

**Citrus Science Advisory Panel Recommendations**  
**Stakeholder Update Call**  
**April 16, 2014**

**Roll call:**

Duane Schnabel (CDFA)  
Magally Williams (CDFA)  
Bob Wynn (CDFA)  
Victoria Hornbaker (CDFA)  
Jason Leathers (CDFA)  
Austin Webster (CDFA)  
Nawal Sharma (CDFA)  
Tom Delfino  
Nick Condos (CDFA)  
Ed Laivo  
Spencer Halsey  
Aaron Dillon (Four Winds)  
Don Dillon (Four Winds)  
Bob Atkins (CDFA)  
Art Gilbert (CDFA)  
Sara Khalid (CDFA)  
Fred Crowder (San Mateo)  
Margaret Cornell (CDFA)  
Kurt Floren (Los Angeles)  
Debby Tanouye (CDFA)

David Pegos (CDFA)  
Tina Galindo (CDFA)  
Ruben Aria  
Bob Blakely (CCM)  
Denis Hanes (Tulare)  
Mary Ann Rajala (Santa Barbara)  
Jim Allen (Solano)  
Dan Dryer (CPDPC)  
Cynthia LeVesque (CRB)  
Brian Taylor (CRB)  
Luci Kumigai (CDFA)  
Cheryl Blomquist (CDFA)  
Richard Bennett (CPDPC)  
Bob Zuckerman (B&Z)  
R Roger Smith (Tree Source)  
Tim Golden (Colorama)  
Tia Russell (Duarte)  
Zea Sonnabend (CCOF)  
Gwendolyn Wyard (OTA)  
Kevin Olsen (CPDPC)  
Kim Wilenius

Margarete Krick (CDFA)  
Vince Areano (CDFA)  
Amy Mitinger  
Leonard Massey (B&Z)  
Ronnie Eaton (Alameda)  
Tom Mulholland  
Prakash Hebbar (USDA)  
MaryLou Polek (CRB)  
Josh Kress (CDFA)  
Jose Lima  
Mary Helen Seeger (Four Winds)  
John Seeger (Four Winds)  
Ellen Kragh (Ventura)

**SAP members:**

Joseph Morse  
Mark Hoddle  
Tim Gottwald  
Beth Grafton-Cardwell  
Ed Civerolo  
Georgios Vidalakos

**Meeting called to order at 9:02 am**

Introductions and welcome: Victoria Hornbaker & Jason Leathers

Nick Condos: Acknowledged all the hard work everyone had done.

- Began the process of soliciting advice from the SAP last year
- Many of the most knowledgeable scientists -- help inform and guide our actions going forward.
- Advice must be vetted and filtered
- Try to base everything we discuss today in science
- Unique format we are using to roll out panel's recommendations – large meeting where all the stakeholders are together = better understanding of how all the parts work together.

Dr. Jason Leathers: We asked the SAP a total of 12 questions (**Answers from the SAP are in bold text**):

#1: What is the appropriate size of treatment areas around ACP find sites in eradication zones under a variety of scenarios?

Answers:

- a) An urban area where no HLB has been detected: **Treating all urban ACP hosts within 400m as is currently done seems appropriate as well as any commercial citrus grove that falls within 400m.**
- b) An urban area where HLB has been detected: **Treat 800m for urban ACP hosts as well as any commercial citrus groves that falls within 800m. In addition, background checks should be done to try and determine why HLB was likely present. All**

infected trees should be removed rapidly and trees in the area should be tested for CLAs using the best detection methods available at that time, especially during the spring and fall when titers are highest. Because transmission of CLAs within ACP occurs at low rates, detection of CLAs in ACP nymphs from an urban tree is proof that the tree is infected with CLAs.

- c) A commercial grove where no HLB has been detected: **Treat that grove and any grove or urban ACP hosts that fall within 400m.**
- d) A commercial grove where HLB has been detected: **Treat that grove and any grove or urban ACP host that falls within 800m. In addition, background checks should be done to try and determine why HLB was likely present. All infected trees should be removed rapidly and trees in the area should be tested for CLAs using the best detection methods available at that time, especially during the spring and fall when titers are highest. Once the cumulative number of infected trees in that grove has reached 2%, all trees in the grove should be removed. Because transovarial transmission of CLAs within ACP occurs at low rates, detection of CLAs in ACP nymphs from an urban tree is proof that the tree is infected with CLAs.**

Questions/Comments: Leonard Massey: Why are some areas 800m and others 400m?

