Boxwood Stem Decline

Dr. Raj Singh

Boxwood (Buxus sp.) is an important landscape shrub in Louisiana, the south and the nation. Several cultivars are commercially available, and its vibrant green color and evergreen growth make it a popular ornamental. Boxwoods are used as stand-alone specimens at the entrances to homes and businesses. They are also grown as low, clipped hedges around homes and commercial landscapes and have become the top choice ornamental for new developments across Louisiana.

In 2011, the Plant Diagnostic Center received diseased boxwoods from commercial and private landscapes that exhibited symptoms indicative of a well-known root rot disease of boxwood caused by Phytophthora species. Symptoms include random dieback of twigs with light tan colored foliage. Affected leaves do not defoliate and tend to stay attached to the branches. Root and crowns of affected plants look normal (Figure 1).

Figure 1: Boxwood infected with boxwood decline showing light tan foliage with normal root system (inset: bright black discoloration of stem under bark).

(continued on page 4)
the clientele of Louisiana. A number of students graduated with their M.S. and Ph.D. degrees, and two were recently hired by the University of Minnesota, **Ashok Chanda**, and Mississippi State University, **Rebecca Melanson**. Our recruiting class for Fall 2014 and Winter 2015 was outstanding, and these students hailed from the states of Arkansas, Georgia and Louisiana, and the countries of China, Brazil, Honduras, Kenya, Nepal, Nigeria and Serbia. We also hired a new faculty member in the area of mycology – **Dr. Vinson Doyle**.

In this current newsletter, you’ll see for yourself these wonderful activities and achievements, which are having profound effects on the University and AgCenter’s missions, Louisiana agriculture and beyond.

Happy Reading!!!!
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2014-2015 New Students

Adam Bigott (Major Professor: Jeff Hoy)
B.A. in Biology, Hendrix College

Cesar Escalante (Major Professor: Rodrigo Valverde)
B.S. in Agronomy, Universidad Nacional de Agricultura, Honduras

Cecilia Freitas (Major Professor: Jong Ham)
M.S. in Plant Pathology, Universidade Federal De Vicosa, Brazil

Teddy Garcia (Major Professor: Raymond Schneider)
B.S. in Agronomy, Universidad Nacional de Agricultura, Honduras

Alejandra Jimenez (Major Professor: Melanie Ivey)
B.S. in Agronomy, Universidad Nacional de Agricultura, Honduras

Churamani Khanal (Major Professor: Charles Overstreet)
M.S. in Plant Pathology, University of Arkansas

Isaack Kikway (Major Professor: Melanie Ivey)
B.S. in Horticulture, University of Eldoret, Kenya

Tiago Lelis (Major Professor: Jong Ham)
M.S. in Plant Pathology, Universidade Federal De Vicosa, Brazil

Benjamin McInnes (Major Professor: Edward McGawley)
B.S. in Horticulture, University of Georgia

Olanike Omolehin (Major Professor: Robert Brown/
Zhi-yuan Chen)
M.S. in Agronomy, University of Ibadan, Nigeria

Myra Purvis (Major Professor: Trey Price)
B.S. in Plant Science with a concentration in Agronomy,
Louisiana Tech University

Jorge Reyes (Major Professor: Kenneth Damann)
B.S. in Agronomy, Universidad Nacional de Agricultura,
Honduras

Natasha Soares (Major Professor: Zhi-yuan Chen)
M.S. in Molecular and Cellular Biology, Pontifical Catholic
University, Rio Grande do Sul, Brazil

Huijing Zhu (Major Professor: Marc Cohn)
M.S. in Cell and Molecular Biology, Grand Valley State
University, MI, US

Marija Zivanovic (Major Professor: Marc Cohn)
M.S. in Plant Pathology, University of Georgia
Boxwood Decline

The infection also causes a bright black discoloration of the stem immediately under the bark (Figure 1). This bright, black discoloration extends all along the infected twigs and differs from discoloration of the crown region caused by Phytophthora root rot. Currently, boxwood decline has been confirmed from Alabama, Louisiana, North Carolina, South Carolina, and Virginia, and is suspected to be present in Indiana, Mississippi, New York and Tennessee. Because boxwood decline is a recently discovered disease, effective control measures and diagnostic tools have not yet been developed.

Due to slow disease development, it will take some time to determine which fungicides are effective in managing decline. The timing of fungicide application also will be a crucial factor in disease management. In the meantime, landscapers, nursery producers and homeowners are recommended to follow good cultural practices and create an environment that will decrease the spread and development of the disease. In landscapes where the disease is already present, surface disinfection of pruning and cutting tools is important to reduce the spread of the disease. Removing dead and dying twigs and avoiding unnecessary injury also is important to avoid infection.

It is too soon to determine the overall impact of boxwood decline on boxwood industry in Louisiana and the nation. Boxwood is a specialty crop in Louisiana’s nursery and landscape industry, and a very important woody ornamental. The total value of boxwood is not known in Louisiana, but according to the 2010 USDA National Agricultural Statistics Service the wholesale market value of boxwood was estimated at $103 million annually. According to 2013 Louisiana Agriculture Summary, there are 730 nursery operations in Louisiana producing a gross farm value estimated at $155 million. While some nurseries specialize only in boxwood, most of them are involved with boxwood as wholesale traders or retailers. The disease impact also extends to landscape architects who design landscape installation and maintenance companies.

Several attempts to isolate or detect Phytophthora sp. from the roots and crowns of the infected plants failed. Symptomatic tissue taken from the transition zone of healthy and dead twigs was plated onto potato dextrose agar and resulted in consistent isolation of a Colletotrichum sp. (Figure 2.) The pathogenicity tests produced similar symptoms on artificially inoculated boxwoods after three months. After further evaluation, Colletotrichum throbromicola was confirmed as the causal agent of the boxwood decline by amplifying the internal transcribed spacer region.
Remembrance of Norman Horn

Dr. Norman L. Horn Jr. died on June 10, 2014 in Covington, La. at the age of 94. He was a faculty member in the Department of Plant Pathology and Crop Physiology for 31 years where he obtained his Ph.D. degree in 1951. During his tenure, he worked on a number of plant disease management strategies for soybeans and wheat as well as citrus and strawberry. He developed fungicide programs for many of these commodities and developed seed treatments too. He was the first to test benomyl for soybeans and found great success in managing the pod and stem disease complex caused by species of Diaporthe and Colletotrichum. He also studied benomyl resistance in populations of these plant pathogenic fungi. This research led to the general use of fungicides on soybeans in Louisiana, which was responsible for large increases in soybean yields. Dr. Horn was very successful in attracting funding for his research program via chemical companies and the Soybean Promotion Board, and he used a portion of these funds to help support academic and other activities within the Department. Dr. Horn was preceded in death by his first wife, Lucile Degrazier, and is survived by his current wife, Claudette; two sons, Norman and John, John’s wife Debra, and one granddaughter, Holly Marie.

