 10-92
Pyrus spp. (pear) 10-92, H-16

vector
definition of Glossary-3

Venezuela
prohibited plants from
Chrysanthemum spp. (chrysanthemum) E-8
Leucanthemella serotina (giant daisy) E-13
Nipponanthemum nipponicum (Nippon daisy) E-17

Vermont
PEQ liaison officers A-6
State plant regulatory officials (SPROs) C-7

verrucose
definition of Glossary-3

verticillium wilt
disease of Humulus spp. (hops) 10-66

Virginia
PEQ liaison officers A-6
State plant regulatory officials (SPROs) C-8

virus chlorosis
disease of Salix spp. (willow) 10-131

W

walnut (Juglans spp.)
subject to PEQ E-12

Washington
PEQ liaison officers A-6
plant inspection station B-2
State plant regulatory officials (SPROs) C-8

watermark disease (Brenneria salicis)
disease of Salix spp. (willow) 10-131, H-17

watery rose apple (Syzygium aqueum)
subject to PEQ E-21

Watsonia spp. (bugle lily)
diseases of
gladiolus rust 10-38
Puccinia mccleani/ H-18

Vaccinium spp. (blueberry, cranberry)
subject to PEQ E-22

verticillium wilt
disease of Humulus spp. (hops) 10-66

Virus chlorosis
disease of Salix spp. (willow) 10-131

Watermark disease (Brenneria salicis)
disease of Salix spp. (willow) 10-131, H-17

Watsonia spp. (bugle lily)
diseases of

U.S. plant inspection stations
Arizona B-2
California B-2
Florida B-1
Georgia (State of) B-1
Guam B-2
Hawaii B-2
Louisiana B-2
New Jersey B-1
New York B-1
Puerto Rico B-1
Texas B-2
Washington B-2

Ukraine
prohibited plants from
Morus spp. (mulberry) E-16

Ulmus spp. (elm)
diseases of
elm mottle virus 10-106, H-17
growing in PEQ H-17
organisms of 9-10
prohibited commodity from Europe E-22
subject to PEQ E-22

undescribed gall-forming rust 10-120
disease of Quercus spp. (oak) 10-120

United Kingdom
postentry plants from
Dianthus spp. (carnation, pink, sweet
William) E-9

United States Department of Agriculture (USDA)
Uredo gladioli-buettneri
disease of
Crocosmia spp. (montbretia) 9-5, 10-44, H-5
Gladiolus spp. (gladiolus) 9-6, H-8
Watsonia spp. (bugle lily) 9-10, 10-44, H-18

Uredo nidularii
disease of
Bromeliaceae 9-2, H-3

Uromyces gladioli
disease of
Crocosmia spp. (montbretia) H-5
Gladiolus spp. (gladiolus) H-8
Watsonia spp. (bugle lily) H-18

Uromyces nyikensis
disease of
Crocosmia spp. (montbretia) 9-5, H-5
Watsonia spp. (bugle lily) 9-10

Uromyces transversalis
disease of
Crocosmia spp. (montbretia) H-5
Gladiolus spp. (gladiolus) H-8
Watsonia spp. (bugle lily) H-18

Uromycladium tepperianum
disease of Acacia spp. (acacia) H-1

Uruguay
prohibited plants from
Chrysanthemum spp. (chrysanthemum) E-8
Crocosmia spp. (montbretia) E-9

Eucalyptus spp. (eucalyptus) E-11
Gladiolus spp. (gladiolus) E-11
Leucanthemella serotina (giant daisy) E-13
Nipponanthemum nipponicum (Nippon daisy) E-17
Watsonia spp. (bugle lily) E-22

USDA (see United States Department of Agriculture)

Ustilago tillandsiae
disease of Bromeliaceae 9-2, H-3

Utah
PEQ liaison officers A-6
State plant regulatory officials (SPROs) C-7

Uzbekistan
prohibited plants from
Morus spp. (mulberry) C-7

Vaccinium spp. (blueberry, cranberry)
subject to PEQ E-22

Valsa ceratosperrma
disease of
Malus spp. (apple, crabapple) 10-92
Pyrus spp. (pear) 10-92, H-16

vector
definition of Glossary-3

Venezuela
prohibited plants from
Chrysanthemum spp. (chrysanthemum) E-8
Leucanthemella serotina (giant daisy) E-13
Nipponanthemum nipponicum (Nippon daisy) E-17

Vermont
PEQ liaison officers A-6
State plant regulatory officials (SPROs) C-7

verrucose
definition of Glossary-3

verticillium wilt
disease of Humulus spp. (hops) 10-66

Virginia
PEQ liaison officers A-6
State plant regulatory officials (SPROs) C-8

Virus chlorosis
disease of Salix spp. (willow) 10-131

Watermark disease (Brenneria salicis)
disease of Salix spp. (willow) 10-131, H-17

Watsonia spp. (bugle lily)
diseases of

gladiolus rust 10-38
Puccinia mccleani/ H-18
**Index**

*Uredo gladioli-buettneri* 9-10, 10-44, H-18
*Uromyces gladioli* H-18
*Uromyces nyikensis* 9-10
*Uromyces transversalis* H-18

growing in PEQ H-18
organisms of 9-10
prohibited commodity from
Africa E-22
Argentina E-22
Brazil E-22
France E-22
Italy E-22
Luxembourg E-22
Malta E-22
Mauritius E-22
Portugal E-22
Spain E-22
Uruguay E-22
subject to PEQ E-22
West Indian walnut (*Juglans jamaicensis*)
subject to PEQ E-13
West Virginia
black stem rust eradication program E-6, E-14
PEQ liaison officers A-6
State plant regulatory officials (SPROs) C-8
white rot
disease of *Quercus* spp. (oak) 10-120
white star-apple (*Chrysophyllum albidum*)
subject to PEQ E-8
wild custard apple (*Annona senegalensis*)
subject to PEQ E-5
wild jujube (*Ziziphus lotus*)
subject to PEQ E-23
wild olive (*Olea europaea subsp. cuspidata*)
subject to PEQ E-17
wild sapodilla (*Manilkara jaimiquie subsp. emarginata*)
subject to PEQ E-15
wild star-apple (*Chrysophyllum oliviforme*)
subject to PEQ E-8
willow (see *Salix* spp.) 9-10, 10-131, E-21, H-17
Wisconsin
black stem rust eradication program E-6, E-14
PEQ liaison officers A-7
State plant regulatory officials (SPROs) C-8
witches' broom
disease of
*Carya* spp. 9-3
*Dimocarpus* spp. 10-50
*Litchi* spp. 10-50
Wyoming
black stem rust eradication program E-6, E-14
PEQ liaison officers A-7
State plant regulatory officials (SPROs) C-8

**X**

*X Mahoberberis* spp.
diseases of
black stem rust 10-17
*Xanthomonas acernea*
disease of *Acer* spp. (maple) H-2

*Xanthomonas populi*
disease of *Populus* spp. (Aspen, cottonwood, poplar) H-13
xylem
definition of Glossary-3

**Y**

yellow mombin (*Spondias mombin*)
subject to PEQ E-21
yellow ring mosaic disease
disease of *Jasminum* spp. (jasmine) 10-70
yellow strawberry guava (*Psidium cattleianum var. cattleianum*)
subject to PEQ E-19

**Z**

*Ziziphus jujuba* (jujube)
subject to PEQ E-23
*Ziziphus lotus* (wild jujube)
subject to PEQ E-23
*Ziziphus mauritiana* (jujube)
subject to PEQ E-23
zonate
definition of Glossary-3