- Debby Tanouye: In areas that are generally infested, we are treating 400 m to give protection to the growers in the area. 800m are being treated for the areas where we have single finds or feel we have a chance of eradication.
- Victoria Hornbaker: areas south of SLO and Santa Barbara will continue to be 400m, whereas other areas will be 800m. Recommendations: Areas where there is HLB: 800m. Areas without HLB: 400m.
- Joe Morse: Can we discuss the portion regarding tree removal?
- Dr. Jason Leathers/Victoria: ran it through the incident command system – if we have an ACP nymph that is confirmed to be positive for HLB (tested through PCR), we would go back to the tree where the nymph was collected and treat the tree as a positive.
- Victoria: The 2% is something we would need to work with the grower community on.
- Nick Condos: Cannot remove trees, legally, at this time unless the tree itself is tested to be positive. Science is one thing, but the law/current legal authority we have is something different – due process issues in trying to prove this 2% threshold.
- Joe Morse: Taking out only the infected trees doesn't work in Texas. Doesn't address the latency period.
- Nick: Issue: if we move beyond the removal of confirmed infected trees, where does the removal stop? Maybe we need to be noting where we need further research on these things. How can we develop the science that tells us, definitively, how far out to go from a known positive tree?
- Caller: How can we rapidly implement this to change the law? Rapid detection and response is key.
- Nick: We need to look at the impact of changing the law. What would the law need to look like to give us more authority to move forward? Need to look at it from a legal perspective, as well as other perspectives, in order to figure out what needs to be changed.
- Need to form subcommittee
- Dennis Hanes: if new technology is able to detect HLB, do we still need to do PCR to consider it positive?

- Victoria: Yes – at this time, we need to have it confirmed via PCR in order to consider it positive for HLB. Early detection technologies are still considered experimental.

#2: To mitigate risk of natural spread of HLB, we currently treat ACP detections in a 2-mile wide buffer on either side of the border with Mexico. What is the minimal width of such a buffer that will mitigate the natural movement of HLB?

Answers: **Two miles on either side of the border (four miles total) appears to be a suitable minimal width.**

Questions/Comments: None

#3: Are the early HLB detection methods in development (sniffer, root survey, metabolite analysis) appropriate for use now? Are they truly accurate?

Answer: **Research is underway in the UC Davis Containment Facility to try and answer this question. It is urgent that this work continue as fast as possible. The close agreement (on three separate trees, three different methods each indicated presumptive “positive” for CLAs) of several very different experimental methods on trees chosen around the Hacienda Heights Ground Zero tree are highly suggestive that several of these methods are accurate.**

Questions/Comments: None

4: Would it be beneficial to freeze dry leaves from asymptomatic, VOC positive trees for future analysis, when technology improves?

Answer: **In part, this is a matter of resources and their best use for answering scientific questions. In some cases, such leaves should be collected on ice (one method) or dry ice (three of the methods), delivered to the Citrus Research Board (CRB) Dimitman Laboratory for processing and then stored at -80°C for later analysis. Consult with the CRB lab (Dr. Polek) to see if this process can be streamlined.**

Questions/Comments: None

5: Beyond what level of HLB survey will we see diminishing returns?

Answers: **Right now is an absolutely critical time period with respect to finding and eliminating CLAs infected citrus trees in California. Based on experience from Florida, once one passes 2 – 8% CLAs tree infection, one sees diminishing returns.**

Questions/Comments: None

6: What role should tree nutrition play in ACP/HLB management? Is phosphoric acid a viable treatment for ACP?

Answer: **Proper nutrition is essential to citrus tree health and most commercial growers in California already practice good tree nutrition. The SAP absolutely rejects the concept that CLAs should be allowed to spread and that this disease can be managed through enhanced nutrition – unfortunately, many growers in Florida have taken this approach and are beginning to see dramatic negative impacts (e.g., very high levels of fruit drop this year; negative impacts on flavor which can be mitigated to some degree with blended juice but ruins a fresh fruit market like California’s). No – phosphorous (phosphite or  $H_3PO_3$ ) acid treatments are absolutely not the way to manage ACP or HLB.**

Questions/Comments: None

7: What method should growers use to facilitate the establishment of *Tamarixia radiata* and other biological control agents when they are introduced in and around groves? Will agents require refugia?

Answers: **Management of Argentine ant and other ants that interfere with biological control is essential to establishment of *T. radiata* in urban areas and to high levels of parasitism that will allow this parasitoid to spread as much as possible. Research and trials by pest control advisors (PCAs) and growers will help us learn which natural enemies can survive under various treatment programs in both organic and non-organic citrus. Leaving refugia of uncontrolled ACP in place is not wise.**

- Jason: In other words, do not leave a tree full of ACP to help the parasitoids.
- Victoria: we hope that if a biocontrol agent is released in an area and it does not have a host, it will disperse until it encounters a host.
- Bob: in the generally infested areas with urban communities surrounding them, there isn't going to be a problem having ACP available for natural refuge for the *Tamarixia radiata*.
  - o Trying to leave some trees in commercial groves is not necessary.

8. The California ACP/HLB Task Force and USDA TWG recommended a time period of 24 months to declare eradication of ACP from an area. This is to allow for the passage of 3 – 4 flushing cycles of citrus. Should the length of the quarantine be reconsidered in conjunction with the treatment program and a lack of finds?

Answer: **If 24 months pass and monthly traps and visual surveys do not reveal an additional ACP find, the SAP considers that a good time period to declare eradication a success.**

Questions/Comments: Caller: Could the same be said for 12 months?

