



2011

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CBC Targets Two New and Important Invasive Pest Threats in Panama, Central America

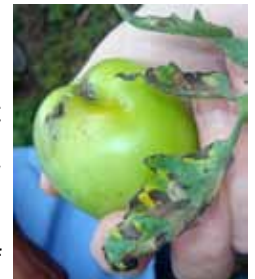


Dr. Amy Roda USDA-APHIS-PPQ-CPHST (front) and Dr. Moses Kairo (second from left) (FAMU-CBC) met with officials of the Ministry of Agricultural Development, Panama including Sr. Emilio Jose Kieswetter, Minister (Right); Sr. Emeris Quintero, National Director of Plant Health (Second from Right); Ms. Lineth Carranza (Center), Advisor to Minister Kieswetter, and Dr. Cheslavo Korytkowski, Professor of Entomology, University of Panama.

The CBC in collaboration with USDA-APHIS-CPHST Miami (Dr. Amy Roda), USDA-APHIS-IS, Panama (Dr. Ceasar Sandoval), University of Panama (Dr. Cheslavo Korytkowski) and the Ministry of Agriculture, Panama have now set their sights on two new and potentially devastating pests from South America: The South American tomato pinworm, *Tuta absoluta* and the South American cucurbit fruit fly, *Anastrepha grandis*. In September, Drs. Kairo and Roda visited Panama, and met with various key partners. They also visited field sites to get a first hand view of the problems and ongoing activities. (see below and page 4)

The South American tomato pinworm, *Tuta absoluta*

This microlepidopteran, is a devastating pest of tomato that is native to South America. In recent years this insect has been rapidly expanding its geographic distribution and is now considered one of the most important lepidopteran pests on tomato. In May 2011, this pest was found in the eastern province of Chiriqui, Republic of Panama, near the border of Costa Rica. (continued on page 4)



The CBC Takes on a Record Number of Graduate Students



Victoria Smith-Thomas on a field visit to examine hydrilla.

During 2011, the CBC took on nine new graduate students. This is a record for the Center as it continues to grow and expand its delivery of the land grant mission. One of the new graduate students, Ms. Victoria Smith-Thomas is pursuing her Master's degree in Agricultural Sciences with a concentration in Agribusiness. Victoria attended Florida A&M and graduated with the Bachelor of Science in Agribusiness and she hopes to become an Agricultural Economist. She is currently working on assessing the economic impact of *Hydrilla verticillata* in the Wassica River under the guidance of Dr. Michael Thomas.

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Editorial: 2011 - Change, Challenges, Opportunities, Risks and Aspirations



Dr. Moses T.K. Kairo,
Center Director

2011 saw significant changes at FAMU including the university-wide restructuring, which was concluded in April. As part of this, engineering programs in the College of Engineering Sciences Technology and Agriculture were transferred to the School of Architecture, and the reconstituted college was renamed the College of Agriculture and Food Sciences. As we go to press, the dust is still settling, but whereas the changes will have a significant impact on academic programming,

the other land grant components - research and extension, including the Center for Biological Control remain relatively unchanged. Overall however, 2011 saw significant belt tightening as budgets continued to shrink.

As we move into 2012, the CBC is taking this opportunity to refocus its programs in order to meet clientele needs more effectively. The unique partnership between FAMU, USDA-ARS and USDA-APHIS, continues to prove to be an effective model to address challenges posed by invasive pests. This has allowed for the growth of a proactive program targeting pests before they get to Florida's shores, as well as the

development of ecologically based mitigation measures for those that escape and become established. In 2011, the CBC led the college-wide initiative in developing an Integrated Pest Management (IPM) extension program. Examples of these research and outreach projects are discussed in this newsletter.

The CBC will continue to emphasize support of the academic program. It is notable that 2011 saw a significant growth in both recruitment and graduation of CBC supported students. Two Ph.D. students in the cooperative doctoral program with the University of Florida graduated while two new students joined the program. At the M.S. level, the Center continued being a major driver, with more than half the graduate students in the college undertaking a range of projects focused on invasive species. We thank you for your interest and support and look forward to continuing to work with you as we strive to seek solutions against existing present and emerging invasive pest problems for Florida and the nation.