New Faculty

Dr. Vinson P. Doyle joined the faculty in August as an assistant professor in the Department of Plant Pathology and Crop Physiology. Vinson has a 75 percent research and 25 percent teaching appointment. His interest in mycology and fungal evolution began as an undergraduate at the Evergreen State College in Olympia, Wash., under the direction of Drs. Michael Beug and Paul Przybylowicz, where he earned his bachelor of science. Vinson continued to pursue his interests in mycology, systematics, and population genetics under the guidance of Drs. Amy Litt and Peter Oudemans, earning his master’s and Ph.D. in Biology at the New York Botanical Garden and the City University of New York. Vinson is making the move to the Department of Plant Pathology and Crop Physiology from the Department of Biological Sciences where he has been working as a postdoctoral researcher in the areas of bioinformatics and statistical phylogenetics in the lab of Dr. Jeremy Brown.

Vinson is enthusiastic about the opportunity to develop an international research program in mycology here at LSU that addresses practical and theoretical problems related to fungal evolution using modern and classical approaches. He is also looking to capitalize upon his diverse background in organismal and computational biology to help prepare graduate students to meet their career goals.
**Awards and Honors**

**Clark Elected APS Fellow**

**Dr. Christopher A. Clark** was elected Fellow of the American Phytopathological Society (APS) for his outstanding contributions to our understanding of and ability to manage important bacterial, fungal, nematode, and viral diseases of sweetpotato. He elucidated the unusual biology of chlorotic leaf distortion, caused by epiphytic development of *Fusarium denticulatum*, Streptomyces soil rot, and the overlapping host ranges of the sweetpotato and tobacco *Fusarium* wilt pathogens. Utilizing screening methods for multiple diseases, he contributed to development of a dozen major cultivars with combined resistance to nematodes, Streptomyces soil rot, *Fusarium* wilt and several postharvest diseases. Through painstaking, determined research, he addressed cultivar decline unraveling the roles of a complex of viruses and other pathogens in that degenerative process. This very challenging research was followed by establishment of an innovative tissue culture program for “virus-tested” planting stock that has increased yields in multiple states. He also has served APS with distinction receiving the Southern Division’s Outstanding Plant Pathologist Award.

**Melanson Wins Prestigious C. W. Edgerton Award**

**Rebecca A. Melanson**, Ph.D. candidate, in the Department of Plant Pathology and Crop Physiology at Louisiana State University and the LSU AgCenter, recently won the prestigious C. W. Edgerton Award. She was nominated by her advisor, **Dr. Jong Hyun Ham**, associate professor. She won this award for her outstanding academic and professional achievements, especially her significant contributions toward our understanding of bacterial regulatory mechanisms. She identified *ntpR*, a new regulatory gene of major virulence factors, from the plant pathogenic bacterium *Burkholderia glumae* and characterized its global regulatory function in bacterial signaling and pathogenesis.

**2014 Gamma Sigma Delta Awards**

**Dr. Charles Overstreet** won the distinguished achievement in agriculture award of merit and **Rebecca Melanson** won the outstanding Ph.D. student award from the Honor Society of Gamma Sigma Delta LSU Chapter. Dr. Overstreet received this award for his many scientific and noteworthy contributions to extension, and the betterment of Louisiana agriculture. Melanson received this award based on her academic and scientific achievements.
Dr. Raj Singh, director of the Plant Diagnostic Center, received the Floyd S. Edmiston Award for outstanding work with the Louisiana Cooperative Extension Service. Singh, assistant professor in the Department of Plant Pathology and Crop Physiology, has been instrumental in helping the state’s horticulture industry combat diseases, including the citrus canker and citrus greening disease.

Dr. Ray Schneider, professor in the Department of Plant Pathology and Crop Physiology, received the Doyle Chambers Research Award for long-time achievement with the Louisiana Agricultural Experiment Station. He is one of the world’s leading authorities on diseases of soybeans and was the first person to detect the presence of Asian soybean rust disease in North America in 2004.

Distinguished Service Award

Dr. Ray Schneider, professor, Department of Plant Pathology and Crop Physiology, won the 2014 Southern Soybean Disease Worker’s (SSDW) Distinguished Service Award. This award is given to those individuals who have distinguished themselves in the area of soybean disease research and education. He received this prestigious honor at the 41st Annual Meeting held in Pensacola Fl., March 5-6.

In addition, two of Dr. Schneider’s graduate students won second and third place in the SSDW’s student oral paper competition. Sebastian Albu won second for his presentation entitled “A molecular phylogenetic redefinition of Cercospora kikuchii” while Eduardo Chagas Silva won third for his presentation entitled “Management of Cercospora leaf blight of soybean with foliar applications of iron.”
Rebecca R. Sweany was honored at the 2014 Louisiana State University College of Agriculture Alumni Awards Reception, held at the LSU Rural Life Museum on April 25, 2014, as the recipient of the Ray and Dorothy Young Endowed Assistantship in Louisiana Row Crop Integrated Pest Management. Sweany is a graduate student in the Department of Plant Pathology and Crop Physiology, LSU and advised by Dr. Kenneth E. Damann Jr. She is working on her dissertation research, “Investigations into Aspergillus flavus infection of corn and regulation of aflatoxin production by volatiles and biocontrol strains.” Ultimately, learning more about the biology of A. flavus can lead to novel control measures against aflatoxin contamination which would improve corn marketability and food safety in Louisiana and globally.

The Ray and Dorothy Young Endowed Assistantship in Louisiana Row Crop Integrated Pest Management was established to honor Mr. Young for his professional contributions and service to agricultural industries for more than 40 years as an agricultural consultant. The establishment of the award was announced at the annual Louisiana Agricultural Technology and Management Conference in 2011 and was formalized by a donation from the Louisiana Agricultural Consultants Association.

