

Pest Detection/CAPS Survey Work Plan - Fiscal Year 2024

Cooperator:	The Connecticut Agricultural Experiment Station	
State:	Connecticut	
Project:	Tree Nursery Pest Survey	
Project Funding Source:	Pest Detection/CAPS Survey	
Total Agreement Amount:	\$63,613	
Start Date:	May 1, 2024	
End Date:	April 30, 2025	
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This Work Plan reflects a cooperative relationship between the Connecticut Agricultural Experiment Station (the Cooperator) and the United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Plant Protection and Quarantine (PPQ). It outlines the mission-related goals, objectives, and anticipated accomplishments as well as the approach for conducting a Tree Nursery Pest Survey and the related roles and responsibilities of the parties [e.g., APHIS role(s) and Cooperator role(s)] as negotiated.

I) OBJECTIVES AND NEED FOR ASSISTANCE

What relevant need or problem within the cooperator's mission area requires a solution in carrying out a public purpose of support or stimulation authorized by a law of the United States? How does the need or problem align with the mission area and strategic goals of APHIS?

The nursery and greenhouse industry in Connecticut is the largest agricultural production sector in the state, accounting for 42% of agricultural product sales (Economic Impact of Connecticut's Agricultural Industry, UConn, 2015). According to the CT Nursery and Landscape Association, the industry grosses more than \$800 million annually. A popular nursery stock is trees of the genus of *Prunus*, which includes cherries, peaches, plums, and nectarines. Many of these nurseries and greenhouses are adjacent to orchards and residential areas, which often have ornamental *Prunus* spp.-This creates a high potential for exotic fruit pest introduction into adjacent

neighborhoods having landscaped *Prunus* spp., and also the introduction of these pests into Connecticut nurseries and orchards. In 2019, Connecticut generated \$414 million in total retail sales (USDA National Agricultural Statistics Service).

Exotic moths, beetles, and pathogens threaten Connecticut's nursery industry and forested areas.

Helicoverpa armigera, the old world bollworm is an important polyphagous moth in Asia, Europe, and Africa. *H. armigera* feeds on a wide variety of plant families, including Asteraceae and Solanaceae. It poses a threat to the cut flower industry as well as field and horticultural crops. Larvae primarily bore into and feed upon the reproductive structures of hosts.

Cydalima perspectalis, the box tree moth is a significant pest in the nursery industry as it can cause complete defoliation of boxwood plants. Larvae feed on leaves and will consume bark during heavy infestations, which girdles the host leading to plant decline.

Rhagoletis cerasi, the European cherry fruit fly, is a serious fruit pest of cherry in Europe. Larvae feed on the pulp of ripening cherries, which can heavily reduce yields of marketable fruit. Exit holes in fruit are visible as mature larvae move from the fruit to the soil to pupate.

Platypus quercivorus, the oak ambrosia beetle, is native to regions of Asia where it causes considerable damage to oak. *P. quercivorus* adults carry a mycangial fungus; therefore as adult females excavate egg laying galleries in the inner bark and vascular system, the galleries are inoculated with the fungus, which disrupts the circulation of water and nutrients.

Ceroplastes japonicus, Japanese wax scale, is a scale insect pest of concern primarily for *Prunus* spp. This pest originated in eastern Asia, and is now distributed throughout France, Japan, and Italy. All life stages of *C. japonicus* feed upon the leaves, stems and fruits of hosts. Honeydew is secreted during feeding which promotes the growth of sooty mold, reducing the quality and marketability.

Anoplophora glabripennis, the Asian longhorned beetle, is a threat to valuable hardwood trees, including red maple, sugar maple, willow, birch and elm. Larvae bore through and feed upon the vascular system, physically weakening and disrupting water and nutrient flow.

Anoplophora chinensis, the citrus longhorned beetle, is a threat to commercially valuable trees; including *Citrus* spp., poplar, willow, and *Prunus* spp. Larval feeding upon the vascular system weakens the structural integrity and leaves the tree vulnerable to disease.

