ALLIANCE OF PEST CONTROL DISTRICTS (APCD)

Technical Advisory Committee Meeting #2

MEETING MINUTES

Date: May 21, 2026

Time: 10:30 AM - 2:01 PM (Pacific Time)

Location: APCD Conference Room, 22847 Road 140, Tulare, CA 93274 (in-person) with Zoom option.

TAC Members present:
Dr. Georgios Vidalakis (Chair), Jim Gorden, Dr. Ray Yokomi, Dr. MaryLou Polek, Dr. Bodil Cass*, Dr. Weiqi Luo*, Dr. Robert Krueger, Dr. Jonathan Kaplan*, Claudia Vazquez*, Libby Ouellette.

APCD Staff: Dr. Subhas Hajeri, Dr. Dhiraj Gautam, Dr. Saurabh Gautam, Mia Neunzig, Tony Patino*, Jose Pena, Kevin Howerton, Hailey Jones, and Tina Acevedo*.

Grower Liaison: Judy Zaninovich, Jessica Leslie*.

CDFA Outreach: Dahmoon Maeesomy*

Grower: John N Fisher IV.

**Attended the meeting virtually.*

1. CALL TO ORDER, WELCOME, AND INTRODUCTIONS

The meeting was called to order at 10:30 A.M. by Chair Dr. Georgios Vidalakis. Self-introductions were made.

2. APPROVAL OF MEETING MINUTES

Minutes from the March 31 full TAC meeting and the April 30 subgroup meeting were presented for review. A minor amendment was made to the subgroup minutes: the phrase "rather than conducting comprehensive visual surveys" was changed to "to enhance" visual surveys, clarifying that visual inspections are not being eliminated but optimized.

- **Details**
  - Bodil: Noted that the original wording implied visual surveys would be replaced entirely, which was not the intent; the goal is to optimize them alongside insect vector monitoring.
  - Subha Hajeri: Confirmed the correction and explained that ACP trapping and testing remain the primary focus, given a recent report from China indicating ACP can transmit three pathogens (not just HLB).
  - Mary Lou Pollack: Suggested "enhance" as the preferred term over "optimize."
- **Conclusion**
  - Both sets of minutes were approved unanimously, with the amendment to replace "rather than" with "to enhance" in the subgroup minutes.
  - Sandipa's comments on outreach will be addressed under the program action items.

3. ACTION ITEMS OVERVIEW AND DEPARTMENTAL STRUCTURE

Subhas Hajeri presented a consolidated document organizing all action items from the two prior meetings into three departmental categories: Admin (A1–A8), Field (F1–F6), and Lab (L1–L7).

- **Details**
  - Subhas Hajeri: Explained the rationale for organizing items by department to track progress and assign accountability.
  - The committee proceeded through all three categories sequentially.
- **Conclusion**
  - The structured departmental breakdown was accepted as the working framework for tracking recommendations.

4. INTRODUCTION RISK MODELING TOOL (ADMIN ITEM A2) - WEIQI LUO'S PLATFORM

Weiqi Luo demonstrated a web-based platform that uses international travel (census travel) data to predict the risk of disease introduction into California by geographic area. The tool allows users to select a target disease (e.g., citrus canker), choose a prediction year, and generate risk maps at the county or census tract level.

