

AMENDED COOPERATIVE AGREEMENT
SIGNATURE PAGE

AGREEMENT NUMBER 25-0002-047-SF
AMENDMENT NUMBER 1

1. This Agreement is entered into between the State Agency and the Recipient named below:
STATE AGENCY'S NAME
DEPARTMENT OF FOOD AND AGRICULTURE (CDFA)
RECIPIENT'S NAME
COUNTY OF SANTA BARBARA
2. The term of this Agreement is: July 1, 2025 through June 30, 2026
3. The maximum amount of this Agreement is: \$15,907.00
4. The parties agree to comply with the terms and conditions of the following exhibits which are by this reference made a part of the Agreement:

Paragraph three (3) of the Agreement is hereby amended to increase the Agreement by \$7,959.00 for a new total not to exceed \$15,907.00. The additional funding will allow the County to complete more Nursery and Ornamental Survey work.

Sections of the Agreement are also hereby amended to incorporate detailed survey guidelines on additional surveys the County will complete.

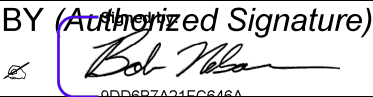
- The following documents are attached:
- 1. The Scope of Work (7 Pages) with new information added in red text. The attached version hereby replaces the version in the original Agreement.
 - 2. A revised Attachment A (3 pages) for the new Agreement amount that hereby replaces Attachment A in the original Agreement. Changes are indicated in red text.
 - 3. A revised Attachment G (2 pages) that hereby replaces Attachment G in the original Agreement. Changes are indicated in red text.
 - 4. Attachment I (9 Pages), which is hereby incorporated in the Agreement.

All other terms and conditions of this Agreement shall remain the same.

IN WITNESS WHEREOF, this Agreement has been executed by the parties hereto.

RECIPIENT

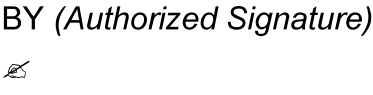
RECIPIENT'S NAME (Organization's Name)
COUNTY OF SANTA BARBARA

BY (Authorized Signature)  0DD6B7A21FC646A...	DATE SIGNED 6/10/2026 3:26 PM PDT
---	--

PRINTED NAME AND TITLE OF PERSON SIGNING
Bob Nelson, Chair

ADDRESS
263 Camino Del Remedio, Santa Barbara, CA 93110-1335
STATE OF CALIFORNIA

AGENCY NAME
DEPARTMENT OF FOOD AND AGRICULTURE (CDFA)

BY (Authorized Signature) 	DATE SIGNED
---	-------------

PRINTED NAME AND TITLE OF PERSON SIGNING
ANDREA PERKINS, SUPERVISOR I, OFFICE OF GRANTS ADMINISTRATION

ADDRESS
1220 N STREET, ROOM 120, SACRAMENTO, CA 95814

SCOPE OF WORK

AGREEMENT SPECIFICATIONS FOR STATE-COUNTY INSECT PEST DETECTION TRAPPING

Fiscal Year 2025-2026

Effective Agreement Period: July 1, 2025 through June 30, 2026

Pest Detection County Agreement Attachments Index:

1. Attachment A - Financial Plans
2. Attachment B – Pest Detection Trapping Guidelines
3. Attachment C – Commitment Form 60-221
4. Attachment D – Quality Control Plant Protocols
5. Attachment E – PEIR Management Practices and Mitigation Measures for Trapping
6. Attachment F – Tiering Strategy Checklist (if applicable)
7. Attachment G – Budget and Survey Quick Guide
8. Attachment H – Invoice Template
9. **Attachment I – Supplementary Survey Guidelines**

I. The California Department of Food and Agriculture (CDFA) shall:

- A. Provide the attachments for the Financial Plans, Commitment Form 60-221, Quality Control Plant Protocols, PEIR Management Practices and Mitigation Measures for Trapping, Tiering Strategy Checklist, Budget and Survey Quick Guide, and Invoice templates following CDFA form instructions.
- B. Provide all fruit fly, spongy moth, and Japanese beetle traps, trap parts and lures.
- C. Provide technical assistance and training to county agricultural commissioner personnel on the use of traps and detection procedures.
- D. Assist with and review the county's trapping programs annually for the purpose of establishing and approving the Commitment Form 60-221 (Attachment C).
- E. Provide county trappers with trapping guidelines.
 - Provide the Insect Trapping Guide (ITG) at: www.cdfa.ca.gov/go/ITG.
 - Provide county specific pest detection trapping guidelines (Attachment B), expanding on the ITG in this pest detection agreement.
 - **Provide guidelines for conducting supplementary survey work outside the activities described in the ITG and the Pest Detection Trapping Guidelines Attachment B as applicable. The guidelines for these surveys are found in Attachment I.**

Pest Detection County Agreement Scope of Work
Agreement Period July 1, 2025 – June 30, 2026

- F. Provide annual training programs for county trapping supervisors and trappers as needed.
- G. Provide quality control (QC) of the county trapping program via inspections and QC plants. The CDFA will use the current Quality Control Planting (QCP) protocol (Attachment D) to conduct inspections on county trapping programs. The QCP protocol is also available from the CDFA District Entomologist.
- H. Contract an outside contractor who will dispose of Dibrom® treated wicks according to California Environmental Protection Agency (CalEPA) guidelines.
- I. Provide training on management practices as they relate to the CDFA's Statewide Pest Prevention Program Final Programmatic Environmental Impact Report (PEIR) at least one week prior to any covered activity occurring.
- J. Provide reimbursement of allowable expenses listed on the executed county cooperative agreement financial plans.
- K. Provide guidance and clarification on the use of Report 1 from the online County Monthly Reporting (CMR) system.

