

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

**Meeting Minutes
December 6, 2023**

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

Science Subcommittee Members Present:

Franco Bernardi	Jim Gorden	Dr. Etienne Rabe
Brad Carmen	Dr. Subhas Hajeri	Dr. Ram Uckoo
Aaron Dillon	Dr. Melinda Klein	

CDFA Staff:

Kiana Dao	Anmol Joshi	David Phong
David Gutierrez	Zack McCormack	Nilan Watmore
Victoria Hornbaker	Keith Okasaki	

Other Attendees:

Dr. Bodil Cass	Dr. Jonathan Kaplan	Dr. Sandra Olkowski
Dr. Robert Clark	Jessica Leslie	Cressida Silvers
Rick Dunn	Dr. Weiqi Luo	Judy Zaninovich
Dr. Dhiraj Gautam	Marcy Martin	Sandra Zwaal
Dr. Saurabh Gautam	Dr. Ivan Milosavljevic	

All attendees participated via webinar.

Opening Comments

Dr. Etienne Rabe called the meeting to order at 2:01 p.m. Dr. Rabe welcomed and introduced Dr. Bodil Cass, an entomologist from the University of California, Riverside, and Dr. Ivan Milosavljevic, an entomologist from the Citrus Research Board (CRB).

Ethyl Formate Update

Dr. Rabe received an update from Jim Cranney stating the ethyl formate registrant answered questions from the deficiency letter and sent the final labels to the Environmental Protection Agency (EPA) and the California Department of Pesticide Regulation (DPR) for review.

Sweet Orange Scab (SOS) Update

Keith Okasaki received an update from Dr. Jim Adaskaveg stating he is continuing SOS research by looking for typical symptoms and signs, and using PCR primers to scribe for SOS from positive samples in CA. Under permit, Dr. Adaskaveg has imported SOS-positive samples from Florida to subculture *Elsinoë australis* and *Elsinoë fawcettii*

isolates. He also continues to evaluate post-harvest handling requirements. Dr. Adaskaveg plans on giving a more formal update at the next subcommittee meeting.

Huanglongbing (HLB) Quarantine Discussion – 5 Mile Radius

Dr. Rabe discussed the use of a 5-mile radius to create quarantine boundaries around an HLB detection. The current state interior quarantine regulations require that a minimum 5-mile radius surrounding an HLB-positive (HLB+) detection be used to establish quarantine boundaries. The 5-mile radius was decided upon through analysis to give a wide buffer for both the natural migration of pests and artificial movement by people. There are currently 8,600 acres of commercial citrus located inside the new HLB quarantine area in Ventura County, Santa Paula. Citrus growers and packers in Ventura County filed an appeal to refute the 5-mile radius quarantine boundary surrounding the HLB+ detection. They argued that there is a mountainous region that creates a barrier between commercial groves in the southern part of the Ventura quarantine and the HLB+ detection, making it nearly impossible for Asian citrus psyllid (ACP) from the center of the quarantine to reach the southern groves. They also argued that the 5-mile radius quarantine around detections is a baseline used across United States Department of Agriculture (USDA) quarantines and is not based on the biology of ACP or HLB. Changes to the 5-mile radius quarantine regulation will need to be made through discussion with USDA.

Multi-Pest Survey (Risk-Based Survey) Discussion

The next topic of discussion focused on the Science Advisory Panel recommendations for Multi-Pest Survey which include splitting the northern and southern California survey programs, de-emphasizing the core residential areas around HLB+ finds, and focusing survey resources on the interface of commercial citrus and residential areas. The existing survey formula prioritizes and identifies Section Township Range (STR) grids using weightings assigned to several risk factors. Risk factors, such as existing *Candidatus Liberibacter asiaticus* positive (CLas+) detections and ACP population density, are currently weighted highly, skewing the model to prioritize STRs with prior detections. Dr. Rabe began the discussion by introducing recommended changes to the current Multi-Pest Survey model. The current protocol, as recently adopted by the Citrus Pest and Disease Prevention Committee (CPDPC), is to prioritize survey in residential areas within 1,500 meters of commercial citrus groves of at least 5 acres. The subcommittee discussed reducing the 1500-meter survey area to 250 meters or 500 meters. Mr. Okasaki stated that the 1500-meter survey distance was chosen to potentially find and remove HLB+ trees before they get as close as 250-meters from commercial groves. Dr. Rabe proposed that using a 250-meter or 500-meter distance from commercial groves would reduce the survey effort and use less resources. The subcommittee concluded to continue with the recommendation of a 1500-meter survey distance from commercial groves, and to collect and review data from this survey to evaluate in the future.