Dr. Stuart R. Reitz, Co-director



The CBC held its annual advisory council meeting on April, 2011. Front Row left to right: Muhammad Haseeb, Charlie Mellinger, Lambert Kanga, Antonio Francis, Amy Roda, Moses Kairo, Paul Hornby. Back Row left to right: Norm Leppla, Stuart Reitz, Trevor Smith, Stephen Hight, John Sivinski. Antonio, Amy and Moses received Awards of Appreciation from the USDA-AHIS for work done on the offshore mitigation of the passionvine mealy bug *Plannococcus minor*.

2011 Advisory Council Meeting

The Center's Advisory Council met on April 26, 2011, to review the Center's activities under the new five-year strategic plan (2011-2015). The meeting was chaired by Dr. Norman Leppla and was attended by nine council members. Others in attendance were representatives from the three partner agencies (FAMU, ARS and APHIS), FAMU Interim Vice-President for Research (Dr. Kinfere Redda), Interim Dean of CAFS (Dr. Samuel Donald). The council noted that overall, the Center had made excellent progress. A series of recommendations for follow-up was developed.

Advisory Council Members

- Dr. Norman Leppla, UF, IFAS, Gainesville, FL (Chair)
- Mr. Joshua Craft, Florida Farm Bureau, Gainesville, FL
- Ms. Abbie Fox, DPI, FDACS, Gainesville, FL
- Mr. Paul Hornby, USDA, APHIS, PPQ, Gainesville, FL
- Dr. Charlie Mellinger, Glades Crop Care, Inc. Jupiter, FL
- Dr. Amy Roda, USDA, APHIS, PPQ, CPHST, Miami, FL
- Dr. Don Schmitz, Invasive Plant Management Section, FFWCC, Tallahassee, FL
- Dr. John Sivinski, USDA, ARS, CMAVE, Gainesville, FL
- Dr. Trevor Smith, DPI, FDACS, Gainesville, FL
- Dr. Jennifer Taylor, CAFS, FAMU, Tallahassee, FL
- Dr. Verian Thomas, Graduate Studies and Research, FAMU, Tallahassee, FL

Ex-Officio Members

- Dr. Samuel Donald, CAFS, FAMU, Tallahassee, FL
- Dr. Ken Redda, Division of Research, FAMU, Tallahassee, FL
- Dr. Moses Kairo, CBC, CAFS, FAMU, Tallahassee, FL
- Dr. Oghehenkome Onokpise, CAFS, FAMU, Tallahassee, FL
- Dr. Stuart Reitz, USDA, ARS, Tallahassee, FL

Research & Outreach News

The Economic Impact of Tropical Soda Apple on Ranches in Florida Following the Implementation of Biological Control.

Nandkumar Divate and Michael Thomas continued assessing the economic impact of the recently released biological control agent (green tortoise beetle) on cattle production in Florida. The recent release of the green tortoise beetle as a method of tropical soda apple (TSA) biocontrol has shown evidence of significantly reducing TSA on developed pasture land, particularly in the central and southern regions of Florida. In 2010, a follow up survey of Florida's cattle producers was administered to document the beetle's impact on TSA control on Florida's pastureland. While the survey is being analyzed, preliminary results suggest a cost savings of approximately 50% statewide. If these savings are verified, it could lead to a state-wide savings of between \$3.25 to \$8 million annually, or assuming the savings are permanent, \$108 to \$266 million in total saving. [Funding: USDA-APHIS-PPQ]

The Cost of Controlling Red Palm Weevil in Curacao and Aruba



Michael Thomas in Aruba

Michael Thomas interviewed pest control experts, hotel managers and agriculturalists in Aruba and Curacao to evaluate the costs associated with present efforts by these nations to control the red palm weevil. A report is being prepared and should be available by January 2012. Dr. Thomas has joined Dr. Robertico Croes (University of Central Florida) and Dr. A. Lorenzo (FAMU) in an on-going

survey of visitors in Aruba to assess the importance of palm trees to tourism. This research will provide a better measure of the potential benefits of controlling the invasive exotic red palm weevil. With a better understanding of the value of palms, it will be easier for policy makers to assess the importance of controlling the red palm weevil on these islands and preventing its establishment on the mainland of North America. [Funding: USDA-APHIS-PPQ]