- **Details**
  - Weiqi Luo: Explained that the model uses public international travel data to estimate the probability of disease introduction from foreign countries into specific U.S. locations. The tool currently supports data up to 2022–2023 and can be run back to 2010 with reliable quality.
  - *Technical note:* The model relies on publicly available census travel data (international passenger travel statistics from airports and border crossings), which provides a standardized, reproducible method for risk assessment across different geographic areas and time periods.
  - Subhas Hajeri: Noted that introduction risk primarily affects residential properties first, then commercial citrus, and that APCD's jurisdiction is commercial citrus. Coordination with CDFA and county agricultural commissioners (CAC) is needed for residential areas.
  - Claudia Vasquez: Confirmed CDFA had previously worked with Weiqi on grid selection for multi-pest surveys and expressed openness to using new tools.
  - Libby Ouellette: Emphasized that APCD does not have authority over residential properties and that coordination with CAC is essential to avoid duplication.
  - John N Fisher IV: Highlighted North Fresno and the semi-abandoned citrus strip near Clovis as high-concern areas; stressed the importance of efficient, non-overlapping pest control.
  - Subhas Hajeri: Raised the need to include domestic introduction risk (e.g., Florida to California truck movement) and interception data from CAC dog teams.
  - Weiqi Luo: Confirmed the model can incorporate domestic movement data from the Department of Transportation and that disease situation updates in foreign countries are also being integrated dynamically.
  - Saurabh Gautam: Flagged Ventura County organic orchards with HLB-positive psyllids as a major current risk; emphasized that psyllid detection must remain the top priority over HLB visual symptom surveys.
  - *Risk context:* The Ventura County situation represents a major current threat: organic orchards in the county have tested positive for HLB-positive psyllids, creating an uncontrolled breeding ground. Compliance with treatment requirements in these areas is reportedly poor, making this a priority concern for the risk model.
  - Dahmoon Maeesomy: Participated in discussion on CDFA's role in residential surveys.
- **Conclusion**
  - The committee strongly endorsed using the census travel-based risk model to prioritize survey areas.
  - A working group was established to assign pest weighting percentages and refine the model for the Central Valley context.

- Working group members: Weiqi Luo, Neil McRoberts, Sandra Olkowski, Georgios Vidalakis, Bodil Cass, Jim Gorden, John Fisher IV, Libby Ouellette, and additional volunteers as needed.
- A coordination workflow (flowchart) between APCD, CDFA, and county agricultural commissioners is to be developed to clarify authority, permissions, and information-sharing protocols.
- Interception data from CAC dog teams and abandoned citrus locations should be fed into the model as additional risk layers.

5. <u>HLB EPIDEMIC SIMULATION TOOL - WEIQI LUO</u>

Weiqi Luo demonstrated a second web-based tool that simulates HLB epidemic spread across a landscape, allowing users to model different management scenarios (spray programs, tree removal, survey frequency, compliance rates) and compare outcomes.

- **Details**
  - Weiqi Luo: Demonstrated the tool's ability to simulate ACP dispersal, HLB infection spread, and the impact of different control strategies (e.g., two-spray vs. three-spray programs, tree removal on/off). The tool uses actual CDFA residential tree location data (where available) and population density estimates where precise tree data are unavailable, providing realistic landscape-level simulations.
  - Jonathan Kaplan: Praised the tool as very impressive and informative but raised a concern about usability — practitioners may get lost navigating the many parameters.
  - Weiqi Luo: Acknowledged the complexity and noted that full documentation is available; the tool is intended to guide decision-making on management strategy investment rather than serve as a day-to-day operational tool.
  - Georgios Vidalakis: Recommended the tool be used for educational purposes, program self-evaluation, and as a feedback mechanism for the model.
  - Jonathan Kaplan: Mentioned that he recently launched a separate HLB website to help growers understand spraying and tree removal decisions.
- **Conclusion**
  - The committee endorsed the simulation tool as a powerful resource for program evaluation and stakeholder education.
  - A dedicated working group session will be scheduled to explore the tool in greater depth.
  - A connecting person (staff or contractor) with expertise in both the modeling tools and field operations is needed to bridge the two.
  - Weiqi Luo will share all tool links and a detailed 150-slide presentation with the team.

6. <u>ECONOMIC ANALYSIS AND RETURN ON INVESTMENT (ADMIN ITEMS A4, A5, A8)</u>

The committee discussed the need for a cost-benefit analysis and white paper documenting the return on investment (ROI) for growers participating in the pest control district programs.