Mr. and Mrs. Young were in attendance at the alumni awards reception to present the award.

PHOTO: Left to right, Dorothy Young, Rebecca Sweany, Ray Young and Vice President and Dean William Richardson
Ashok K. Chanda, who completed his Ph.D. degree in 2012 under the direction of Drs. Z. Chen and R. Schneider, recently accepted a research (60%) / extension (40%) plant pathology position as an assistant professor with the University of Minnesota’s Department of Plant Pathology, and is located at the Northwest Research and Outreach Center in Crookston, Minn. He started in August 2014. He has responsibilities for the biology and management of sugar beet diseases. His current research focuses on *Rhizoctonia solani* and *Aphanomyces cochlioides* on sugar beets with projects ranging from developing integrated disease management approaches to basic studies on understanding pathogen biology, virulence mechanisms and dissecting genetic diversity. His extension/outreach efforts will focus on developing educational programs for the agricultural professionals and stakeholders aimed at improving knowledge about sugar beet diseases and disseminating unbiased research-based information to the sugar beet growers so they may have more effective ways to manage diseases.

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Ashok (left) rates sugarbeets for Rhizoctonia

## Graduate Student Association Activities

### 2014 Students Guest Speaker for the Departmental Seminar Series

During the Spring 2014 semester, the Plant Pathology and Crop Physiology Graduate Student Association had the opportunity to select a guest speaker for the Departmental seminar series. The program was initiated to give graduate students an opportunity to interact with professionals outside of the Department to broaden their educational experiences, and to develop professional relationships.

The graduate student association selected Dr. Glen Hartman to be their guest speaker. Dr. Hartman is a research plant pathologist with USDA Agricultural Research Service and a professor of plant pathology in the Department of Crop Sciences at the University of Illinois. He earned a B.S. degree in plant health technology at the University of Minnesota, and an M.S. and Ph.D. degrees in plant pathology from the University of Illinois. He worked for 5 years at two international centers where he was the leader of the cowpea pathology program, and head plant pathologist responsible for host resistance research on bacterial and fungal diseases of vegetables including soybean. Since 1993, his research has focused on variability and biology of soybean pathogens, epidemiology of soybean diseases, the nature and genetics of host plant resistance, and soybean disease management located at the University of Illinois.

Dr. Hartman joined the PPCP faculty and students for 2 days, and had a busy schedule which included meetings with students and faculty as well as a seminar, in which he presented the research developed in his laboratory. He also experienced Louisiana culture, touring the Botanic Gardens at Burden and Rural Life Museum and sampling typical Cajun food at a dinner with students from the department.

Glen Hartman
Graduate students from the Department of Plant Pathology and Crop Physiology at Louisiana State University visited several universities and agri-businesses on the way to and from the APS meeting in Minneapolis, Minn., in late August 2014. We named the trip “Rollin’ Down the River” because the route generally followed the Mississippi River. Six students traveled together: Sebastian Albu, Eduardo Chagas, Ally Lunos, Yen Raruang, Josi Rezende, and Rebecca Sweany. We met many wonderful people on their home turfs and had experiences that one cannot obtain in the classroom.

Our first stop was the University of Arkansas. While there, we helped Drs. Bluhm’s and Rupe’s graduate students with their inoculations of about 1500 mutants of *Phomopsis longicolla* on more than 4000 soybean seedlings. In spite of the intense rivalry between Arkansas and LSU, we can work together to make the lives of graduate students a little less stressful.

On the way home we started our visits at the University of Minnesota, St. Paul. Sara Bratsch and Dr. Jim Bradeen led us on a tour of the Department of Plant Pathology that recounted the rich history of the department, which includes giants of plant pathology such as Dr. E. C. Stakman and Dr. N. Borlaug. During our tour, we visited the biosafety greenhouse facilities, diagnostic lab, and fungarium. It was inspiring to visit a place with such a rich history and with state of the art research facilities. Thanks go out to Drs. Jeanne Cibarowski, Anita Cholewa and Brett Arenzhome for showing us their research operations.

Next, we visited the University of Wisconsin, Madison, where Robyn Roberts arranged an active itinerary. The trip started with getting lost on Madison’s beautiful campus. We learned about the turf grass problems and the potato clean “seed” program. We visited the community gardens and the disease diagnostic lab where we saw many diseased plants. Finally, we met Dr. Nancy Keller, a functional geneticist who is focusing on *Aspergillus flavus*. She generously gave us input on our research projects and shared her current research and experiences with us. Thanks to Dr. Paul Koch, Andy Witherrll, Dr. Brian Hudelson, Jaime Willbur, Katelyn Horgan, Sachin Jain, Joe Spraker and Tomas Rush for showing us around.

Our next stop was a farm outside of Wyanet, Il. Ken and Phyllis Weyand, Sweany’s family, showed us around their 150-plus-year-old family farm. Japanese beetles and cold winter winds are the major garden threats. We explored old red barns, hay lofts and old water handling systems for swine rearing. After surviving on fast food, the Weyands prepared a welcomed, home-cooked meal for us. After lunch, we inspected corn and soybean fields and collected many samples for our own research projects.

Next we visited the headquarters of DuPont Pioneer in Johnston, Ia. During the tour, hosted by Dr. Bill Dolezal, we learned more about the operations of this multinational company. We met a number of research leaders including Drs.
Tabare Abadie, Jean Liu, and Scott Heuchelin. They discussed their research pipelines and plant pathology group activities. We also heard about collaborations with national and international organizations, including EMBRAPA in Brazil. We discussed personal traits that they look for when hiring: communication skills, team work, enthusiasm, passion and technical skills. We toured the disease clinic, field demonstration plots and the northern corn leaf blight screening plots.

Our last visit was the headquarters for Monsanto Company in St. Louis, Mo. Dr. Kathy Sehnert provided a tour and showed us the pipeline to develop new products in the company: from protein and gene identification to plant screening in growth chambers and greenhouses. Drs. Mike Clements and Leigh Ann Harrison discussed aflatoxin in corn, precision ag, emerging diseases in soybeans, and the challenge of feeding the growing global population. We visited the soybean breeding ag traits department and saw soybean screens for resistance to Phytophthora root rot, Frogeye leaf spot, Charcoal rot and Stem canker plus different molecular techniques. Thanks to Nona Lafaver, Claudia Morris, Michelle Elrod, Kelsey Andersen and Zoey He for showing us their work.

