

DOCTOR OF PLANT MEDICINE

NEWS



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UF | **IFAS CALS**
UNIVERSITY of FLORIDA

PLANT DISEASE SPOTLIGHT

DISEASE

Citrus Greening Disease;
Huanglongbing

PUTATIVE CAUSAL AGENT

Gram-negative bacteria,
Candidatus Liberibacter asiaticus

INSECT VECTOR

Asian citrus psyllid,
Diaphorina citri

TRANSMISSION

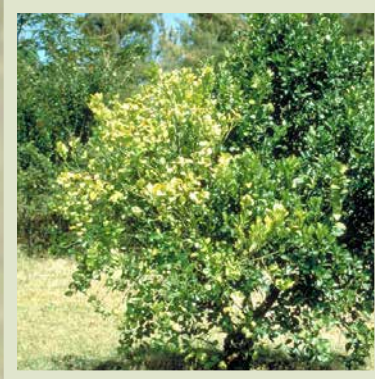
Persistent, propagative

PLANT HOSTS

Citrus; plants in the family
Rutaceae

SYMPTOMS

Blotchy yellow mottling of the leaves, "yellow shoot" appearance of branches, small, lopsided fruits, bitter juice



Creators

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WELCOMING REMARKS



Dear Alumni and Friends:

Our University of Florida interdisciplinary Doctor of Plant Medicine (DPM) program continues to serve a unique global need for practical plant health solutions. Students, faculty and staff are focused on premier experiential learning, internships, and comprehensive courses. DPM students are constantly immersed in industry interaction opportunities, applied research and extension projects, peer to peer team building initiatives, leadership development, and the latest technical scientific knowledge. Employers interested in the best and brightest problem-solvers are increasingly seeking the elite-the UF, DPM graduate! Indeed, every graduate has limitless potential and a variety of career opportunities associated with their chosen profession.

As of 2019, the University of Florida will approach 20 years of serving as the international leader for interdisciplinary plant health training. The success of our almost 100 alumni and current students continues to speak to the vision and foresight of the first DPM Director, the late Dr. George Agrios. The Martin Law Firm, from Lakeland, Florida, has generously initiated a scholarship campaign to honor the late Dr. George Agrios. We have currently achieved 21% of our \$30,000 goal. Will you stand with generations of plant health professionals and help us establish a DPM scholarship endowment in honor of Dr. George Agrios? Whether you are supporting the DPM program financially or with internships, public relations, service, mentoring, teaching, or graduate assistantships-we appreciate your support. Thank you for sharing our passion for interdisciplinary plant health education!

Sincerely,

Dr. Amanda Hodges

Director, Doctor of Plant Medicine Program

EXTERNAL ADVISORY COMMITTEE HIGHLIGHT



Richard Miranda
State Plant Health Director
USDA APHIS PPQ - Florida

Richard Miranda is the Florida State Plant Health Director (SPHD) for Plant Protection and Quarantine (PPQ) within the USDA-APHIS. PPQ spans the entire United States, with Directors in each state working to safeguard agricultural and natural resources. In Florida, PPQ is a team of 340 employees. There are four regional areas throughout the state, and two statewide programs (the Citrus Health Response Program and the Fruit Fly Exclusion and Detection Program). The Area and Program directors report directly to the SPHD.

Overall, the responsibility of the SPHD is to prevent entry of pests and diseases of economic concern into Florida and the United States, and to stop the interstate spread of pests that are already present in Florida. There are two sides to PPQ's role in pest interception: the international side and the domestic side.

On the international front, PPQ conducts agricultural quarantine inspections to intercept pests on propagative plant material entering the U.S. Customs and Border Protection employees inspect agricultural imports and passenger baggage, and any pest of concern is sent to PPQ for identification. PPQ will make regulatory decisions

based on what is found. In addition, PPQ facilitates the export of agricultural commodities by providing phytosanitary certifications. These certifications fulfill the phytosanitary requirements of receiving countries so that growers are able to sell their commodity to other countries. For example, China requires all pinewood shipments to be fumigated for any kind of actionable pest, such as woodboring beetles and bark beetles. PPQ monitors these fumigations and certifies the shipment was treated according to China's requirements.

The domestic side of PPQ is to either detect pests (CAPS, FFED, etc.) or ensure that those currently in Florida do not leave the state.