- **Details**
  - TAC: Proposed developing a white paper or peer-reviewed publication using historical operational cost data and program outcomes (CTV suppression, ACP finds, etc.) to demonstrate ROI to growers and support expansion of PCDs to new areas.
  - Jonathan Kaplan: Noted the challenge of quantifying benefits (what growers are not suffering due to the program) and the need for a counterfactual scenario. Indicated he has limited resources at CSU but could work with a student research assistant if funding is available.
  - Weiqi Luo: Offered to share an existing online tool that simulates HLB epidemic economic impact and cost-benefit analysis under different management scenarios, previously developed with CRB funding.

- TAC: Proposed a collaborative model where APCD or USDA applies for a grant with Jonathan Kaplan as a co-investigator or sub-awardee, similar to a prior arrangement with a statistician.

- **Conclusion**
  - A grant application will be pursued to fund a student research assistant to develop the ROI white paper/peer-reviewed article.
  - Jonathan Kaplan and Weiqi Luo will collaborate on economic analysis.
  - APCD will provide historical operational data; Jonathan will advise on economic methodology.
  - Potential funding sources include USDA NIFA, PPQ 7721, and others identified in the funding list.

7. <u>GROWER OUTREACH AND ENGAGEMENT (ADMIN ITEM A3)</u>

The committee discussed the scope of the coordinated outreach campaign listed in the action items, including Sandipa's suggestion to involve UC ANR.

- **Details**
  - Subhas Hajeri: Clarified that the primary outreach goal is to increase grower awareness of APCD and its activities, as many growers are not aware of the name change and/or its role.
  - The committee suggested renaming the item to "grower engagement" for clarity.
  - UCANR (Sandipa) will be included as a partner for broader outreach efforts, as APCD has previously co-hosted workshops with her (e.g., ACP/HLB training at LREC).
  - The action item was split into two: one focused on agency-level grower engagement, and one focused on pest- and disease-specific outreach coordination with other industry partners.
- **Conclusion**
  - Action item A3 will be split into two distinct items: agency/grower engagement and pest/disease outreach coordination.
  - UCANR will be added as a partner for outreach activities.

8. <u>FIELD OPERATIONS — RISK-BASED SITE SELECTION (FIELD ITEM F1)</u>

Discussion covered how to integrate the risk-based model outputs into day-to-day field operations, including prioritization of survey sites based on ACP risk, proximity to packing houses, transportation corridors, and residential citrus.

- **Details**
  - Subhas Hajeri: Explained that the model will eventually generate a prioritized property list; in the interim, manual selection continues.
  - John N Fisher IV: Emphasized the need to think separately about insect detection programs (continuous, year-round) and disease visual survey programs (periodic, once or twice a year), cautioning against expecting field staff to look for too many things simultaneously.
  - Subhas Hajeri: Confirmed the current staffing ratio (8 trappers, 2 inspectors) reflects the priority on insect vector monitoring over disease visual surveys.
- **Conclusion**
  - Field operations will run in parallel with model development; the working group will refine the pest weighting and site prioritization list.
  - Insect trapping and testing remain the primary field activity; visual disease surveys are secondary and will be optimized, not eliminated.
  - The model-generated property list will guide monthly deployment decisions, adjusted for seasonality and recent finds.

9. <u>REGULATORY PEST REPORTING PROTOCOL (FIELD ITEM F2)</u>

The committee discussed the protocol for handling observations of regulated pests (e.g., citrus canker, sweet orange scab) by APCD field staff.

- **Details**
  - Subhas Hajeri: Confirmed that APCD inspectors will photograph and GPS-tag suspect regulated pest observations but will not collect official samples, as doing so could compromise the regulatory process.
  - Libby Ouellette: Raised concern about CDFA response time after a report is submitted; suggested a defined response window.
  - Subhas Hajeri: Acknowledged this is beyond APCD's control but emphasized thorough documentation (photos, GPS, detailed notes) to preserve evidence.
  - Libby Ouellette: Noted that county agricultural commissioners can collect official samples and submit them to CDFA, which would count as official regulatory samples.
- **Conclusion**
  - APCD will document and report suspect regulated pest observations to the relevant county deputy agricultural commissioner (to collect official samples) and keep the CDFA in the loop.
  - Detailed photographic and GPS documentation is mandatory to support follow-up regulatory action.