Finally we returned home to Louisiana. Our trip was most enjoyable and rewarding as we made new professional and personal contacts and now have a much clearer vision of our future professional careers. Thanks to everyone for their generous hospitality, and Dr. William B. Richardson, vice president for agriculture and dean of the College of Agriculture, for his financial support in making this educational trip a reality.

Chanda and Melanson
(continued from page 9)

Rebecca A. Melanson, who completed her Ph.D. degree in December 2014 under the direction of Dr. Jong H. Ham, accepted a 100% extension assistant professor of plant pathology position with the Mississippi State University Extension Service. She started in January 2015, and will be located at the Central Mississippi Research and Extension Center in Raymond, Miss. She will have her academic home in the Department of Biochemistry, Molecular Biology, Entomology, and Plant Pathology at Mississippi State University. Her responsibilities will include performing extension-related educational activities and research in the areas of commercial vegetable, ornamental, fruit, and nut production as well as greenhouse fruit and vegetable production.
Successful Summer Technique Sharing Session Program Held by the PPCP GSA

The PPCP GSA journal club/training committee held a new training series during the summer of 2014. The summer technique sharing session idea originated from Jingyu Peng and was organized and implemented by Jingyu, Rebecca Sweany, Ally Lunos and Mary Helen Ferguson. Over the course of the summer, graduate students from different labs shared techniques they commonly use in their labs. This was great learning exercise; students gained teaching experience and learned about important plant pathology and physiology skills they may need in their careers. We learned about yield estimations (Mary Helen Ferguson), aflatoxin extraction and quantification (Rebecca Sweany), toured the LSU microscopy facility (Ally Lunos and Maryam Shahrtash), constructed phylogenies (Sebastian Albu), measured leaf tissue nutrients (Eduardo Chagas), measured chlorophyll and anthocyanins (Maryam Shahrtash), learned about the use of the Lac operon in topocloning (Jingyu Peng). We are looking forward to next summer’s technical sessions.

Graduate Students Unveil Website

The Plant Pathology and Crop Physiology Graduate Student Association now has a website. Please visit: http://lsuppcpgsa.wordpress.com/ We will be updating the website periodically with our current activities. The website was created by Mary Helen Ferguson with the help of Ally Lunos, Rebecca Sweany and Adam Bigott. To help professionals learn more about our students, we will include students’ anticipated graduation dates, dissertation/thesis proposal titles and photos. Please become one of our followers on Facebook or by email.

NC State Researchers Observe PPCP Sweetpotato Tissue Culture Clean Stock Program

July 2014. Three researchers from the NC State Micropropagation Unit visited the Department of Plant Pathology and Crop Physiology to observe the sweetpotato tissue culture clean stock program. The program, under the leadership of Dr. Chris Clark and Mary Hoy, is a service provided by the LSU AgCenter in order to provide yearly virus-tested and disease-free sweetpotato tissue cultures to the AgCenter’s Sweetpotato Research Station in Chase, Louisiana.

The researchers, Dr. Christie Almeyda-Becerra, Kala Parker and Rose Caldwell, spent three days discussing not only general tissue culture production methods, but also more specialized techniques such as meristem-tip culture and virus indexing procedures. Dr. Almeyda-Becerra and Caldwell toured the Chase Research Station with Dr. Clark, and visited with Dr. Tara Smith, the Director of the Station. They discussed the process of tissue culture adaptation to greenhouse conditions and the spring transfer of tissue culture plants to beds in preparation for production of virus-tested storage roots for the sweetpotato industry.

Parker discussed media preparation and dissection techniques for meristem tip culture, and subsequent shoot regeneration with Hoy, who directs the tissue culture program.
**Allysson Lunos**

*Activities Planned for 2015:*

Present master’s degree research at the 2015 APS Meeting in August, defend master’s work in Fall 2015 semester and graduate with master’s December 2015.

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**Rebecca A. Melanson**

*Invited Presentations:*

“Success is where preparation and opportunity meet” at the 2014 Louisiana Agricultural Technology and Management Conference, Marksville, La., February 12-14. Invitation to speak as the recipient of the 2013 Ray and Dorothy Young Endowed Assistantship in Row Crop Integrated Pest Management.

“Using Emerging Technologies and Conventional Approaches to Study and Control Bacterial Panicle Blight of Rice” (poster presentation) at the Louisiana State University Economic Development Assistantships Symposium, Baton Rouge, La., April 28. Invitation to participate in the symposium and prepare a poster presentation as a recipient of an Economic Development Assistantship.

*Awards and Honors:*

LSU Dissertation Year Fellowship ($9,000; August-December 2014)
Gamma Sigma Delta LSU Chapter 2014 Outstanding Ph.D. Student
Gamma Sigma Delta LSU Chapter 2014 Graduate Student Merit Honor Roll

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**Surendra Osti**

*Awards and Honors:*

Graduate Student Association Travel Award to present poster at the Annual Meeting of American Phytopathological Society, Minneapolis, Minn.

*Activities Planned for 2015:*

After finishing M.S. in plant health from Department of Plant Pathology and Crop Physiology, I am going to join the Ph.D. program in Department of Agricultural Economics and Agribusiness at LSU, Spring 2015.

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**Rebecca Sweany**

*Awards and Honors:*

Received the Ray and Dorothy Young Endowed Assistantship in Louisiana Row Crop Integrated Pest Management on April 25. Assistantship was awarded by the College of Agriculture and supported by the Louisiana Agriculture Consultants Association. Assistantship was established to honor the life-long professional contributions of Ray Young towards the advancement of ag-consulting and especially integrated pest management practices in Louisiana and nationally.