Many times this involves quarantine, management, and/or eradication programs, for which PPQ partners closely with the Florida Department of Agriculture and Consumer Services. For example, citrus canker and citrus black spot are regulated pests in Florida. PPQ implements monitoring and control

programs to prevent spread of these pests elsewhere in the USA.

Mr. Miranda received an undergraduate degree in agricultural communication from the University of Florida, then he pursued a Master's degree in Management. For eighteen years, he worked at the Division of Plant Industry (DPI) in all facets. While working on the front lines of field operations, he gained extensive experience of pests and plant health issues.

"Whenever we had a pest detection, whether it was Mediterranean fruit fly or Giant African snail, I responded as an incident commander during eradication efforts."

"We make sure there is abundant and healthy food to eat in the country. I get to go home at the end of the day and feel like what I do matters and impacts people's lives directly."

Over the course of his eighteen years at DPI, Mr. Miranda also worked closely with the USDA.

He was the federal grant administrator for ten years, and during that time he served as a liaison between DPI and the USDA as it related to cooperative agreements and emergency response initiatives. The last two years at DPI, as Deputy Director, allowed him

to work more with PPQ on strategic planning to prevent pests from entering the state.

"The combination of my education, my field operations experience, and my liaison experience with the agency all came together to provide the qualifications that I needed to step into this role and head the Florida PPQ Office."

Mr. Miranda shared the most enjoyable aspect of his role as Florida SPHD is the nobility of the mission. "We make sure there is abundant and healthy food to eat in the country. I get to go home at the end of the day and feel like what I do matters and impacts people's lives directly."

The first time Mr. Miranda became aware of the DPM program was about eleven years ago, when he met a graduate, Dr. Adam Silagyi, who was working with USDA-PPQ at the time. A couple years later, he met Dr. Leroy Whilby, who is now the chief of diagnostics at DPI. His experience with

these two alumni showed the extensive training students receive in the DPM program.

"I was blown away by their broad knowledge of plant health. I have also met a few other students from the program, and the quality of the students going into the DPM program is very impressive."

DPM graduates are well-qualified

"Pursue internships that will get you in the field and get your hands on things. Do ride-alongs, conduct inspections, service traps – gain some practical experience. That will work wonders for you during your job search."

for almost any role in PPQ: plant health survey specialists, field technicians, biological science technicians, pest survey specialists, risk analysis and identifiers, and more.

"The DPM program is highly interesting to me because it's applied. Researchers are a small percentage of PPQ. The applied science is more useful for us."

For students interested in pursuing one of their professional internships

at PPQ, there are a few options. The USDA Internship Program is for students of all levels within a wide variety of opportunities available during each semester. The USDA Recent Graduates program is for individuals who have graduated within the past two years and are interested in a career in civil service. Finally, the USDA Presidential Management Fellows Program is a

competitive two-year appointment for recent graduates which teaches leadership development skills.

Finally, Mr. Miranda's advice to graduate students is to have as much experience as possible outside of the classroom. "Pursue internships that will get you in the field and get your hands on things. Do ride-alongs, conduct inspections, service traps – gain some practical experience. That will work wonders for you during your job search."

Martin Law Office provides inaugural gift for a Dr. George Agrios Scholarship Endowment

The Martin Law firm is a family practice based in Lakeland, Florida. Mr. Mike Martin has been serving clients with agriculture concerns for several decades. The firm interacts with growers who have suffered crop damage and often requires the assistance of professionals skilled in crop damage assessment to present to insurance adjustors or a judge and jury. The Martin Law firm seeks to coordinate with professionals such as Doctors of Plant Medicine to provide real time documentation of plant damage to build a solid foundation for claims. He

is pleased to inaugurate the Dr. George Agrios Scholarship fund and looks forward to interacting with future DPMs.

Are you interested in contributing to the future of the DPM program? We are beginning a 5-year campaign to raise \$30,000 to establish the Dr. George Agrios Scholarship fund for future DPM students. Dr. George Agrios was the first director of the University of Florida-IFAS Plant Medicine Program, and we are thrilled to offer a scholarship to DPM students that will support Dr. Agrios' vision of training highly-skilled plant doctors.