The State of Economic Analyses in Classical Biological Control Projects: A Meta-Analysis

Michael Thomas continues reviewing the use of economic analysis in CBC literature. A paper was presented to the XIII Annual International Symposium for Biological Control of Weeds (ISBCW) in Hawaii. One important component of the paper was the correct classification of costs and benefits. To that end, a simple definition and framework was identified for reviewing the CBC/economics literature. The research revealed that over half of the papers made mistakes in their methodology and almost none properly accounted for risk. [Funding: USDA-APHIS-PPQ]

Effects of Commercial Oils and Repellent Plants on Sweetpotato Whitefly

A major insect pest of vegetables and horticultural crops in the southeast US is the sweetpotato whitefly, *Bemisia tabaci* (also known as silverleaf whitefly). To control this whitefly, Dr. Jesusa Legaspi and cooperators are evaluating the effect of commercial products and repellent plants. In laboratory tests, whiteflies were released on potted cantaloupe plants sprayed with mustard oil, garlic oil, horticultural petroleum oil, hot pepper wax or a water control. We found that the plants sprayed with the oils had significantly lower numbers of whiteflies compared to those sprayed with hot pepper wax or water alone. It is possible that whiteflies were repelled by volatiles from the oils. In a separate study, we studied the effect of plant volatiles on whitefly behavior using specialized odor detecting equipment. We found that whiteflies moved to collard plants and were repelled by giant red mustard plants. Our results indicate that giant red mustard plants and commercial oils such as mustard, garlic and horticultural oils are promising control agents against whiteflies in vegetable plants. [Funding: USDA-ARS]

Biological Control of the Argentine Cactus Moth

The Argentine cactus moth, *Cactoblastis cactorum*, is an invasive moth that originates from South America and now poses a serious threat to Opuntia-rich areas in the southwestern USA and Mexico. ARS initiated a survey and life table study of cactus moth natural enemies in Argentina, and found a yet to be identified, apparently host specific *Apanteles* species (Hymenoptera: Braconidae) as the primary parasitoid attacking cactus moth larvae. The ARS South American Biological Control Laboratory in Argentina is working to identify the *Apanteles* species, determine rearing protocols for the wasp, and complete host range testing on Argentine cactus-feeding Lepidoptera species. The critical next step is to bring the potential biological control agent into a quarantine facility in the USA and continue host range testing on North American cactus-feeding moth larvae. [Funding: USDA-ARS, USDA-APHIS, and Mexican Government; Contact Stephen Hight]



ARS Technician John Mass evaluating colony development of the blue cactus moth, *Melittara prodenialis*, a native species from southeastern USA.

Africa Farmer-to-Farmer Project



Raymond Hix (CBC) and FAMU colleague Alex Dejarnett (Global Security Center) spent 20 days in Alice, South Africa as volunteers in the Farmer-to-Farmer program.

Raymond Hix spent 20 days in the Alice, Eastern Cape, South Africa as a Farmer-to-Farmer volunteer. The Farmer-to-Farmer program is part of a USAID project administered through the office International Agriculture, College of Agriculture and Food Sciences. Harriet Paul is the project director. Dr. Hix shared expertise in IPM with Agripark

Cooperative at the University of Fort Hare. He worked with 7 cooperative growers. Five produce vegetables, 1 nursery produces bedding plants and a one produces dehydrated vegetables. These cooperatives were interested in IPM (e.g. pest monitoring/scouting methods, biological controls, pest avoidance methods, certified seeds, weed identification chemical herbicides, insect/mite identification, insecticides/resistance management, chemical application).

South American tomato pinworm continued from page 1



Enelvia Rujano (MIDA, Panama), Moses Kairo (CBC) and Amy Roda (USDA-APHIS-CPHST) on a visit to a tomato farm in Chiriqui Province.

Florida A&M Extension IPM Coordination and Support Project



Ms. Roaida Said, discussing pest management issues at the FAMU extension IPM demonstration plots.