*Activities Planned for 2015:*

Organizing along with Dr. Zhi-Yuan Chen (of PPCP) and Hilary Mehl for the mycotoxicology committee a special session for the 2015 Annual American Phytopathological Society Meeting in Pasadena, Ca. The session entitled, “Mycotoxins: From Production, Secretion, and Detection to Effects on Plants and Mammals” will present current research on mycotoxin production by plant-pathogenic fungi and their effects on both plants and animals. Talks will discuss regulation of aflatoxin production and the role of vesicles in the synthesis of mycotoxins. Additional topics will address mycotoxin detection methods and problems with mycotoxin-contaminated grain and effects of the pathogens on grain quality. Finally, toxicity of mycotoxins to humans and livestock will be presented. More info can be found at [http://www.apsnet.org/meetings/annual/Pages/SpecialSessions.aspx#14](http://www.apsnet.org/meetings/annual/Pages/SpecialSessions.aspx#14)

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**Tiago de Paula Lelis**

*Activities Planned for 2015:*

Studies related to the *Erwinia psidii* genome.
Sequencing of the type strain of *E. psidii* for future comparison with already sequenced genome of other *Erwinia* sp.

Mutagenesis of Tolf1/R quorum sensing genes of *B. glumae* 411-6, trying to understand the mechanism of toxoflavin production independent of QS genes.
Zhi-yuan Chen

Invited Presentations:

“World Mycotoxin Conference” in Beijing May 21. The title of the presentation was “Enhancing host resistance in maize to control Aspergillus flavus infection and aflatoxin contamination”.

Grants and Contracts:

The USDA-ARS cooperative agreement award for “Identification and evaluation of proteins/genes associated with aflatoxin-resistance in soybean and maize.” $40,000. (08/2014-04/2016)

The AMCOE Aflatoxin Program grant for “Transgenic Control of Aflatoxin Contamination in Corn through Host Induced Gene Silencing”. $80,000 (06/2014 – 05/2015; my portion is $42,500).

USAID-ICRISAT Linkage Grant on “Biotechnological approaches for developing aflatoxin resistance in peanut”. $45,000 (01/2014 – 09/2015).

Visiting Scientists/Students:

Dr. Zhuqiang Han, a peanut breeder from Guangxi Academy of Agricultural Sciences, China, visits our lab for one year (10/2014 to 09/2015) to learn proteomics and molecular biology.

New Graduate Students:

Natasha Soares, a master degree student from Pontifical Catholic University of Rio Grande do Sul, Brazil, joined our lab in Aug, 2014.

Activities Planned for 2015:

Dr. Xinnian Dong, a professor at Department of Biology, Duke University working on plant defense against microbial pathogens, specifically on systemic acquired resistance (SAR), has been invited and agreed to come here and give a seminar on Nov 18th, 2015. Please mark your calendar.

Christopher Clark

Invited Presentations:

Gave a presentation on graft-transmissible pathogens at the organizational meeting of NCPN-SP in Raleigh, NC, Nov 12.

Awards and Honors:

Fellow, American Phytopathological Society

Visiting Scientists/Students:

Lefei Huang, Guangdong Academy of Agricultural Sciences

New Graduate Students:

Favio Herrera

Activities Planned for 2015:

Co-chairing the new National Clean Plant Network – Sweetpotato as it undergoes its first round of funding, forms a governing board, and becomes established as an ongoing entity.

Marc Cohn

Invited Presentations:


Recognitions:

C-4 Division Chair (Seed Science), Crop Science Society of America, 2014-2015
Committee member for the University Distinguished Dissertation Award (2014)
Ad-hoc grant evaluator for the National Research Foundation (South Africa)

Visiting Scientists/Students:

Dr. Youhua Wang, Professor of Crop Physiology, Nanjing Agricultural University (China) is a visiting scientist (May 2014-April 2015) in the Cohn lab to study instructional methods for seed biology and graduate student mentoring strategies, as well as research protocols.
Dr. Xingyou Gu (Plant Sciences, South Dakota State University) visited the Cohn lab to discuss seed dormancy research, present a departmental seminar, and give a guest lecture in PLHL 7067 (Professional Development for Plant Scientists) in February, 2014.

New Graduate Students:

Ms. Huijing Zhu joined the Cohn lab in January 2014 to study smooth cordgrass seed death in a doctoral research program. She has an M.S. degree from Grand Valley State University in Grand Rapids, MI.

Ms. Marija Živanović joined the Cohn lab in August 2014 to study protein targets of dormancy-breaking chemicals in red rice for a doctoral research program. She has an M.S. degree from the University of Georgia (Athens, GA), and is a recipient of a LSU Economic Development Assistantship, of which only four were awarded university-wide.

Activities Planned for 2015:

The Cohn lab will attend the Southern Branch-American Society of Plant Biologists annual meeting in March, 2015 in Mobile, Ala.

Kenneth E. Damann Jr.

Invited Presentations:

Moderator for the Mycotoxin poster huddle at the APS meetings in Minneapolis, MN.

Present research results of AMCOE funded project “Understanding Biological Control of Aflatoxin Contamination of Corn” at the Commodity Classic in San Antonio, TX, February 25.

Grants and Contracts:

AMCOE funding ($60,000) for continuing project on “Understanding Biological Control of Aflatoxin Contamination of Corn”.

Louisiana Soybean & Grain Research and Promotion Board support ($25,000) for “Epiphytic bacteria and/or their metabolites for control of aflatoxin contamination of corn”.

Visiting Scientists/Students:

Hosted Jorge Reyes, a UNA visiting scholar from Hondouras to work on the bacterial control of aflatoxin project during the summer and fall of 2014.

Dr. Subbaiah Chalivendra, an expert in corn endosperm development, joined the lab as a research assistant professor. He is pursuing expression of Aspergillus mating type genes in culture and in corn kernels by individual isolates alone and pairs of isolates which we know to be fecund or not fecund. Also investigating the ability of kernel isolates vs soil only isolates to grow under low oxygen conditions on the premise that the corn kernel endosperm niche is almost anaerobic and therefore successful pathogens have to be able to negotiate that environment. Subbaiah is also looking at the seed/soil fungal isolate hypoxia related gene expression under corn infection conditions.

Rebecca Sweany and I visited Dr. Burton Bluhm’s lab at the University of Arkansas just prior to the APS meetings where we worked with Jonathan Smith who demonstrated his technique of protoplast transformation of Aspergillus flavus.

New Graduate Students:

Jorge Reyes will begin an M. S. degree in my lab beginning in January 2015. He plans to continue with the successful bacterial biocontrol work he did this summer as well as evaluate soil and kernel populations of A. flavus from samples from eight states from Minnesota to Louisiana on each side of the Mississippi River.