If you would like to donate, please visit:

www.uff.ufl.edu/give/AgriosScholarship

A NEW BIOLOGICAL CONTROL AND IPM WORKSHOP IN GUAYAQUIL, ECUADOR

by Sage Thompson

Amanda Hodges and Hugh Smith collaborated on a workshop focused on biological control and integrated pest management techniques with recently graduated Doctor of Plant Medicine student Lisbeth Espinoza. Dr. Espinoza is a newly appointed professor at an Ecuadorian university, La Escuela Superior Politécnica del Litoral (ESPOL). Seventeen Ecuadorian professionals and students attended the week-long workshop that included topics on insect diagnostics, trapping techniques, rearing procedures for biological control, pesticide thresholds, and information on scouting and monitoring. Dr. Espinoza hopes to continue this program and develop more entomology and crop protection courses to be offered in her teaching program.

Plant biosecurity fellows Morgan Pinkerton and Sage Thompson developed activities and delivered presentations at the workshop. They also had the opportunity to see some pests of concern for Florida in the field, such as the tomato pinworm *Tuta absoluta*.



INTERNSHIP HIGHLIGHT

ARIANE MCCORQUODALE: ARBORJET



During the summer of 2018, I had the opportunity to intern with Arborjet, a plant health care company that specializes in tree injection systems and tree pest management. The internship offered me a great chance to put my DPM skills to the test. I did bioassays on arthropod pests, plant pathogens, and soil organisms. I was given the freedom to design experiments, conduct my own data analyses, and make recommendations from those results. I was able to practice pathogen isolation and identification, and I got to work with some insects we don't get in Florida, such as Japanese beetles (*Popillia japonica*).

This internship also provided good exposure to how pest management research is driven in the private sector. Sales are what provides the funding to develop new products, so there is a lot of collaboration with marketing to make sure that whatever is being developed is something that consumers will want to buy. I got to see the development process for new pesticide formulations and learned a little about how regulations affect product labeling. Though there are many large pest management companies with great internship programs, I am very grateful that my internship was with a smaller company as I was exposed to all aspects of the product life cycle and I was able to meet and learn from people acting in a variety of roles.

PROGRAM EXHIBITS, ACTIVITIES, AND STUDENT RECRUITING

MAY

- Amanda Long, Ploy Kurdmongkoltham, and UF plant disease diagnostician Sladana Bec helped with the Sentinel Plant Network Workshop in Naples.
- Clayton Bania, Sage Thompson, and Dr. Hodges presented entomology pest and diagnostic information at The Villages.
- Cory Penca coordinated a trap workshop for people to learn about different insect traps. Sage Thompson, Morgan Pinkerton, and Cory Penca gave presentations at the event.

JUNE

- Sage Thompson taught students B'Nai Israel Preschool about entomology.
- Ploy Kurdmongkoltham and Dr. Hodges met with growers about managing their stink bug problems.

JULY

- Alex Gannon and Ploy Kurdmongkoltham attended Gatormania.
- Jessica Awad, Arjun Khadka, Ploy Kurdmongkoltham, and Dr. Hodges attended the Florida Entomological Society Meeting in St. Augustine.
- DPM alumnus Dr. Jeffrey Pack presented a seminar titled "Wanderings of a DPM in Latin America: Lessons I Wish I Understood During My Studies"

AUGUST

- Matt Borden delivered a presentation to the 2018 Master Gardener Summer Institute about biological control principles and how the Dale Lab is using wildflower plots to boost pollinator and natural enemy populations on local golf courses.
- Alex Gannon and Ploy Kurdmongkoltham represented the DPM program at the inaugural A2i symposium hosted by the Center for Stress Resilient Agriculture.



DPMO Trap Day



Sage teaching entomology at B'Nai Isreal Preschool



Amanda, Ploy, and Sladana at the Sentinel Plant Network Workshop



Ploy and Alex at GatorMania



Jessica, Arjun, and Ploy at FES in St. Augustine



Matt presenting at the 2018 Master Gardener Summer Institute

CONGRATULATIONS TO OUR GRADUATES

Congratulations to our Spring and Summer 2018 Graduates! We wish you the best!

We asked our graduates to share a few words regarding their recent graduation and current employment. Here is what they had to say.