In 2010 FAMU Extension Integrated Pest Management (IPM) Coordination and Support Project was launched with a funding support from the USDA, NIFA (Extension IPM Coordination and Support Program). The goal of this interdisciplinary project is to provide critical knowledge based solutions to small growers to effectively protect fruits and vegetables through implementation of pertinent components of the national IPM Roadmap. Since induction of the project, we have established IPM demonstration plots and organized three workshops and a field day. In addition, the project is providing experiential learning opportunities for students on the IPM of fruits and vegetables in North Florida.

The interdisciplinary project team is comprised of Dr. Moses Kairo (Project Director) and Project Co-Directors are Dr. Muhammad Haseeb, Dr. Raymond Hix, Dr. Odemari Mbuya, Dr. Bobby Phillips, Mrs. Janice Peters, Dr. Jack Petersen, Dr. Jennifer Taylor, and Mr. Gohar Umar. [Funding: USDA-NIFA]

In addition to tomato, the pest has also been reported on potato, eggplant and common beans. With a high reproductive capacity, the pest can cause total yield loss and its presence may have serious consequences for trade. *T. absoluta* is a very challenging pest to control, which may be complicated by the appearance of resistance to insecticides. A number of important questions which are critical for the development of mitigation measures remain unanswered including aspects of the biology such as the host range on other cultivated and wild plants, the lifecycle in Panama and the presence and impact of local natural enemies. Additionally more information on the most effective ways to detect and manage the pest are needed and will be the focus of the research in Panama. [Funding: USDA-APHIS]

South American cucurbit fruit fly, *Anastrepha grandis*

This tephritid exists in several South American countries including: Argentina, Bolivia, Brazil, Colombia, Ecuador, Panama, Paraguay, Peru and Venezuela. Recently, the fruitfly was detected in Panama. The host range of the insect includes several plants in the family Cucurbitaceae. Although it was previously considered to be of minor to moderate importance, in recent years it has become a rather important pest, and is considered a quarantine pest in the United States where it would be of significant importance in states such as Florida or Texas if it were ever to be introduced. The pest was detected in Panama in 2009, but knowledge of its ecology is scanty. For instance, knowledge of wild hosts is scanty. The goal of this project is therefore to conduct basic studies to increase knowledge of the biology and ecology of this pest in the field in Panama, with a view to improve mitigation measures. [Funding: USDA-APHIS]

Staff News

Dr. Lambert Kanga Wins FAMU Researcher of the Year Award



Dr. Lambert Kanga Receives Researcher of the Year Award from FAMU President Dr. James Ammons

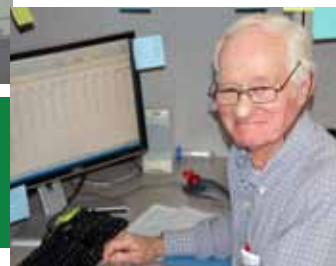
Dr. Kanga is one of the leading authorities worldwide in the microbial control of pests of honey bees and his findings have been well published and translated into several languages. He has filed for patent rights for several of his discoveries. He pioneered the development of diagnostic tools to monitor for resistance in Varroa mite populations in honey bees. His scholarly research programs also include the development of fungal control agents for invasive species (Cactus moth, Asian citrus psyllid, glassy-wing

sharpshooter and redbay ambrosia beetle), the molecular identification of resistance allele frequencies in glassy-wing sharpshooter populations, the molecular construction of mosquitocidal toxins, and the characterization of genetic profiles of selected species of mayflies. He also pioneered the development of techniques to monitor for resistance to biodegradable insecticides in cotton pests in the mid-south region of the United States and Sonora (Mexico). He developed and implemented a resistance management program for the Oriental fruit moth that is currently used to ensure productivity for the fruit industry in Ontario, Canada.



Always the preeminent writer and editor, Stuart Reitz, ARS Scientist, works his "magic" on another manuscript.

Most often seen in the vegetable patch under his sun hat and driving the tractor, Marcus Edwards, ARS Farm Manager, enters yield data into a computer spreadsheet.



ARS Technician Neil Miller is curating specimens of predatory hover flies (Syrphidae) for a study to identify the attraction of natural enemies to native Florida plants.



Ava Davis usually sits behind a computer and telephone as the ARS Office Assistant, but here she's preparing to test thrips insects for the presence of a plant virus.



