Cooperator:	**The Connecticut Agricultural Experiment Station**			
State:	Connecticut			
Project:	Combined Surveys			
Project funding source:	Pest Detection / CAPS Survey			
Project Coordinator:	Gerda Magana			
Agreement Number				
Contact Information:	**Address:**	123 Huntington Street New Haven, CT 06504		
	Phone:	**(203) 974-8483**	**Fax:**	**(203) 974-8502**
	Email Address:	**Gerda.Magana@ct.gov**		

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 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. Many of these nurseries and greenhouses are adjacent to forested areas which in turn create a high potential for exotic pest introduction to near-by hardwood trees. According to Economic Impact of Connecticut's Agricultural Industry (UConn), 54% of total land cover in Connecticut is forest (2015). Sales of forest products accounted for approximately $132 million in 2015. Moreover, Connecticut public forests, preserves, land trusts, and wilderness areas provide many social benefits to residents such as hiking, camping, and biking.

Exotic moths, beetles, and planthoppers threaten Connecticut's nursery industry and forested areas. The oak processionary moth, *Thaumetopoea processionea*, is a major defoliator of oaks and is native to central and southern Europe, though populations are beginning to expand northwards in response to climate shift. This moth also poses a public health risk, as later instar caterpillars have stinging hairs that cause irritation to the skin and can cause respiratory distress if inhaled.

The oak ambrosia beetle, *Platypus quercivorus,* is a pest of oak trees with native populations in Asia. The oak ambrosia beetle is a vector for Japanese oak wilt, *Raffaelea quercivora,* which is

introduced into the tree when these beetles bore into the wood. Often oak trees suspected to be infested with the oak ambrosia beetle have wilted canopies and leaf discoloration.

Anaplophora glabripennis, the Asian longhorned beetle, is an insect pest of hardwood trees. Larvae of this insect primarily feed on birch, maple, elm, and willow trees. This beetle is a native of China and it poses a serious threat to forests and maple syrup production.

Lycorma delicatula, the spotted lanternfly (SLF) was first found in North America in Pennsylvania in late 2014. It has since spread to multiple states and interceptions of single adults have occurred throughout the northeast, including in Connecticut in October 2018. Its primary reproductive host tree-of-heaven is highly advantageous and is abundant along highways, in urban areas, and along the edges of agricultural and industrial areas where the spotted lanternfly could easily become established. Due to a large host range, *L. delicatula* has the potential to have a major impact on many of Connecticut's agricultural industries, as well as become a nuisance pest in landscapes.

Trichoferus campestris, the velvet longhorned beetle (VLB), attacks a wide range of woody plant hosts, including apple, mulberry, birch, willow, and at least 40 other genera. Larval velvet longhorn stages bore underneath the bark, crating large galleries and causing bark destruction and the yellowing of leaves. As this beetle can develop in dry wood, the primary pathway for introduction is in imported wood packaging and dunnage.

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 *Thaumetopoea processionea, Trichoferus campestris, Platypus quercivorus, Anaplophora glabripennis, and Lycorma delicatula* are present in Connecticut nurseries and forests.
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
Nursery Pest Survey				
Anoplophora glabripennis	Asian longhorned beetle	Visual	Visual	N/A
Lycorma delicatula	Spotted lanternfly	Visual	Visual	N/A
Platypus quercivorus	Oak ambrosia beetle	Trap	Multi-funnel Trap, 8 Funnel, Wet	*Platypus quercivorus* Lure
Thaumetopoea processionea	Oak processionary moth	Trap	Wing Trap Kit, Paper	*Thaumetopoea processionea* Lure

Trichoferus campestris	Velvet longhorned beetle	Trap	Cross Vane Panel Trap, Black	*Trichoferus campestris* Lure

Forest Pest Survey

We will place traps baited with appropriate lures for Platypus quercivorus, Oak Ambrosia Beetle, Thaumetopoea processionea, Oak Processionary Moth, and Trichoferus campestris at twenty-five high-risk sites in Connecticut. High-risk sites include nurseries (wholesale, retail, and growing yards) that sell, grow, cut or contain pest host hardwood trees, especially oak and maple. Other high risk sites will include forested areas near highrisk conveyance pathways. Traps will be installed from June-August and serviced biweekly according to the CAPS Approved methods and National Survey Guidelines.

We will visually survey for Asian longhorned beetle (*Anoplophora glabripennis*) at the same twenty-five high-risk sites from September-October. Host species (including Birch, Maple, Elm, and Willow) will be inspected for potential Asian longhorned beetle infestation.

Spotted lanternfly, Lycorma delicatula visual surveys will follow general detection survey protocol as outlined in the 2020 PPQ Spotted Lanternfly Program Operations Manual. One hundred and fifty locations of one of more Ailanthus altissma surrounding high risk introduction and establishment location will be surveyed during September-October.

The CAPS State Survey Coordinator (SSC) and assistants will conduct surveys, sort moth trap samples and send the samples containing suspect moths to the Oregon Department of Agriculture Insect Pest Prevention and Management (IPPM) Lab for identification and screening. (Six visits, 150 potential samples) Additionally, all raw samples from beetle traps will be collected and sent to the Carnegie Museum of Natural History for sorting, screening, and identification. (Six visits, two traps, 300 potential samples) .

