


The survey methodology presented in this Appendix lists the most up-to-date, CAPS-approved methods for survey and identification/diagnostics of CAPS target pests from the Priority Pest List, consisting of pests from the 1) commodity- and taxonomic-based surveys and 2) pests of economic and environmental importance (AHP Prioritized pests). The information in this table supersedes any survey and identification/ diagnostic information found in any other CAPS document (i.e., Commodity-based Survey References and Guidelines, EWB/BB National Survey Manual, etc.). All other CAPS documents eventually will be revised to include the information contained in this table; however, **this table will always be the authoritative source for the most up-to-date, CAPS-approved methods.**

Appendix M-1 has been developed in HTML format for ease of navigation and updating content. Click on this link to access Appendix M-1.  [2014 CAPS Approved Methods](#)

CPHST Pest Datasheets

These are datasheets (similar in format as to what is used in the commodity manuals) that are developed for any pest on the Pests of Economic and Environmental Importance pest list that do not fit into a commodity, taxon, or pathway-based survey manual. These datasheets are located on the individual CAPS-approved methods pages. Once you click on a specific pest's information page, if a datasheet exists, there will be a link at the top of the page from the "CPHST Pest Datasheet" link in the Resources section. In addition, sometimes these datasheets are developed for imminent pest threats or pests on the previous Additional Pests of Concern List that have been found in the United States. Examples include red palm weevil, South American palm weevil, and leek moth.

Visual Surveys Conducted in Nurseries

In recent years, at the end of the survey season, some states have asked for permission to enter negative data entry for visual surveys in nurseries for pests that did not have visual as an approved method. It was decided at the 2013 National CAPS Committee Meeting that surveys conducted in nurseries must follow the approved methods for target pests. Negative data will be allowed for a visual survey only if visual is an approved method for the target species. If nursery owners do not want traps hung in nurseries, surveyors can place traps near the nurseries or in right-of-ways.

Insects – Survey Considerations

For 2011 and beyond, negative data may be reported for these target pests **only** when surveyed for by the CAPS-approved survey method. For species with attractants and/ or lures available, the CAPS-approved trap type and lure **must** be used in order to report negative data.

If "visual" is listed as the only approved survey method for a target pest, then traps and lures have not yet been proven effective for attracting that target. Negative data may only be reported

for these species by conducting a visual survey and not from any trap/ lure combination. Please see detailed survey information by clicking on the target species datasheet on the main table.

Trap recommendations

The CAPS program managers, with support from CPHST, have made a concerted effort to review information from the literature and subject matter experts on what the most effective trap would be for an early detection survey for CAPS targets. In cases where there was more than one effective trap, the CAPS coordinators narrowed the options to one trap in order to establish homogeneity in the dataset. Decisions were made based on the scientific data available, cost, and ease of use (both for surveyors and identifiers.) If you have evidence to support the use of other traps, please submit relevant literature references or communications, and these traps will be taken into consideration. Please contact Lisa Jackson (lisa.d.jackson@aphis.usda.gov) for more information.

Ordering traps and lures

Unless otherwise noted, all traps and lures should be purchased through the IPHIS Survey Supply Ordering System. The trap and lure product names on the CAPS Approved Methods pages are synchronized with the product names in the IPHIS Survey Supply Ordering System.

IMPORTANT: Unless noted otherwise, when more than one lure is listed, all of the lures are required to report negative data for that species. For example, for *Tetropium castaneum*, three lures are listed:

- Spruce Blend Lure
- Geranyl Acetol Lure
- Ethanol Lure

All three lures are required for negative data reporting for this target.

In some cases, there are multiple lure options that may be used. These will be designated by the **Option** header (i.e., Option 1, Option 2, etc. will be listed). It is rare that there is more than one lure option.

Example for *Adoxophyes orana*:

- Paper Delta Trap, 2 sticky sides, Brown
- Paper Delta Trap, 2 sticky sides, Green
- Paper Delta Trap, 2 sticky sides, Orange

Any one of these traps would be equally acceptable for use. For this insect, there is a **Method Note** re-affirming this, “Trap color is up to the State and does not affect trap efficacy.”

IMPORTANT: Do not place lures for two or more target species in a trap unless otherwise recommended. Effects of lures on non-target species cannot be predicted based solely on pheromone chemistry, taxonomic relationship, etc. Because of this, lures should never be combined in individual traps unless PPQ has specific data indicating that the trap will remain a functional detection tool for both species.

