

**Citrus Pest and Disease Prevention Committee (CPDPC)
Interim Science and Technology Subcommittee Meeting**

**Meeting Minutes
June 15, 2021**

There was a quorum of the Science Subcommittee and the following were in attendance:

Science Subcommittee Members Present:

Dr. Ed Civerolo	Dr. Melinda Klein	Dr. Monique Rivera
Aaron Dillon	Kevin Olsen	Ram Uckoo
Dr. Subhas Hajeri	Dr. Etienne Rabe	Jack Williams

CDFA Staff:

Karina Chu	Amelia Hicks	Briana Russell
Kiana Dao	Victoria Hornbaker	Claudia Vazquez
Paul Figueroa	Anmol Joshi	Jennifer Willems
David Gutierrez	Sara Khalid	
Daren Harris	Keith Okasaki	

Other Attendees:

Teri Blaser	Dr. Weiqi Luo	Keith Watkins
Holly Deniston-Sheets	Dr. Neil McRoberts	Judy Zaninovich
Rick Dunn	Margaret O'Neill	Sandra Zwaal
Jessica Leslie	Sylvie Robillard	
Jasmine Lopez	Cressida Silvers	

All attendees participated via webinar

Opening Comments

Dr. Etienne Rabe called the meeting to order at 1:32 p.m.

Ethyl Formate Registration

Dr. Rabe began the meeting by stating there are no updates from the last meeting regarding ethyl formate registration other than additional information is being submitted to the United States Environmental Protection Agency (EPA) and the Department of Pesticide Regulation (DPR). The agencies requested additional information which will be collected later this week by Dr. Spencer Walse. Dr. Walse will record the fumigation process to show DPR and EPA a visual of what the ethyl formate fumigation process entails. Ram Uckoo requested a draft label for ethyl formate be shared with the subcommittee members.

Sweet Orange Scab Working Group Update

The first sweet orange scab (SOS) working group meeting will be held on June 16th to discuss the scientific and economic justifications needed to support the state interior quarantine rulemaking process. Dr. Neil McRoberts is currently working on a "white

paper” consisting of the history and science of SOS. The working group will compile and present documents to the Science Subcommittee for review and a recommendation for a path forward. Mr. Uckoo asked if the “white paper” will include references from other states that have already established an SOS quarantine. Ms. Hornbaker stated California is the only state considering an interior quarantine, as the United States Department of Agriculture (USDA) has implemented a statewide quarantine in all other states with an SOS detection.

Data Analysis and Tactical Operations Center (DATOC) Update

Holly Deniston-Sheets provided an overview of DATOC’s current research projects. DATOC is developing a Huanglongbing (HLB) risk index that considers environmental requirements for Asian citrus psyllid (ACP) and *Candidatus Liberibacter asiatica* (CLAs). DATOC is also exploring the potential correlation between flush, the environment, and ACP population which may be applied to the HLB risk index and provided to the biocontrol task force. Additionally, DATOC is working alongside Dr. Subhas Hajeri to complete a statistical analysis of the results of CLAs testing on different citrus tissue types. Dr. McRoberts and Tom Delfino are also working on a project that will support inspections of grate cleaned fruit.

ACP Trap Report

Ms. Deniston-Sheets explained that DATOC reviewed ACP trap technology and traps used in southern California and other states. She added that the yellow panel trap (YPT) has been studied extensively and produces good results. ACP catches on YPTs are directly correlated with field populations as well as population trends over time. Ms. Deniston-Sheets described YPT design variations that have been field tested. One design utilized mesh over the YPT to block larger insects and reduce the number of nontarget catches and debris. Another design utilized an alternative adhesive to allow ACP to be more easily removed from the trap. These traps were tested in Texas but found no difference in the number of trapped ACP adults. The three-dimensional (3D) traps collected fewer ACP than the YPT, but the 3D traps have an added benefit of allowing ACP to be tested for CLAs for an extended period of time due to a preservative. This preservative is effective up to six weeks. DATOC concluded that no new technology is available for immediate implementation by the CPDPC.

The tests were conducted to evaluate the YPT for polymerase chain reaction result accuracy, costs of the traps, labor, and timing. The added costs of the new traps may be outweighed by the extended ACP testing time gained from these traps. These methods may be useful in other states but need to be evaluated for efficacy in California.

ACP Trap Comparison

Claudia Vazquez presented slides comparing the standard YPT, Alpha Scents trap without an ACP lure, and Alpha Scents trap with an ACP lure. She discussed the potential benefits, costs, and downsides to each. The standard YPT uses a soft adhesive and is affordable at \$0.28 per trap. The Alpha Scents trap without an ACP lure has a plastic protective sheet covering a pressure sensitive adhesive and costs \$1.39

per trap. The Alpha Scents trap with an ACP lure is \$2.78 per trap, uses a pressure sensitive adhesive, but also includes a lure, whereas the other two traps rely solely on the yellow color of the trap to lure ACP. The type of adhesive used resulted in no real difference to the number of ACP collected, but does have some effect on CLAs testing. A standard YPT containing potential ACP needs to be tested for CLAs within a two-week window which means testing can only occur in the first month of delimitation, as delimitation traps are serviced weekly for the first month, then monthly after. Alpha Scents traps allow ACP to be tested for CLAs for up to three weeks, which provides an extra week compared to the standard YPT. If the ACP lure is found to be effective in California, it may help determine the locations of ACP populations.