Lawrence E. Datnoff

Invited Presentations:


Presented a talk on “Use of silicon for the management of plant diseases” at the V National and IV International Symposium of Plant Pathogenic Bacteria, Guadalajara, Jalisco, Mexico, Sept. 22-24.

Presented a talk on “Silicio: su rol en la nutricion de las plantas y su efecto para inducir Resistencia frente a estres biotico y abiotico” at the Conferencia Redagricola, Santiago, Chile, July 2-3.

Presented a talk on “Relacion entre nutricion mineral y las enfermedades de las plantas” at the Conferencia
Redagricola, Santiago, Chile, July 2-3.

Presented a talk on “Silicon: Revisiting its role in plant nutrition, biotic and abiotic stress reduction” at the 12th New Ag International Conference & Exhibition, Warsaw, Poland, March 26-28.

**Vinson Doyle**

*Invited Presentations:*

“Inferring process from pattern in fungal evolution: genes to genomes”, Louisiana State University AgCenter, April 24.

“Inferring process from pattern in fungal and viral evolution”, Marshall University, February 26.

*Visiting Scientists/Students:*

2014-2015 - Willie Anderson dos Santos Vieira, Graduate Program in Plant Pathology at the Universidade Federal Rural de Pernambuco, Brazil, “Phylogeny, genotypic diversity, and population structure of *Colletotrichum* species associated with Banana anthracnose in Brazil.”

**Jong Hyun Ham**

*Invited Presentations:*

35th Meeting of Rice Technical Working Group (2/19/2014, New Orleans, La.)
Panel: Plant Breeding and Genetics
Title: Development of new rice lines showing broad disease resistance to bacterial panicle blight and sheath blight.

2014 Annual Meeting of the American Phytopathological Society (8/10/2014, Minneapolis, Minn.)
Title: An RNA-sequencing analysis implicates the presence of multiple cell-to-cell signaling pathways in the rice pathogenic bacterium, *Burkholderia glumae*.

*Grants and Contracts:*

Testing the efficacy of product on sheath blight control (Agri-Neo Inc.): $13,220

Testing the efficacy of product on bacterial panicle blight (Syngenta Inc.): $14,400

Testing the efficacy of product on bacterial panicle blight (Gowan Inc.): $6,000

Training a visiting scholar from Thailand (Nootjarin Jungkhun, Chiangrai Rice Research Center, Rice Department, Bangkok, Thailand): $4,000


*Visiting Scientists/Students:*

Intern Student: Ms. Katherine N. Rubio (Zamorano University, Honduras) (Visiting period: 5/14 – 7/14)

Visiting Scientist: Ms. Nootjarin Jungkhun (Chiangrai Rice Research Center) (Visiting period: 10/14 – 9/15)

*New Graduate Students:*

Mr. Tiago Lelis (8/2014) Ph.D. program
Ms. Cecilia Freitas (8/2014) Ph.D. program

*Activities Planned for 2015:*

Chair of the APS Bacteriology Committee

**Clayton A. Hollier**

*Invited Presentations:*


PPCP Faculty Activities
January – December 2014


“Louisiana IPM Programs,” SERA003 (virtual), Mar. 25 “Cercospora Complex in Rice,” Agent Training, Crowley, June 24.

“Cercospora Complex Biology and Management in Rice,” Rice Research Station, June 25.


“How Important are Plant Diseases as Major Causes of Food Insecurity?” APS, Minneapolis, Minn. August 12.

“Southern Corn Rust: A Sleeping Giant or a Rusty Wimp?” Purdue University Seminar Series. Sept. 24.

“Southern Corn Rust’s Impact on Yield and Quality of Louisiana Corn” Corn Disease Working Group, Chicago, IL December 10.

“Fungicides for Corn Diseases,” Corn Disease Working Group, Chicago, IL December 10.

Grants and Contracts:
$5,000 United Soybean Board for videos on fungicide resistance.

$40,000 United Soybean Board for disease sentinel plots and statewide disease scouting.

$27,500 Louisiana Soybean and Feed Grains Research and Promotion Board for disease sentinel plots and statewide disease scouting.

$24,000 Louisiana Soybean and Feed Grains Research and Promotion Board for soybean disease yield loss.

$18,000 Rice Research Board for Cercospora Disease Complex: Biology and Impact.

$23,000 from chemical companies for determining fungicide efficacy.

Activities Planned for 2015:

Develop agent training materials for corn and soybeans.

Continue evaluating corn, sorghum and soybean fungicides.

Continue researching the biology of Puccinia polysora on corn.

Continue yield loss work on corn, soybeans and rice.

Continue the evaluation of silicon against Colletotrichum spp. on grain sorghum.

Continue the evaluation of fungicide resistance of Rhizoctonia solani on rice and soybean.

Teach: Plant Disease Management (PLHL 4001) in the Spring 2015 semester.

Present agronomic crop pathology topics at grower meetings, field days, training sessions, consultant meetings.

Oversee the Extension Integrated Pest Management program.

Jeff Hoy
Invited Presentations:

“Taking a new approach to defeat brown rust”, American Society of Sugar Cane Technologists Louisiana Division.

“Seed treatment chemicals improve stand establishment and yield obtained from billet planting in Louisiana”, American Society of Sugar Cane Technologists Joint Annual Meeting.

New Funding (American Sugar Cane League, Certis, Helena Chemical and BASF = $67,000).

New graduate student:

Adam Bigott, and he will be studying sugarcane microbial communities with and without a sugarcane cropping history.

Melanie L. Lewis Ivey
Invited Presentations:

2014 APS-CPS Joint Meeting Special Session: “A Systems Approach for Microbe Management: From Food Safety to Plant Health.”
PCCP Faculty Activities  
January – December 2014

“A systems approach for producing greenhouse tomatoes free of human pathogens and plant pathogens.”


International Programs, LSU Agricultural Center, 2014. “Horticulture Pathology at the LSU AgCenter.”

Grants and Contracts:


LDAF Specialty Crop Block Grant, Enhancing La Growers Food Safety Awareness and Market Opportunities through GAP/GHP, $112,385, 2014-2016.

IR-4 Project 2014-2015, $3000

Visiting Scientists/Students:

Marggie Nataly Quiroz, Zamorano University
Alejandra Maria Jimenez, UNA.

