7

Agricultural Clearance

Preparing Plant Pest Interceptions

Contents

Introduction

Plant pest interceptions from imported commodities provide documented evidence of the value of plant quarantine activities. Historical records of interceptions are the best evidence of how pests enter the United States. Interception records provide a basis for decision making in Plant Protection and Quarantine (PPQ). The interception records are used in conducting pest risk assessment and in determining the personnel and equipment needs at ports of entry. Pest interception information is available to field managers and identifiers through accessing the Agricultural Quarantine Activity System (AQAS) and the Pest ID database.

Classifying and Routing Interceptions for Identification

Routine Interceptions

Classify an interception as "Routine" when neither foreign cargo nor conveyances are being held and when a quick identification is **not** necessary. You may hold "Routine" interceptions until you have a grouping—a schedule worked out in your work unit (for example, once a week when you have accumulated 10 interceptions). Work units are to send "Routine" interceptions to the appropriate PPQ Area Identifier by regular mail (see ***List of PPQ Identifiers and Co-Lateral National Specialists*** in ***Appendix G***). If necessary, the PPQ Area Identifier will then forward the interceptions to a PPQ National Specialist (see ***List of PPQ National Specialists for Routine and Prompt Interceptions*** in ***Appendix G***).

Prompt Interceptions

Classify an interception as "Prompt" when a quick identification is required and no foreign cargo or conveyances are being held. Send "Prompt" interceptions **immediately** by regular mail to the appropriate Area Identifier. No telephone identification results are required for Prompt interceptions. Select "Prompt Priority" when creating ***PPQ Form 309, Pest Interception Record*** on **page A-1-95**.

Work units are to send "Prompt" interceptions to the appropriate PPQ Area Identifier by regular mail (see ***List of PPQ Identifiers and Co-Lateral National Specialists*** in ***Appendix G***). If necessary, the PPQ Area Identifier will then forward the interceptions to a PPQ National Specialist (see ***List of PPQ National Specialists for Routine and Prompt Interceptions*** in ***Appendix G***).

URGENT Interceptions

Classify interceptions as URGENT when quarantine actions depend on host or pest identification or when immediate identification is required for a domestic collection. Your PPQ Area Identifier will determine whether you are to send the URGENT interception to him or her, or directly to the PPQ National Specialist. The decision to send the interception to the PPQ Area Identifier or PPQ National Specialist can be either on a case–by–case basis or by a prior agreement.

USDA-APHIS-PPQ Identifiers may upgrade or downgrade the classification applied by CBP Specialists for interceptions not subject to national or regional PPQ policies.

When mailing URGENT interceptions, take the following steps:

1. Package the interception as described in ***Sending Specimens for Identification*** on **page 7-1-10**.
2. Type URGENT on the mailing label and select "Urgent Priority" when creating ***PPQ Form 309, Pest Interception Record*** on **page A-1-95**.
3. Put a 2-inch band of yellow and black striped tape around both ends of the mailing container.
4. Mail by a designated **overnight** delivery service.

See **Table G-1-1** on **page-G-1-2** for the addresses of PPQ Area Identifiers and **Table G-1-4** on **page-G-1-15** and **Table G-1-5** on **page-G-1-17** for the addresses of PPQ National Specialists.

Preparing Specimens 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. **Never** attempt to rear plant pests without authorization from Registration, Identification, Permits, and Plant Safeguarding (RIPPS) in Riverdale, Maryland.

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

- USDA Miscellaneous Publication No. 1443, *Insects and Mites: Techniques for Collection and Preservation*, edited by G. C. Stayskel, W. L. Murphy, and E. M. Hoover, 1986
- *An Introduction to the Study of Insects*, Borror, Triplehorn, and Johnson, Sixth edition or any of the previous editions

Arthropods

Use **Table 7-1-1** to determine how to preserve your arthropod specimen.

