



# REPORT

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## IRCHLB III: The Third International HLB Research Conference

The February meeting of the International Research Conference on HLB provided a forum for reporting of over 160 worldwide research projects focused on HLB. The meeting contained 10 sessions of formal presentations and an equal number of poster presentations over the 3-day event, with time slotted for discussion and scientist interaction. Thus, a tremendous amount of information exchange occurred, encouraging closer collaboration and accelerating the search for solutions to HLB.

On March 6, a large audience of growers and other interested parties met at UF/IFAS-CREC in Lake Alfred to hear a synopsis of the HLB conference, with presentation of summaries of each general area of research provided by Dr. Michael Rogers (Asian Citrus Psyllid (ACP)), Dr. Megan Dewdney (the pathogen, *Candidatus Liberibacter asiaticus* (CLas)) and Dr. Steve Futch (citrus tree response to HLB). A grower summary was provided by Mr. Jerry Newlin, a CRDF board member and long-term advocate of citrus research.

While it was clear that considerable research progress has been made, growers focused a lot of questions on the immediate use of research results in their grove operations against HLB. The Q & A session raised a number of very good discussion areas, and a few of these are presented here.

### What progress has been made in evaluating the rootstocks that reportedly may confer tolerance to HLB?

Presentations and field day observations from the UF, IFAS and USDA, ARS citrus improvement programs indicate that select candidate rootstocks appear to be performing better than industry standards in small field trials where the rootstock/scion combinations are exposed to HLB pressure. Several field trials have experienced 4-5 years of field exposure and are fruiting, providing an opportunity to evaluate tree health and early productivity. These field trials will continue to be evaluated and data accumulated on how the candidates perform in comparison to Swingle and other standard Florida rootstocks. In this way, the extent and durability of the rootstock tolerance to HLB will be evaluated, along with how tolerant rootstocks affect scion health. The plant breeders are currently funded to continue this work, but growers are asking what else can be

#### UPCOMING MEETINGS

##### APRIL, 2013

17	Governance Meeting	CREC, Lake Alfred	9:00 am
23	Board of Directors Meeting	CREC, Lake Alfred	9:30 am

done to move this work along more rapidly.

At the March 26, 2013 CRDF Commercial Product Development Committee (CPDC) meeting, discussion of the rootstock research lead to a recommendation that CRDF instigate a project to encourage additional testing of the most promising rootstocks for their tolerance to HLB and to begin to evaluate these candidates under commercial scale production. Viewed as a “penultimate rootstock test”, this project could provide a head start on release of material to be used in new plantings. This CPDC project will bring together the citrus breeding teams of UF and USDA to determine which candidates might best be included in a new field planting, and to define the parameters of the field planting. Variables such as the number of plantings to be located across the industry, the size of plots, and a plan for cultural practices that should be followed in the plantings will be developed through discussion with this group and through interactions with the Committee. Arrangements for propagation of nursery plants will follow the selection of rootstock candidates for inclusion in the planting project, and a timeline for the ultimate planting and data collection will be developed. CRDF is being encouraged to do whatever is necessary to encourage new plantings through delivery of management tools, and this is one example of how developing a parallel project while continuing the research can shorten the timeline to solutions.

### We heard that citrus roots are affected by HLB before phloem plugging occurs in the tree. How does this change research directions?

Reports from University of Florida, IFAS Professor Jim Graham’s research team provides interesting new information on the invasion of citrus roots by CLAs early in plant infection. Early infection of citrus roots by CLAs, that occurs before phloem plugging impacts the tree, points to the importance of root response in development of HLB disease. Follow-up research will pinpoint the interactions that lead to root decline in HLB-infected plants, and will likely suggest approaches for interfering with root infection and damage. Furthermore, the dynamics of root infection will likely help us understand how other

stresses, such as Diaprepes root weevil feeding and Phytophthora root rot, interplay with HLB to cause tree health decline.

The findings of Drs. Graham and Johnson will be strengthened by further detailed experiments, and the early reports illustrate the importance of continuing to support research for understanding the disease. Understanding the broader dimensions of how HLB invades healthy plants, moves within infected trees and causes disease onset, new avenues of treatment are likely to emerge that may provide for short-term implementation.

### **Are there any research options to address the fruit drop that occurred this season?**

One of the most frequent questions from the field is “What can be done about the fruit drop that has occurred this season?” While tree decline associated with HLB has been associated with fruit loss in other areas of the world, the onset of significant fruit drop has surprised many in Florida in both its intensity and how quickly it manifested itself during the 2012-13 harvest season. Annual fruit crop estimates were reduced in December, 2012 and again in January and March, 2013 due to excessive fruit drop.

Fortunately, investigators at UF have connected this phenomena with other plant responses, and hypothesized that plant growth regulator (PGR) effects may be involved. A UF project recently approved for funding by CRDF proposes to look at the role of plant growth regulators in phloem dynamics, and concurrently, will evaluate whether externally applied PGRs may also influence disease-related fruit drop. Field experiments will be aligned with careful greenhouse studies to better un-

derstand this phenomenon. Additional evidence from other crop systems reinforces that support in this area of research is vital. Concurrent interest in this aspect of citrus production by CRDF’s Commercial Product Development Committee (CPDC) will be focused on understanding the details of currently approved PGRs that are labeled for use in Florida citrus so that while the research is being conducted, the need for adjustment of label conditions for PGRs might be considered.

Like many other areas of research, the emergence of new findings and follow-up areas of emphasis point to the need for responsive research project plans funded in part by CRDF, and matched with CPDC projects to overcome limitations to rapid adoption as results emerge. Growers have communicated clearly that time is of the essence and have requested that the CPDC lead the way to understand the changing dynamic of HLB in Florida. Through its Research Project Funding and Commercial Product Development Programs, CRDF continues to seek answers.

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## **ANNUAL AND FINAL REPORTS**

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Following are the annual and final reports on CRDF-funded research projects which have been posted online since our last issue. The full report can be accessed from the ‘link’ button. These, and interim progress reports on all projects as well as projects funded by the California Research Board and Texas Citrus Producers Board can be found online at [citrusrdf.org](http://citrusrdf.org)>GROWERS>SEARCH PROGRESS REPORTS.

LINK	TITLE	RESEARCHER
	Development of Promising New Rootstocks and Scions for Florida Citrus	Bowman
	Development of sensitive non-radioactive and rapid tissue blot diagnostic method for large-scale detection of citrus greening pathogen	Gowda
	Engineering citrus for resistance Liberibacter and other phloem pathogens	Gurley
	Surviving HLB and canker: genetic strategies for improved scion and rootstock varieties	Gmitter
	Identification and Characterization of HLB Survivors	Gmitter