- Jason: They recommended we keep it at 24 months, so that 3-4 flushing cycles pass, as ACP could reproduce and flourish during that time frame
- Caller: Same question – what if there were more than 3 or 4 flushing cycles in less than 24 months?
- Victoria: Part of the problem is that depending where you are, or the variety of the tree, you may have more or less flushing cycles in an area. Needs to be uniform across the entire state; cannot do this based on each variety.
- Nick: consider the fact that over 24 months you have more opportunity to check the traps. You have the flushing cycles, but also detection opportunities.

9. In lieu of the field cleaning process, chemical treatments are now considered sufficient to mitigate risk of spreading ACP on bulk fruit, stems and leaves from commercial groves in areas of low ACP prevalence.

a. What criteria should be used to determine areas of low pest prevalence?

Answer: **Based on science, the SAP considers southern California to no longer be an area of low pest prevalence and this will likely soon be true of other areas such as the San Joaquin Valley. Given the current HLB situation, the SAP does not believe chemical treatment is sufficient to reduce levels of ACP that might be carrying CLAs in shipments of fruit from southern California and coastal areas into the SJV. Instead, the SAP recommends that all fruit be run through a wet packing house wash/brushing before movement to the SJV and fruit should be moved in enclosed or tarped trucks. No treatment should be needed for movement of fruit within a quarantine zone. For movement of fruit within a SJV quarantine**

**zone to a non-quarantine area, the current list of chemical treatments appears adequate except the SAP further suggests two approved organic spray could be substituted for each approved traditional spray unless the treatment is deemed 'eradication' and then there are no organic treatments deemed eradivative.**

Questions/Comments: Zia Sonnabend (CCOF): finds this confusing – not sure if they are talking about post or pre harvest treatments.

- Victoria: it is a pre-harvest spray; if they spray before they harvest, they don't do the cleaning afterwards – it goes straight to the packing house.
- The cleaning is post-harvest, the spray is pre-harvest.
- b. Is there a different set of chemicals that would be sufficient for high prevalence areas?

Answer: **For the reasons stated above, the SAP does not consider any insecticide treatment to be sufficient for movement from southern California (because of the risk of moving CLAs inoculative ACP) into either a non-quarantine area or low-density area such as the SJV sufficient. Instead, all such fruit should be run through a wet packing house wash/brushing before movement and should be moved in enclosed or tarped trucks.**

Questions/Comments: None

10. In addition to treatments listed in Attachment 1, are there other efficacious alternatives for control or eradication of ACP in commercial organic groves?

Answer: **The SAP has modified the chemicals listed under Attachment 1 below to include four products deemed appropriate to list at present. The SAP does not know of sufficient efficacy data to add additional chemicals to the list at this time. It is important that additional organic testing be done so that the strongest products can be selected for use in organic citrus. The SAP does not consider organic products to be eradivative, but they may be used where eradication has been replaced with an areawide treatment program.**

Questions/Comments: Victoria: there is ongoing research for different organic products.

11. With most of the ACP detections in Tulare County being on traps placed on poles rather than within the canopy, should we change trap placement for the ACP program?

Answer: **Trials are currently underway to compare adult ACP trapping on cards hung using protocols used for GWSS vs by CPDPC vs by CDFR in urban citrus. Pending the outcome of those trials, data should be submitted to the SAP so that a recommendation can be made.**

Questions/Comments: None

12. On March 23, 2014 we will be 2 years without a HLB detection in California. What should be our exit strategy?

Answer: **The SAP believes an HLB exit strategy does not make sense given that it is extremely unlikely the Hacienda Heights infected tree is the only one in that area and the likelihood that CLAs inoculative ACP are moving northward from Mexico toward California. The long latency period between when a tree is infected with CLAs and when HLB symptoms appear (can be as long as 3-4 years depending on variety, size of the tree, time of the year, etc.) must be considered.**

Questions/comments: None

Other recommendations included in the SAP report.

## Section A: Rapid detection of ACP/HLB:

Top priority should be rapid detection of HLB-associated Liberibacter(s) and HLB, and the elimination/reduction of CLAs.

### A1. Survey for HLB twice a year. Focus on the high-risk areas.

- Victoria: CDFA does engage in a survey for HLB – right now, it is focused in southern California. Have two different surveys happening simultaneously: Hacienda Heights find (Zone Survey) and Risk Survey
- Zone survey:
  - Zone 1: 400m from epicenter; survey every host plant 6 times a year
  - Zone 2: 400m – 800m; survey 100% host 3 times a year
  - Zone 3: 800m – 1200m; survey 50% twice a year
- Risk Survey: developed using Dr. Gottwald’s Risk-based detection model
- Survey in Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura
- Looks like we will be likely able to complete two cycles annually in all areas, except maybe Imperial due to weather conditions.
- Questions/Comments: so we aren’t doing HLB survey in the rest of California?
- Victoria: No, the intention is to, over time, incorporate more areas. CRB has also done some sampling and survey work in addition to what CDFA is doing.
- Around each find we have had in the central valley, we do a visual survey around 800 meters for both symptomatic plant tissue, as well as the presence of ACP.
- Caller: So we have not surveyed areas where there is a potential for inoculum? Ex: Fresno urban surveys
- No, we have not yet at this time.
- Tom Delfino: Is CDFA planning on surveying areas that are outside the ACP/HLB zone? (Ex: San Francisco, Sacramento, etc.)
- Victoria: These surveys are labor intensive, so we are focusing our resources on high risk areas.
- Bob: Without the vector, the risk diminishes. If there is no vector to move it, it only moves by grafts. So, there is not much risk in those areas where an ACP population has not been identified.
- Caller: Are psyllids collected from the SJV tested for HLB?
- Victoria: Yes: the psyllids that are collected via visual survey are tested for HLB. We are not testing/analyzing trapped psyllids.
- Caller: How do you reconcile the SAP recommendations of twice a year with the process CDFA is currently using?
- Victoria: as soon as we get the risk-based survey protocol from Dr. Gottwald mapped, we will implement survey in the central valley.
- Caller: How long have we been working with Dr. Gottwald?
- Magally: Since September of 2012 (18 months).
- Victoria: Initial focus was on southern California and the Los Angeles basin based on the ACP populations – that’s why we focused on southern California.
- Debby: it is based on the fact that southern California is generally infested and we felt the biggest risk was there; felt we needed to allocate most of the funding to surveys in southern California, as not much has been found in the central valley.