3D Cylindrical Trap Update

Dr. Hajeri began his presentation with a slide comparing visual inspection, YPT, and 3D cylindrical traps used for capturing ACP. With visual inspection, staff are only in the field for a brief period which is not ideal, not cost effective for preliminary screening, and requires a follow up survey. However, visual inspection allows live sample identification and collection and inspection for HLB symptoms. In comparison, YPTs stay in the field 24/7, are inexpensive, and are ideal for preliminary monitoring. However, YPTs are not ideal for ACP sample collection and CLAs testing, and there is no pathogen status. Lastly, the 3D cylindrical traps remain in the field 24/7, are ideal for preliminary monitoring, delimitation monitoring, ACP sample collection, testing for CLAs, and the pathogen status is available for an entire sampling period (up to six weeks). 3D cylindrical traps are an expensive one-time cost of \$11.48 plus an ongoing cost of \$2.08 per trap and field and lab staff time. Dr. Hajeri reiterated that the cost and method used will depend on the Citrus Division's situational goal. According to Dr. Hajeri, because the Citrus Division's goal is to capture and test ACP for CLAs, the best method would be the 3D cylindrical traps. The 3D traps originated from Florida's Division of Plant Industry and Dr. Chandrika Ramadugu's work from the University of California, Riverside. Dr. Ramadugu's traps were able to capture testable ACP whereas YPT degraded psyllids. Dr. Hajeri has tested these cylindrical traps on organic citrus under a risk-based survey model. The traps were placed near residential citrus, packing houses, recent ACP find locations, and ill-managed citrus. Ten traps were deployed per day, per crew, with approximately 100 traps deployed in two weeks. The vial that collects insect samples is replaced after two weeks, and after four weeks the trap is relocated, and the vial is replaced. Out of the 1,627 traps deployed, only three traps were lost or damaged.

Dr. Rabe opened the floor for questions and discussion regarding the presentations on ACP traps. Ms. Hornbaker commented that traps are susceptible to wind so the antifreeze in the traps may spill, which would require CDFA to amend its California Environmental Quality Act Program Environmental Impact Report (PEIR) to include the low toxic antifreeze. Ms. Hornbaker mentioned the design of the cylinders does not allow for the vials to be easily removed. Dr. Hajeri responded the newest trap design allows the cap to be easily removed to change the vial. Additionally, according to Dr. Ramadugu, the traps can be shortened. These traps will be deployed in an experimental trial in southern California to determine if more ACP are caught in the cylindrical trap relative to the YPT. Dr. Hajeri suggested adding a zip tie to the bottom of

the trap to secure it in place to prevent spillage from weather or other forces, and also recommended the cylindrical traps be deployed in locations other than a tree to determine if more ACP can be captured.

Dr. Monique Rivera suggested comparing ACP deoxyribonucleic acid (DNA) degradation in different regions with varying weather conditions. She recommended moving forward with the Alpha Scents trap due to the type of adhesive, studying potential DNA degradation over time, and then providing DNA samples for bioinformatic evaluation. Adding the use of Alpha Scents traps to the current USDA multiagency coordination (MAC) project would likely cost less than \$100,000 a year. Dr. Rabe asked if a comparative analysis of CLAs analysis in ACP captures with the different traps had been conducted. Ms. Deniston-Sheets reviewed literature and found that data from the 3D traps reported a lower capture rate than a YPT, but ACP may be tested for CLAs in a 3D trap for a longer period of time. Comparing pressure sensitive and traditional adhesive traps shows no difference in number of ACP captured. Ms. Deniston-Sheets said the Alpha Scents trap with a lure was generally effective, but results were inconclusive in California. Dr. Rivera stated that alternative blends of lures are available but questioned if the type of trap needs to change and what the advantages are in changing the trap type. Ms. Hornbaker added that CDFA is not planning to divert from using the YPT at this time but will continue to explore alternatives. Additionally, using the lure or cylindrical traps would require amending the PEIR. Mr. Uckoo suggested that YPTs could be used as a primary screening, and once ACP has been found, an additional method could be used depending on the region. Dr. Rabe asked Dr. Rivera how the Science Subcommittee can help her expand her research. Dr. Rivera proposed to review Dr. Mamoudou Setamou's recent proposal regarding DNA degradation. She will present a proposed work plan to compare all ACP traps, ACP catches, and DNA viability at the next Science Subcommittee meeting.

Mr. Uckoo inquired about trap limitations, such as temperature and region. Dr. Rabe said a comparative analysis for CLAs capturing and DNA degradation would be needed. Mr. Watkins supports the idea of moving forward with testing different traps in California, questioning whether different traps are any more effective than the current ones, and how testing different traps would be funded. Dr. Rabe stated other avenues for funding should be explored to supplement Dr. Rivera's MAC project funding.

Southern California HLB Program Update

Mr. Okasaki began the southern California HLB program update by stating the slide deck will be organized in a way that shows what has been accomplished while attempting to extract the actual cost of the southern California program. Budget and expenditures are known but the field and project codes are more complicated to break down by cost in southern California. He stated that his team will look into determining the effectiveness of the project. DATOC has provided updated modeling to compare effectiveness but is a work in progress. Dr. Rabe suggested the other Science Subcommittee members should look through the slides and provide feedback. He mentioned possibly submitting the slide deck to a panel of scientists. Ms. Hornbaker had a meeting with the Secretary discussing the program status and further stated that

having an expert panel review the program at large will be helpful in reviewing the program's strategic priorities.

Closing

Dr. Rabe adjourned the meeting at 2:52 p.m.