Trap spacing

When trapping for more than one species of moth, separate traps for different moth species by at least 20 meters (65 feet). When trapping for wood borers or bark beetles, separate traps with different lure combinations by at least 30 meters (98 feet).

Insects – Identification Information

For the majority of insects, morphology is the basis for identification. In a few instances, molecular techniques are used for confirmation. Please refer to the individual datasheets for specific information.

The “Mistaken Identities” section lists families, genera, and species that may be confused with the target species. This information is not to be interpreted as an exhaustive list of all species that could be confused for the target.

Mollusks – Survey Considerations

All mollusk surveys will be by visual inspection. Use the cited references for additional information on identifying high risk sites, seasonality and time of day to survey, and signs of mollusk presence.

Appendix N, Data Entry Guide for Selected Taxonomic Groups, should be used to determine the appropriate requirements for reporting negative data.

Mollusks – Identification Information

See specific information on the pest datasheets.

Nematodes – Survey Considerations

Negative data may be reported for these target pests only when surveyed for by the CAPS-approved survey method. For most nematodes, surveys will be conducted via soil sampling. If plant hosts are present, sampling host roots or visual sampling can be useful in conjunction with soil sampling. When more than one survey method is listed, all methods can be used depending on the type of survey. The methods, however, are listed in order from most preferred to least preferred. Please see detailed survey information by clicking on the target species’ datasheet on the main table.

Appendix N, Data Entry Guide for Selected Taxonomic Groups, should be used to determine the appropriate requirements for reporting negative data.

Nematodes – Identification Information

The PPQ-recommended diagnostic method(s) for each nematode is provided. These methods correspond to those commonly used to confirm a nematode identity. Any molecular methods that have been validated by the CPHST lab in Beltsville, MD also are included under PPQ-recommended diagnostic method. Work instructions are available for each method validated by CPHST-Beltsville. If more than one diagnostic method is listed, a combination of methods may be required to confirm a nematode identity.

For the majority of nematodes, morphology is the basis for identification. In a few instances, biochemical or molecular techniques are used for confirmation. Please refer to the individual datasheets for specific information.

The "Mistaken Identities" section lists nematodes and conditions that may be confused with the target species. This information is not to be interpreted as an exhaustive list of all species that could be confused for the target.

Information is provided on diagnostic methods from the scientific literature. Although these methods have not been validated by PPQ, many labs and state institutions may find the information useful to confirm identification.

Pathogens – Survey Considerations

Negative data may be reported in for these target pests only when surveyed for by the CAPS-approved Survey Method. For most pathogens, surveys will be conducted visually by looking for characteristic symptoms (an indication of disease by reaction of the host, e.g. canker, leaf spot, wilt, etc.) and/or signs (indication of disease from direct observation of a pathogen or its parts). When more than one survey method is listed, all methods can be used depending on the type of survey. The methods, however, are listed in order from most preferred to least preferred. Please see detailed survey information by clicking on the target species' datasheet on the main table.

Pathogens – Diagnostic Information

The PPQ-recommended diagnostic method(s) for each pathogen is provided. These methods correspond to those commonly used to confirm a pathogen identity. Any molecular methods that have been validated by the CPHST lab in Beltsville, MD also are included under PPQ-recommended diagnostic method. Work instructions are available for each method validated by CPHST-Beltsville. If more than one diagnostic method is listed, a combination of methods may be required to confirm a pathogen identity.

For the majority of pathogens, morphology is the basis for identification. In a few instances, serology or molecular techniques are used for confirmation. Please refer to the individual datasheets for specific information.

The "Mistaken Identities" section lists pathogens and conditions that may be confused with the target species. This information is not to be interpreted as an exhaustive list of all species that could be confused for the target.

Information is provided on diagnostic methods from the scientific literature. Although these methods have not been validated by PPQ, many labs and state institutions may find the information useful to confirm identification.

Weeds – Survey Considerations

All weed surveys will be by visual inspection. Please see detailed survey information by clicking on the target species' datasheet on the main table.

Weeds – Identification Information

At this time, all weed identification will involve a morphological confirmation by a botanist. See specific information on the pest datasheets.

For further information on Nematodes, Pathogens, or Weeds, contact:
Melinda Sullivan, USDA-APHIS-PPQ-CPHST
970-490-4469
melinda.j.sullivan@aphis.usda.gov

For further information on Insects or Mollusks, contact:
Lisa Jackson, USDA-APHIS-PPQ-CPHST
919-855-7549
lisa.d.jackson@aphis.usda.gov