Candidatus phytoplasma ziziphi 16SrV-B, Jujube witches' broom, is a destructive pathogen distributed throughout China, Korea, India, and Japan. Primary hosts include apple and peach. Infected trees suffer a reduction in quantity of quality of fruit.

Candidatus phytoplasma mali 16SrX-A, apple proliferation, is an insect-borne disease originating in Europe. This disease primarily infects apple causing a reduction in overall tree growth and vigor.

Candidatus phytoplasma prunorum 16SrX-F, European stone fruit yellows, is distributed throughout Africa, Asia, and Europe. Primary hosts include peach and Japanese plum. This disease has the potential to cause serious decline in fruit orchards.

The purpose of these surveys is to determine if any of these invasive pests have been introduced to the state of Connecticut and whether Connecticut is free of these exotic pests. Demonstrating area freedom is an important phytosanitary measure that will allow the United States to continue to export at-risk stock from regions of the country that are determined to be free from these pests.

II) RESULTS OR BENEFITS EXPECTED

The Cooperator seeks to conduct a program which is expected to result in:

- A. Determining whether *Helicoverpa armigera*, *Cydalima perspectalis*, *Rhagoletis cerasi*, *Platypus quercivorus*, *Ceroplastes japonicus*, *Anoplophora glabripennis*, *Anoplophora chinensis*, *Candidatus phytoplasma ziziphi 16SrV-B*, *Candidatus phytoplasma mali 16SrX-A*, and *Candidatus phytoplasma prunorum 16SrX-F* are present in Connecticut nurseries.
- B. Increase outreach and awareness to Connecticut stakeholders and industries about the pests of concern.
- C. Knowledge regarding the presence or absence of these pests will assist in decision making regarding management of these pests.

III) APPROACH

What is the plan of action or approach to the work?

Scientific Name	Common Name	Survey Method	Trap	Lure
<i>Helicoverpa armigera</i>	Old World Bollworm	Trap	Plastic Bucket Trap	<i>Helicoverpa armigera</i> Lure
<i>Cydalima perspectalis</i>	Box Tree Moth	Trap	Plastic Bucket Trap	<i>Cydalima perspectalis</i> Lure
<i>Rhagoletis cerasi</i>	European Cherry Fruit Fly	Trap	Sticky Card, Yellow, Baited Trap	Ammonium acetate Lure, Bait Enhancer
<i>Platypus quercivorus</i>	Oak Ambrosia Beetle	Trap	Multi-funnel trap, 8 funnel, wet	<i>Platypus quercivorus</i> Lure
<i>Ceroplastes japonicus</i>	Japanese Wax Scale	Visual	N/A	N/A
<i>Anoplophora glabripennis</i>	Asian Longhorned Beetle	Visual	N/A	N/A

<i>Anoplophora chinensis</i>	Citrus Longhorned Beetle	Visual	N/A	N/A
<i>Candidatus phytoplasma ziziphi 16SrV-B</i>	Jujube witches` Broom	Visual	N/A	N/A
<i>Candidatus phytoplasma mali 16SrX-A</i>	Apple proliferation	Visual	N/A	N/A
<i>Candidatus phytoplasma prunorum 16SrX-F</i>	European Stone Fruit Yellows	Visual	N/A	N/A

We will place traps baited with appropriate lures for *Helicoverpa armigera*, Old World Bollworm, *Cydalima perspectalis*, Box Tree Moth, *Rhagoletis cerasi*, European Cherry Fruit Fly, and *Platypus quercivorus*, Oak Ambrosia Beetle at thirty-five high-risk sites in Connecticut. High-risk sites include nurseries (wholesale, retail, and growing yards) that sell, grow, cut, or contain maple, oak, and *Prunus* spp. including cherries, peaches, plums, and nectarines. Traps will be installed starting in June and serviced biweekly according to the CAPS Approved methods and National Survey Guidelines. The survey will continue into September.

We will visually inspect for *Ceroplastes japonicus*, Japanese Wax Scale, *Anoplophora glabripennis*, Asian Longhorned Beetle, *Anoplophora chinensis*, Citrus Longhorned Beetle, *Candidatus phytoplasma ziziphi 16SrV-B*, Jujube witches` broom, *Candidatus phytoplasma mali 16SrX-A*, Apple Proliferation, and *Candidatus phytoplasma prunorum 16SrX-F*, European Stone Fruit Yellows at the same thirty-five sites in September. Each of these visual surveys will be conducted once during the survey season.