10. ACP TRAP LURE EFFICACY TRIAL (FIELD ITEM F3)

Saurabh Gautam presented the design of a field trial to evaluate whether chemical lures (AlphaScent) and visual enhancements improve ACP trap catch rates on yellow sticky traps.

- **Details**
  - Saurabh Gautam: Described additional trap enhancements being explored: black border for contrast, "decoy yellow" color for UV reflectance, magnesium oxide coating for UV reflection, and addition of a lure layer — a systems approach to improve trap attractiveness.
  - Saurabh Gautam: Described a randomized crossover trial design using six trees per location across eight locations in two commercial blocks. Treatments will be rotated across 7–9 rounds to detect a treatment effect while controlling for the "party tree" effect (trees that consistently attract more ACP regardless of treatment).
  - *Trial design note:* The "party tree" effect refers to individual trees that consistently attract higher numbers of ACP regardless of the trap treatment applied. The crossover design with treatment rotation controls for this tree-specific attraction effect, allowing the trial to isolate the true treatment effect of the lure and visual enhancements.
  - Bodil: Confirmed the design looks good; agreed that visual cues are likely more important than olfactory cues for ACP based on the literature. Suggested including a treatment where the trap is hung on a non-citrus site (e.g., in parking lots), run as a separate experiment rather than incorporated into the current block trial.
  - Weiqi Luo: Suggested considering a greenhouse experiment to control for uncontrolled field variables; Subhas Hajeri noted that ACP access is highly restricted in the Central Valley (due to quarantine regulations and biosecurity protocols) and grower hesitancy limits block access, making field trials the only practical option despite less experimental control.
- **Conclusion**
  - The current block trial design is approved; continue with the two commercial blocks.
  - A separate, smaller experiment will be designed for trap performance without citrus (e.g., parking lots) to isolate the lure effect.
  - Visual cue enhancements (black border, decoy yellow, magnesium oxide) will be incorporated once a manufacturer can supply modified traps.
  - Results will be shared with Weiqi Luo and Bodil for review before scaling up.

11. <u>TRAPPER TRAINING AND VIGILANCE PROTOCOL (FIELD ITEM F4)</u>

The committee discussed training trappers to serve as additional "eyes on the tree" for flagging unusual plant symptoms while servicing traps.

- **Details**
  - Subhas Hajeri: Proposed that trappers be given simple visual reference tools (flashcards or digital equivalents on iPads) to recognize and flag unusual symptoms without slowing down their primary trapping duties.
  - Ron Carter: Mentioned that Saurabh Gautam previously developed flashcards for multi-pest inspections during earlier program phases; these existing materials will be adapted and updated for the trapper vigilance protocol.
  - Jim Gorden/MaryLou Polek: Supported the idea, noting that even experienced scouts benefit from a checklist to avoid missing symptoms.
  - Dhiraj Gautam: Demonstrated that the iPhone's built-in image recognition feature (no additional app needed) can identify plants and potentially insects from photos, which could supplement flashcards.
  - The iNaturalist app was also mentioned as a citizen science tool already being used for ACP reporting.
- **Conclusion**
  - Trappers will be equipped with simple, easy-to-use digital reference tools (iPad-based flashcards or equivalent) listing the top symptoms to flag.
  - Trappers will photograph, GPS-tag, and report flagged observations to the inspection team; they will not collect samples or make identification decisions.
  - Detailed inspection protocols should be developed and shared with TAC.

12. <u>ASYMPTOMATIC PLANT TISSUE SAMPLING PROTOCOL (FIELD ITEM F5)</u>

The committee reviewed ongoing research on optimizing tissue sampling for early HLB detection in asymptomatic trees, particularly the use of phloem-rich trunk tissue as an alternative to leaves, fruit, or roots.

