

The 2008 International Research Conference on Huanglongbing (greening) – Reaching beyond boundaries



Informal discussion among conference attendees was an important component of meeting the conference goals of communication regarding HLB and progress being made to develop solutions.

Photo courtesy of Florida Citrus Mutual

By Harold Browning

Most readers have heard comments from the HLB International Conference that took place during the first week of December in Orlando, and the consensus is that the conference was an informative and useful exchange.

The Theme, “Reaching Beyond Boundaries”, was chosen to cross many dimensions. In his opening comments on the purpose of the meeting, Wayne Dixon of the Florida Department of Agriculture and Consumer Services and a member of the conference program committee outlined the determination of the originators and organizers of the conference to assemble the greatest number of representatives from the international research and outreach community, regulatory agencies, and, most importantly, representatives from the commercial citrus industries affected by the bacterial disease across citrus-producing areas of the world. Together, the group was challenged to overcome boundaries shaped by politics, geography, institutions and boundaries we impose upon ourselves through our often narrow perspective. The goal established for this meeting was provision of a rich atmosphere for international collaboration and open communication regarding HLB.

The venue for the meeting, the Orlando Caribe Royale Resort, offered on-site accommodations and more than adequate conference facilities. Matched with outstanding organizational efforts by Florida Citrus Mutual, the official

host, and the Conference Program Steering Committee, the resort site provided a comfortable setting which encouraged informal interactions around the formal scheduled events. Beginning with an opening reception, the meeting schedule mixed oral presentation sections, poster sessions and various special topical meet-

ings. Woven into this schedule were hosted lunches with keynote speakers, evening receptions and two organized dinners on site.

Facilitation of an interactive conference for a large group of attendees is a difficult task, and the hosts and sponsors met the expectations for the event. In addition to Florida Citrus Mutual, primary sponsorship for the event was provided by Texas Citrus Producers Board, Sunkist, Cutrale, the Florida Specialty Crop Foundation and the Florida Citrus Production Research Advisory Council (FCPRAC). The Conference Program Committee was comprised of Tim Gottwald, USDA, ARS; Jim Graham, UF, IFAS, CREC; Phil Berger, USDA, APHIS; and Dixon.

Pre-registrants numbering near 350 guaranteed a good turnout for the 3 1/2-day meeting, and this outstanding turnout was further enhanced with on-site registrants. Final attendance for the event exceeded 400 participants, representing 26 countries. Participation from this broad arena guaranteed that ongoing work across the world was included in presentations and discussions, and a fruitful exchange resulted. Among the many members of the international citrus research community who gathered were research teams from Brazil, China, Japan and Taiwan — major citrus areas with ongoing programs to address HLB. U.S. citrus researchers attended from California, Arizona, Texas and Florida, and included universities, USDA and state departments of agriculture. Significant

grower participation was seen through the week by individuals from numerous industries, and the Friday morning wrap-up session was particularly well attended by Florida industry folks. Industry-presented talks highlighted progression of HLB in respective regions and how growers were responding to the challenges of limiting the spread of the disease.

BENEFITS

When responding to the introduction of the Asian citrus psyllid and the HLB pathogen, lack of knowledge is our greatest enemy. We face a serious disease for which our foundational understanding is very limited. Owing to the quirky biologies of the pathogen and vector insect, the systemic nature of the pathogen inside citrus phloem, and limited abilities to diagnose, trace movement of the disease, and predict onset of symptoms, the research community must overcome many information gaps to formulate and test management practices to slow the effects of HLB movement into the United States and other citrus areas. These characteristics also pose challenges to growers who are attempting to implement new management practices to counteract the disease.

More than 100 oral presentations were made during the conference, mixing topics, presenters and research locations. Most were 15-minute overviews, although many were highly specific and very technical presentations — scientists talking to scientists. This was intended. However, each talk was followed by a question period, and often the direction of the questioning was to explain how the progress reported will contribute to overall goals of developing solutions for citrus growers. The program steering committee organized the daily sessions in such a way that similar work was presented in sequence, bringing focus to the agenda. In addition, poster presentations were allied with the oral sessions, and this combined to link similar

topics. Among the topics highlighted in the program were:

- HLB Survey, Detection and Diagnostics
- HLB Pathogen Genome Sequencing, Genetics and Culturing
- Citrus and HLB Pathogen Interactions
- Asian Citrus Psyllid Biology, Ecology and Disease Transmission
- Economics, Fruit Quality and Crop Loss in Relation to HLB
- Dynamics of HLB Disease Spread
- Citrus Psyllid Management Strategies
- HLB Management Strategies
- Host Resistance to HLB

The citrus industry often raises concerns over potential overlap of ongoing citrus research, and this phenomenon was evident in the general titles of presentations. However, due to different objectives, approaches and locations, even those talks with similar titles often presented complementary information that enriched our current knowledge. The safeguard against “unfruitful duplication” is coordinated, overlapping research projects, and this conference did much to foster the face-to-face interactions that lead to researchers learning from one another and planning in a complementary fashion.