Angela Galette – FAMU Entomology Undergraduate Hired as New SCEP Worker with ARS



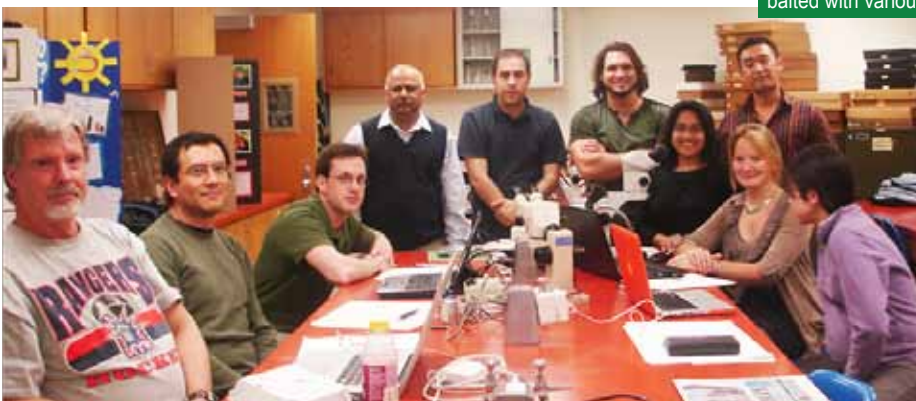
Angela Galette curating non-target moth specimens captured in cactus moth traps baited with various synthetic pheromones.

Angela Galette, FAMU undergraduate, was hired by ARS in August 2011 as a student worker. She was hired under the Student Career Experience Program (SCEP), a Federal program that employs students in occupations related to their field of study. Angela will be assisting on research

projects related to the Argentine cactus moth (*Cactoblastis cactorum*), topical soda apple (*Solanum viarum*), and Chinese tallow (*Triadica sebifera*). In the attached photo, Angela is preparing a trapped moth specimen for identification. A new synthetic female sex pheromone of the cactus moth has been identified that attracts fewer non-target moths into traps. Additional studies and analysis are continuing to identify an improved pheromone that attracts more cactus moths but fewer non-targets. [Funding: USDA-ARS; Contact Stephen Hight]



After collecting thrips insects on various solanaceous vegetable crops, Kristen Bowers, ARS Technician, prepares thrips insect samples to test for the presence of a plant virus.



Dr. Wills Flowers and Muhammad Haseeb organized a Digital insect identification tools training workshop at the University of Kansas, Natural History Museum, Lawrence, KS (April 2011).

Student News



Spring 2011 graduations from left to right: Dr. Antonio Francis, Dr. Oulimathe Paraiso, Mr. Kevin Lewis and Dr. Moses Kairo.

Graduations

Dr. Oulimathe Paraiso completed the requirements for the Ph.D. in Entomology (Spring 2011) in the Cooperative program between University of Florida, Gainesville, FL, and Florida A&M University, Tallahassee, FL. Her dissertation was titled: "Understanding and Improving Risk Analysis Process for Permitting the Importation and Release of Arthropod Biological Control Agents in the United States—Evaluation of Current Methodologies and Lessons Learned from Biological Control Research". Her major advisors were Drs. Moses Kairo (Florida A&M University) and Stephanie Bloem (USDA-APHIS-PPQ-PERAL). She is currently a Post-Doc with Dr. Kairo working on the use of molecular markers (COI) to determine the geographical origin of populations of the Cotton Seed Bug, *Oxycarenus hyalinipennis* [Hemiptera: Lygaeidae], found in Florida and the Caribbean Islands.

Dr. Antonio Francis completed his Ph.D. May 2011 in the Cooperative Florida A&M and University of Florida Ph.D. program in entomology. The title of his dissertation was "Investigation of Bio-ecological Factors Influencing Infestation by the Passion Vine Mealybug, *Planococcus minor* (Maskell) (Hemiptera: Pseudococcidae) in Trinidad for Application Towards Its Management." Antonio's major advisor was Dr. Moses T. Kairo.

Kevin Lewis completed his M.S. in Agriculture with an emphasis in Entomology. The title of his thesis was, "Characterizing Insect Pest Problems and Farmer Decision Making in Crucifer Crops, in Small Scale Low – Input and Organic Farming Systems in North Florida." His major advisor was Moses Kairo. Kevin is currently working with Cooperative extension.