- **Details**
  - Saurabh Gautam: Reported that main trunk phloem punches (12–16 punches around the trunk circumference) provide detection accuracy equivalent to root samples and significantly better than fruit peduncles or leaves, while being substantially easier and faster to collect than root excavation. This makes the method more practical for large-scale screening.
  - Weiqi Luo: Asked about the number of trunk punches needed for reliable detection; confirmed 12–16 punches around the trunk achieve 100% match with root infection status.
  - Saurabh Gautam: Noted that the protocol has also successfully detected Citrus Yellow Vein Clearing Virus and can potentially detect other phloem-limited pathogens.
  - Georgios Vidalakis: Cautioned against over-investing resources in this research at the expense of the primary trapping and detection program.
  - Subhas Hajeri: Clarified this is a research/preparedness activity, not part of current commercial operations; it is being developed so the agency is ready for large-scale testing if needed.
  - John N Fisher IV: Supported continued development as a tool to maintain confidence in the ability to scale up detection if required.
- **Conclusion**
  - The trunk phloem punch protocol is classified as a research/preparedness project, not a current operational activity.
  - Resource allocation must remain prioritized toward ACP trapping and vector monitoring.
  - Collaboration with Doug Hill (pending grant funding) may enable technology transfer and protocol validation.
  - The protocol will be shared with partner labs (including Robert Kruger's lab) for reproducibility testing.

13. PACKING HOUSE FRUIT SAMPLING (FIELD ITEM F6)

The committee discussed a previously proposed idea of collecting discarded or symptomatic fruit from packing houses for HLB/stubborn testing.

- **Details**
  - Subhas Hajeri: Noted that the idea was dropped due to traceability concerns (mixed fruit from multiple growers) and potential reluctance from packing houses to participate.
  - The revised approach is for inspectors to collect unpicked symptomatic fruit still on trees during block inspections, particularly fruit showing HLB-like symptoms (lopsided, color abnormalities).
  - Ray Yokomi: Confirmed that fruit symptoms are generally more reliable indicators of phloem-limited diseases than foliar symptoms.
- **Conclusion**
  - Inspectors will collect symptomatic unpicked fruit from trees during block inspections as a supplementary diagnostic sample.
  - The packing house collection idea is set aside for now due to traceability and political concerns.
  - This approach is biologically sound and avoids regulatory complications.

14. LAB PROTOCOLS — MIQE/DVAN COMPLIANCE AND EXTRACTION OPTIMIZATION (LAB ITEMS L1–L6)

The committee reviewed lab action items covering protocol standardization, MIQE compliance, and optimization of insect extraction from sticky traps for multi-pest testing.

- **Details**
  - Subhas Hajeri: Described ongoing work to evaluate all lab protocols against MIQE guidelines, ensuring proper positive, negative, and buffer controls at every step from tissue preparation through DNA extraction and PCR.
  - Georgios Vidalakis: Referenced the APS Diagnostic Validation Network (DVAN) as an online platform for protocol validation, accessible to APS members.
  - Weiqi Luo: Suggested using reverse transcription qPCR (RT-qPCR) targeting 16S rRNA as a supplementary screening tool for very low-level HLB detection (CT values 38–39), noting this is used in the USDA-ARS lab in Florida.
  - Georgios Vidalakis: Confirmed RT-qPCR has been explored; noted that targeting 16S with an RT step may improve sensitivity and referenced a publication with additional simple improvements (white PCR plate, glycerol addition, etc.).
  - Subhas Hajeri/Dhiraj Gautam: Described ongoing optimization of insect extraction from sticky traps using HistoClear solvent, mortar and pestle, and BioReba bags as alternatives to bead-beating. Bead-beating is being phased out for bulk samples because it causes glue clogging in the extraction tubes and equipment, leading to incomplete DNA extraction. A fine-mesh strainer (similar to a tea strainer) is used to separate insects from dissolved glue after HistoClear treatment.
  - Subhas Hajeri: Reported that a single ACP among a bulk insect sample was successfully detected using the optimized protocol; noted that incomplete crushing was identified as the cause of one missed detection in initial trials, leading to protocol refinement: 4 cycles of 30-second grinding with 15-second rest breaks between cycles to prevent sample overheating while ensuring complete homogenization.
  - Robert Kruger: Noted that JC Chen (USDA-ARS, Parlier) cautioned that pooling large numbers of insects dilutes the target DNA, potentially reducing sensitivity; suggested metagenomic sequencing as an alternative for bulk trap analysis.
  - Subhas Hajeri: Confirmed plans to apply for grants on metagenomics combined with AI-assisted trap screening as a future direction.
- **Conclusion**

