



A fresh perspective on the HLB fight

By Jack Payne, jackpayne@ufl.edu, @JackPayneIFAS

A member of Italy's parliament has resigned her position to fight HLB and other health, agricultural and environmental challenges in Florida.

The University of Florida's Institute of Food and Agricultural Sciences (UF/IFAS) didn't hire Ilaria Capua for her political skills — though those may come in handy.



Capua

Capua is also a bird flu expert of international acclaim. As qualified as she is as one of the university's preeminent faculty hires, there's nothing in her resume to suggest special expertise in citrus.

But that's precisely what may make her a valuable contributor to advance our anti-HLB efforts. In addition to her impressive technical knowledge, Capua is known for creative thinking and her willingness to challenge the status quo and conventional wisdom.

ADVANCING THE HLB CONVERSATION

Outsiders have a way of staying out of the weeds and looking at a problem from an entirely different perspective than those who focus full-time on it. One of Capua's first public events as director of UF's One Health Center of Excellence for Research and Training

was a conversation on HLB.

Capua's powerful mind recast the problem this way: We need to think beyond just the pathogen (HLB), the host (your trees) and the vector (the psyllid) as separate entities and see them all as part of the same problem.

It's like taking all the snapshots we have from entomology, plant pathology, microbiology, tree physiology and other fields and combining them to get stereoscopic vision. It's a 3-D look at the problem.

Of course, the vast array of experts we have at the Citrus Research and Education Center in Lake Alfred already combine in many different multidisciplinary teams. But on campus in Gainesville, it takes someone like Capua to get a room full of biologists, engineers, mathematicians, biostatisti-

for the entire university. After all, as great as IFAS scientists are, it was UF Mathematics Department faculty who did the work that revealed the asymptomatic spread of HLB was much faster than imagined, for example.

It's a way to bring more of the intellectual firepower offered by a land-grant university to bear on the thorniest problems that beset the state's economy and its people's well-being. This vision provides the glue to connect our areas of excellence.

Capua served for three years in the Italian parliament. But ultimately she wanted to return to science instead of remaining in politics, and she found an opportunity here at the One Health Center founded as part of UF's movement to rise in national and international stature. She couldn't do

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cians, epidemiologists and others and engage them in talking about HLB. They raised all sorts of questions that take a look at our decade-old problem with fresh eyes.

What Capua is doing can make the IFAS campaign against HLB a cause

both. So she took the job here in June and left the parliament a couple of months later.

A 'BIRD'S-EYE' VIEW

Just as the audience at the HLB talk saw the problem in interesting and

unexpected ways, Capua looks at HLB through the lens of what she knows — bird flu.

She sees interesting parallels between bird flu and HLB. For example, from her virologist's point of view, animal and plant markets look similar. The constant replenishment of the stock exposes ever more animals or plants to possible infection.

Moving the birds and the trees can spread infection if biosecurity measures aren't applied. And the backyard destinations of these plants and animals can become reservoirs of disease — continuing sources of potential disease outbreaks.

BUILDING BRIDGES

Capua says she has a moral responsibility to provide fresh ideas on how to manage HLB and other diseases. That doesn't mean she thinks them all up herself. It means she taps into the expertise of the faculty in 16 colleges at UF, not just IFAS. That's why One Health is a partnership of IFAS, the Emerging Pathogens Institute, the College of Public Health and Health Professions and the College of Veterinary Medicine.

Capua also intends to develop public-private partnerships to engage the industry and stakeholders in the One Health vision. This is a way to find solutions to wicked problems experienced by many sectors — and much more can be achieved through active participation.

It's the model we hope our One Health Center will operate on to address all sorts of problems. It's our attempt to cure medicine's own malady: building walls between the specialties that focus separately on the health of people, plants and animals. If we can build bridges to unite these disciplines, we can put medicine to work saving so many more millions of lives — whether those lives belong to people, animals or trees. 🍊

Jack Payne is the University of Florida's senior vice president for agriculture and natural resources and head of UF's Institute of Food and Agricultural Sciences.

Status of the NuPsyllid Project

By Harold Browning



This month's column is an update on the effort to develop an alternative Asian citrus psyllid (ACP) management tool. Chemical control of ACP has only allowed suppression of populations so far, and the need for alternative ACP management fits into the goal of an overall tree health management program. The project, titled "Rear and Release Psyllids as Biological Control Agents — An Economical and Feasible Mid-Term Solution for Huanglongbing (HLB) Disease of Citrus," emerged in 2012. Representing a wide array of scientific expertise, the project was approved for funding under the 2012 U.S. Department of Agriculture's National Institute of Food and Agriculture's Specialty Crop Research Initiative. The project involves 22 U.S. institutions and was awarded \$9 million over a 5-year period.

The goals of the project managed by the Citrus Research and Development Foundation (CRDF) were to:

1. Employ a coordinated, multidisciplinary and systems-based approach to stop the spread of the economically crippling plant disease, HLB
2. Eliminate citrus greening by blocking the ability of insects to move the disease from infected trees to healthy ones
3. Conduct outreach to growers and consumers to increase the adoption of this new biological control system

Eight sub-teams were established to develop the mechanisms to interfere with ACP/bacterium interactions, integrate the mechanism of choice into ACP populations in the grove, rear and release resulting ACP populations, monitor the impacts of this tool and share the information with growers. The net effect would be to develop psyllid populations incapable of transmitting CLAs (nuPsyllid) and strategically release the nuPsyllid population to displace current ACP populations that have invaded the United States.

The project is now in its fifth year of funding. The team has met periodically during the course of the project to evaluate progress and to fine-tune the scope and resource allocations. While the project has not yet yielded an ACP population that is ready to be deployed in the field, significant progress has been made.

The outcome of the project is uncertain at present, but many lines of the research will continue, building on the progress made in the first four years. Several segments of the project have already captured funds to continue the effort beyond year five, and others are planning for continuation of the work.

One real benefit of the work has been progress toward identifying RNA interference targets in the ACP/bacterial interaction that are being exploited. Termed RNAi, this focus area has advanced in the nuPsyllid project and has stimulated a related effort to test the strategy in the field. CRDF, with several partners, is moving forward with best ACP/bacterial RNAi candidates as well as identifying and addressing steps that will allow for a proof-of-concept field trial in the next year. Progress in the nuPsyllid project makes this possible by assembling the teams and fueling the work.

A more comprehensive overview of the nuPsyllid project will be provided within the next two to three months. It will update growers on the outcomes expected from the work and provide more details on the next steps.

Harold Browning is Chief Operations Officer of CRDF. The foundation is charged with funding citrus research and getting the results of that research to use in the grove.



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