II. The County Agricultural Commissioner shall:

- A. Complete and submit financial plans (Attachment A), Commitment Form 60-221 (Attachment C), and Tiering Strategy Checklist (Attachment F, if applicable), following the CDFA form instructions. These documents must be submitted and approved by CDFA prior to payment of the first invoice.
- B. Ensure the full county costs of the programs are provided on the financial plans. This is 100% of the county costs to complete the requested activities of this agreement. Please note that the full county costs will not necessarily be fully reimbursable by the CDFA. The total reimbursable cost by the CDFA is notated on the financial plans when submitted for execution. This information will also be provided to the counties for their records.
- C. Hire and train county personnel as needed.
- D. Provide and maintain county trapping vehicles.
- E. Ensure that county supervisors and trapping personnel attend training provided by the CDFA District Entomologists.
- F. Ensure that all trapping activities conform to the current version of the ITG, the Pest Detection Trapping Guidelines (Attachment B) and if enclosed, the **Supplementary Survey Guidelines (Attachment I)**.

Pest Detection County Agreement Scope of Work
Agreement Period July 1, 2025 – June 30, 2026

1. Ensure that a copy of the current version of the ITG is kept in each county trapper's vehicle for reference.
 2. Should there be a discrepancy between the Scope of Work, the enclosed Attachment B, **Attachment I (if enclosed)** or the ITG, then the Scope of Work, Attachment B **and Attachment I (if enclosed)** must supersede the ITG.
 3. **If applicable, conduct supplementary survey work for pests outside the activities described in the ITG and the Pest Detection Trapping Guidelines Attachment B as specified in the Financial Plans in this agreement. Follow the guidelines for these surveys found in Attachment I. Attachment I will only be included in the agreement if applicable.**
- G. Place and service the specified number of each trap type as indicated on the Trapping Hours Worksheet and Commitment Form 60-221 (Attachment C).
- H. Ensure that all traps are properly identified with a unique trap number and accurately reflect servicing, baiting, and rebaiting dates. The unique trap numbering system is based upon the Statewide Trapping Grid, referenced here <http://maps.cdfa.ca.gov/TrapBooks/MapBookHelp.pdf> for software needs, links to the Map Books and GIS layers, and contacts for assistance.
1. The naming convention for the grid system is alphanumeric. Columns are Alpha (A – UW) and rows are Numeric (001 – 656). The grid name is the combination of column and row names. Naming starts in the northwest corner of the state and runs through the southeast. The remainder of the trap number consists of the quint or subgrid, trap type, and an intra-quint or intra-subgrid designation if more than one trap of that type is present or it is otherwise needed to track a trap that moves between quints. For example, trap EV241-S-OF1 is in grid EV241, south quint, trap type is oriental fruit fly, and it is designated as number “1” OF trap within that quint.
 2. Ensure that the unique trap number is placed properly on all traps, along with accurate placement, servicing, baiting, and rebaiting dates, as appropriate. Requirements for the various trap types are as follows.
 - a. Jackson trap – full trap number and servicing and rebaiting dates on outside.
 - b. Jackson trap insert – full trap number, placement date, and trapper's initials on non-sticky side.
 - c. Delta trap – full trap number, servicing and rebaiting dates, and trapper's initials on outside.
 - d. Japanese beetle trap – full trap number and servicing and rebaiting dates on calendar card in cup of trap.

Pest Detection County Agreement Scope of Work
Agreement Period July 1, 2025 – June 30, 2026

- e. ChamP™ trap – full trap number, servicing dates, and trapper's initials on the top fold.
 - f. Yellow panel trap – full trap number, placement date, and trapper's initials on white backside when placing; note servicing dates on outside non-sticky margins.
 - g. McPhail trap – full trap number and servicing dates on calendar card.
- I. Ensure that all sticky traps (i.e., Jackson, ChamP™, yellow panel, and SM) inspected and removed from the field shall be screened for suspects a second time at the trapping office by a supervisor or other qualified staff before disposal. This should occur daily, but in any event must be done within a week of removal from the field.
- J. Ensure that all suspect sterilized fruit flies (non-QC plants) from areas where such flies are not being released are brought to the attention of the CDFA District Entomologist and sent to the Plant Pest Diagnostic Center (PPDC) in Sacramento with an accompanying Pest and Damage Record (PDR). The PPDC is located at:

