Example: Pest Detection / CAPS Survey Work Plan - Fiscal Year 20XX

Cooperator:	Delmarva Department of Agriculture			
State:	Delmarva			
Project:	Combined Survey			
Project funding source:	Pest Detection/CAPS Survey			
Project Coordinator:				
Agreement Number				
Contact Information:	**Address:**			
	Phone:		**Fax:**	
	Email Address:			

This Work Plan reflects a cooperative relationship between the Delmarva Department of Agriculture, Plant Health Division (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 Soybean Commodity Survey, a Corn Commodity Survey, a Nursery and Retail Plants Survey, and an Exotic Wood borers/Bark Beetles Survey. This plan also includes the related roles and responsibilities of the parties [e.g., mutual roles, 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?

Delmarva harvested about 5.5 million acres of soybean worth about $3.2 billion and about 5.9 million acres of corn worth about $3.9 billion in 2018 (National Ag Statistics Service NASS). In 2018 the nursery, greenhouse, floriculture, and sod industries added $111 million value to the local and state economies (NASS). The overall economic impact of Delmarva's hardwood industry (crop value, milling, manufacturing, and transportation) was $17 billion in 2014 (DDA).

The primary objective of these surveys is early detection of exotic invasive organisms that could threaten the agricultural and natural resources (listed above) in Delmarva and the in United States. This general objective includes program development, coordination, execution, and archiving results of surveys intended to detect and/or monitor exotic pests that are of national and state concern and to facilitate export of American products.

II) RESULTS OR BENEFITS EXPECTED

The Cooperator seeks to conduct a program which is expected to result in timely identification of high-risk, exotic invasive organisms that could threaten the agricultural and natural resources (listed above) of Delmarva and the United States. Additionally, the intent of this program includes the facilitation of the exportation of Delmarva and national agricultural products by providing reasonable assurance of pest absence.

III) APPROACH

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

Scientific Name	Common Name	Survey Method	Trap	Lure
Soybean Commodity Survey				
Autographa gamma	Silver Y moth	Trap	Plastic bucket	*A. gamma*
Helicoverpa armigera	Old World bollworm	Trap	Plastic bucket	*H. armigera*
Spodoptera littoralis	Egyptian cottonworm	Trap	Plastic bucket	*S. littoralis*
Chrysodeixis chalcites	Golden twin-spot moth	Trap	Plastic bucket	*C. chalcites*
Megacopta cribraria	Bean plataspid	Sample	Sweep net	
Alectra vogelii	Yellow witchweed	Visual		
Corn Commodity Survey				
Autographa gamma	Silver Y moth	Trap	Plastic bucket	*A. gamma*
Helicoverpa armigera	Old World bollworm	Trap	Plastic bucket	*H. armigera*
Spodoptera littoralis	Egyptian cottonworm	Trap	Plastic bucket	*S. littoralis*
Spodoptera litura	Cotton cutworm	Trap	Plastic bucket	*S. litura*
Striga asiatica	Asiatic witchweed	Visual		
Sclerophthora rayssiae var. *zeae*	Brown stripe downy mildew	Sample		
Peronosclerospora philippinensis	Philippine downy mildew	Sample		
Peronosclerospora maydis	Java downey mildew	Sample		
Exotic Wood Borer / Bark Beetle Survey				
Trypodendron domesticum	Eur. hardwood ambrosia beetle	Trap	Multi-funnel	Lineatin
Ips sexdentatus	Sixtoothed bark beetle	Trap	Multi-funnel	*Ips* sp.
Ips typographus	European spruce bark beetle	Trap	Multi-funnel	*Ips* sp.
Monochamus alternatus	Japanese pine sawyer	Trap	Multi-funnel	3 component*
Monochamus urussovii	Black fir sawyer	Trap	Multi-funnel	3 component*
Orthotomicus erosus	Mediterranean pine engraver	Trap	Multi-funnel	*Ips* sp.
Platypus quercivrous	Oak ambrosia beetle	Trap	Multi-funnel	Quercivorol
Pityogenes chalcographus	Sixtoothed spruce bark beetle	Trap	Multi-funnel	Chalcogran
Agrilus biguttatus	Oak splendor beetle	Trap	Purple prism	No lure
Agrilus auroguttatus	Gold spotted oak borer	Trap	Purple prism	No lure
Nursery & Retail Plants Survey				
Helicoverpa armigera	Old World bollworm	Trap	Plastic bucket	*H. armigera*
Cylindrocladium pseudonaviculata	Boxwood blight	Sample		
Phytophthora ramorum	Ramorum blight	Sample		