A. **The Cooperator Will:**

1. **By function, what work is to be accomplished?**
   a. Forest Pest Survey:
      - Cooperator will conduct trapping surveys from June to August.
      - Cooperator will conduct visual surveys for Asian longhorned beetle (*Anoplophora glabripennis*) and spotted lanternfly (*Lycorma delicatula*) in each twenty-five high-risk sites from September to October.

   b. 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.

3. **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: oak ambrosia beetle, oak processionary moth, and velvet longhorned beetle - June to August; Asian longhorned beetle and spotted lanternfly – September to October. Lindgren funnel traps, wing traps, and cross-vane panel traps will be checked every two weeks as per survey guidelines.
- Samples will be sent to appropriate identifiers throughout the survey period from June to October 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 July, and an annual report will be submitted in January.

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, beetles, and plant hoppers. 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 2021. All position will be paid positions.
   - Gerda Magana, 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:

- Laptop – 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.

b. *What supplies will be requested from APHIS (list supplies)?*
Traps and lures for moth and beetle surveys prior to start of survey as requested by the SSC through the PPQ Survey and Supply database.

c. *What supplies will be purchased in whole or in part with APHIS funds?*
For site selection and outreach: printing supplies/postage for printing and distributing grower information packet, Survey supplies: ropes, bags, anti-freeze, safety materials, ethanol, tablet and case, identification books, vials, shipping materials and boxes.

d. *How will the supplies be used?*
Supplies will be used to conduct surveys, conduct initial sorting, and shipping 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.

8. What are the travel needs for the project?

a. *Is there any local travel to daily work sites?*
Local travel to survey sites for moth and beetle site establishment and 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.

9. **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.

10. **Are there any <u>other</u> 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.
    - Producing maps of the survey activities with the location data (latitude and longitude) provided by the Cooperator.

    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?*
All eight Connecticut counties where high risk sites are identified: Fairfield, New Haven, Middlesex, New London, Litchfield, Hartford, Tolland, and Windham.

B. *What type of terrain will be involved in the project?*
Wholesale and retail nursery land, including growing yards, and sawmills with woodland border

C. *Are there any unusual geographic features which may have an impact on the project?*
None.

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 Pest Surveillance. 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

Choose A or B.

- *If you do not need taxonomic assistance for preliminary identification, list the person(s) or institution who will perform the identification/diagnostics, and do not check B.*
- *If you need assistance, check B. Do not list requests for confirmatory identification here.*

A. Person(s) or Institution that will screen/identify targets (Name & Contact Information) and level of screening/identification.

Oak ambrosia beetle and velvet longhorned beetle: Bob Androw, Carnegie Museum of Natural History, To Target
440 Forbes Avenue
Pittsburgh, PA 15213

Oak processionary moth: Richard Worth, Oregon Department of Agriculture, To Target
635 Capitol St. NE

Salem, OR 97301
(503) 986-6461

Asian longhorned beetle and spotted lanternfly: Gerda Magana, The Connecticut Agricultural Experiment Station, To Target
123 Huntington Street
New Haven, CT 06511
(202) 974-8483

OR

B. ☐ Request for taxonomic support.

VII) SURVEY SUMMARY FORM

A Survey Summary Form must be completed to summarize all Pest Detection/CAPS surveys **funded by the Pest Detection line item.** If surveys are combined into one work plan, each individual survey still needs to be entered separately into the Survey Summary Form.

VIII) SIGNATURES

Victoria Lynn Smith 10 Sept 2020

ROAR **Date** **ADODR** **Date**

COOPERATOR NAME: The Connecticut Agricultural Experiment Station

TIME PERIOD (Cooperative Agreement Year): January 1, 2021 – December 31, 2021

ITEM	APHIS FUNDS		COOPERATOR FUNDS (Show even if zero)
PERSONNEL:			
State Survey Coordinator: 489 hrs. @ $25.52	$ 12,479		$ 0
Seasonal Assistant: 1200 hrs. @ $12	$ 14,400		$ 0
Subtotal	**$ 26,879**		**$ 0**
FRINGE BENEFITS:			
85% of salary of permanent employee	$ 10,607		$ 0
48% of salary of seasonal employees	$ 6,912		$ 0
Subtotal	**$ 17,519**		**$ 0**
TRAVEL:			
One state car rental for six months @ $ 400 per month	$2,400		$ 0
Subtotal	**$ 2,400**		**$ 0**
EQUIPMENT			
Subtotal	**$ 0**		**$ 0**
SUPPLIES			
Office and survey supplies	$ 3,619		$ 0
Tablet & Otter Box	$ 1,100		
Subtotal	**$ 4,719**		**$ 0**
CONTRACTUAL			
Subtotal	**$ 0**		**$ 0**
OTHER			
Subtotal	**$ 0**		**$ 0**
TOTAL DIRECT COSTS	$ 51,517		$ 0
INDIRECT COSTS (45% of Direct Costs)	$ 12,096		
TOTAL	$ 63,613		$ 0
Cost Share Information	100%		0%