CDFA – Plant Pest Diagnostic Center
3294 Meadowview Road
Sacramento, CA 95832
- K. Ensure that all county commitment traps are placed, serviced, maintained, and removed following the state trapping guides and that all data collected from these traps also follows the state trapping guides.
- L. All counties generating Dibrom® treated wicks from methyl eugenol and cue-lure baited traps shall possess a Hazardous Waste Permanent State (HWPS) ID Number issued by the CalEPA, Department of Toxic Substance Control (DTSC) and shall possess a Certified Unified Program Agency (CUPA) permit from the applicable local CUPA agency. Counties will dispose of this hazardous waste using the PD/EP hazardous waste disposal contractor in accordance with CalEPA regulations and requirements.
- M. Ensure that all activities are performed following the CDFA's management practices and any necessary mitigation measures as required and consistent with the CDFA's PEIR Management Practices and Mitigation Measures (Attachment E). A summarized list of pertinent practices and measures is attached. Complete the Tiering Strategy Checklist (Attachment F) prior to conducting trapping activities and mark any management practices and mitigation measures as required for each specific activity. The checklist, descriptions of the CDFA's management practices, and mitigation measures are found in PEIR Appendix C (PEIR, Appendix C, at http://www.cdfa.ca.gov/plant/peir/docs/final/Volume-3_Appendices_B-G.pdf), Mitigation Reporting Program at http://www.cdfa.ca.gov/plant/peir/docs/final/Volume-4_Appendices_H-P.pdf, and Findings of Fact at <http://www.cdfa.ca.gov/plant/peir/docs/final/Findings-of-Fact->

Pest Detection County Agreement Scope of Work
Agreement Period July 1, 2025 – June 30, 2026

[and-Overriding-Considerations.pdf](#). Complete the enclosed Tiering Strategy checklist templates for trapping for the core program by inserting Project Leader and County name where indicated by quote marks, and by inserting County number and name where indicated in the electronic file name. Submit each completed checklist along with the agreement. When the agreement ends, the County dates and signs a copy of each Tiering Strategy Checklist and sends that copy to the Invoice Team at cdfa.phpps_pdepb_county_invoices@cdfa.ca.gov.

- N. Maintain a Daily Trapping Summary (DTS) Form 60-210 for each trapper. This form must be completed daily, signed by the individual who performed the work and submit to the trapping supervisor. The current DTS (i.e., the DTS completed the day prior to a QC inspection) must be available for immediate review by the CDFA District Entomologist or designee conducting the QC inspection. All DTS forms must be kept on file by the county for the CDFA Audits Office for three years. This form is available from the District Entomologist.
- O. Complete a monthly Report 1 through the online CMR, documenting all traps deployed, added, removed, and serviced during the month. A servicing is an inspection of the trap for the presence of the target pest. Relocations are considered trap servicings. Do not count trap relocations as “removed” and then “added.” The form must be filled out and submitted online prior to submitting the monthly invoice. The Report 1 is found at:
<https://secure.cdfa.ca.gov/egov/crs/login.aspx>
- P. Provide one set of trapping records for all traps. This set must be in the form of either the "Trap Book" or electronic records, shall indicate the exact trap location using a site map and all information regarding trap placement, servicing, baiting, relocation and removal.
- Q. Maintain an inventory of known host sites. The inventory shall be organized by square miles, contain the addresses of host properties traceable to the nearest cross street, and indicate all known hosts on that property. The inventory shall be updated yearly. Electric records or the multiple trap card system will suffice for this inventory. This inventory must be available for the trapper to use in the field daily.
- R. Allow the CDFA personnel and/or federal officers to perform QC inspections on all county trap lines, including any county commitment trap lines. Also, follow any recommendations to address problems revealed through quality control inspections.
- S. Allow the CDFA personnel and/or federal officers to accompany trappers and/or supervisors in the field. This will be credited as field training for county personnel.

Pest Detection County Agreement Scope of Work
Agreement Period July 1, 2025 – June 30, 2026

T. Submit an electronic invoice (Attachment H) monthly to the Invoice Team at cdfa.phpps_pdepb_county_invoices@cdfa.ca.gov. The counties must use the provided invoice.

1. Submit monthly invoices 30 days after the last date the work was completed.
2. Reimbursement of the monthly invoice will not occur unless Report 1 is completed and submitted.
3. All invoice charges for reimbursement must match expenses listed on the executed county Financial Plans. All expenses listed on a monthly invoice must be itemized and kept for three years in county records in the event of an audit (federal or state). Any expense that is not listed in the Financial Plan is considered unauthorized and will not be reimbursed by the CDFA. A Budget and Survey Quick Guide (Attachment G) shows the total reimbursement cost CDFA must pay. Any cost over CDFA's reimbursable cost will not be paid. The Budget and Survey Quick Guide (Attachment G) can be used to assist in monthly invoicing.
4. The Invoice Template provided with the county cooperative agreement must be used and must contain the following:
 - i. County name
 - ii. Remit to address
 - iii. Date of submittal
 - iv. Invoice number
 - v. Agreement name
 - vi. Agreement number
 - vii. Billing period
 - viii. If revised, date revised invoice was submitted
 - ix. The number of hours worked claimed on the invoice must match those documented on Report 1.
 - x. Invoices file names must follow the standard naming convention detailed below:

County Name, Month of Service (ex: JUN, NOV, APR, FEB, etc.), Year of Service (last two digits 2025=25), Program Activity (ex: PD, ADD, CT, PD/ADD, PD/DELIM), Full Agreement #.

