

Working Together To Fight Citrus Greening

Of all the pests and diseases that affect the U.S. citrus industry, citrus greening, also known as “Huanglongbing” (HLB), is the most serious to date. The disease has already greatly affected the Florida citrus industry, causing millions of dollars in damage and lost revenue. The Asian citrus psyllid (ACP), the vector that spreads the disease, has recently been found in Texas and California, the other primary citrus-producing states. If HLB becomes established in these locations, the impact on the states’ economies will be significant, as will the lack of domestically supplied citrus and related products. That’s why ARS scientists all over the country are feverishly working to better understand and manage the disease and its vector.

Our scientists in Fort Pierce, Florida, have published the full genomic sequence of *Candidatus Liberibacter asiaticus*, the bacterium believed to cause HLB. This advance will enable researchers to identify genes responsible for the disease, enhance capabilities to culture this organism, and determine its presumed role as the causal agent of HLB. Scientists in Fort Pierce, Florida; Beltsville and Fort Detrick, Maryland; Parlier, California; and Weslaco, Texas, have developed tests and tools to improve detection of HLB and ACP. And researchers in Riverside, California, have begun testing citrus and related germplasm for tolerance or resistance to the disease and its vector.

But we know we can’t take on this problem alone. In response to requests from U.S. citrus industry representatives, ARS and sister organizations the Animal and Plant Health Inspection Service (APHIS) and the National Institute of Food and Agriculture (NIFA) began a dialogue with stakeholders and state research programs to build a framework for ongoing and future HLB research. Within this framework, research projects will not continue to proceed as individual, separate entities. Instead, they will be better coordinated toward a common goal: to ensure a productive and thriving citrus industry in the face of serious diseases and pests.

In December 2009, industry and government met to establish the Citrus Health Science and Technology Coordination Group. It consists of representatives from ARS, APHIS, NIFA, the National Academy of Sciences, the Florida Citrus Production Research Advisory Council, Florida Citrus Mutual, the California Research Board, California Citrus Mutual, and Texas Citrus Mutual. At that time, three desired outcomes that correspond to each main citrus-producing state and its status with regard to HLB were identified: 1) Keep citrus groves currently affected with ACP and HLB as productive as possible (Florida); 2) Prevent or slow the spread of ACP and HLB (Texas); and 3) Keep unaffected citrus groves and trees free of ACP and HLB (California).

The Science and Technology Coordination Group also established outcome-based research groups during a 2-day workshop this past March. There, key selected researchers who are representative of and fully engaged in research related to each outcome met to develop a

research framework and identify gaps for future research progress toward solutions to HLB. Representatives from ARS, APHIS, NIFA, state departments of agriculture, and citrus industry members were present to support the process and reinforce the need for a coordinated approach to planning. At this meeting, attendees also identified the need for more robust transfer and use of knowledge and products that arise from new research.

To expand on the initial planning session with the Science and Technology Coordination Group, the citrus industry hosted a research-discussion-based workshop as the first Citrus Health Research Forum this past June. Participation was expanded to include all researchers in the national citrus community—pathologists, entomologists, horticulturists, and geneticists—who were tasked with developing a strategic roadmap leading to the three desired outcomes identified last year.

Forum participants agreed that a holistic system—which includes plant nutrition, psyllid suppression, early detection and new diagnostic tools, removal of infected trees, and the potential use of various therapeutics, such as antibiotics—is necessary to maintain healthy citrus trees. To protect healthy replants, groves, and trees, participants discussed strategies for developing HLB-resistant trees and using various approaches that could forestall infection. The group also identified research gaps in better understanding ACP behavior, disease transmission, molecular methods for control, biological control, and best practices for developing an areawide control program. And because HLB affects citrus production worldwide, participants emphasized the importance of involving neighboring countries like Mexico and other international partners in the research and extension efforts.

More details from the forum, including poster abstracts and presentations, can be found on the ARS website at www.ars.usda.gov/citrusgreening/.

The forum was so well received that participants agreed to continue the dialogue and brainstorming activities with a special session at the International HLB/ACP Symposium in January 2011 in Orlando, Florida. International partners will join us there as we discuss the progress we’ve made and new challenges we face.

Through continued cooperative research and sharing of information, we will be better equipped to manage HLB outbreaks. With a unified strategic plan in place, we are now working with our partners to target resources toward research that will have the greatest impact on meeting short- and long-term goals for a productive, sustained citrus industry.

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