The CAPS State Survey Coordinator (SSC) and assistant will conduct surveys, sort moth, fruit fly, beetle trap samples, and send the samples containing suspect moths (420 potential samples) and fruit flies (210 potential samples) to the Oregon Department of Agriculture Insect Pest Prevention and Management (IPPM) Lab for identification and screening. Samples containing suspect beetles will be sent to Carnegie Museum of Natural History in Pittsburgh, PA for identification and screening (210 potential samples).

The CAPS State Survey Coordinator (SSC) and assistant will conduct visual surveys and send suspect samples to the Pennsylvania of Agriculture Insect Pest Prevention and Management (IPPM) Lab for identification and screening (six visits, 420 potential samples).

A. The Cooperator Will:

1. By function, what work is to be accomplished?

Cooperator will conduct moth, fruit fly, and beetle trapping surveys from June to September. Cooperator will conduct visual surveys from August-September. The cooperator will also conduct outreach to the nursery growers and other stakeholders at their annual meetings and as survey sites are arranged with them. Nursery employees will be educated about pest management so as to minimize any possible negative impact on their business.

2. What is the quantitative projection of accomplishments to be achieved?

a. By activity or function, what are the anticipated accomplishments by month, quarter, or other specified intervals?

- Data management and reporting will occur throughout the survey season into an approved APHIS database from June to December, after taxonomic evaluations.

- Pest risk and pathway analysis will be used to select survey sites in nurseries and other high-risk areas containing prominent target pest hosts during January through May.
- Surveys will be undertaken when pest symptoms are expressed and/or adult stages are flying: Old World Bollworm, Box Tree Moth, European Cherry Fruit Fly, Oak Ambrosia Beetle. Multi-funnel traps, plastic bucket traps, and yellow baited sticky cards will be checked every two weeks as per survey guidelines.
- Samples will be sent to appropriate identifiers throughout the survey period from June to September and completed as needed in the fall.
- Cooperator outreach and risk communication will occur throughout the season at survey locations and at grower meetings.
- Work plans, survey results, and pest information will be submitted to the CAES webmaster on an ongoing basis throughout the year. A semi-annual report will be submitted in December 2024, and an annual report will be submitted in August 2025.

b. *What criteria will be used to evaluate the project? What are the anticipated results and successes?*

- Pest detection surveys and outreach are completed in the manner and time frame outlined in Section III.A.1 above.
- All data collected from the pest detection surveys will be entered into APHIS PPQ approved database (NAPIS) as outlined in Section V below.
- PPQ site visits conducted at least once a year of planned survey activities.

3. What numbers and types of personnel will be needed and what will they be doing?

- One seasonal worker will be trained to run trap and visual surveys, in sorting and sending samples for identification, and to recognize symptoms of infestation of exotic moths, fruit flies, beetles, scales, and phytoplasmas. The worker will be supervised by the State Survey Coordinator (SSC) and will assist with trap installment, insect collection, and visual inspections. The seasonal worker will be hired for the summer of 2024. All positions will be paid positions.
- Dana Crandall, the SSC, will coordinate the surveys, ensuring all necessary supplies are obtained and the objectives are met. She will also assist in survey, sorting, and outreach activities.

4. What equipment will be needed to perform the work?

a. *What equipment will be provided by the cooperator?*

Cooperator will provide large format printers and state vehicle.

b. *What equipment will be requested from APHIS on loan?*

None.

c. *What equipment will be purchased in whole or in part with APHIS funds?*

None.

d. *How will the equipment be used?*

Large format printers will be used for producing outreach materials; state vehicle will be used to conduct survey and for travel to meeting and outreach events.

e. *What is the proposed method of disposition of the equipment upon termination of the agreement/project?*

N/A

5. Identify information technology equipment, e.g., computers, and their ancillary components.

IT equipment currently used by SSC:

- Tablet – purchased with APHIS funds from previous agreement.
- LCD Projector – purchased with APHIS funds from previous agreement.
- GPS Unit – purchased with APHIS funds from previous agreement.