Example: TulareJUN25PD20-1034-000-SF

5. Invoice amendments should be named using the same invoice naming convention, with the incorporation of 'REV' at the end. Amendments include invoice revisions due to adding/removing funds, adjusting any information in the invoice.

Example: TulareJUN25PD20-1034-000-SF REV

Pest Detection County Agreement Scope of Work
Agreement Period July 1, 2025 – June 30, 2026

6. All invoices, including invoice amendments, must be received within 120 days following the expiration date of the agreement. Invoices received more than 120 days after expiration of the agreement will not be paid.
7. Please submit the invoice as a PDF file, making sure the file does not have dark highlights. A low-resolution PDF file or dark highlights may make the numbers illegible and the invoice unacceptable to the CDFA Financial Services Branch. The invoice will be returned to the county for an updated invoice.
8. Payment will be made monthly, in arrears, upon receipt of Report 1 and approval of the invoice.
9. Please note that the CDFA cannot reimburse more than the total executed agreement amount. If funds have been exhausted, it is recommended to continue sending monthly invoices as this can be useful information for future county budget needs and cost allocations.

California Department of Food and Agriculture
Pest Detection County Agreements
Revised Core Nursery Financial Plan
FY 2025/2026
July 1, 2025 - June 30, 2026
Santa Barbara County

Attachment A

A. Personnel Services - Nursery Survey						
					Billable Hours	New Billable Hours
Detection Trapping Hours <i>(Total hours pulled from the Personnel Work Sheet)</i>					37.74	88.00
Non-Detection Trapping Hours <i>(Total hours pulled from Personnel Cost Work Sheet)</i>					16.00	21.50
Total Hours:					52.74	109.50
Subtotal Personnel Cost:					\$6,016.82	\$11,984.40
Overhead: 25.0% 16.8%					\$1,010.83	\$2,996.10
Total Personnel Cost:					\$7,027.64	\$14,980.49
B. Supplies <i>(Itemized such as trapping poles, office & field supplies, etc.)</i>						
shipping/postage					\$500.00	\$506.00
Total Supplies Cost:					\$500.00	\$506.00
C. Other Items of Expense <i>(Communications, IT Services, Subcontractor, etc.)</i>						
Shipping o					\$0.00	\$0.00
Total Other Items of Expense Cost:					\$0.00	\$0.00
D. Mileage						
	# of Vehicles	Est. Miles	Mileage Rates	Total Mileage Cost		
County Vehicles	1.0	600.0	0.700	\$420.00	\$420.00	
State Vehicles	0.0	0.0	0.000	\$0.00	\$0.00	
Rental Vehicles	0.0	0.0	0.000	\$0.00	\$0.00	
Total Mileage Cost:					\$420.00	\$420.00
Total Nursery Survey Cost:					\$7,948.00	\$15,907.00
Total Agreement Amount CDFA will reimburse for Core Nursery Survey Cost:					\$7,948.00	\$15,907.00

California Department of Food and Agriculture
Pest Detection County Agreements
Revised Nursery Survey Personnel Worksheet
FY 2025/2026
July 1, 2025 - June 30, 2026
Santa Barbara County

Attachment A

Personnel Costs - Nursery Survey							
Position Title	Hourly Wage	Hourly Benefit Amount	Total Hourly Rate	Total Billable Hours to be Worked	Old Total Cost	New Total Cost	
Detection Positions							
IPM Specialist	\$56.50	\$50.85	\$107.35	37.74 88.00	\$4,048.17	\$9,446.80	
Agricultural/Weights & Measures Inspector III	\$0.00	\$0.00	\$0.00	0.00	\$0.00	\$0.00	
Detection Total:				37.74 88.00	\$4,048.17	\$9,446.80	
				THWS 37.74			
Non-Detection Positions							
Deputy Ag Commissioner	\$80.58	\$72.52	\$153.10	10.00	\$1,531.00	\$1,531.00	
Administrative Office Professional Senior, Supervisor	\$46.07	\$41.46	\$87.53	6.00 11.50	\$437.66	\$1,006.60	
Supervising AGWM	\$0.00	\$0.00	\$0.00	0.00	\$0.00	\$0.00	
Financial Office Professional II	\$0.00	\$0.00	\$0.00	0.00	\$0.00	\$0.00	
Non-Detection Total:				16.00 21.50	\$1,968.66	\$2,537.60	
Total Nursery Survey Personnel Cost:					\$6,016.82	\$11,984.40	

Salary rates subject to change due to changes in labor contracts program modifications, cost-of-living adjustments, step increases, classification series, fringe benefits, etc.

COMMENT: Non-Detection staff time spent processing specimens, second review of all traps, support, conference calls, meetings, public relations, etc. General management & clerical type duties, training, quality control, time keeping, invoicing, etc. Time allotted for data entry, tracking gps coordinates, and weekly reporting.