***** Monochamol + Alpha Pinene UHR + Ethanol

Soybean Commodity Survey
A Soybean Survey will be a combination of seasonal trap/lure monitoring at preselected sites for priority insects, and sweep net and visual sampling of high risk sites for pests of state concern that are determined in season. Traps for priority moths will be deployed at five locations with soybean interspersed with regional acreages of one or more of tomato, pepper, sweet/seed/popcorn and snap beans. Five plastic bucket traps (unitrap) with lure and kill strips per location will be deployed for adult silver Y-moth, *Autographa gamma,* old world bollworm, *Helicoverpa armigera,* Egyptian cotton leafworm, *Spodoptera littoralis,* and golden twin-spot moth, *Chrysodeixis chalcites.* Traps will be monitored weekly for three months. All traps with lures will deployed according to the Soybean Commodity Survey Guidelines (25 July 2007) and the CAPS Approved Methods. CAPS SSC will prescreen and PPQ identifiers will verify suspect moths. The bean plataspid (aka kudzu bug), *Megacopta cribraria*, a pest of state concern will be bundled with the survey. Soybean foliage will be swept (30 sweeps/set) with a 15-cm diameter heavy beating net in multiple counties having kudzu infestations. One to four fields per county will be sampled with a minimum of 30 samples. The methodology will be adapted to the Delmarva Cooperative Extension Service recommendations to evaluate stink bug in soybean. Observations (laboratory-confirmed) for Yellow witchweed, *Alectra vogelii*, (Soybean Commodity Survey Guidelines 25 July 2007 and CAPS approved methods) will be obtained monthly for 3 months at five locations and 5 sites per location. Results will be uploaded to NAPIS.

Corn Commodity Survey
A Corn Survey will be a combination of seasonal trap/lure monitoring techniques at preselected sites for priority insects and visual/laboratory-confirmed observations chosen in-season. Traps for priority moths will be deployed at five locations with high concentration of field corn. Five plastic bucket traps (unitrap) with lure and kill strips per location will be deployed for adult silver Y-moth, *Autographa gamma,* old world bollworm, *Helicoverpa armigera,* Egyptian cotton leafworm, *Spodoptera littoralis,* and cotton cutworm, *Spodoptera litura.* Traps will be monitored weekly for three months. Traps/lures will be deployed according to the Corn Commodity Survey Guidelines (August 2010) and the CAPS Approved Methods. CAPS SSC will prescreen and PPQ identifiers will verify suspect moths. Five observations per five locations per month for 3 months will be made for Asiatic witchweed, *Striga asiatica*. Priority disease targets including brown stripe downy mildew, *Sclerophthora rayssiae* var. *zeae*, Philippine downy mildew, *Peronosclerospora philippinensis*, and downy mildew, *Peronosclerospora maydis* will be sampled in 10 counties from about mid-May through mid-August. Selection of counties will be directed by seasonal weather conditions. Disease samples will be screened and confirmed by the DDA Plant Pest Diagnostic Laboratory (DPPDL) using molecular techniques. Results will be uploaded to NAPIS.

Exotic Wood Borer / Bark Beetle Survey
The Delmarva CAPS program will cooperate with APHIS PPQ officers in Delmarva by receiving and processing samples from about 40 statewide, risk-based sites for an Exotic Wood Borer/Bark Beetle Survey. APHIS PPQ will deploy and service up to two Lindgren funnel traps at each site. One to two traps per site will contain either Monachamol+UHR ethanol+ UHR alpha-pinene, Chalcogran lure, IPS Tri-lure, Lineatin, or *Platypus quercivrous* lure. Combinations of specific insect pests will be sampled at five to 25 sites resulting in ~50 total sites represented. Single unbaited purple panel traps will be placed at five sites. Traps