The Capelouto Foundation Continues to Support FAMU Entomology Students

As in previous years the Capelouto Foundation once again continued to support FAMU's entomology students. This year, ten students were awarded scholarships. We salute the foundation for their continued support of our students.



Scholarship Awards presented by Grant Capelouto of the Reuben Capelouto Foundation to FAMU Entomology students – Front Row: Omotola Dosunmu, Julius Eason, Dr. Kanga, Sandra Wheeler, Courtnee Eddington, Angela Hutcherson. Back Row: Eutyclus Kariuki, Latasha Tanner, Enger S. German-Ramirez, Jordan Williamson, Grant Capelouto.



Roaida Said completed her M.S. in Entomology on May 2011. The title of her thesis was "Biological Control of the Grape Root Borer *Vitacea polistiformis* Harris (Lepidoptera: Sesiidae) with Commercially Available Entomopathogenic Nematodes in Florida Muscadine and 'Cynthiana' Grape Vineyards." Ms. Said's major advisor was Dr. Raymond Hix.



The FAMU Linnaean Games team competed at the 84th Annual Meeting of the Southeastern Branch-Entomological Society of America meeting in Puerto Rico, March 2011. The FAMU team (orange shirts) of Eutyclus Kariuki, Oulimathe Paraiso, Antonio Francis, Enger Germán-Ramirez (left to right) competed against the team from the University of Georgia. FAMU lost in a competitive game. The alternate was Kaneisha Barr pictured somewhere in the audience.

Student News

New students joining the CBC in 2011

Angela Hutcherson is a first semester graduate student majoring in Entomology. She received her BS from Auburn University in Animal and Dairy Sciences- Pre-Vet. Her research will focus on the effects the tortoise beetle has on tropical soda apple plants, if any, and their potential effect upon transmission of tomato spotted wilt virus by western flower thrips. She is a certified veterinary technician and has worked in the veterinary field since 1994. She is a member of the Florida Veterinary Medical Association, and maintains her licensing in good standing. After obtaining her Master's, she hopes to continue her education by either beginning Vet School or pursuing a PhD in Entomology.



Angela Hutcherson

Megan Wilkerson, a native of Savannah Georgia, earned a B.S. in Biology from Fort Valley State University. During her undergraduate career, she completed a research internship with the University of Tennessee, where she focused on the use of switchgrass for ethanol production. Later, Ms. Wilkerson was awarded best oral presentation by the National Science Foundation at Universidad Metropolitana, for 19th annual Undergraduate Research Symposium in San Juan, Puerto Rico. Soon after, Ms. Wilkerson conducted research at Delaware State University, where she studied molecular markers and their application to rust resistance pathways in the common bean plant. Shortly after, she was awarded by both the National Role Models Conference and by HBCU-Undergraduate Programs in the area of oral presenting. Currently, Ms. Wilkerson is pursuing a M.S. of Science in Entomology under the guidance of Dr. M. Kairo, she is interested in pursuing a Ph.D. to later become a microbiologist.



Megan Wilkerson



Gunasegaran Cheliah

Gunasegaran Cheliah is from Penang, Malaysia. He received the Bachelor of Veterinary Science (DVM) degree from Madras Veterinary College, Tamilnadu, India. He then returned to his home country, Malaysia and started working as a poultry veterinarian in charge of biosecurity and biocontainment in a private company. Having worked in different capacities his interests are now centered around animal nutrition, immunology and food safety.

He went to the University of Florida for his graduate studies and obtained his Master of Science in Animal Science in 2006. Now he is pursuing his Ph.D. in Entomology under the tutelage of Dr. Lambert Kanga.



Michael Anthony Cooke

Michael Anthony Cooke is a second semester graduate student majoring in Plant Science. Mr. Cooke earned his undergraduate degree in Biology from Binghamton University in New York. He later taught Biology/Microbiology for grades 9 thru 12 in Georgia. He is a veteran who served honorably as a Combat Engineer in United States Army. His service included overseas tours in Korea and Iraq. His major professor is

Dr. S. Reitz. The focus of his research is low input sustainable farming using goat manure and green manure to produce Scotch Bonnet pepper yield in historically underserved communities. Mr. Cooke prides himself in giving back to the community and has volunteered his time with a range of community based organizations. During his leisure Mike likes to fish, watch movies and play sports. He hails from Savanna La Mar in Westmorland on the beautiful Island of Jamaica.