REVISION

Attachment A

State of California
Department of Food and Agriculture
Plant Health and Pest Prevention Services
Pest Detection/Emergency Projects

County: Santa BarbaraFiscal Year: 2025-2026

TRAPPING HOURS/YEAR WORKSHEET

TRAPPING SEASON for Core Nursery and Ornamental Survey Program

Table 1

Trap Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CSB							2	2	2			
PMB							2	2	2			
BTM							2	2	2			
	4	weekly servicings			2	biweekly servicings		1	monthly servicings			

Table 2 B: SM and JB

Trap Type	# of Sites/ Traps	x	serv/year*	=	serv/year/trap/site
CSB	10.00	x	2.00	=	20.00
PMB	10.00	x	2.00	=	20.00
BTM	10.00	x	2.00	=	20.00
Total:					40.00

NOTE: serv/year*. Insert figure from Servicings per Year sheet, 66_223A. For visual/sampling, enter # of visits per site.

Table 3 B: SM and JB

	Servicings/year		Avg traps serve/hr		Hours/year		Hours/year plus 10%
CSB TOTAL:	20	÷	4.75 0.75	=	11.43 26.67	x1.1(10%	12.57 29.33
	(A)				(C)		(D)
PMB TOTAL:	20	÷	4.75 0.75	=	11.43 26.67	x1.1(10%	12.57 29.33
	(A)				(C)		(D)
0 TOTAL:	20	÷	4.75 0.75	=	11.43 26.67	x1.1(10%	12.57 29.33
	(A)		(B)		(C)		(D)
Total Nursery Survey Hours/Year plus 10%							37.71 88.00

B = Average # of traps serviced per hour - figure entered by person completing work sheet.

C = Hours/year - calculated electronically.

D = Hours/year plus 10% - calculated electronically. "D" represents the billable hours for the trapper(s) in the field and is applied to the work plan in the "Detection" section. In addition to the detection trapper hours, the financial plans also cover non-detection (supervisor, administrative, etc.) hours.

Budget and Survey Quick Guide

Pest Detection County Agreements

County: Santa Barbara
FY: 25/26

Budget summary guide of the fund source breakdown.

Total Agreement Amount CDFA will reimburse				\$ 15,907.00		
Funding Sources	CORE Costs			Nursery	Total	%
	Fruit Fly	Spongy Moth	Japanese Beetle			
	Federal Funds	\$ -	\$ -	\$ -	\$ 15,907.00	\$ 15,907.00
State Funds	\$ -	\$ -	\$ -	\$ -	\$ -	0.00%
Totals	\$ -	\$ -	\$ -	\$ 15,907.00	\$ 15,907.00	100%

The Total Agreement Amount CDFA will reimburse for is the total cost CDFA may reimburse the counties. Any costs exceeding this total will not be paid.

The Funding sources give a summary of the funding costs CDFA uses to reimburse county monthly billing. Each fund source listed comes from separate pots of money. Once each fund source is exhausted, no more funds can be reimbursed through that specific fund source. Counties must not exceed the total individual costs listed above for each activity and fund source.

Budget and Survey Quick Guide

Pest Detection County Agreements

County: Santa Barbara**FY:** 25/26**Survey Summary Guide:** This form is to aid in billing and invoicing**Disclaimer:** Refer to contract for full survey details. Does not include EFF, SM and JB Additional Extended Season Traps

Survey type	MF	MP	OF	ML	CP gard	CP rural	CP rural res.	Total EFF	SM	JB	CSB	PMB	BTM
Core								0			10	10	10
Other								0					
Total trap/site surveyed/Mo	0	0	0	0	0	0	0	0	0	0	10	10	10
Servicing/trap/Mo											2	2	2
Servicings/Mo	0	0	0	0	0	0	0	0	0	0	20	20	20

TRAPPING SEASON for CORE PROGRAM

Trap Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CSB							2	2	2			
PMB							2	2	2			
BTM							2	2	2			
	4	weekly servicings				2	biweekly servicings				1	monthly servicings

Supplemental Survey Guidelines- FY 2025-2026

Survey: 2025 Nursery and Ornamental Survey Handout

TRAPPING SEASON: The survey will be conducted from July-September 2025.

TYPES OF SITES: The survey will be conducted at production nurseries with host plants.

TRAP DENSITY: One trap for each pest should be deployed per nursery and one CSB inspection conducted unless the nursery is large. If the nursery is large, then multiple traps can be deployed and multiple CSB inspections can be conducted at that nursery. Ideally survey more nurseries vs. placing more traps at fewer nurseries as your budget allows. Traps must be placed at least 20 meters (65 ft.) apart.

INSPECTION FREQUENCY: Traps should be serviced every two weeks. The visual Cotton Seed bug inspection is conducted at trap sites with CSB hosts, twice per month.

Table 1: Survey information.

Common Name	Target Species	Trap/Lure	Lure Replacement
Cotton seed bug	<i>Oxycarenus hyalinipennis</i>	Visual	N/A
Box tree moth	<i>Cydalima perspectalis</i>	Plastic Bucket Trap/ <i>Cydalima perspectalis</i> Lure	4 weeks
Pink hibiscus mealybug	<i>Maconellicoccus hirsutus</i>	Paper Delta Trap (Glued on 3-sides) / <i>Maconellicoccus hirsutus</i> Lure	N/A-1 lure/trap

Pest Survey Guidelines:

- **Cotton Seed Bug (CSB)**
 - ✓ **Survey Type:** Visual inspection.
 - ✓ **Hosts:** Many plants in the family Malvaceae including cotton and okra. It is reported to feed preferentially on at least nine Malvaceae genera, including *Gossypium*, *Hibiscus*, *Malva*, *Abutilon* and others. Also in California, the following ornamental and wild plants: *Lagunaria patersonii* (cow itch tree; a very good host for inspection), *Abutilon palmeri*, *Alyogyne huegelii*, and *Lavatera assurgentiflora*.
 - ✓ **Pest Description:** CSB is multivoltine, having multiple generations per year. A single generation may be completed in as little as 20 days.