- Within 800m of where the detections have occurred, we have done the survey. We do plan on initiating the survey in the central valley most likely in spring.
- We do have Dr. Gottwald's survey, but we are waiting for the grove information.
- Fred Crowder: In regards to surveys, he feels it may be prudent to do outreach in areas where there are large Asian communities.
- Victoria: we do have a robust outreach program geared toward Asian travelers; were at both San Francisco International Airport and Los Angeles International Airport. Even had something geared toward Chinese New Year.
- Ronnie: also feels that outreach is critical in the Indian communities, too, because curry leaves do move up through Los Angeles County. Recently had an interception.
- Magally: Cannot forget the Latino community – it is where we found HLB, after all.

**A2: Rapid exchange of information:**

- It is certain HLB will be found in CA again. We need to develop a communication system in which details on what sites have been sampled and the results (positive vs. negative) are communicated rapidly to Tim Gottwald so that he can update the HLB survey model and communicate modifications back to those who are conducting the surveys.
- Victoria: The data is being submitted to USDA, who gives it to Dr. Gottwald, in a timely manner. Additionally, CDFA is preparing a monthly situation report in which HLB sampling data will be included.

**A3: Retraining:** visual symptoms of HLB can be easily missed, so staff should be sent to Florida or Texas in order to get an idea of what HLB symptoms look like in the field.

- Victoria: has developed a proposal to bring forward to CPDPC meeting to send 6 key inspectors up to Texas and Florida for training.
- Ronnie: can you send that information, once available, to the counties so that the counties may send samples to the lab. Also, are there symptoms on curry leaves?
- Beth: the symptoms are extremely subtle and are not obvious.
- Caller: Florida has an extensive outreach and education program for this. Might want to get a hold of them so as not to “reinvent the wheel” on this process.
- Victoria: please send that contact information to us so we may get in touch.

**A4: Hacienda Heights experimental early detection surveys:**

CPDPC has authorized the funding of a “Transect Survey.” The SAP feels the transect survey is extremely important and it needs to be done as soon as possible.

Victoria: the survey was a project that CRB had undertaken.

- Brian Taylor (CRB): in cooperation with CDFA, CRB has selected 75 sites in Hacienda Heights that spread 5 miles out.
- Used a combination of transect surveys and Dr. Gottwald's Risk Survey
- Survey has been completed. 75 samples have been collected and submitted to various researchers.
- MaryLou: Samples are being sent to various researchers; have not had any results sent back to them; still a work in progress
- Some went to Riverside; CRB lab staff processes the samples using varying protocols depending on the detection method

- Victoria: these trees were not subjected to the VOC sniffers, correct?
- MaryLou: Correct. It is a double-edged sword: one of the major pieces of equipment that could have been used is inside the contained research facility, so once it goes in, it does not come out until it has been decontaminated, which takes several weeks.
- Ronnie: What is the timeline for when we can expect data to be shared?
- MaryLou: I don't know. It depends on the researchers.
- Cynthia: they are testing the samples currently in the lab; doing root and stem samples right now via PCR. Anticipating results to be shared by, hopefully, the end of the month.
- MaryLou: The group that participates in the contained research cooperative project has a call every two weeks → encourages anyone on the SAP to participate in the call so they get updates every two weeks. She also encourages the SAP to take a tour of the contained research facility.
- Bob: can we send the SAP the information for those calls so they may attend?
- Victoria: MaryLou can send that information to Jason so he may distribute it to the group.
- Nick: maybe this is something we should do now – schedule a tour. A tour will help us all understand the nuances of what is going on with the advanced detection methodologies.

#### **A5: Commercial grove CLAs sampling**

The SAP suggests that a high priority of the CPDPC is sampling and testing for CLAs in psyllids (and perhaps plant material when suspicious symptoms are present) in commercial citrus groves. Obviously, funding is limited and CLAs sampling in the urban areas of Los Angeles is a very high priority. But the SAP also suggests that commercial citrus sampling should be initiated, especially in areas where areawide ACP management programs have begun and ACP is established.