IT equipment currently used by all personnel:

- Access to CAES computers, access to Internet through CAES and CAES computer network.

6. What supplies will be needed to perform the work?

a. *What supplies will be provided by the Cooperator?*

Office supplies and ethanol.

b. *What supplies will be requested from APHIS (list supplies)?*

Traps and lures for moth, fruit fly, and beetle traps prior to start of survey as requested by the SSC through the PPQ Survey and Supply database (IPHIS).

c. *What supplies will be purchased in whole or in part with APHIS funds?*

For outreach: printing supplies/postage for printing and distributing grower information packet. For survey supplies: zip ties, antifreeze, paint filters, wire cutters, rope, throw bags, easy-squeeze wash bottles, shipping materials and boxes, and plastic bags for trap and sample collections.

d. *How will the supplies be used?*

Supplies will be used to conduct surveys and outreach, conduct initial sorting, and shipping of specimens to identifiers for screening and identification.

e. *What is the proposed method of disposition of the supplies with a cumulative value over \$5,000 upon termination of the agreement/project?*

N/A

7. What procurements will be made in support of the funded project and what is the method of procurement (e.g., lease, purchase)?

Materials are purchased through the approved system of state contract vendors. Purchases are made with a credit card billed directly to the appropriate account at CAES.

1. What are the travel needs for the project?

a. *Is there any local travel to daily work sites?*

Local travel to survey sites for trap site establishment. Trapping will occur biweekly from June through September. Cooperator will provide vehicle for local travel as state allows.

b. *What extended or overnight travel will be performed (number of trips, their purpose, and approximate dates)?*

No extended or overnight travel is anticipated for this project. Dr. Jason White and Mr. Michael Last approve all travel.

8. Reports:

All Reports will be completed in ezFedGrants. Reports include:

- a.** Narrative accomplishment reports in the frequency and time frame specified on the Agreement Award Face Sheet.
- b.** Federal Financial Reports, SF-425, in the frequency and time frame specified on the Agreement Award Face Sheet.

9. Are there any other contributing parties who will be working on the project?

a. If so, list other participating institutions/agencies who will work on the project.

N/A

b. Describe the nature of their effort.

N/A

B. APHIS Will:

1. Outline the Agency's (USDA APHIS PPQ) substantial involvement.

a. Include any significant Agency collaboration and participation

- Providing any new information that becomes available on survey pests, provide appropriate forms and review data.
- Providing the following resources: funds to the Cooperator to cover costs outlined in the financial plan. In addition, specific appropriated funding, in the level authorized by APHIS Field Operations, will be dedicated to the delivery of CAPS objectives listed above.
- Making arrangements for confirming identification of suspect moth and beetle samples.

b. Project oversight and performance management

- The State Plant Health Director, USDA APHIS, will provide information support, review performance, and federal guidance.
- The Pest Survey Specialist, USDA APHIS, will assist in developing CAPS pest survey protocols, pest risk analysis, IPHIS training, work plan and budget development, and other related activities.

c. Provide the equipment requested by the cooperator in 4.b. & c.

d. Provide the supplies requested by the cooperator in 6.b. & c.

IV) GEOGRAPHIC LOCATION OF PROJECT

A. Is the project statewide or in specific counties?

Statewide; all eight Connecticut counties where high risk sites are identified: Fairfield, New Haven, Middlesex, Litchfield, Hartford, Tolland, Windham, and New London.

V) DATA COLLECTION AND MAINTENANCE

Each State is responsible for entering complete, accurate, and timely pest survey data that was obtained using the [Approved Methods for National Priority Pests](#) for that fiscal year. The [National Agricultural Pest Information System](#) (NAPIS) is the final repository for all Pest Detection and Cooperative Agricultural Pest Survey (CAPS) survey results. As such, all data generated from all Pest Detection/CAPS surveys will be entered into NAPIS at <https://napis.ceris.purdue.edu>. In addition:

- First record for the State and/or County will be entered within **48 hours** of confirmation of identification by a qualified identifier.
- All other required records, both positive and negative survey data, must be entered **within two weeks** of confirmation.
- All records are to be entered into the NAPIS database no later than the date that the final Accomplishment Report is due, otherwise a justification must be provided in the Accomplishment Report. If results have not been returned from an identifier or diagnostic lab by the time the Accomplishment Report is due, please notify the ADODR and the National Operations Manager for Pest Detection.