Adults: Cotton seed bugs are small hemipteran insects. Adults are 4-5 mm long and newly emerged individuals are pale pink in color but rapidly turn brown, dark brown, or black (Figure 1). Other distinguishing characteristics include: three tarsal joints, a pair of red simple eyes situated above and behind the compound eyes, and the second antennal segment is usually partially yellow or pale yellow. The wings are glassy/translucent and usually whitish (Figure 1).

Nymphs: The nymphs are orange red on hatching and later develop a dark red abdomen that has a greenish tint (Figure 2). There are five instars. The fifth instar

has distinct wingpads that extend to the third abdominal segment (Figure 2).

Eggs: Egg are 0.29 mm (0.01 in) wide by 0.97 mm (0.04 in) long and slender with 25 longitudinal ribs or corrugations. During development, the eggs change from straw yellow to orange or pink (Figure 3).



Figure 1. Cotton seed bug adult dorsal and side views.

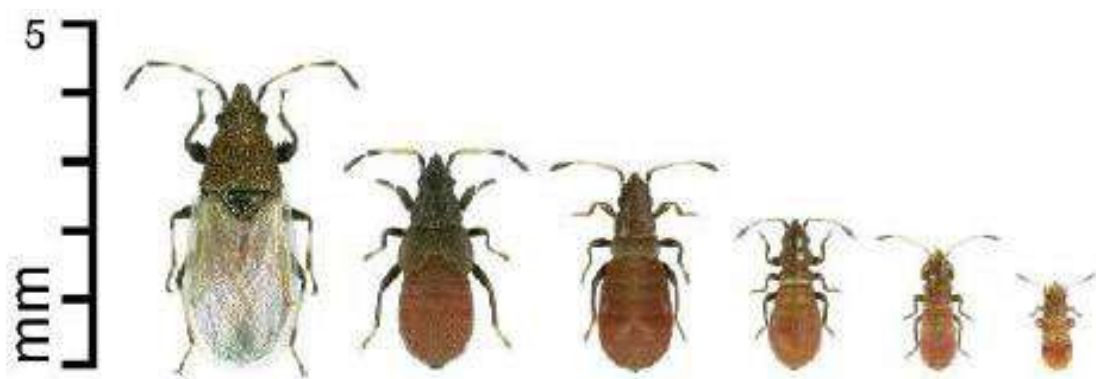


Figure 2. Adult and five nymphal stages of cotton seed bug.



Figure 3. Cotton seed bug eggs.

✓ **Survey Guidelines**

Survey season: July-September

- The survey should target malvaceous hosts that have seed pods, preferably open seed pods. The insects are tiny so a thorough visual inspection of the whole plant and the seed pod is needed.
 - Conduct visual survey during the first visit while placing trap(s) for the other nursery pests.
 - A second survey should be conducted when removing trap(s) for the other nursery pests.
- ✓ **How to inspect:** Survey malvaceous hosts with seed pods, ideally survey should be conducted when seed pods start to open. Closely examine plant, especially the inside of the pods, for signs of the insect. Specifically focus on seed pods when present. Inspect the entire plant. Insects can occur in the bolls or seed pods, on leaves and in other resting places on the plant. If pods are dry and open, this is a good time to inspect them; look carefully inside and on the open dried out pods. Dense infestations can be obvious; the bolls or seed pods look like they have fleas. If small black insects are observed on or in seed pods, collect samples as described below.
- ✓ **Collection and Submission of Samples:** At the collection location, collect insects by one of the following methods:
- A. Cut the seed pod from the plant. Open a gallon-sized plastic bag (does not need to be re-sealable) and tap the seed pod into the bag, dislodging the insects into the bag. Have a small paint brush available to remove insects from plants as well as vials w/alcohol (dab brush w/alcohol and use it to remove insect into bag). Important: Remove the seed pod. Squirt 70% isopropyl alcohol into the bag to kill the insects and then transfer them to a collection vial.
- Or
- B. (If unable to cut seed pods) Beat the seed pods over a tray or paper sheet and use an aspirator to collect the insects into a collection vial.

Note: Some plants can cause skin irritation, so wearing long sleeves and gloves during the inspection is recommended.

Use either method and then transfer the insects to a vial and cover with 70% isopropyl alcohol. DO NOT transport live insects, cut seed pods, or seeds. **Leave all plant material in the field.**

- ✓ **Signs and Symptoms:** Visual cues can help detect the presence of CSB in an area. It is easier to find CSB populations when fruits, seeds, and seed pods from plants in the family Malvaceae are available. Symptoms and signs to look for include the following:
- Feeding damage: Not a reliable indicator but can indicate an infestation. Look for brown leaves and stipple marks from feeding (Figure 4).
 - The plant may show no external signs of damage from CSB. Internally, seeds in pods or bolls may be shriveled and discolored from CSB feeding.