DR. BLAIRE COLVIN



I thoroughly enjoyed my time as a DPM student and I am extremely proud to be a DPM graduate! The DPM program was perfect for me and allowed me to expand my knowledge in entomology, plant pathology, nematology, and agronomy. The interdisciplinary nature of the program was exactly what I was looking for and allowed me to not only have a broad knowledge base, but I was also able to build relationships with people in many different fields of study. I really enjoyed the applied nature of the program because I got to apply the knowledge I learned in the field on a regular basis through research, conferences, grower meetings, internships, and even international travel! I also enjoyed serving as DPMSO president and doing the DPM newsletter as this gave me the opportunity to get to know other DPM students and faculty really well. I would like to thank Dr. Amanda Hodges, DPM Program Director, for her guidance throughout my time in the program. Dr. Hodges is a wonderful person who truly cares about the success of students and the DPM program. Dr. Hodges was always a great support to me during my time in the program. The DPM program is academically rigorous, emphasizes applied practical learning, and teaches students to think outside of the box when approaching problems. I believe the DPM training produces graduates who are ready to solve some of the most challenging issues we have in agriculture today.

The interdisciplinary training and practical experiences I gained while in the program have prepared me for a career in the agricultural industry. My ultimate career goal is to use my combination of formal agronomic training and practical agricultural knowledge to help growers be as successful as possible. I also strive to be a strong advocate for agriculture in a time when the general public is far removed from the farm and exposed to so much misinformation. Agriculture is truly my passion and I am proud to be a graduate of a program that fully supported my passion and strives to continue to serve an industry that is so critical to society. I currently own and operate Colvin Farms LLC in Marion county Florida where we produce peanuts, small grains, snap beans, and carrots. I use my DPM training nearly every day on the farm to overcome challenges and enhance our operation. I hope to also eventually obtain a job in industry to be able to help other farmers throughout the southeast.

DR. DANIEL MANCERO



During my time in the DPM program, I felt consistently enthusiastic, curious and grateful because of the complexity and flexibility of the program. More, the DPM colleagues were very supportive and the graduates proved that the DPM program allows students to choose very diverse professional pathways. My personal experience during classes and internships showed me the importance of being exposed to different areas and disciplines. The diversity of DPM classes allowed me to interact with multiple departments and professors which created a network and collaborations for my dissertation in Horticultural Sciences and side projects at the Stone fruit breeding program. I am still convinced that students can be prepared for a specific research, then working experience can teach them about other areas. A DPM student is exposed to multiple disciplines allowing the students to analyze simultaneously problems from different perspectives. The wider perspective and broader knowledge are a valuable contribution to work-teams in industry or academia.

Twelve years ago, I left my home country looking for a different training and education which showed me a broader understanding of agriculture. In spring 2018, I graduated with a doctorate in Horticultural Sciences and another doctorate on Plant Medicine.

After graduation, I had some opportunities and I spent some time collaborating with some professors as a teaching assistant, research assistant, and developing classes at the University of Florida. The DPM seminars and educational trips combined with participating in national and international conferences with my research gave me an opportunity to establish connections and expand the ideas about changing agriculture in my home country.

Currently, I am working as a professor and researcher at “Universidad Agraria del Ecuador”. I am teaching undergraduate and graduate level courses and my multidisciplinary training allows me to collaborate and supervise research projects related to disease management, crop production, biodiversity, biological control, post-harvest treatments.

Agriculture needs more people looking for the impossible. There will be always someone or something blocking the pathway, but keep working hard and helping each other.

DR. WAEL ELWAKIL



Dr. Elwakil is continuing his post-doctorate with Dr. Nicholas Dufault in plant pathology. Dr. Dufault’s lab focuses on disease control of vegetables and row crops. Dr. Elwakil’s research focus was on early and late leaf spot on peanut. He performed fungicide trials and observed how climates affected disease incidence and severity of early and late leaf spot. He presented his research at American Phytopathological Society in 2016 and 2017. Dr. Elwakil also served as DPMSO president in 2015.

STUDENT ACCOMPLISHMENTS

MATT BORDEN



Matt published four articles during the summer!

- In *Florida Entomologist*: "Evaluation of reduced-risk insecticides to control chilli thrips (Thysanoptera: Thripidae) and conserve natural enemies on ornamental plants"
- A *Featured Creatures* article: "Crapemyrtle bark scale, *Acanthococcus* (=Eriococcus) *lagerstroemiae* (Kuwana)."
- In *PestPro Magazine*: "An introduction to biological pesticides. Bacillus who? Entomopathogenic what?"
- On *Medium.com*: "Golf Courses as a Source of Habitat Conservation in the Urban Landscape"

SAGE THOMPSON



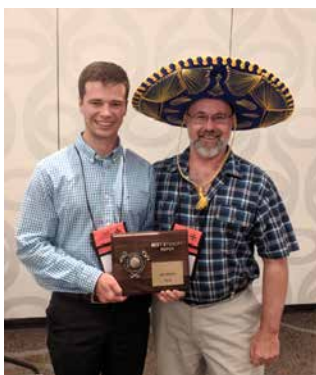
Sage proposed her Master's thesis, titled "Risk assessment of *Bagrada hilaris* in Florida cole crops." Great job Sage!