Questions/Comments:

Victoria: Currently doing trapping and/or survey in Imperial, San Diego, Orange, Riverside, San Bernardino, Ventura, Santa Barbara, Tulare, Kern, Fresno, San Luis Obispo, Kings, Monterey and Placer counties. All of these areas, except for San Bernardino, are running traps. Traps are on a 2-week servicing. Riverside, San Diego and San Bernardino: HLB/ACP survey

Art: There are three additional counties being trapped: Merced, Stanislaus and San Joaquin.

- Commercial is getting trapped along with the urban.
  - o Monthly servicing.

#### **A6: Expanding capacity for CLAs testing:**

SAP believes that processing a large number of samples in a timely manner is critical and the volume of this work is going to increase exponentially in the future. Thus, the processing capacity needs to be expanded substantially. A suggestion of the SAP is that the CDFA lab continue testing all leaf and root samples and the CRB lab assume the processing of all ACP samples, including those collected in zones 1, 2 and 3 around Hacienda Heights and other high risk areas. The SAP also suggests that the current Zone 1-3 plant samples continue to be collected per the current protocol.

Victoria: For the period of January – March 2014, CDFA averaged 142 ACP samples per month

- Only testing ACP from the Hacienda Heights area; sending the rest (~3,500) to CRB for analysis.



- Both labs are authorized to pool up to 25 adult ACP per sample and up to 75 nymphs per sample.
- CDFA lab can currently handle 3,800 samples monthly, but can increase that to 7,680 samples per month by adding two additional staff. Current cost per sample is \$12.95.

CRB: can run 9600 samples monthly at this time – this capacity will double if they hire staff. Current cost per sample is \$12.26

Plant tissue: CDFA tests all the regulatory plant samples. January – March 2014: lab averaged ~1400 plant samples per month. Most samples are from the LA area (87%) and 60% of the LA samples are from the Hacienda Heights area.

- Lab can currently handle 1,400 plant samples monthly, but can increase that by 1,840 samples per month by adding one additional staff. The current cost per sample at CDFA is \$15.88.

CRB is currently processing an average of 932 plant samples – able to handle that easily, may be able to increase this if additional staff is hired. Current CRB cost per sample: \$14.85.

- Caller: Cost for ACP samples and plant samples about the same?
- Victoria: the plant samples are a little bit more expensive than the ACP samples, for both labs.
- Georgios Vidalakos: have we compared both costs of running samples here vs running samples in Florida as well as testing capacities? May be room for improvement. Can we get better? Or are we the same?
- Victoria: not just the cost of running the reagent to run the sample – it's the cost of running the whole program.
- Georgios: we can ask if Florida can recommend a means for improving our testing capacity.
- Tim Gottwald: suggests reaching out to Mike Ireys' lab
- Tom Delfino: estimate of when the existing capacity will be exceeded by the number of samples that need to be processed?
- Victoria: I don't know how that would be estimated. It's based on sampling.
- Tom: SAP has said that the requirement will increase exponentially over time – maybe they have thought about the trajectory of need and have figured out when the paths will cross.
- Duane: the issue with the lab sampling limitation is the labor – leaf sampling and leaf punches; everything else is fairly automated, so the problem is on the front end.
- Bob Atkins: So the equipment is not the limitation at this point?
- Duane: Correct. Both of the labs are mostly automated.
- Victoria: the consensus is that the HLB find in Hacienda Heights is not an isolated incident – as the plants begin to come out of the latency period, we will see more and more symptomatic tissue, therefore more samples will be sent to the lab.
- Cynthia (CRB lab): if we had a second shift, we could basically quadruple our testing capacity.
- Time is added by changing knife blades for cutting, as well as gloves, for every sample.
- Georgios: agrees the most difficult and time consuming part is bringing in the sample and putting it into a tube or on a plate.
- Has seen places where they have simplified the process by not taking too many precautions in terms of cleaning and throwing away the blades.

- Believes his guys use the same knife to cut all leaf samples; believes cross contamination is not an issue.
- Cynthia: Blades DO need to be changed – cross contamination HAS been observed. However, cleaning the glass plates and changing the gloves for every single plant sample reduces/eliminates cross contamination → adds time.
- Georgios: Agrees. The SAP may test that protocol because if something comes up as positive, we are going to go back and recheck it. It doesn't matter if we identify immediately one tree or 10 trees, so maybe we can change our gloves every 10 trees.
- Cynthia: Fine with her, but USDA is the one who created this protocol. In order for the CRB and CDFA labs want to remain USDA certified, it is mandatory for them to follow this protocol.
- Georgios: Understands this, but maybe we don't do everything in the first round, but rather have a preliminary round of screening in order to reduce costs?
- Cynthia: Agrees this would save a lot of time and money.
- Nick: Feels this is an interesting concept. These samples are being run in such a way that if something comes back positive, we take regulatory action on them. Our lab processes need to be unassailable in the respect that someone would be able to challenge it and say we don't have good cleanliness techniques and that there may be cross contamination.
- If the goal is to screen lots of samples at a lower biosecurity standard, we have to be cognizant of the fact we may not be able to take action on that; may only be able to do so if we re-sample using proper Biosecurity standards. We need to weigh the pros and cons of this.
- Bob: the field end is the limiting factor – the bottleneck is not the lab.
- Nick: maybe this is an issue for the CPDPC committee to address, as this is largely paid for by them.
- Magally: if we want to apply what Georgios is saying, then we will have to do a classification of the samples to determine what is a risk and what is not. Those that are a risk would receive the entire testing procedures, whereas the other batch could be processed the “quick” way.
- Prakash: samples from a non-quarantined area should be processed with caution. Those from inside the quarantine area: if it is a matter of detecting a new positive, he doesn't have too much objection to a screening process.
- Caller: can we form a subcommittee?
- Victoria: get the two labs together so they can discuss where they can do some high throughput sampling techniques without creating issues in regards to the certification of the labs.