- CSB adults and nymphs commonly congregate in tight clusters, especially in seed pods (Figure 4).
- Populations of CSB do not damage seeds until the bolls or seed pods open. If another pest damages the seed pod or boll and creates an opening in it, CSB will enter and feed on the internal seeds.
- Symptoms in cotton will be most apparent between July and September when the bolls are open.
- Cotton seed bugs resemble fleas in infested bolls. Look for small black or brown bugs running through the cotton (Figure 5).
- Aggregated groups and crushed CSB produce a pungent odor.



Figure 4. A. CSB suck fluids from leaves, stems, and flowers for moisture but insects feed on seeds. B. Aggregates of adult and nymphs CSB on, and inside dried seed pods.



Figure 5. Cotton bolls infested with cotton seed bugs. Note how insects look like fleas on cotton boll lint.

- ✓ **Biology and Ecology:** Cotton seed bug can cause significant damage to cotton and okra and is a serious pest in Egypt, Southeast Asia, India and Africa. Eggs are typically laid on or near immature bolls. When nymphs hatch, they enter and feed on bolls once the bolls open or through openings created by other pests. Nymphs and adults cannot enter closed seed pods. Cotton seed bugs primarily feed on plants in the Malvaceae family, including cotton (*Gossypium* spp.), and they must feed on seeds of these plants to complete development. These insects also feed on fluids from other plants and plant parts, likely to acquire moisture. Cotton seed bugs complete development in approximately one month and can have from four to seven generations per year depending on temperature and host plant availability. Adults overwinter in hidden locations such as tree trunks and leaf litter.

- **Box Tree Moth (BTM)**

- ✓ **Survey Type:** Plastic Bucket Trap
- ✓ **Trap Density:** Separate traps for different moth species by at least 20 meters (65 feet) and place box tree traps at least 20 meters (65 ft.) apart.
- ✓ **Inspection Frequency:** Two to three weeks. Place traps in the nursery during the first visit. Remove and inspect traps during the second visit.
- ✓ **Primary Hosts:** Boxwood (*Buxus* species)
- ✓ **Pest Description:** Adults: There are two color morphs for this species and both males and females display both colorations. The white color morph has a white body, with a brown head and abdomen (Figure 6). The wings are white and slightly iridescent, with an irregular thick brown border spanning 4-4.5 cm (1.6–1.8) inches. The brown color morph has all-brown fore- and hindwings with a small white streak on each forewing (Figure 6). Both forms have a distinctive white dot or mark in the middle of each forewing; this is the most diagnostic wing character and can be used to separate this species from similar moths in other genera (e.g. *Diaphania*). In addition, the brown and white portions of the wings in both forms are iridescent, giving a golden sheen to the brown portions and a purple sheen to the white portions.

Larvae: Newly hatched larvae are greenish yellow with black head capsules and two rows of black dorsal spots (Figure 7). As the larvae mature, their bodies become greener, and black, white, and dark green stripes appear along the length of the body (Figure 7). Fully grown larvae can reach 4 cm (1 1/2 in) in length before pupation. They use silk to join leaves together to overwinter as larvae and to pupate. Signs of feeding by larvae include silk and greenish black frass on the host leaves and frass and leaf fragments on the ground around the base of the plant.

Eggs: Eggs are laid as gelatinous cluster and are pale yellow, averaging 0.04 inches and are laid in flat clusters.



Figure 6: Box tree moths: Adult box tree moth white color and brown color morph. Note white wing spots/streaks on forewings.



Figure 7: Box tree moth larvae. Newly hatched larvae and older larva on top row. Box tree moth eggs in bottom.

- ✓ **Biology and Ecology:** The development time for the box tree moth is dependent on temperature and the pest can have from 2-5 generations per year depending on climatic conditions. Female moths lay clusters of 5-20 eggs in a gelatinous mass on boxwood leaves. They can lay up to 42 egg masses during their lifespan. Larvae through six larval instars. Larvae feed on leaves and, once they are gone, bark. Leaves are skeletonized and heavy infestations can defoliate host plants. Bark feeding leads to girdling and death of the plant. Boxwood moths enter diapause in the fall and can overwinter in any of the larval instars. Larvae are active from March to September or October depending on climate. Adults are present in the field from April to October depending on climate.
- ✓ **Hanging the Trap:** Traps should be hung in open spaces near but not touching hosts. Traps should be hung 4-5 ft. off the ground (measured from the top of the trap). Traps can be hung from trees, poles, posts, rebar and other man-made objects.

- ✓ **Important:** To reduce the risk of potentially drawing any box tree moths into the nurseries (which is unlikely considering this pest has not been detected in CA), traps will be placed so they are at least 25 meters from outside the nursery perimeter. In cases where this is not possible, traps will be placed so that the nearest boxwood (*Buxus* spp.) host outside of the nursery is at least 25 meters from the nursery.