Activities Planned for 2015:

Hosting the 30th Annual Tomato Disease Workshop, Fall 2015.

Edward C. McGawley

Invited Presentations:

Keynote speaker at 6th International Congress of Nematology (Capetown, South Africa (4-9 May) and Japan-Korea Joint Symposium on Nematology 2014 (18-20 May). Invited seminar speaker, Auburn University School of Forestry (October 15).

Grants and Contracts:

Monsanto-$31,500. (research on seed treatment nematicides for management of reniform and root-knot nematodes); CAI, LTD-$5000. (research on mechanism of action of Agri-Gard); DuPont-$26,000 (research on influence of experimental nematicide on nematode motility).

New Graduate Students:

Mr. Churamani Khanal and Mr. Bond McInnes…both co-advised by ECM and Dr. Charles Overstreet.

Activities Planned for 2015:

Host visitor from Japan for continued research on Pinewood nematode. Attend meetings of Society of Nematologists, Organization of Nematologists of Tropical America and European Society of Nematologists.

Charles Overstreet

Invited Presentations:


“Reniform nematode influence on soybean production in Louisiana.” Southern Soybean Disease Workers meeting in Pensacola Beach, Fl. March 5.


“Awards and Honors:

Distinguished Achievement in Agriculture. 2014 awards luncheon of the Gamma Sigma Delta Louisiana State University Chapter, April, Baton Rouge, La.

Grants and Contracts:

Syngenta Crop Protection, LLC. 2014. Efficacy of new A20703 formulation on early season nematodes in cotton. $6,000
Monsanto Company. 2014. Evaluation of nematode management seed treatments in corn and cotton. $46,368

Bayer CropScience. 2014. Evaluate the value of partnering Fluopyram and Poncho/VOTiVO on corn and cotton. $24,000

Dow AgroSciences. 2014. Site-specific application of nematicides. $27,000

Dow AgroSciences. 2014. Yield and quality of Phytogen Nematode Resistant Cotton varieties following preplant fumigations with 1,3-D. $10,000

Dupont. 2014. Evaluation of foliar applications of Vydate CLV following Avicta seed treatments in soybeans. $2000

Visiting Scientists/Students:

Ernesto Ticiano de Silva- Intern from Brazil
Felipe Mendes Carvalho Godoy- Intern from Brazil.

Activities Planned for 2015:

I will be working on site-specific application of nematicides on soybean next year at the Northeast Research Station at St. Joseph, La., as well as a number of production fields in Morehouse Parish.

I will also continue working with a number of chemical companies evaluating new products and formulations for efficacy under Louisiana conditions.

I will be attending the 8th International IPM Symposium in Salt Lake City, Utah next March, the Organization of Nematologists of Tropical America meeting in Havanna, Cuba in May, and the Society of Nematologist meeting in East Lansing, Michigan in July.

Trey Price

Invited Presentations:


10 grower meetings, eight field days, two LDAF recertification meetings, and 1 agent training.

Grants and Contracts:

Managing Foliar Diseases in Louisiana Cotton, Louisiana Cotton Incorporated State Support Committee. $5,000

Development of FHB Resistant Wheat Genotypes Adapted to the Gulf Coast, USDA-ARS. $7,500

Managing Disease in Louisiana Corn. Louisiana Soybean and Grains Research and Promotion Board (LSGRPB). $12,000

Evaluation of Soybean Cultivars and Fungicides for Disease Management in Northeast Louisiana. LSGRPB. $26,006

Wheat Disease Management in Louisiana. LSGRPB. $21,700

Evaluation of Cercospora Leaf Blight and Purple Seed Stain in Louisiana. LSGRPB. $30,893

New Graduate Students:

Myra Purvis

Hunter Pruitt (new Research Associate and future graduate student).

Year-In-Review and Activities Planned for 2015:

This has been a busy and productive year for our program. A total of 45 field trials investigating foliar fungicide efficacy at various rates and timings were conducted at MRRS, NERS, and DLRS in wheat, corn, grain sorghum, soybean, and rice. Six trials were conducted investigating the effects of seed treatments on seedling diseases in wheat and soybean, while five in-furrow application trials were conducted in corn and soybean bringing the total trial count in grains to 56.

In addition to field trials, official variety/hybrid trials were rated for numerous diseases of wheat, corn, grain sorghum, and soybean at MRRS, NERS, and DLRS. Wheat OVTs were rated at NERS and DLRS for
The most prevalent soilborne issue in soybeans was three fungicide applications for frogeye leaf spot. Field failures of fungicides were observed in the number-one foliar issue in soybeans was frogeye leaf blight was very light compared to previous years. The biggest issues in corn were Northern corn leaf blight (early) and southern rust in late-planted varieties, and generate other information useful for our producers.

In the laboratory we continued to evaluate the Cercospora leaf blight pathogen for resistance to fungicides. Forty-three new isolates were obtained during 2014 from northeast and central Louisiana. We have determined in the past that the majority of the pathogen population is resistant to strobilurin fungicides (Quadris, Headline, Gem, and others), and about one-third is resistant to thiophanate-methyl (Topsin, Incognito, Cercobin, and others). We are currently monitoring triazole (Topguard, Domark, Proline, and others) and SDHI (Priaxor, Endura, Vertisan, and others) sensitivities as well. We have isolates of a number of other suspected soybean, corn, and grain sorghum pathogens, and plan to initiate research programs in an effort to confirm pathogenicity, define optimum conditions for infection, search for resistant varieties, and generate other information useful for our producers.

In cotton, we received many calls concerning target spot. Producer fields were observed in Franklin, Madison, and Tensas Parishes with two-thirds foliage loss due to the disease. Eight foliar fungicide trials were conducted at MRRS, NERS, and DLRS with various products, rates, and timings. Fungicides, particularly Headline and Priaxor applied during the 3rd week of bloom, were the most efficacious on target spot, and in some severe cases preserved yield. Additionally, bacterial blight (angular leaf spot) also was confirmed in Louisiana cotton for the first time in many years. The disease was noted in four parishes: Red River, Natchitoches, Pointe Coupee, and Catahoula.

Our program participated in eight field days at research stations and farms across the state. Additionally, we participated in 10 grower meetings, two LDAF recertification meetings, and one agent training session providing producers, consultants, industry, and other stakeholders with the latest in field crop pathology.