will be placed approximately late-April and serviced every 14 to 21 days until early-October (approximately 7 sampling dates). SSC will be responsible for retrieving samples from a staging site, prescreening, reporting, and archiving samples. Suspect specimens will be confirmed by a PPQ area identifier. Priority insects that could respond to the lures used in this survey include *Trypodendron domesticum, Ips sexdentatus, Ips typographus, Monochamus alternatus, Monochamus urussovii, Orthotomicus erosus, Platypus quercivrous,* and *Pityogenes chalcographus*. *Agrilus biguttatus* and *A. auroguttatus* will be sampled with unbaited purple prism traps coupled with visual observations. Methodology will be according to the Exotic Wood Borer/Bark Beetle Survey Reference 2014 and CAPS Approved Methods. Results will be uploaded to NAPIS.

Nursery and Retail Plants Survey

A bundled Nursery and Retail Plants Survey will be integrated with the annual plant nursery and retail outlet inspections conducted by Delmarva Department of Agriculture. A subset from approximately 263 plant nurseries and a large number retail outlets are inspected statewide on a rotating basis. State nursery inspectors will set and monitor traps for the priority pest, old world bollworm, *Helicoverpa armigera,* observe and sample foliage of ornamental boxwood cultivars, *Cylindrocladium pseudonaviculata*, and observe and sample a wide range of susceptible perennial plant foliage for *Phytophthora ramorum*. Moth and foliar samples will be sent to the Delmarva Department of Entomology and the DDA Plant Pest Disease Laboratory (DPPDL), respectively. For moth survey, traps will be deployed and serviced at 45 nurseries and/or retail plant outlets state-wide. One plastic bucket (unitrap) trap with lure and kill strip per will be placed per site for old world bollworm, *H. armigera* in mid-May and serviced biweekly for 3 months (six samples per site). CAPS SSC will prescreen and PPQ identifier(s) will verify suspect moths. Disease targets will be sampled in 10 counties (150 samples for *C. pseudonaviculata* and 150 samples for *P. ramorum)* from about mid-May through mid-August. Disease samples will be screened and confirmed by the DPPDL using morphological and/or molecular techniques. Results will be uploaded to NAPIS.

A. The Cooperator Will:

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

a. Soybean survey: cooperator will install and service traps for moth targets using Soybean Commodity Survey Guidelines (25 July 2007) and the CAPS Approved Methods, conduct sweep sampling for bean plataspid using stink bug survey guidelines developed by Delmarva Department of Entomolgy, and visual observations for yellow witchweed, *Alectra vogellii*, (Soybean Commodity Survey Guidelines 25 July 2007) using CAPS Approved Methods. Results will be reported to NAPIS.

b. Corn survey: cooperator will install and service traps for moth targets using Corn Commodity Survey Guidelines (August 2010) and the CAPS Approved Methods, will observe for Asiatic witchweed, *Striga asiatica*, using methodology for yellow witchweed, and will collaborate with DDA Plant Pest Diagnostic Laboratory for the disease survey portion using Corn Commodity Survey Guidelines (August 2010) and the CAPS Approved Methods. Results will be reported to NAPIS.

c. Wood borer/bark beetle survey: cooperator will collaborate with Delmarva PPQ in planning an exotic wood borer/bark beetle survey, and

process/prescreen/archive samples. Methodology will be according to the Exotic Wood Borer/Bark Beetle Survey Reference 2014 and CAPS Approved Methods. Results will be reported NAPIS.

d. Nursery and retail plant survey: cooperator will install/service traps for priority moth target (old world bollworm), collaborate with DDA Plant Pest Diagnostic Laboratory to survey for sudden oak death (*Phytophthora ramorum*), and make a visual survey for boxwood blight. Results will be uploaded to NAPIS

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?*

- Corn and Soybean Commodity survey traps will be deployed at risk sites in early May and will be sampled weekly for selected pests. Processing will begin within a week of receiving the samples and will continue for several months following the end of the field season. Disease sampling occurs from mid to late summer and results are available one to two months following the field season.
- Exotic wood borer/bark beetle survey field season ends in early October. Several months are required to screen and identify potential targets.
- The Nursery and Retail Plants Survey ends approximately late August. Moth dissections require several months to complete. Sudden oak death evaluations will be completed by September. Boxwood blight observations will be complete by August. Moth data upload will occur as soon a possible after taxonomic evaluations.