#### **A7: ACP treatments/sampling in the Hacienda Heights area**

- HLB positive nymphs may be the best way to confirm a tree as HLB positive.
- How quickly does an ACP nymph become detectable with PCR?
- Tim Gottwald: As soon as it acquires the bacteria, it should be detectable.
- Magally: the 4-5 instar of the nymph.
- MaryLou: they detected it in everything BUT the first instar.
- SAP recommends that Beth Grafton-Cardwell and Joseph Morse work with CDFA to develop an optimal treatment program.

- Joe Morse: We don't want to do anything that will increase the rate of refusals. Is there any way we can coordinate the sprays and sampling so that we reduce the amount of visits we make to Hacienda Heights?
- Victoria: Debby and I are going to work with the crews to achieve this.
- Three trees have tested positive in Hacienda Heights using early experimental detection methods – SAP recommends we get homeowners to voluntarily relinquish those trees.
- Victoria: CRB would be the entity to take the lead on talking to the homeowners to voluntarily remove the trees ASAP.
- At this point, they have been focusing on the transect survey, but CRB would be the ones taking point on this; CDFA would take the lead once the trees were confirmed to be positive for HLB.

#### **A8: Voluntary Removal of Hacienda Heights trees**

- Recommend that we enlist all of the homeowners in zone one (~565 trees).
- Bob Atkins: we really need to push outreach, especially if we get any evidence from these trial techniques that indicate there is infection present that PCR is not picking up. Need to figure out a strategy to gain the highest voluntary compliance from that area.
- Victoria: CDFA would not have the authority to do that sort of outreach. We can work with our outreach contractor to develop some positive messaging. We cannot advocate going out and doing that activity – but if a research entity wanted to volunteer to do this, that is possible.
- Joe Morse: Wait for the transect data to come back, as that will give us a better idea. If HLB has really spread outside the core, then removing the core is not going to do us any good.

#### **B: Longitudinal Study Being Conducted in the UC Davis Containment Facility**

##### **B1: Varieties, replication, timing:**

- Mary Lou: experiment 1 is in progress – obvious this will need to be repeated several times. She encourages the SAP to tour their facility.
- Huge space constraint, so working on multiple strains is not likely to happen at UC Davis.
- Michelle Cilia of Cornell University does have the facility to do this.
- Plants have been inoculated; have been problems with the infected psyllid colony, so that did not start at the same time as the graft inoculation.
- Once we get through experiment 1 and regroup, experiment 2 will go on; this is already planned.
- Cristina Davis is afraid that removing tissues will compromise the profile
- Groups are collecting and analyzing their data. Hoping that some of the researchers will have some results by the next conference call on April 25<sup>th</sup>.

Question/Comments: Aaron Dillon: is Davis looking at the psyllid detection method developed by Richard Lee?

- MaryLou: no, we are not using that. The facility is set up to run PCR, so it is just as easy to run the psyllid via PCR. All of the material that has gone into the facility originated from Georgios' program (CCCP).

Bob: back to the three trees still in Hacienda Heights: were those among the samples taken by Brian Taylor in his transect survey?

- Victoria: No, they were from the original survey done around the epicenter with the VOC.
- Bob: Were they re-sampled?
- Brian Taylor: Those three trees were re-sampled using all the alternative techniques, but they are not included in the 75 samples that were taken during the transect high risk survey.
- Bob: Ok, was just curious if the results from the transect survey could be used to go back and seek voluntary removal.

## **B2: Other Strains of CLAs**

- No questions or comments.

## **C: Potential for Movement of CLAs Infected ACP with Fruit Movement**

### **C1: Movement of fruit from Mexico into the U.S.**

Questions/Comments:

- Victoria: there is a manual that discusses moving fruit from Mexico to the U.S.
- Prakash Hebbar: meeting with SAP at a later date.

### **C2: ACP treatment buffer along the California – Mexico border:**

- Caller: Do the treatments independent of trapping? Or only 400m around where something is found?
- Victoria: treating 400m area around ACP finds in the buffer. We are maintaining a 2-mile buffer north of the CA – MX border. Mexico does something similar.
- Joe Morse: Would it be less expensive to treat every host within the 2 mile buffer?
- Debby Tanouye: No
- Bob Atkins: going to something like an area-wide treatment in that area would not save cost?
- Debby Tanouye: No – we would still have to identify every citrus host.
- Joe: So trapping is less expensive?
- Debby: Not necessarily

### **C3: Movement of fruit from southern California into the San Joaquin Valley**

Questions: None.