The technical level of many talks presented at the conference left some of the audience grasping to hear words found in their everyday vocabulary. Some struggled to achieve this goal. One of the greatest challenges in mixed technical and non-technical audiences is to allow for the technical exchange among the experts, while addressing the general information desires of others in the room.

HIGHLIGHTS

While it is difficult to summarize all that was presented, some highlights included:

- A significant compilation and sharing of information on the biology and ecology of the Asian citrus psyllid, and information to contrast this with other related vector psyllids. Details on seasonal abundance, distribution, winter survival and host interactions were presented. Interesting and innovative details of the behavior of the insect as it selects and recognizes host plants, the mechanics of probing phloem tissues on which to feed, and how the feeding and reproductive behaviors might be exploited in pursuit of psyllid suppression tactics were also presented.

- A related theme emerged wherein results of efforts to suppress Asian citrus psyllid with chemical pesticides, biological control and other IPM tools were presented. Progress in evaluating pesticidal materials, methods of application and timing was presented, along with complimentary tools of biological control and potential use of attractants or repellents for psyllid suppression. Presentations were made on field dynamics of psyllid populations from around the world in relation to seasonal plant phenology and disease transmission.

- Similar emphasis was placed on presenting and interpreting the details surrounding the presumed causal agent, *Candidatus Liberibacter asiaticus*. Reviews of work dating back to the 1940s was balanced by updates from aggressive ongoing efforts to culture the bacterium, elucidate its genetic structure, and to determine the molecular and chemical basis for onset of symptoms in an infected citrus plant. Understanding how the pathogen affects different cultivars, moves within the plant, and ultimately induces symptoms was discussed in formal presentations and informal gatherings.

- Summaries of research on the range of susceptibility of various citrus types to infection and disease led to discussion of how this information might be mined in finding or producing trees with tolerance or immunity from disease infection. Reports of tolerance being observed in various citrus varieties stimulated a lot of follow-up discussion.

- Of particular interest to the broader audiences present were sessions dedicated to reporting previous and ongoing efforts to manage the disease in commercial citrus plantings, citing specific case examples from the field. Information was presented on dynamics of spread from global-scale movement to regional and local spread. Data from evaluation of psyllid control, scouting and removal of infected trees, replanting in infected areas, and testing of materials for suppression of the bacterium within the plant were broadened to overviews of how some countries are living with endemic infection with HLB while others are anticipating incursion and spread into their uninfected areas.

- Finally, sessions looking to the major breakthroughs necessary to attain the goal of having trees resistant or tolerant to the disease were scattered

through the program. These focused on citrus breeding and the potential incorporation of novel genes or approaches to limit growth and spread of the bacterium, to counteract the plant response to infection, and to prevent advanced infection epidemics. The Friday morning wrap-up session offered a snapshot summary of information reported during the conference and discussion of the future directions for research — a fitting close to an outstanding event.

WHAT ARE THE EXPECTED OUTCOMES?

The meeting had many highlights, but among them was the open dialogue that occurred in and around the presentations and posters and spilled into coffee breaks, lunches and receptions. While growers supported the meeting in hopes of hearing about breakthroughs, the value of the meeting was in the exchange, comparisons of results and methods, planning for follow-up studies, and the overall camaraderie which results from such a meeting. Industry and regulatory representatives were immersed in these discussions as well, and a lot of translation of scientific results to potential solutions happened in these informal interactions. Those leaving the conference witnessed perhaps the largest meeting ever focused on this disease, representing the broadest cross-section of participants worldwide. All left with a better understanding of the magnitude of the challenge, but also the level of effort and cooperation in place to meet this challenge. In this sense, the conference met or exceeded the goals set at the outset. The organizers and sponsors of the meeting are to be congratulated for their efforts to make this conference a success.

WHAT HAPPENS NEXT?

The organizers of this meeting anticipated that this conference should offer the opportunity to revisit progress in HLB research in the future, and suggestions were solicited to consider a follow-up international conference in 18 to 24 months. In the interim, other events may be useful in filling in the time gap and sharing results from state, regional or national projects. A committee was charged with continuing dialogue and to begin preliminary planning for such a future meeting.

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