TABLE 7-1-1: Determine How to Preserve Arthropod Specimens

If the taxon of the specimen is:	Then:
◆ Acarina ◆ Coleoptera ◆ Dermaptera ◆ Diptera ◆ Heteroptera ◆ Homoptera[1] ◆ Hymenoptera ◆ Isoptera ◆ Lepidoptera (immatures) ◆ Orthoptera (immatures) ◆ Thysanoptera (adults)[2]	PRESERVE specimens in alcohol (see ***Preserving Arthropod Specimens in Alcohol*** on **page 7-1-4**)
Homoptera on host material (scale insects and immature psyllids) Lepidoptera (adults) Orthoptera (adults)	PRESERVE specimens by dry mounting (see ***Preserving Arthropod Specimens by Dry Mounting*** on **page 7-1-5**)

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 Arthropod Specimens in Alcohol

If, after referring to **Table 7-1-1**, you have determined that alcohol is the proper method of preservation, then preserve the specimens using an appropriately sized shoulder-type vial or container with a screw-cap lid as follows:

1. For adult specimens, kill by placing them in 70 percent alcohol, as follows:
   - **A.** Select shoulder–type screw-cap vials over shell vials because they are stronger and provide better protection for the specimens.
   - **B.** Fill vials three–quarters full with alcohol and make sure the stoppers fit securely.
   - **C.** Bleed air pressure when necessary.
   - **D.** For delicate specimens, place wadded paper within the vials to minimize specimen movement.
2. For larvae specimens, kill larvae by doing the following:
   - **A.** Place the larvae in water.
   - **B.** Slowly bring the water to boiling point.
   - **C.** Allow the specimen to cool down.

D. Place the specimen in a vial with alcohol.

E. Select shoulder-type screw-cap vials over shell vials because they are stronger and provide better protection for the specimens.

F. Fill vials three–quarters full with alcohol and make sure the stoppers fit securely.

G. Bleed air pressure when necessary.

H. For delicate specimens, place wadded paper within the vials to minimize specimen movement.

Preserving Arthropod Specimens by Dry Mounting

Preserve arthropod specimens by dry-mounting using the following steps:

1. Make sure all specimens are dead. If the specimen is **not** dead, you may use one of the following killing agents:
   - ❖ Ethyl acetate
   - ❖ Trichloroethylene

Use killing agents with care and follow the label directions.

   Also, you may seek instructions from the Area Identifier for alternative killing measures.
2. Label all killing bottles containing the killing agents above with "**POISON**."
3. Pin dead adult specimens of Lepidoptera and Orthoptera before shipping, as follows:
   A. Spread and pin adult Lepidoptera and Orthoptera on styrofoam pinning blocks.
   B. Pin the styrofoam blocks to the bottom of the pinning box.
   C. Use small pinning boxes and place these, snugly padded, inside a shipping box.
   D. Seek instructions from your Area Identifier for additional information.
4. Partially dry host material with insects (for example, scale insects and whiteflies) before placing in the container.
5. Unless the host material is thoroughly dry, pack to permit drying after closure of container without damaging specimens (see***Host or Other Plant Material, Including Noxious Weeds*** on **page 7-1-6**). Cut as thin a slice as possible of the fruit or vegetable peel.

Honey Bees

If interception is made during an Africanized Honey Bee Survey, then see ***Special Instructions for Honey Bee Specimens*** on **page 7-1-12**.

For honey bee specimen identification, do the following:

1. Place at least 10 intact adult bees in 70 percent alcohol.
2. Place about 100 adult bees in 70 percent alcohol for mite examination.
3. Package a sample of honeycomb, if available, carefully so that it is **not** crushed.

Host or Other Plant Material, Including Noxious Weeds

For identification of host or other plant material (including noxious weeds) include as many plant parts as possible with your specimen (for example, fruit, flowers, leaves, buds, stems, roots, bark, wood, or spines). Prepare the specimen as follows:

1. Press and dry all specimens using standard herbarium techniques, if possible.
2. Send pressed and dried plants in newspaper sheets bound between corrugated cardboard.
3. Place dry seeds in vials or resealable plastic bags. **Never** place seeds in alcohol. If you use vials, tighten vial caps so they don't come off during shipment.

Preserving Soft Fruits for Identification

If sending soft fruits for identification, preserve at least one specimen dry and place one to two specimens in alcohol for 48 hours. Drain the alcohol from the jars and pack the fruit firmly in a jar to prevent shifting during mailing.

Complete and submit ***PPQ Form 309, Pest Interception Record*** on **page A-1-95**, for each pest intercepted or host that you want identified. Give each interception a unique number. Also, give an interception number to host material you're sending in for identification. If the host material is associated with a pest, assign numbers to the host and intercepted pest so that either may be cross–referenced.

