Citrus Pest and Disease Prevention Committee (CPDPC)
Interim Science and Technology Subcommittee Meeting
December 8, 2020 Minutes

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

Science Subcommittee Members Present:

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

CDFA Staff:

Karina Chu*	Victoria Hornbaker*	Keith Okasaki*
Kiana Dao*	Anmol Joshi*	David Phong*
Paul Figueroa*	Daniel Lee*	Derek Schulz*
David Gutierrez*	Zachary McCormack*	Michael Soltero*
Amelia Hicks	Alex Muniz*	Jennifer Willems*

Other Attendees:

Bob Atkins*	Jonathan Kaplan*	Sylvie Robillard*
Teri Blazer*	Jessica Leslie*	Keith Watkins*
Rick Dunn*	Mark McBroom	Judy Zaninovich*
Lisa Finke*	Dr. Neil McRoberts*	Sandra Zwaal*
Sara Garcia-Figuera*	Sandra Olkowski*	
James Gordon*	Curtis Pate*	

*Participated via webinar

Opening Comments:
Dr. Etienne Rabe called the meeting to order at 1:03 p.m. Throughout the meeting, Dr. Rabe displayed a presentation containing information previously provided by Dr. Neil McRoberts, Holly Deniston-Sheets, Anmol Joshi, Keith Okasaki, and from recent Science Subcommittee meetings. The presentation was reviewed throughout the meeting to elicit feedback from Committee members. No recommendations will be made to the full committee yet.

Review Compiled Questions and Answers
Dr. Rabe reiterated the overall objective of the committee: to quantify the effectiveness of the southern California residential risk-based survey program, Huanglongbing (HLB)-positive tree removal, and mitigations to curb the threat of HLB to the Californian citrus industry. This quantification takes into account the time and personnel required to complete activities; effectiveness of finding HLB-positive trees; quantity of undetected, asymptomatic, HLB-positive trees; and cost of actions intended to slow the spread of *Candidatus* Liberbacter asiaticus (*C*Las) positive Asian citrus psyllid (ACP) and HLB into commercial groves. The objective of updating and reviewing the assembled

presentation is to compile information to support current program activities or to determine if an alternate course is needed.

HLB Risk Survey

Mr. Okasaki presented data showing HLB risk-based survey activities conducted over the past few years in southern California. The data presented was noted as incomplete due to inconsistencies in reporting and record keeping by the Pest Detection/Emergency Projects branch. Mr. Okasaki will provide updated risk survey numbers broken down by southern California counties. Victoria Hornbaker presented a table showing the cost of collecting and analyzing HLB delimitation and risk-based survey samples. In 2020, HLB delimitation survey activities cost $7.2 million and risk survey activities cost $2.5 million. These expenditures include laboratory diagnostic fees. Ms. Hornbaker clarified that these 2020 expenditures may increase when the state fiscal year is closed out in the Financial Information System for California (FI$Cal). These numbers will be updated accordingly.

Program Cost

The program budget for federal fiscal year 2020-21 is $42.2 million. Ms. Hornbaker suggested the organization chart be divided up by districts to help the committee understand the total staffing allocation – both permanent and seasonal staff – in each district.

Cost is a concern regarding HLB and ACP laboratory diagnostics attributable to southern California program activities. Mr. Okasaki's staff will reach out to Lucita Kumagai to request a cost breakdown by year.

Total southern California expenditures reported for the 2019-20 federal fiscal year is approximately $10 million, to date. Activities included in these expenditures are risk-based survey, laboratory diagnostics, tree removal, ACP treatment, personnel, etc. As multiple related activities may be charged to a single field code, the cost of individual activities cannot be shown. For example, the field code for HLB diagnostics encompasses diagnostics for both delimitation survey and risk survey. At the request of the committee, Mr. Okasaki's team will work with staff from other districts to assess the amount of time required to complete specific activities and the correlated wages.

Southern California HLB Eradication Program

The total number of HLB-positive trees removed to date is 2,196. Due to COVID-19, fewer trees were detected and removed in 2020 in relation to previous years. CDFA is currently conducting the second risk-based survey cycle of 2020.

Ms. Hornbaker reiterated that the Committee passed a motion to reduce the HLB delimitation survey radius from 400 meters to 250 meters surrounding a HLB-positive detection. The 2020-21 budget for HLB delimitation survey is based on a 250-meter radius area, resulting in cost savings. If ACP is detected near commercial citrus, CDFA will conduct additional surveys. Properties with more than 25 trees that are not considered commercial producers would also be surveyed if considered higher risk.

CDFA staff will reach out to Dr. Weiqi Luo regarding an updated estimated HLB incidence map including a residential GIS layer.

Dr. McRoberts clarified that the Statewide HLB Risk Estimates map represents normalized risk and is different from the estimated HLB incidence map. The risk layers for the HLB risk estimate map are the foundation of risk-based survey analysis and are not used for estimating incidence of tree disease. Risk layers are used to differentiate risk levels between residential and commercial citrus. Residential citrus provides an increased risk to commercial citrus whereas commercial citrus originates from certified stock and therefore does not add much HLB risk to residential properties. Accordingly, proximity to commercial citrus is a weighted factor in the model to prioritize sampling near and around areas closest to commercial citrus.