Our plans for 2015 are to publish first reports for sudden death syndrome and black root rot of soybean. We also plan to conduct variety screenings with these diseases as there have been numerous inquiries concerning sources of resistance. We also plan to explore the effects of seed treatments and in-furrow applications on these diseases. Undoubtedly, we’ll continue to have a full load of field efficacy trials with seed treatments, in-furrow sprays, and foliar fungicides in cotton, corn, soybean, wheat, and grain sorghum. We have isolates of Corynespora cassicola, and will begin to conduct basic research of epidemiological parameters (inoculum concentration, optimum temperature, dew period duration, etc.) and initiate
varietal screenings. We will continue to define the distribution of bacterial blight in cotton and provide our producers with information concerning resistant varieties and conditions favoring disease development. We will continue our fungicide resistance work with the Cercospora leaf blight pathogen, and will have at least one manuscript published concerning strobilurin and thiophanate-methyl resistance, possibly another covering baseline and subsequent sensitivities to triazole and SDHI fungicides.

Raymond Schneider

Awards and Recognition:

Schneider received the Distinguished Service Award from the Southern Soybean Disease Workers at their annual meeting in Pensacola Beach, FL in March of 2014. This award recognizes continued research and service in the area of soybean pathology. Schneider served as president of the organization several years ago and has been an active participant.

Two graduate students from Schneider’s group, Sebastian Albu and Eduardo Chagas, also received awards from SSDW in the student competition as described elsewhere in this newsletter.

Schneider received the Doyle Chambers Research Award (described on page 7 of this newsletter), the most prestigious award given by the LSU AgCenter for research accomplishments that benefit Louisiana agriculture.

Presentations:


“The Soybean Pathology Research Program at Louisiana State University.” Department of Crop Sciences, University of Illinois, Urbana-Champagne, Ill. July 7.


Meetings Attended:

Southern Division, American Phytopathological Society, Dallas, Tex. Feb. 2-3.

Southern Soybean Disease Workers, Pensacola Beach, Fl. March 5-6.

NCERA 204 (CSREES Regional Project), Pensacola Beach, Fl. March 3-4.

New Students:

Teddy Garcia, Universidad Nacional de Agricultura, Honduras

Grants and Contracts:

USDA via United Soybean Board. $30,000. Causes and Cures for Delayed Maturity in Soybean.

United Soybean Board. $18,000. Elucidating the Complex Etiology of Cercospora Leaf Blight of Soybean.

Louisiana Soybean and Grain Research and Promotion Board. $78,500. Biology and Control of Major Diseases of Soybean. $16,000 Supplement. Analysis of Leaf Tissue for Flavonoids and Other Compounds.

Brandt, Consolidated. $25,000. Effects of Foliar Applications of Iron on Cercospora Leaf Blight of Soybean.

Courses Taught:


Plans for 2015:

My group, including graduate students and student workers, will greatly expand our research on management of Cercospora leaf blight of soybean with foliar applications of minor elements and investigate the causal mechanisms by which disease is suppressed. We will be attending several national and regional meetings to present our findings.

Raj Singh

Master Gardener Training Sessions:

PPCP Faculty Activities
January – December 2014

Participated in 11 garden shows.

Invited Presentations:


“Citrus Canker and Citrus Greening Training to Survey Inspectors.” Louisiana Department of Agriculture and Forestry, Kenner, La. October 23.


“Disease and Insects of Trees.” Southwest Region Agricultural and Natural Resource Agent Training, Crowley, La. October 10.


“Awards and Honors:

2014 Floyd Edmiston Extension Faculty Award

Grants and Contracts:

National Plant Diagnostic Network $25,000
Cooperative Agriculture Pest Survey $25,000
Citrus Clean Plant Network $11,000
Sudden Oak Death Survey $6,000
Plant Diagnostic Center, $37,000
Visiting Scientists/Students:
Emilio Gautreauz, Honduras
Activities Planned for 2015:
Five regional first responder trainings on invasive organisms not present in Louisiana.
Participate in the LSU AgCenter Internal Leadership Program.
Direct the Plant Diagnostic Center.
Conduct research on boxwood decline (LSU Economic Development Assistantship proposal).
Report new diseases from Louisiana.
Survey of the distribution of Texas Phoenix palm decline in Louisiana (USDA Farm Bill Suggestion).

Name: Rodrigo Valverde

Invited Presentations:
Invited speaker at the Annual Meeting of the Mexican Phytopathological Society, Ixtapan de la Sal, Mexico, July 20-24. Title of presentation: Persistent dsRNA plant viruses and viral diseases of ornamental crops: importance identification, and occurrence.

Grants and Contracts:
Louisiana Board of Regents (seed grant): Bell pepper endornavirus, $10,000.
Louisiana Soybean and Grain Research and Promotion Board: Screening Soybean Lines for Resistance to Soybean Viruses, $20,000
US-Israel Binational Agricultural Research and Development Fund (BARD): Interactions between Bell pepper endornavirus and Acute Viruses in Bell Pepper and Effect to the Host, $95,000

Visiting Scientists/Students:
Dr. Eliezer Rodrigues de Souto, Professor at Universidade Estadual de Maringa, Brazil, six month sabbatical visit. He will work on endornaviruses of crops.
Mr. Tanakorn Srirat, an M. S. student from Kasetsart University, Thailand, spent a 3 month internship conducting research on soybean and pepper viruses.
Mr. Cesar Escalante from Universidad Nacional de Agricultura, Honduras spent a 3 month internship conducting research on Bell pepper endornavirus.
Hosted two interns, Mia Doucet and Allison Hultgreen, seniors at Episcopal High School, Baton Rouge. They conducted supervised research on plant endornaviruses.

Activities Planned for 2015:
Participate as member of the proposal evaluation panel (Crop Health) for US-Israel Binational Agricultural Research and Development Fund grants.
Start advising a new M. S. graduate student.
Travel to Tel Aviv, Israel to meet BARD grant collaborators.
Travel to Mexico City, Mexico to attend the annual meeting of the Mexican Phytopathological Society in conjunction with the Latin American Society of Plant Pathology.
Travel to Pasadena, Ca., to attend the APS annual meeting.
Annual Spring Departmental Crawfish Boil

Coming soon in April/May 2015

Stay tuned!!!!!