All survey data performed by federal personnel in conjunction with this agreement should be properly arranged and formatted for NAPIS data entry and provided to the State Survey Coordinator for entry into NAPIS.

VI) TAXONOMIC SUPPORT Responsibilities

VI - Person(s) or Institution that will perform preliminary identification of samples as defined above.

Preliminary Identification (raw samples)

Scientific Name	Common Name	Diagnostician Name	Title	Affiliation
<i>Platypus quercivorus</i>	Oak Ambrosia Beetle	Robert Androw	Scientific Preparator	Carnegie Museum of Natural History

Diagnostic Details – Type	Diagnostic Details – Notes	Diagnostic Details – Expected # of Samples	Contact Name	Contact Email

Raw samples	Samples will be collected raw by the CAES and sent to Carnegie Museum of Natural History for screening.	210	Austin Vitelli	austin.vitelli@ct.gov
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Preliminary Identification (screened samples)

Scientific Name	Common Name	Contact Name	Title	Affiliation
<i>Helicoverpa armigera</i>	Old World Bollworm	Richard Worth	Entomologist	Oregon Department of Agriculture
<i>Cydalima perspectalis</i>	Box Tree Moth	Austin Vitelli	State Survey Coordinator	The Connecticut Agricultural Experiment Station
<i>Rhagoletis cerasi</i>	European Cherry Fruit Fly	Richard Worth	Entomologist	Oregon Department of Agriculture

Diagnostic Details – Type	Diagnostic Details – Notes	Diagnostic Details – Expected # of Samples	Contact Name	Contact Email
Screened samples	Will screen out by-catch and only send suspect specimen	630	Austin Vitelli	austin.vitelli@ct.gov

VII) SURVEY SUMMARY FORM

A Survey Summary Form must be completed to summarize all CAPS surveys. If surveys are combined into one work plan, each individual survey still needs to be entered separately into the Survey Summary Form.

VIII) SIGNATURES

ROAR

Date

ADODR

Date

FY2024 Financial Plan

COOPERATOR NAME

The Connecticut Agricultural Experiment Station

TIME PERIOD

May 01, 2024 to April 30, 2025

Item	APHIS	Cooperator	Total
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<i>Personnel</i>			
State Survey Coordinator: 765 hrs @ \$28.45/hr	\$21,764	\$0.00	\$21,764
Seasonal Worker: 400 hrs @ \$16.00/hr	\$6,400	\$0.00	\$6,400
Subtotal	\$28,164	\$0.00	\$28,164
<i>Fringe Benefits</i>			
89.22% of salary of permanent employees	\$19,418	\$0.00	\$19,418
67.22% of salary of durational employees	\$4,302	\$0.00	\$4,302
Subtotal	\$23,720	\$0.00	\$23,720
<i>Travel</i>			
State vehicle @ \$400/month for 3.5 months	\$1,400	\$0.00	\$1,400
Subtotal	\$1,400	\$0.00	\$1,400
<i>Equipment</i>			
Subtotal	\$0.00	\$0.00	\$0.00
<i>Supplies</i>			
Outreach and survey supplies	\$153	\$0.00	\$153
Subtotal	\$153	\$0.00	\$153
<i>Contractual</i>			
Subtotal	\$0.00	\$0.00	\$0.00
<i>Other</i>			
Subtotal	\$0.00	\$0.00	\$0.00
Total Direct Costs	\$53,437	\$0.00	\$53,437
Indirect Costs: 36.130% of Personnel	\$10,176	\$0.00	\$10,176
Total	\$63,613.00	\$0.00	\$63,613.00
Cost Share Information	100.00%	0.00%	100.00%