When completing ***PPQ Form 309, Pest Interception Record*** on **page A-1-95**, fill in the country of origin as accurately as possible. Add **one** of the following in the remarks section of the 309 record:

- Noxious weed
- Host identification
- Plant identification
- Seed identification

In addition, list the following information in the remarks section of the 309 record when submitting host or other plant material, including noxious weeds:

- All common names
- Uses of plant or plant parts (for example, medicinal, tea, spice)
- Any information which could give clues for identification

If the interception is **not** an URGENT, hold it until the host is identified.

Mollusks

Routine Interceptions of Terrestrial Snails and Slugs Except for Giant African Snails (*Achatina* and *Archachatina* spp.), and Tropical Slugs (Veronicellidae)

Use the following procedures for routine interceptions of terrestrial snails and slugs, **except** giant African snails, aquatic snails, and tropical slugs:

1. Place the mollusk in a vial or specimen bottle of water.
2. Hold the vial or specimen bottle under water and seal, making sure that no air bubbles remain inside the container.
3. Put the container containing the specimen in a cool place until the mollusk has relaxed (has died and is fully extended). This relaxation will take between 12 and 24 hours.
4. Transfer the relaxed mollusk to 70% ethanol.
5. Submit the specimen for identification.

Routine Interceptions of Giant African Snails (*Achatina* and *Archachatina* spp.), Aquatic Snails, and Tropical Slugs (Veronicellidae)

Because of snail-borne parasitic diseases, wash your hands in hot soapy water or rinse them in a standard disinfectant after handling these mollusks.

Use the following procedures for routine interceptions of Giant African Snails (*Achatina*) and (*Archachantina spp*), Aquatic Snails, and Tropical Slugs (Veronicellidae):

1. Place the mollusk directly in a vial or specimen bottle with 70% ethanol.
2. Submit the specimen for identification as follows:

URGENT Interceptions of Terrestrial Snails Except for Giant African Snails (*Achatina* and *Archachatina* spp.), Aquatic Snails, and Slugs Except for Tropical Slugs (Veronicellidae)

A. When shipping Monday through Thursday:

i. Place the mollusk in a vial or specimen bottle of water.

ii. Hold the vial or specimen bottle under water and seal, making sure that no air bubbles remain inside the container.

iii. **Overnight** the urgent interception for identification (the snail will have drowned in transit, hence, there is no pest risk).

B. When shipping Friday through Sunday:

i. Place the mollusk directly in a vial or specimen bottle 70% ethanol. If there is time (12-24 hours), relax the specimen in water as described for routine interceptions. (Place the mollusk in a vial or specimen bottle and hold the vial or bottle under water and seal, making sure that no air bubbles remain inside the container. Put the vial or bottle containing the specimen in a cool place until the mollusk has relaxed—has died and is fully extended.)

ii. **Overnight** the urgent interception for identification.

URGENT Interceptions of Giant African Snails (*Achatina* and *Archachatina* spp.), Aquatic Snails, and Tropical Slugs (Veronicellidae)

Because of snail-borne parasitic diseases, wash your hands in hot soapy water or rinse them in a standard disinfectant after handling these mollusks.

Prepare the URGENT interception for shipment as follows:

3. Place the mollusk directly in a vial or specimen bottle 70% ethanol.
4. **Overnight** the URGENT interception for identification.

Nematodes

Prepare nematodes for specimen identification as follows:

1. Place material in a plastic bag to prevent the host material from drying if you are forwarding nematode-infested host material.
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 one of the fixatives in **Table 7-1-2**.

TABLE 7-1-2: Determine Fixative Formula for Nematodes

If using fixative:	Then mix together:
3 percent formaldehyde	◆ 1 part commercial Formalin ◆ 12 parts water
TAF	◆ 7 ml Formalin ◆ 2 ml Triethanolomine ◆ 91 ml water

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 worm-like nematodes directly into single-strength fixative without heating.

Plant Diseases

Selecting Material for Plant Disease Identification

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 Area Identifier. Symptoms may be modified or destroyed if the host material becomes dried, molded, shriveled, or decayed. When cutting the diseased portions of fruits and vegetables, include a generous margin of healthy tissue. Cut as thin a slice as possible of the fruit or vegetable peel. If the material is soft or pulpy, then 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.