Grace Mhina is a master's student majoring in Agribusiness under Dr. Michael Thomas. She received her B.Sc. in Agricultural Economics and Agribusiness in 2009 from Sokoine University of Agriculture, Tanzania. Before joining FAMU, Grace worked in microfinance personnel in the rural parts of North Tanzania. Her research will document the economic benefits of the biological control efforts against mole crickets in Florida.



Grace Mhina

Omotola Dosunmu is a new M.S. student majoring in entomology. She will be working on acoustic detection and ecology of *Rhynchophorus cruentatus* under supervision of Dr. Moses Kairo.



Omotola Dosunmu



Julius Eason

Julius Eason is a new M.S. student with an emphasis in entomology and is working with Dr. Lambert Kanga. Julius is a recent graduate of Fort Valley State University. His project is entitled, "Susceptibility of the Asian citrus psyllid to microbial control agents and molecular analysis of the citrus psyllid parasite, *Tamarixia radiata*". He will be using molecular tools to characterize the parasites of the citrus psyllid from



Falan Goff

Falan Goff is a new M.S. student with an emphasis in agricultural economics. She is working with Dr. Michael Thomas to document the adaptability of limited-resource agriculture producers to climate variability. Her research will compare and contrast agriculture production systems and the effect of long-term rainfall and temperature changes on firm production and profitability.

Jordan Williams is a new M.S. student with an emphasis in entomology. She recently graduated with a B.S. from CESTA. She is currently working with Drs. Stuart Reitz and Moses Kairo to document tritrophic food webs in agroecosystems with a particular emphasis on invasive leafminers in Florida.



Jordan Williams

Continuing Students

Enger Germán-Ramirez, M.S. student majoring in entomology, anticipates to complete his studies early in 2012 in Entomology. His major Professor is Dr. Moses Kairo and the title of his thesis project is "A Faunistic Survey of Mealybugs (Hemiptera: Pseudococcidae) and Their Natural Enemies Occurring on Coffee (*Coffea arabica* L.) and Cacao (*Theobroma cacao* L.) Agroecosystems in the Dominican Republic."



Enger Germán-Ramirez

Shalom Siebert is a M.S. student with an emphasis in entomology. Her major advisor is Dr. Lambert Kanga. The title of her thesis project is "A Comparative Study on Bee Health in Organic and Conventional Bee Keeping." She is a graduate of FAMU with a major in agricultural sciences with an emphasis in structural pest control.



Shalom Seibert



Latasha Tanner

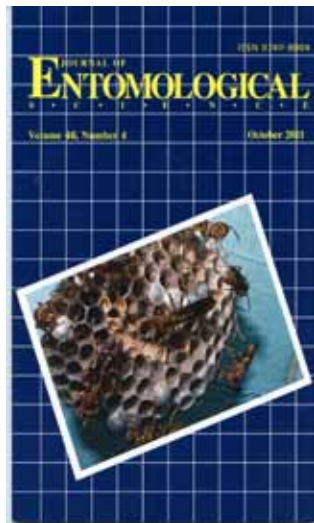
Latasha Tanner is currently working under the supervision of Dr. Lambert Kanga and with CAPS (Cooperative Agricultural Pest Survey In Florida), with the help of DPI (Florida FDACS Division of Plant Industry). Currently working on surveying the Apalachicola Forest for

Xyleborus glabratus. The goal of this project is to determine if there is a positive infestation in Liberty and/or Franklin county. Another aspect of this research will be fungal competition which will involve using several different bio control fungi to see which will compete with fungus that cause the laurel wilt in lab conditions. She is due to graduate May 2012.



Sandra Wheeler

Sandra Wheeler is a fourth semester graduate student majoring in Entomology and Agricultural Biosecurity. Her major professor is Dr. L. B. Kanga. The focus of her research is the Small Hive beetle and the development of its control. Ms. Wheeler is a 2011 Sustainable Agriculture Research Education (SARE) Graduate Student Grant recipient. Ms. Wheeler anticipates to complete her M.S. in the summer of 2012.