Data Analysis and Tactical Operations Center (DATOC) Update

Dr. Clark presented an overview of completed and in-progress work as part of consulting activities for DATOC. He presented an assessment of the rate of CLas+ trees

and vectors, showing a significant increase using a change-point detection analysis. Using monthly cumulative CLas+ detections as data points, his analysis shows change-points with an increasing rate of CLas positivity 2017, leveling of CLas positivity in 2020, and a significant increased positivity rate in 2021. Dr. Clark further concluded that although rates of CLas positivity could be affected by changes in sampling efforts or testing capacity, his findings of significant increases in positivity rates starting in 2021 are not a result of the aforementioned changes.

Dr. Clark continued by presenting his assessment of the effectiveness of HLB positive (HLB+) tree removal. In Spring and Summer 2023, he conducted interviews with Citrus Division staff, CRB, and members of the CPDPC to understand the effectiveness of tree removal. He concluded that “reservoir management” in the form of tree removal provided the strongest argument in favor of continuing to remove HLB+ trees in residential areas, but it is not yet well supported by current HLB+ detection data. This may be due to time lapsed from when HLB is detected in a tree to when that tree is removed, which can be as short as 1 week or up to 6 months due to logistical challenges. If reservoir management is effective, sites with faster tree removal should have a lower CLas reservoir size than slow tree removal sites. Dr. Clark plans to continue analyzing the comparison between fast and slow HLB+ tree removal and the CLas reservoir size and corresponding cycle threshold (CT) values.

Dr. Clark then presented his assessment of the rate of HLB spread in relation to the size of the expanding HLB quarantine area to evaluate spatial spread of the disease. The analysis examines “new detections” or detections that occur outside the current HLB quarantine boundary. Each “new detection” increases the quarantine area and subsequent analyses take that larger area into account, continuing across all detections through the most recent HLB+ finds. The average distance is then taken across all “new detections” to find the average distance from the quarantine boundary, determining the average rate of HLB spread. Through these analyses, Dr. Clark found that 86% of “new detections” are found less than 3 miles from the quarantine boundary. Dr. Clark concluded that this model could be helpful in estimating how much the HLB quarantine area is expected to expand based on current management practices and rate of HLB spread.

HLB Prevalence and Positivity Rate

Dr. Weiqi Luo presented highlights of the analysis he conducted with Dr. Neil McRoberts to estimate the prevalence and positivity rates of HLB in Southern California counties. He began this analysis by estimating the population of citrus trees in each county using parcel data. The total number of residential citrus trees in Southern California is estimated to be 6,050,032 trees, while the total amount of commercial citrus trees in the same area is estimated to be 6,310,100 trees. He continued with a graphic showing the distribution of residential citrus trees in each 1 square mile STR grid in Southern California, with 501 grids estimated to have more than 4,000 residential citrus trees. Dr. Luo emphasized the importance of understanding the distribution of HLB hosts to estimate the prevalence of HLB in residential citrus. Using the binomial theorem with machine learning and data collected from HLB detections and residential

survey, Dr. Luo calculated the estimated prevalence and positivity rates of HLB. The estimated HLB prevalence rate is the percentage of STR grids infected with HLB, while the estimated HLB positivity rate is the percentage of trees infected with HLB within the infected grids. Using the estimated positivity and prevalence rates multiplied by the estimated residential citrus population, Dr. Luo estimated the minimum number of HLB positive residential trees for each county. Dr. Luo plans to conduct another analysis to provide an estimated range showing both the average and maximum number of HLB positive residential trees.

Other Items and Adjournment

The meeting was adjourned at 3:50 p.m.