

Evidence of HLB Progress

By Rick Dantzler, CRDF chief operating officer



In the law, there are two kinds of evidence, direct and circumstantial. Direct evidence is evidence which, if accepted as genuine or believed true, necessarily establishes the point for which it is offered. Circumstantial evidence is indirect evidence that does not, on its face, prove a fact but gives rise to a logical inference that the fact exists. Each can be used to establish guilt or liability, but for our purposes, each can be used to draw scientific conclusions.

At the Florida Citrus Industry Conference in June, CRDF sponsored an educational session in which pertinent research projects were highlighted. Growers saw evidence — direct and circumstantial — that we have short-term therapies for HLB underway that are working, as well as long-term projects which have the potential for a “cure.” Here are examples:

Ute Albrecht, University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) associate professor, presented direct evidence that trunk injection of oxytetracycline (OTC) consistently increased yield and juice quality in young and mature trees. Two consecutive years of injections resulted in compounded effects.

Jim Graham, UF/IFAS professor emeritus, presented circumstantial evidence that injecting OTC has increased root growth substantially. In two locations unaffected by Hurricane Ian, root mass is up 20% to 25% after OTC injections. Statewide, root mass is unchanged compared to before Hurricane Ian. This should be seen as evidence that OTC is working since history would suggest that the hurricane would have caused significant root loss.

Robert Turgeon of Cornell University explained his antibody project which could, if successful, provide a “cure” to HLB. To be clear, this project is in its infancy, and it might not work. And even if it does, it will be several years before we know. Nevertheless, if it works, it could take over when the life of systemically applying bactericides ends, which was only meant to be a bridge therapy.

Turgeon explained that antibodies are proteins that fight invading foreign organisms, including bacteria. Antibodies start the fight by binding very specifically to the bacteria. He has produced transgenic citrus that synthesizes CLas-binding antibodies in the phloem. The antibodies immobilize the bacteria, allowing the tree to kill them by natural defense mechanisms before they can travel and harm the tree. Since the antibodies are made internally and throughout the life of the tree, there is no need for external treatments. In tests conducted with Kranthi Mandadi of Texas A&M University, CLas titer in roots was reduced to non-detectable levels.

Turgeon’s presentation created a lot of grower enthusiasm, so CRDF had a subsequent conversation with him and Amit Levy of UF/IFAS, the co-principal investigator, to work on ways to put this project on afterburners. We produced a plan that will maximize the speed with which we can answer the most important question: Will it work?

With so many variables in science, conclusions are drawn from circumstantial as well as direct evidence. I believe we now have enough of each to conclude that we are on the right track.



Column sponsored by the Citrus Research and Development Foundation