Preparing and Preserving Plant Disease Material

Prepare specimens of plant disease material for identification as listed below.

1. Large Specimens

   Prepare large specimens of plant disease material for identification as follows:

A. Pack large specimens to prevent movement in the shipping container.

B. Place crumpled newspaper around the specimens to prevent movement.

2. Multiple Determinations

When more than one disease is evident, circle the diseased area with India ink or in a way to indicate the diseased area.

3. Soil

Most ports are equipped to sample soil interceptions for nematodes. When it is necessary to ship soil to another office, do as follows:

A. Place a representative sample of 500 g or less (approximately 1 pound) in a metal can or other suitable container.

B. **Do not** sift the sample.

C. Remove rocks, pebbles, and large pieces of debris by hand.

D. Seal the container lid with nylon reinforced (filament) tape to prevent leakage.

E. Wrap the entire container in heavy wrapping paper.

Sending Specimens for Identification

Records

Use ***PPQ Form 309, Pest Interception Record*** on **page A-1-95** for forwarding interceptions made in predeparture items and imported items. To complete the form, see ***Instructions*** on **page A-1-96**.

PPQ employees use ***PPQ Form 391, Specimens for Determination*** on **page A-1-97**, for domestic collections (warehouse inspections, local and individual collecting, special survey programs, export certification). To complete and distribute the form, see **Figure A-1-38** on **page A-1-99**. For more information on PPQ Form 391, contact a PPQ area identifier (see ***Appendix G***).

Packaging the Specimens

Packaging Specimens in Vials

Package specimens in vials as follows:

1. Write or type the interception number on a standard interception envelope.
2. Twist the vial cap until it is secure and place the vial in the envelope.
3. Complete the proper form and paper clip the unfolded form to the outside of each envelope.
4. Put the envelope and form in either a mailing tube or a box (2" x 4" x 8" cardboard box). **Do not** use padded envelopes because the contents are frequently crushed in transit.
5. Put packing material around the vial so that it will **not** break during shipping. If a live specimen is requested, use a container within a container.
6. Wrap the container securely using reinforced tape.

Packaging Moist Materials

Since moist materials tend to cause the standard interception envelope to stay open, you may use either a paper bag or newspaper instead of the standard envelope, as follows:

1. Write or type the interception number on a paper bag or, if using newspaper, on a separate sheet of paper and then tape to the newspaper.
2. Complete the proper form and paper clip the unfolded form to either the paper bag or the newspaper.
3. Place the paper bag or paper containing the specimen in a mailing tube or box.
4. Wrap the container securely using reinforced tape.

Special Instructions for Pest Interceptions on Irradiated Commodities

If you find pests or diseases inside an irradiated box or carton or associated with irradiated fruits or vegetables, forward a photocopy of both the PPQ Form 203 (Foreign Site Certificate of Inspection and/or Treatment) and the phytosanitary certificate with the ***PPQ Form 309, Pest Interception Record*** on **page A-1-95** to the identifier.

Special Instructions for Honey Bee Specimens

Bees taken in the Africanized Honey Bee (AHB) Domestic Survey should be tested using the Fast Africanized Bee Identification System (FABIS). Contact either your Area Identifier or National Identification Services (301-734-8758) for the nearest testing facility. If the FABIS test results indicate European bees, then no additional identification is needed.

If any of the following circumstances exist, then send the bees by **overnight** delivery to the Bee Research Laboratory (**Table G-1-4**):

- Swarms of bees are intercepted on carriers, cargo, or found moving in foreign commerce at U.S. Ports of Entry
- Swarms of bees are involved in severe stinging incidents
- Samples test as possible Africanized (average wing length is 9.0 mm or less) by the FABIS screening technique. Send slide–mounted wings and additional bees if possible

Send the following to the laboratory:

- 10 (minimum) intact adults bees
- 100 adult bees for mite examination
- Sample of honeycomb, if available (package to prevent crushing)
- Note regarding presence or absence of queen or drones in swarm (specimens are **not** necessary)

Contact Mona Chambers at the following address whenever you send bees as URGENT.

Carl Hayden Bee Research Center
200 East Allen Road
Tucson, AZ 85719
520-670-6380 Ext. 105