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

- Criteria used to evaluate project will be monthly communication with the survey coordinator, a semi-annual report submitted to APHIS by 31 July 2016 and consistent, efficient, and accurate data entry submitted to NAPIS by 31 March 2017. The anticipated result is the determination of target pest presence/absence and the facilitation of state and federal export trade.

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

- State Survey Coordinator will plan and execute surveys, provide outreach, and perform data upload. One to two trap tenders/lab technicians, employed full time from mid-May to mid-August and part time from mid-August to December are needed to deploy, monitor, and retrieve traps and process samples.

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

a. *What equipment will be provided by the cooperator?* None

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?* Not applicable

e. *What is the proposed method of disposition of the equipment upon termination of the agreement/project?* Not applicable

5. **Identify information technology equipment, e.g., computers, and their ancillary components.**
No new IT or electronic equipment is needed.

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

a. *What supplies will be provided by the Cooperator?* None

b. *What supplies will be requested from APHIS (list supplies)?* None

c. *What supplies will be purchased in whole or in part with APHIS funds?*
Field supplies: staples, twine, wire, etc.
Lab supplies: bags, tags, preservatives, etc.
Foliar disease test kits: 3 kits.

d. *How will the supplies be used?*
During survey, sample preparation, and diagnostics

e. *What is the proposed method of disposition of the supplies with a cumulative value over $5,000 upon termination of the agreement/project?*
Not applicable

7. What procurements will be made in support of the funded project and what is the method of procurement (e.g., lease, purchase)?
Not applicable

8. What are the travel needs for the project?

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

b. *What extended or overnight travel will be performed (number of trips, their purpose, and approximate dates)?*
Occasional overnight in-state travel is possible to address unanticipated need. Number of trips, purpose, and dates to address potential problems cannot be identified a year in advance.

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.*

1. Philip Rockfish, Delmarva Department of Agriculture is the cooperator and Delmarva State Plant Regulatory Official. He will oversee program planning and execution.
2. Larry Oyster will serve as Delmarva State Survey Coordinator and plans and executes survey and outreach activities.
3. Gary Bay PPQ, Delmarva State Plant Health Director, will assist in program development.
4. Bobby Beach (PPQ domestic identifier) will assist in taxonomic confirmations of Wood Borer/Bark Beetle Survey.
5. Tom Sands (Director of DDA Plant Pest Diagnostic Laboratory) will perform diagnoses of disease samples from the Corn Commodity and Nursery and Retail Plants surveys.
6. Gail Osprey, (Senior Diagnostician) will perform diagnoses of disease samples from the Corn Commodity and Nursery and Retail Plants surveys.
7. Steve Salisbury, (Head, Delmarva Department of Entomology) will provide general administrative assistance.
8. Tim Dover (PPQ) will co-coordinate the Delmarva exotic woodborer and bark beetle risk based survey.
9. Charlotte Elk (PPQ) will co-coordinate the Delmarva exotic woodborer and bark beetle risk based survey.
10. James Sussex (PPQ) will co-coordinate the Delmarva exotic woodborer and bark beetle risk based survey.
11. Delmarva Department of Natural Resources nursery inspectors, provide samples for nursery and retail plant pest survey.

b. *Describe the nature of their effort.* See above

B. APHIS Will:

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

a. *Include any significant Agency collaboration and participation*

- Tim Dover (Delmarva PPQ) will co-coordinate the Delmarva exotic woodborer and bark beetle risk based survey.
- Charlotte Elk (Delmarva PPQ) will co-coordinate the Delmarva exotic woodborer and bark beetle risk based survey.
- James Sussex (Delmarva PPQ) will co-coordinate the Delmarva exotic woodborer and bark beetle risk based survey.

b. *Project oversight and performance management*
Gary Bay PPQ, Delmarva State Plant Health Director, will assist in program development.

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?*

- Corn Commodity Survey in approximately 6 counties in primarily northern Delmarva.
- Soybean Commodity Survey in 12 counties statewide.
- Exotic Wood Borer/Bark Beetle Survey in approximately 8 counties statewide.
- Nursery and Retail Plants Survey in approximately 12 counties statewide.