- All protocols will be evaluated against MIQE guidelines and the APS DVAN platform.
- RT-qPCR (16S target with RT step) will be explored as a supplementary low-level detection tool.
- Simple PCR improvements (white plate, glycerol, RT-qPCR) will be implemented.
- Insect extraction protocol will be finalized using mortar/pestle or BioReba bags; bead-beating is being phased out for bulk samples.
- Protocol reproducibility testing will be conducted with partner labs (Georgios Vidalakis, Robert Kruger's lab, and others).
- Current priority vectors for protocol development: ACP (primary), whitefly, and glassy-winged sharpshooter.

15. AI-ASSISTED TRAP SCREENING AND DIGITAL TRAP TECHNOLOGY (LAB ITEM L7)

The committee discussed the long-term vision for AI-assisted identification of insects on sticky traps and emerging digital trap technologies.

- **Details**
  - Saurabh Gautam: Described a pending grant application (SCBGP-2026) for AI-assisted trap screening; a funding decision is expected soon. Notably, program contacts were reached out to this week for additional information, which may indicate the application is advancing through final review stages.
  - Saurabh Gautam: Mentioned FarmSense digital traps that use acoustic detection to identify insects in real time; noted this technology works for some insects (e.g., moths) but is currently not applicable to ACP due to the lack of a chemical lure to attract ACP into the trap.
  - Bodil: Suggested that the lure development work (F3 trial) is a prerequisite for enabling digital trap technology for ACP.
  - Subhas Hajeri: Noted that real-time trap data would dramatically reduce the current 4–5-week lag between trap deployment and grower notification.
  - Ray Yokomi: Highlighted that pre-screening traps to remove non-target insects before DNA extraction will improve molecular assay quality and reduce dilution of target DNA.
- **Conclusion**
  - AI-assisted trap screening remains a high-priority long-term investment; await grant decision.
  - FarmSense and similar digital trap technologies will be monitored; lure development for ACP is a prerequisite.
  - Pre-screening of traps (removing non-target insects) will be incorporated into lab intake protocols.
  - Metagenomics combined with AI screening is a future direction; a broader grant application (including multiple crops) will be prepared for the next funding cycle.

16. FUNDING SOURCES

The committee reviewed available and upcoming funding opportunities to support the program's research and operational needs.

- **Details**
  - Subhas Hajeri: Listed several funding sources with due dates, including USDA-NIFA-SCRI, SCMP, SCBGP, PPQ 7721, and CRB grants.
  - Dahmoon Maeesomy: Highlighted Proposition 4 money (approximately **$17.5 million** total available) being administered through the California Invasive Species Council; offered CDFA as a potential lead applicant with APCD as a sub-awardee for funding streams not directly available to local governments.
  - Saurabh Gautam: Noted that many NIFA grants are restricted to land-grant universities or regulatory bodies (CDFA, CAC); APCD will need to partner or sub-award.

    - Georgios Vidalakis: Suggested that the risk model and multi-pest surveillance work could be framed under the Rapid Response RFA, particularly given citrus yellow vein clearing virus as an emerging pest.
- **Conclusion**
    - Dahmoon Maeesomy will send links for Proposition 4 / California Invasive Species Council funding to Subhas Hajeri.
    - CDFA will include APCD as a sub-awardee in relevant grant applications where local government cannot apply directly.
    - APCD will pursue a broader grant application for metagenomics/AI trap screening, expanding scope beyond citrus to specialty crops generally.
    - Citrus Nursery Board will be added to the funding list for nursery-related survey work.