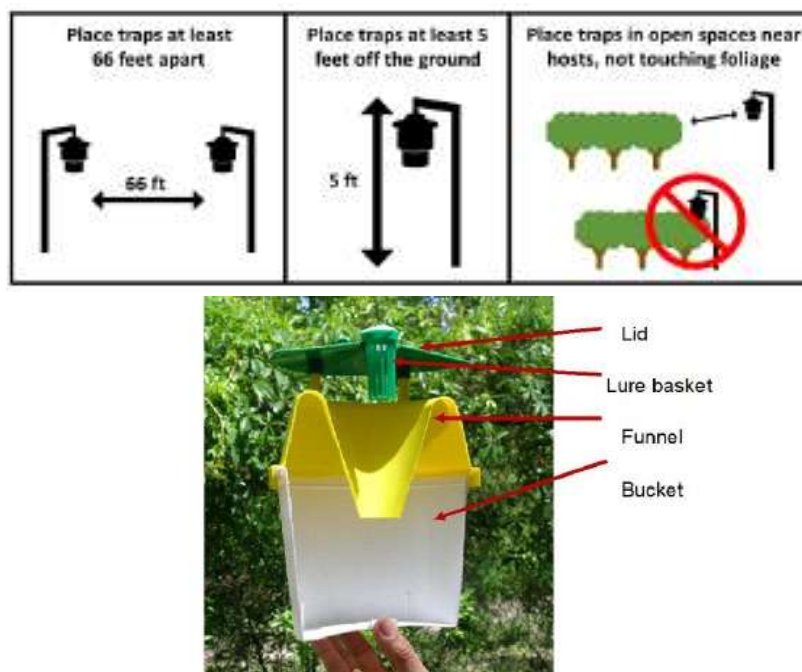
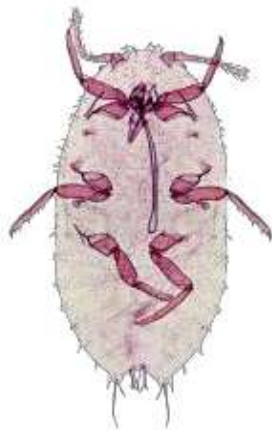


Figure 8: Box tree moth trap baiting and proper trap placement.

- ✓ **Collection and Submission of Samples:** If the suspect moth(s) is alive in the trap, place the trap in the freezer for at least one hour to kill the moth(s). Place suspect specimens in dry vials and avoid damaging the specimens. E-PDRs should be filled out online. Send all samples to Meadowview lab along with a hard copy of the PDR. Be sure the identification slip and the outside of the package are marked "RUSH." Include trap number in "Remarks" section of the PDR.
- **Pink Hibiscus Mealybug (PHM)**
 - ✓ **Survey Type:** Paper Delta Trap
 - ✓ **Trap Density:** One trap should be placed at each nursery, unless the nursery is large; in that case, more than one trap can be placed.
 - ✓ **Inspection Frequency:** Traps should be placed during the first visit to a nursery and removed 2-3 weeks later during the second visit.
 - ✓ **Hosts:** PHMB has many hosts. **Priority hosts** are *Hibiscus* spp. and grapevine. Other hosts include citrus, avocado, *Prunus* spp., *Solanum* spp., fig, guava, and cotton.

- ✓ **Pest Description:** “Crawlers” (first-instar nymphs) are approximately 0.3 mm long and salmon pink. Immature females and newly matured females have greyish pink bodies dusted with mealy white wax. The adult female is 2.5-4 mm long, soft-bodied, elongate oval and slightly flattened; on maturation, she begins to secrete sticky, elastic, white wax filaments from her abdomen to form a protective ovisac for her eggs. As her pinkish grey body fills with salmon pink eggs it turns pink, but often this is not immediately visible because the entire colony tends to become



covered by white, waxy ovisac material. When the sticky ovisac wax is parted with a needle, clusters of salmon-pink eggs and pink to grey females become visible (Figure 8).

Figure 9: Pink Hibiscus Mealybug Female and field infestation.

- ✓ **Trapping information:** The paper delta trap (Figure 10) is a tent-like paper trap with two side surfaces coated with stickum. A PHMB pheromone lure placed inside the trap attracts male mealybugs onto the sticky surfaces where they are captured. Traps should be placed in a host tree approximately five to seven feet from the ground with both ends open, free from obstructions and out of reach of children or the general public. The lure should be placed in the corner of the trap where adhesive surfaces meet to maximize adhesion. It is recommended to use gloves or forceps when inserting the lure. Do not expose bare skin to the lure. Place all pheromone related trash into a plastic bag for proper disposal.



Figure 9: Paper data trap.

- ✓ **Trap submission:** All PHMB traps will be screened at Los Alamitos. Contact Oscar Aguilar before shipping PHMB traps for screening. Ship traps at the beginning or the end of the week and within 1 week of collection. Before shipment store traps in a cool, dry location.

Include a packing slip inside the box with the following information for each trap:

- County
- Trap number
- Date collected
- Initials of trapper
- Address of trap location and trap coordinates
- Verify that the trap number on the trap is legible.

Mail traps to:

Oscar Aguilar
Los Alamitos Office
3802 Constitution Avenue
Los Alamitos, CA 90720
562.533.8844
oscar.aguilar@cdfa.ca.gov