B. *What type of terrain will be involved in the project?*

- Corn and Soybean Commodity Survey: cropland-corn, soybean, small grains, and vegetables.
- Nursery and Retail Plant Survey: urban/suburban.
- Exotic Wood Borer/Bark Beetle Survey: forests/parkland, roadsides, high risk solid wood packing material sites, shipping port.

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 National Operations Manager for Pest Detection.

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

VI) TAXONOMIC SUPPORT

Definitions:

- *Preliminary identification – sorting, screening, and preliminary identification of samples. Suspect positives will be submitted for confirmatory identification.*
- *Confirmatory identification – confirming pest identifications that are preliminarily made by a federal or state official or competent private entity of domestic samples.*
    - *Confirmatory identification will be provided separately and should not be captured here.*

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.

- Corn and Soybean Commodity Survey
    1. Larry Oyster, Department of Entomology, Delmarva University, 123 West State Street, Salisbury, DA 10000, loyster@delmarva.edu, ph123-456-7890
    2. Tom Sands, DDA Plant Pest Diagnostic Laboratory, 987 East State Street, Dover, DA 10002, ph 123-098-7654
    3. Gail Osprey, DDA Plant Pest Diagnostic Laboratory, East State Street, Dover, DA 10002, ph 123-098-5476

- Exotic Wood Borer/Bark Beetle Survey
    1. Larry Oyster, Department of Entomology, Delmarva University, 123 West State Street, Salisbury, DA 10000, loyster@delmarva.edu, ph123-456-7890

- Nursery and Retail Plants Survey
    1. Larry Oyster, Department of Entomology, Delmarva University, 123 West State Street, Salisbury, DA 10000, loyster@delmarva.edu, ph123-456-7890
    2. Tom Sands, DDA Plant Pest Diagnostic Laboratory, 987 East State Street, Dover, DA 10002, ph 123-098-7654
    3. Gail Osprey, DDA Plant Pest Diagnostic Laboratory, East State Street, Dover, DA 10002, ph 123-098-5476

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

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

FY2021 Financial Plan

COOPERATOR NAME: Delmarva Department of Agriculture (DDA)

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

ITEM	APHIS FUNDS		COOPERATOR FUNDS
PERSONNEL:			
Field/lab staff: 840 hours @ $9.00/hour	$ 7,560		$ 0
Lab staff: 250 @ $15.00/hour	$ 3,750		$ 0
Subtotal	**$11,310**		**$ 0**
FRINGE BENEFITS:			
Field/lab staff: 8.8% of $7,560	$ 665		$ 0
Lab staff: 8.8% of $3,750	$ 330		$ 0
Subtotal	**$ 995**		**$ 0**
TRAVEL:			
Vehicle rental: 5500 miles @ 0.44 per mile	$ 2,420		$ 0
Project vehicle insurance	$ 528		$ 0
Project vehicle maintenance	$ 900		$ 0
Project vehicle fuel: 2500 miles/18mpg*$2.75/gal	$ 382		$ 0
Vehicle rental: 5500 miles @ 0.44 per mile	$ 2,420		$ 0
Subtotal	**$ 4,230**		**$ 0**
EQUIPMENT			
Subtotal	**$ 0**		**$ 0**
SUPPLIES			
Field supplies: staples, twine, wire, etc.	$ 142		$ 0
Lab supplies: bags, tags, preservatives	$ 200		$ 0
Foliar disease test kits 3 kits @ $560	$ 1,680		$ 0
Subtotal	**$ 2,022**		**$ 0**
CONTRACTUAL			
Subtotal	**$ 0**		**$ 0**
OTHER			
Shipping: incoming/outgoing samples (estimate)	$ 400		$ 0
PCR confirmation fee: 70 samples @ $30	$ 2,100		$ 0
PPDL lab fee: 500 samples @ $11	$ 5,500		$ 0
Nursery inspection assistance	$ 4,455		$ 0
Subtotal	**$ 12,455**		**$ 0**
TOTAL DIRECT COSTS	$ 31,012		$ 0
INDIRECT COSTS	$ 0		$ 0
TOTAL	**$ 31,012**		**$ 0**
Cost Share Information	100%		0%