17. <u>TAC-APPROVED OPERATIONAL PLAN</u>

Subhas Hajeri noted that the ultimate goal of the TAC process is to produce a formally TAC-approved operational plan for the agency, covering multi-pest surveillance protocols for field and lab departments.

- **Details**
    - Subhas Hajeri: Explained that the agency has undergone significant protocol changes (from CTV to HLB to multi-pest) and needs a TAC-endorsed effective plan to provide institutional protection and operational clarity.
    - The draft protocols developed from the two prior meetings were presented as a first draft of such a plan.
- **Conclusion**
    - Committee members will review the draft protocol document independently before the next meeting.
    - One or two additional TAC meetings are anticipated to finalize and formally approve the operational plan.

<u>CHALLENGES</u>

- Coordination between APCD, CDFA, and county agricultural commissioners for residential area surveillance lacks a formal workflow; risk of duplication or jurisdictional confusion.
- Grower hesitancy in Ventura County (and elsewhere) limits access to commercial blocks for ACP trapping trials and sampling.
- No chemical lure currently exists for ACP, blocking the application of digital/acoustic trap technologies (e.g., FarmSense) for real-time ACP detection.
- Bulk insect extraction from sticky traps (for testing multi-pest by PCR) is still being optimized; glue interference and incomplete homogenization remain technical obstacles.
- Many federal grant programs (NIFA, etc.) are restricted to land-grant universities or regulatory agencies, limiting APCD's ability to apply directly.
- Ventura County organic orchards with HLB-positive psyllids represent an uncontrolled breeding ground risk; compliance with treatment requirements is reportedly poor, creating ongoing risk of psyllid population expansion and potential HLB spread to other commercial citrus areas.
- The HLB epidemic simulation tool is complex and may be difficult for practitioners to use without dedicated training or a liaison staff member.
- Ventura County grower hesitancy and restricted ACP access in the Central Valley create practical barriers to conducting field trials and obtaining representative samples from commercial operations, potentially limiting the ability to validate protocols under real-world conditions.

<u>KEY TAKEAWAYS</u>

- The Technical Advisory Committee (TAC) held its second meeting to review action items from prior meetings and advance the multi-pest surveillance program for the citrus industry.
- Minutes from the March 31 full TAC meeting and the April 30 subgroup meeting were reviewed and approved with minor amendments.
- Weiqi Luo (Weiqi) demonstrated two modeling tools: a census travel-based disease introduction risk platform and an HLB epidemic simulation tool, both recommended for integration into the agency's survey design.
- The committee endorsed a risk-based, prioritized approach to field operations, with ACP (Asian Citrus Psyllid) as the top surveillance priority.
- A working group was established to assign pest weighting percentages and refine the multi-pest risk model for Central Valley.
- Lab protocols for insect extraction from sticky traps are being optimized, with reproducibility testing planned across multiple labs.
- Funding opportunities were identified, including Proposition 4 money through the California Invasive Species Council and USDA rapid response grants.