## **D: Recommendations Regarding Areawide ACP Treatment Programs**

### **D1: Optimal size of areawide treatment programs**

Questions/Comments: None.

### **D2: Commercial ACP treatments**

Questions/Comments:

- Victoria: there has been work in organizing area-wide treatments, both in SoCal as well as in the central valley. Gottwald is close to having his optimal CHMA protocol put together.
- Zia (CCOF): Organic community is strongly supportive of the area-wide treatment program. What are the next steps? Is there anything the stakeholders can do to properly organize and fund this?

- Victoria: the best thing would be to work with the growers who are part of your different organizations. That is the best way to get participation.
- Joe Morse (?): We need something that is going to make them want to cooperate with our efforts. Are there organic options for areawide treatment?
- Beth: they are not linked to eradication in the area-wide. This is problematic for the organic growers if there isn't something strong enough to be considered eradicated.
- Believes that the organic treatments will be fully accepted in the areawide treatment program, and that is what they are planning.
- Doesn't know when SJV is going to switch from eradicated efforts to Areawide.

### **D3: Urban treatments around commercial citrus**

Questions/Comments:

Victoria: working with Drs. GC and Morse to explore alternate treatment options for organic growers and sensitive environmental conditions.

### **D4: ACP sampling within areawide programs**

Questions/Comments:

Victoria: Joe expressed it would be better to collect live psyllids for HLB analysis than to conduct trapping activities in heavily infested areas.

- Bob: that would be what CPDPC or CDFA is doing, but we are also suggesting that PCAs working these groves at least do pre and post treatment.
- Victoria: this is the tool that Beth is looking at developing. Something that they can collect information to use to make recommendations to growers in order to control the ACP populations.

### **D5: Management of abandoned or poorly managed groves**

Questions/Comments:

- Jason: Sooner, rather than later, is when we should explore mitigation options for abandoned groves.
- Victoria: working with the liaisons to start identifying abandoned groves so that owners may be contacted and educated regarding the situation.
- San Diego Co has started working on a tactical plan – it is being revised so that it will meet the needs statewide. We are trying to be as proactive as we possibly can.
- Bob Atkins: will do a presentation with CACASA; will make sure they have a copy of the tactical plan.
- If we go to the mandatory/abatement of these groves, that will fall primarily to the county Ag commissioner.
- We need to look at the definitions of an abandoned grove
- Gwendolyn: can we get more information regarding the time table of this areawide treatment?
- Victoria: in southern California, we have already moved forward on some areawide treatments.
- Beth: we have not decided when this would take place. Finding psyllids will obviously be a trigger. A lot of this is going to depend on how many psyllids appear in the central valley in the months to come.
- Victoria: Areawide treatment in the central valley does not mean that CDFA will cease to

respond to individual psyllid finds in the central valley – these would be independent of each other.

- Areawide would be for the growers in the area.
- Nick Condos: last year, we were attempting to eradicate in Tulare Co.
- SAP was evaluating if eradication was feasible – they found it is not feasible in Tulare Co. As a result:
  - We are not going to mandate treatment in Tulare, but we will still respond to the finds of psyllids.
  - Will not need to get warrants for residential refusals.
  - Tulare County: the next psyllid that is found is not going to trigger mandatory treatment – growers can still use organic product.
- Bob: How will this affect quarantine boundaries in the area?
- Nick Condos: the two are unrelated. The size of the quarantine is also unrelated to the effort of eradication.
- Art Gilbert: will we still be reacting to delimit finds?
- Nick: Treatments: Yes, but we need to think it through from the context that growers are doing areawide treatments.
- Bob: continue to do monitoring in the groves and taking psyllid samples to monitor for HLB and ACP populations.
- Caller: Is the quarantine zone remaining at 5 miles even though it has been determined that eradication is unlikely? If so, why?
- Nick: Yes, the quarantine zone is remaining the same size, as eradication efforts and quarantine boundaries are unrelated items.
- Leonard Massey: reason for delimit is to see if it is out further so we can see if we need to move the boundary out further, correct?
- Nick: these are things we need to discuss; we need to modify our protocols so when one thing changes, everything else still makes sense.

## **E: Recommendations Affecting Quarantine Areas**

Suggestions regarding current quarantine areas, which may change as these areas change.

### **E1: Tulare County quarantine area**

Questions/Comments:

Dennis Hanes (Tulare Co.): Does anyone else have a problem with the fact that we are using an ineffective trap, but there are 4 psyllids found on a single trap when we cannot find a population in the trees?

- Feels there may be cross contamination out in the field and that it has to be considered as a possibility.
- Nick: we use biosecurity protocols in the labs and the labs are confident in these procedures.

Tom Mulholland: where is the science on the ability for there to be a cross-contamination on traps when they are in the field/offsite and not being observed?

- Victoria/Nick: you are asking us to prove a negative here, and that is impossible to prove.
- Bob: finding a psyllid on a trap and then not seeing populations in trees is not uncommon – has observed this in San Diego/Valley Center.

