

Recent NAS Report on HLB Research

In 2010, the National Academy of Sciences (NAS) issued a Florida Department of Citrus-sponsored report that recommended the formation of the Citrus Research and Development Foundation (CRDF) to manage funding for citrus greening (HLB) research projects and to act as a clearinghouse for information on scientific progress fighting the disease. From 2010–2017, CRDF awarded approximately \$124 million to 398 projects, with 90 percent of those focused on HLB.

At the request of CRDF, the NAS conducted a second review of the foundation's research portfolio, which was completed in April 2018. The review concludes that research supported by CRDF and other agencies has expanded knowledge of every aspect of HLB, yet there has been no cure. There are complex reasons for the lack of breakthroughs in HLB management. These include the inability to culture the bacteria pathogen in a laboratory, the complexity of the pathogen-insect-tree interactions and the lack of HLB resistance/tolerance in citrus.

Progress toward a viable HLB solution will require continued building on existing research knowledge, supporting research on management practices proven effective, greater communication of research outcomes by scientists, and research coordination by CRDF and other funders of HLB research in California and Texas.

Florida citrus growers still need short-term solutions to sustain the industry while researchers generate longer-term approaches for managing HLB. Ultimate solutions to HLB will require citrus variety improvement through classic breeding and from new molecular techniques such as gene editing, focusing on targets that mediate molecular interactions among the tree, bacteria and vector.

The 2018 report goes on to say that although a single breakthrough discovery for managing HLB in Florida is unlikely, funders should support management approaches that can be combined in different ways and optimized. This approach, founded on the integrated pest management strategy for long-term control of pests, would allow optimization of management for each grower and at each site. Accessible databases with standardized data formats should be developed. CRDF and other agencies should work together to create an overarching HLB research advisory panel to develop a fresh, systems approach to HLB research prioritization and the strategic distribution of resources for research leading to effective HLB management.

On the positive side, we know so much more about every possible aspect of the HLB system than we did 10 years ago. This is the foundation for building new knowledge. Grower ingenuity and intensive management have improved plant nutrition and tree health programs to keep HLB trees as productive as possible. Many growers are still profitable, so there is room for optimism. Had Hurricane Irma not come, we might have thought that this was the year for winning the battle in HLB management. There is currently a new round of CRDF research proposals coming from our best scientists, which may lead to the optimum combination of site-specific HLB management practices or lead to the long-term solutions.

Submitted by the CRDF staff



Column sponsored by the Citrus Research and Development Foundation