The percentage of areawide buffer treatment refusal rates varies by region and is estimated to be in the low-to-mid 30's. Mr. Okasaki's team will reach out to the southern California CDFA offices for a more accurate estimation of general refusal rates in each region.

Dr. McRoberts added that ACP populations tend to be higher in areas with a more suitable climate. He showed maps illustrating that the HLB epidemic is progressing relatively slowly in California in relation to Florida due to California's broad climatic differences. Dr. McRoberts said staff are gathering data from weather stations in three different areas of Florida and he expects Florida's climate to look similar to San Diego's. Dr. Rabe asked if the insect can detect the change in temperature and humidity. Dr. Rivera explained that temperature and humidity are connected; at higher altitudes, the humidity is lower. Florida is insulated by humidity and does not reach high temperatures like California. ACP is at risk when the humidity is at 20 percent and below and will not fly effectively at 20 percent humidity when the temperature is over 100 degrees Fahrenheit. The wind also influences ACP's ability to fly and will not move far unless forced by wind. In summary, climate plays a role in slowing the disease.

Data Analysis and Tactical Operations Center (DATOC) will provide an updated model showing the rate of spread of HLB based on chemical control, no control, removal of HLB trees, and removal with and without chemical control. Ms. Deniston-Sheets presented HLB randomized simulation models of what DATOC might project over 20 years in Ventura of commercial and residential citrus, comparing HLB control versus no HLB control. The model ran over 100 simulations with an increasing line over time representing an increasing number of HLB-positive trees in each area evaluated. The model can also set an optimal temperature for ACP to show how the temperature affects multiple aspects of the life cycle.

Southern California HLB Program Discussion

CDFA activities are progressing well despite issues arising with residential request for treatments, delays due to unavailability of sufficient treatment trucks, delays due to inclement weather, multiple response areas running concurrently, quarantine

expansions, inability to make contact with all residents of confirmed trees, delays due to COVID-19, and other unforeseen events.

The total area of southern California included in the HLB risk survey program is 4,993 square miles. The total HLB quarantine area to date encompasses 1,415 square miles (28 percent of the total area). Additionally, approximately 80 square miles (5.7 percent of the total area) have been treated with insecticides as a result of HLB detections. The majority of CDFA activities occur within the treatment area. Mr. Okasaki said he will work in congruence with David Phong to provide an updated area treated map.

Bob Atkins noted that the map showing the HLB quarantine and treatment areas does not include two recent quarantine area expansions. Ms. Hornbaker added that once an area has an established HLB quarantine boundary, the boundary will stay in effect indefinitely as there is no exit strategy within the USDA to remove an area from quarantine. CDFA is in the process of working with USDA to be able to remove a county from ACP quarantine if no psyllids have been found for at least two years. CDFA will continue to revisit areas within the current ACP regional quarantine zones to conduct survey and treatment. Dr. Rabe asked why we were able to stop treatment in Santa Clara, to which Ms. Hornbaker answered that HLB has not been detected in Santa Clara and the area was only an ACP treatment project. CDFA's action plan provides an exit strategy for ACP-only treatment areas.

The Committee members discussed the effectiveness of defensive borders against HLB around commercial citrus. Texas implemented a defensive border to defend their commercial citrus and discontinued actively searching for HLB, which reduced costs. Dr. McRoberts added that a defensive border around commercial citrus could be drawn rather than establishing a border around known HLB detections. Dr. McRoberts continued by reviewing the area covered by the risk-based survey in southern California. He presented a slide showing the relative workload potentially involved with establishing a defensive strategy. Establishing a defensive border around commercial citrus may initially seem like a smaller area to protect, but the perimeter - and therefore defensive border - would encompass a large area, even if a narrow buffer is used. Dr. McRoberts continued by stating a defensive border would be at least as big as the area currently being surveyed to detect the disease.

As another defensive strategy, the detector dogs may be helpful in detecting ACP. Using detector dogs should cut costs.

Other Items

Dr. Rabe presented a list of questions posed in previous meetings:

- With the current incidence rate, level of infected trees, and tree removal, CDFA's activities reduce the HLB incidence rate by 16.6 percent. Does 16 percent make a significant difference?

- As chemical control covers a relatively small acreage, can it be considered chemical control? Tree removal without effective control may not be effective over the long term.

Dr. McRoberts reiterated that the HLB randomized simulation models shown were about three kilometers per site and asked the following questions:

- If the Committee does not spend money removing trees from residential properties, would the industry spend money removing their own trees from commercial citrus?
- How much interest is there to look for HLB in commercial citrus and deal with the problem if found?
- Growers in Ventura were unhappy with the number of trees marked as suspect by the dog teams. Does the industry have enough interest to do something other than what it is currently doing?

Dr. McRoberts continued by questioning the political implications of altering the program at the state level regarding incoming state and federal funds. Teri Blazer suggested to include in the PowerPoint information on what would happen if the program is discontinued.

Dr. Rivera's concern is that there is no effective vector control in southern California. She presented the question of whether lack of vector control impacts the value of the program.

Closing
Dr. Rabe adjourned the meeting at 2:59 p.m.