## **E2: ACP Trapping methods**

Suggests changes to the trapping experiment to make it more scientifically sound.

Questions/Comments:

- Victoria: Brian Taylor submitted preliminary information. From what she could see, it did not seem like any one method was more effective than another. None stuck out as being statistically significant.
  - o Brian pointed out that more trials may be required.

## **E3: Citrus cull piles**

Questions/Comments: None.

## **F: Recommendations Affecting Citrus Nurseries**

**F1: Movement of tissue culture material and cuttings:** SAP feels this is extremely low risk of contamination

Questions/Comments:

Victoria: Ability for tissue to move between labs, but there are protocols for that as well. We have a permit to move untreated budwood from one structure to another without treatment.

- Caller: Labs within CA? Or labs in another state?
- Victoria: applies to any citrus tissue for laboratory analysis being moved within or between the state(s) → done under permit.
- Caller: Cuttings always contain leaves; some accommodation needs to be made for cutting for approved enclosed facilities
- Tissue culture material has to be lyophilized before it can be moved.
- Lyophilization: freeze drying. It freezes the tissue and sublimates/removes the water by going from frozen to vapor, rather than go through the liquid phase, which preserves the tissue.
- Leonard Massey: seems like the issue is that the recommendations say there is a low risk if the cuttings contain no leaves, but what is the risk if it does contain leaves?
- Georgios: if the cuttings/leaves are coming from an approved structure and the leaves are absent of ACP, it is okay.
- It all depends on how one interprets the language – needs to be discussed further in the subcommittee.
- Tom Delfino: if we re-draft the answer to the question, he suggests separating it into two different paragraphs: one for tissue culture, and one for budwood and cuttings.
- Victoria: it isn't just CDFA – there are USDA regulations with which we have to comply
- Caller: is it USDA protocol in California? Or is it a state rule we have to follow? Are we just, as a state, just choosing to follow this rule?
- Nick Condos: It is both: we have to be, at a minimum, as restrictive as USDA.
- Bob: we have to run parallel to USDA regulations.
- Victoria: different quarantine criteria for both ACP and HLB.

## **F2: Accelerate movement into protective structures.**

Questions/Comments:

- Leonard Massey: Definition of “Production” – when does that end? When the tree is sold or when it is put out for sale?
- Georgios: when the tree is put on the truck to leave the planting site – it is either leaving

to be sold or planted in a field somewhere.

- Jose Lima: Do seed trees need to be screened? → Lots of ramifications
- Georgios: If seed trees are outside and HLB/ACP is spreading around, they will become a source of inoculum.
- Cannot have thousands of seed trees outside to get infected.
- The best recommendation is to protect the nursery stock from beginning to end.
- Jose Lima: Do these trees have to be screened by law?
- Nick: No – these are being offered as good advice, not as definitive evidence that something needs to be regulated.
- Nick: Just because this advice was solicited by CDFA, it doesn't mean that this was done so with the intentions of turning these into laws. These recommendations are for a variety of stakeholders.
- Don Dillon: there is concern about having the citrus nursery production being screened. This is not in harmony with federal rule.
- Josh Kress: CDFA does not require, nor have the authority to require, all nursery stock to be put under screening at this time. We only have the authority to require that bud wood, seed and other source trees to be maintained under structure.
- Victoria: many of the recommendations being made in the document are not regulatory in nature.
- Aaron Dillon to Georgios: do you know of anyone producing seed under screen?
- Georgios: Believes Florida is producing seed under screen.
- Aaron: recalls Florida saying they cannot get enough seeds under screen, so that proposal was rejected outright.
- Georgios: Feels the recommendation still holds.

Nick: maybe we can reframe the recommendation.

- Georgios: this is *just* a recommendation – it doesn't mean it needs to be followed.
- Victoria: this discussion needs to be shelved – will be put to the working group.
- Mary Helen Seeger: thinks isolation from quarantine, pest and disease is another option. Also, placing a nursery in a location that is low risk is good technique.
- Jim Allen: this seems prescriptive with hard-coded dates.
- Victoria: This is just a recommendation

### **F3a: Storage and sale of citrus nursery trees at retail outlets**

Recommend that a working group be appointed as soon as possible in order to handle and assess this threat.

- Spencer Halsey: CANGC and members of industry drafted a citrus retail stock...
- Panel states that retail outlets are one of the highest risk pathways – he would like more data from the SAP regarding what threat retail poses.

Tom Delfino: how are we going to constitute who is on the working group?

CCNB will organize this, as they have the funding to organize it and what not.

Nick: Who from the SAP would be necessary to help clarify their recommendations if there are along the way?

- All of them are invited
- Victoria feels it is best to reach out to everyone to be a part of this.

Leonard Massey: timeliness of this? A lot of this has to do with movement of plants, so it would be good to have this tacked down as soon as possible.



- Idea is to get this going as soon as we can.
- Tom Mulholland: can we get a date for this?
- 30 days out is the goal.

**F3b: Interim plan for movement of nursery trees until all trees are inside protective structures**

Questions/Comments: None

**F4: Harmonization of USDA and CDFR regulations**

Questions/Comments: None

**F5: Use of solid systemics**

Questions/Comments: None