JESSICA AWAD



Jessica Awad won first place in the Master's competition at Florida Entomological Society meeting! Her presentation was titled "Laboratory rearing and sex ratio of *Apanteles opuntiarum* (Hymenoptera: Braconidae), a potential biocontrol agent of *Cactoblastis cactorum* (Lepidoptera: Pyralidae)." Congratulations Jessica!

BENJAMIN WALDO



Benjamin successfully defended his Master's thesis this summer! His thesis title was: "Nematicide effects on non-target invertebrate populations in turfgrass systems."

Benjamin also presented his Master's research at the Society of Nematologists Annual Meeting in Albuquerque, NM (July 22-25). He won first place in the three-minute thesis competition! Congratulations Ben!



Alumni Spotlight

DR. BRIANNE REEVES

Why did you choose to enroll in the DPM program?

Upon finishing my undergraduate degree in Agronomy Plant Science, I knew that I wanted to pursue even higher education. Looking at the options of a masters, PhD or the DPM program I knew that the DPM program was the one for me. It is a unique multidisciplinary option to further broaden my knowledge on topics that affect how plants grow. I knew that the DPM program would make me very marketable for a diverse career in agriculture.

What is your current occupation, and how has your DPM degree aided you in the tasks and responsibilities as sociated with your position?

I am currently an Innovation Specialist working for BASF in Northeastern NC and Southeastern VA. As an Innovation Specialist, I get to work closely with farmers across my territory in a consultative sales role. The main crops I work in are corn, soybeans, cotton, peanuts, and wheat, and to a lesser extent sweet potatoes, white potatoes, tobacco,

and cucurbits. The DPM degree prepared me to be an agronomic advisor for these farmers helping to solve problems (weeds, diseases, insect pests, nematodes, fertility issues ect.) and making the best recommendations for crop protection products on their farms.

From a personal standpoint, how has your DPM degree influenced you?

The DPM degree helped me to refine my time management, organization, problem solving and critical thinking skills, which has helped me in work life and in my personal life. The DPM program also kept me in Gainesville long enough for me to meet my husband John who is also a Gator grad.

Are there any challenges that your DPM degree has helped you overcome?

There are many day-to-day challenges that I face in my work life that I am more prepared to handle due to what I have learned in the DPM program. Aside from challenges in a work day there are many

challenges that the general public puts on agriculture. The knowledge gained in the DPM program helped me become more of an ADVOCATE FOR AGRICULTURE which has helped me actively participate in many challenging conversations trying to correct misconceptions about farmers and agricultural practices.

Do you have any advice or words of wisdom for current DPM students?

The best advice I have for current DPM students is to tailor your class and internship choices to what you are passionate about, but also challenge yourself and get out of your comfort zone. I would also advise current students to start planning for their career EARLY, at least a year before graduation. Many companies hire full time employees out of internship or training programs, and often times you have to be enrolled in them a year before your graduation. Also consider looking at careers in ag industry as companies like BASF are always looking for people with a DPM skillset.

DPM STUDENTS



Jessica Awad
Florida, USA



Jamey Betts
Georgia, USA



Matt Borden
Virginia, USA



Craig Frey
Maryland, USA



Alex Gannon
Florida, USA



Nick Goltz
Florida, USA



Brandon Jones
Florida, USA



Alicia Kelley
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Nepal



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Cory Penca
Florida, USA



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Tennessee, USA



Morgan Pinkerton
Florida, USA



Bruce Stripling
Georgia, USA



Taylor Smith
Florida, USA



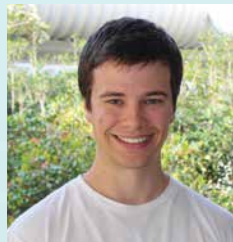
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Susan Swartzfager
Florida, USA



Sage Thompson
Florida, USA



Benjamin Waldo
Indiana, USA



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