ACTION ITEMS

- **Subha Hajeri / APCD team**
  - Amend subgroup meeting minutes to replace "rather than" with "to enhance" in the visual survey language and circulate final approved minutes.
  - Split action item A3 into two items: (1) agency/grower engagement outreach and (2) pest/disease-specific outreach coordination; add UCANR as a partner.
  - Develop a coordination flowchart defining the workflow between APCD, CDFA, and CAC for introduction risk areas, including authority, permissions, and information-sharing steps.
  - Establish and convene the risk model working group (members: Weiqi Luo, Neil McRoberts, Sandra Olkowski, Georgios Vidalakis, Bodil Cass, Jim Gorden, John Fisher IV, Libby Ouellette, and additional volunteers as needed to assign pest weighting percentages and refine the multi-pest risk model for the Central Valley.
  - Schedule a dedicated working group session to explore the HLB epidemic simulation tool in depth.
  - Identify and pursue grant funding to support a student research assistant for the ROI white paper/peer-reviewed article in collaboration with Jonathan Kaplan and Weiqi Luo.
  - Develop and distribute simple digital reference tools/pocket guide for trappers listing top symptoms to flag during trap servicing.
  - Continue the ACP trap lure efficacy trial in the two commercial blocks; design a separate smaller experiment for trap performance in non-citrus locations (e.g., parking lots).
  - Contact trap manufacturers to obtain modified traps with black borders, decoy yellow color, and magnesium oxide coating for visual cue enhancement trials.
  - Finalize the insect extraction protocol from sticky traps (mortar/pestle or BioReba bags); schedule reproducibility testing sessions with Robert Kruger & Georgios Vidalakis' lab and other partner labs.
  - Implement simple PCR improvements in the lab: white PCR plates, glycerol addition, and RT step for HLB detection.
  - Evaluate all lab protocols against MIQE guidelines and the APS DVAN (Diagnostic Validation Network) platform.

- Prepare a broader grant application for metagenomics/AI-assisted trap screening, expanding scope to specialty crops generally (not citrus-only) for the next PPQ 7721 funding cycle.
- Add Citrus Nursery Board to the funding source list and explore small grant opportunities for nursery-related survey work.
- Review the draft multi-pest operational plan document independently and prepare for finalization in one or two subsequent TAC meetings.
- Discuss with Weiqi Luo what additional scientific or technical support is needed and bring resource requirements back to the committee if needed.

- **Weiqi Luo**
  - Share links to the census travel risk platform and the HLB epidemic simulation tool (including the 150-slide detailed presentation) with Subha Hajeri for distribution to the committee.
  - Participate in the risk model working group to refine pest weighting and integrate additional risk layers (residential citrus proximity, packing houses, transportation corridors, interception data, abandoned citrus locations).
  - Explore incorporating domestic movement data (Department of Transportation truck movement data) and county interception data into the risk model.
  - Share the recent publication on RT-qPCR for low-level HLB detection with the APCD lab team.
  - Collaborate with Jonathan Kaplan on the economic impact/ROI analysis, sharing the existing HLB cost-benefit simulation tool.

- **Dahmoon Maeesomy**
  - Send links and details for Proposition 4 / California Invasive Species Council funding (approximately $17.5 million available) to Subha Hajeri.
  - Include APCD as a sub-awardee in relevant CDFA grant applications where local government cannot apply directly.
- **Jonathan Kaplan**
  - Assess data availability and feasibility for the ROI white paper/peer-reviewed article.
  - Identify potential student research assistant candidates and determine funding needs.
  - Share the newly launched HLB grower decision-support website with Weiqi Luo and the committee.
  - Collaborate with Weiqi Luo on reviewing each other's economic and simulation tools for potential integration.
- **Bodil**
  - Participate in the risk model working group.
  - Review Saurabh Gautam's ACP trap lure trial design and provide feedback on the separate non-citrus trap experiment design.
  - Provide input on ACP lure attractant distance thresholds and visual cue literature for the trap enhancement work.
- **Claudia Vasquez / CDFA**
  - Schedule a follow-up meeting with APCD to discuss how the census travel risk model can be integrated into CDFA's residential multi-pest survey grid selection methodology.
  - Explore opportunities to apply for grants with APCD as a sub-awardee.
- **Libby Ouellette / Fresno CAC**
  - Participate in the risk model working group.
  - Coordinate with APCD on the workflow for reporting suspect regulated pest observations to the county commissioner (quarantine and standards division).
- **Saurabh Gautam**
  - Share the draft ACP trap lure trial plan with Weiqi Luo and Bodil for review.

    - Continue optimizing the trunk phloem punch protocol and coordinate reproducibility testing with partner labs.
- **Dhiraj Gautam**
    - Continue insect extraction protocol optimization (HistoClear/mortar-pestle/BioReba approach) and document results for sharing with partner labs.
    - Develop the pre-screening protocol for sticky traps (removal of non-target insects before DNA extraction).