



0 5 10 20 30 40 Miles

Data source: Eskalen lab, Dept. of Plant Pathology and Microbiology, University of California, Riverside. www.eskalenlab.ucr.edu

Commission Intensifies Fight Against PSHB/FD

By Ken Melban
Director, Issues Management

With the troubling discovery and confirmation late last summer that the polyphagous shot hole borer (PSHB) and fusarium dieback (FD) pest complex was in commercial avocado groves, the California Avocado Commission-led efforts quickly intensified in pursuit of identifying any possible control options.

We now know there are multiple infested groves in San Diego County. The Commission is working with University of California at Riverside (UCR) researchers, University of California Cooperative Extension personnel, and industry members in developing and deploying a significant trapping grid to determine both levels of infestation and learn

more about PSHB behavior. Traps are also being deployed in Ventura County to provide early warning detection.

As reported by Commission President Bellamore in his column, since the identification of the PSHB/FD in Los Angeles in 2012, more than \$1 million in research has been funded by the Commission. With such a broad host range for PSHB/FD (over 70 known), it wasn't a matter of "if" commercial avocado groves became infested, but "when." Fortunately, based on information that we've learned from previous Commission research work – along with the continuing collaboration with researchers from Israel, Florida, and elsewhere – we are better positioned to aggressively



Researchers meet with industry members

pursue solutions.

To illustrate, in October the Commission commenced pesticide and fungicide trials utilizing infested wood from commercial avocado groves. The selection of possible materials was narrowed through lab trials that had been conducted at UCR along with field trials conducted in Israel by researchers there. The Commission has partnered with the Center for Applied Horticultural Research in Vista, and a quarantine greenhouse is in place. The quarantine greenhouse allows for the introduction of PSHB and FD onto wood that has been treated with pesticides and fungicides to determine efficacy. In addition, as temperatures have cooled, the activity of beetles has slowed, making the collection of live beetles for use in bioassays more difficult. The rearing of beetles in the quarantine greenhouse is also being considered.

Current pesticide trials include both materials that are registered on avocado in California and others that are not registered. Initial results indicate one of the non-registered materials, bifenthrin, shows some encouraging efficacy as a curative control. These results are comparable to studies in Florida specific to the red ambrosia beetle and in Israel on the PSHB. The Commission is working with the California Department of Pesticide Regulation to prepare for a Section 24(c) registration should the continuing trials show similar results. A Section 24(c) would still take a few months to secure, in part due to the public comment period, but would provide an emergency registration while the full Section 3 registration is being completed. If a material is registered, it will likely require multiple applications during the spring and summer when the beetles are more active to be most effective.

UCR researchers are also evaluating possible prophylactic pesticide and fungicide materials that would be applied



Section of infested wood

through trunk and branch injections. This work will take some time, and even if one of the materials shows promise it will likely be at least three years at the earliest before a registration could be secured.

In addition, research on the efficacy of chipping infested wood has been conducted. Two studies were conducted by UCR and results showed 99 percent of the beetles were killed when the chips were two inches or smaller. Similar results were found from a study in Florida. Given the beetles' tendency to stay in host material, chipping and composting should greatly reduce the risk of beetles from removed trees infesting new hosts.

Finally, the Commission is working with the packers and researchers to develop protocols to mitigate possible risk

of PSHB/FD spread through harvest and transportation of fruit. It is imperative, even within an infested grove, that proper equipment sanitation occurs, and during harvest all bins should be free of tree and leaf debris. A tremendous amount of resources – including the signs and symptoms of PSHB/FD, how to collect and submit a plant sample for laboratory identification, equipment sterilization methods, and other useful information – may be found here: <http://eskalenlab.ucr.edu/avocado.html>

Based on the persistence over the last few years of both PSHB in Israel and red ambrosia beetle in Florida, it is evident the threat we face in California from PSHB/FD isn't going to be easily solved. Clearly there are no simple treatment options. As the Commission continues to research a suite of possible options for control, in all likelihood there will not be one best solution for all.

While the task before us remains daunting, we are better prepared for the challenge because of the foundation that has been built over the last few years. The Commission will continue in our relentless efforts to pursue any and all possible cultural, biological, or pesticide control options to ensure this latest threat against our industry's sustainability is averted. 🥑



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