Raymond Hix's photo of an active *Polistes* sp. (Hymenoptera: Vespidae) nest was featured on the December 2011 issue (Vol 46) of the Journal of Entomological Science.



Drs. Moses Kairo, Antonio Francis, Oulimathe Paraiso, and Stephanie Bloem following the graduation ceremony at the University of Florida. Being in the cooperative Ph.D. program, allowed Antonio and Oulimathe the joy of celebrating twice with their major professors!



Dr. Hix taught the graduate level course in IPM during the Fall 2011 semester. There were a record 14 students in the course.

2011 ESA-SEB M.S. Poster Competition Winner

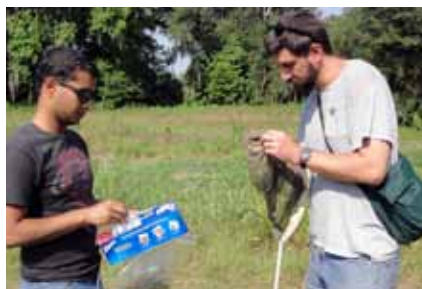


Eutyclus Kariuki was the winner of the M.S. Graduate student SEB M.S. Poster competition titled "Effect of light intensity on distribution and herbivory activity of *Gratiana boliviana* along the light intensity gradient." Mr. Kariuki started a Ph.D. working on biological control of Hydrilla in Florida springs. Drs. Raymond Hix (FAMU) and Jim Cuda (UF) are his Ph.D. major advisors. He has been a member of

the FAMU Linnaean Team and currently serves as the FAMU representative on the SEB Student Affairs Committee.

Additional Outreach Activities

Dr. Raymond Hix was the Co-Chair of Program Committee of the 85th Annual Meeting of the Southeastern Branch of the Entomological Society of America (SEB-ESA) San Juan, Puerto Rico March 19-22, 2011. This meeting was the first time the branch has met in Puerto Rico even though the territory is part of the branch. It was also a joint meeting held with the American Phytopathological Society Caribbean Division (APS-CD). Dr. Juang-Hong "JC" Chong, Clemson University (SEB-ESA) and Dr. Jose C. V. Rodrigues, Univ. of Puerto Rico (APS-CD) were also Co-Chairs. The meeting was a record for the SEB-ESA. In total, 288 papers and 70 posters were presented in this Joint Meeting (excluding additions and cancellations after the press of the program booklet), which is more than the numbers of papers and posters presented at the past 5 ESA-SEB meetings.



Tarjim Hassain and Neil Miller sweep for insects at an organic farm.



Joane Noel was an FAMU entomology undergraduate student intern working in Dr. Legaspi's lab.



Summer undergraduate student interns in Dr. Legaspi's Lab- Dr. Legaspi, FAMU Biology major, Shekinah Mose, and Univ. South Florida Environmental Science major, Tarjim Hossain.



Eutyclus Kariuki and Dr. Muhammad Haseeb at the CBC Booth during Grape Festival.

Peer-reviewed publications:

- Baez, I., S. R. Reitz, J. E. Funderburk, & S. M. Olson. 2011. Variation within and between *Frankliniella* thrips species in host plant utilization. *Journal of Insect Science*. 11:41 1-18
- Fiaboe, K. K. M., R.W. Mankin, A.L. Roda, M.T.K. Kairo, and C. Johanns. 2011. Pheromone-Food-Bait traps and acoustic surveys of *Rhynchophorus ferrugineus* (Coleoptera: Curculionidae) in Curacao. *Florida Entomologist* 94:766-773.
- Francis, A., M.T.K. Kairo, A.L. Roda, O.E. Liburd, and P. Polar. 2011. The passion vine mealybug, *Planococcus minor* (Maskell) (Hemiptera: Pseudococcidae), and its natural enemies in the cocoa agroecosystem in Trinidad. *Biological Control* (in press).
- Gao, Y., Z. Lei, Y. Abe, & S. R. Reitz. 2011. Species displacements are common to two invasive species of leafminer fly in China, Japan and the United States. *Journal of Economic Entomology*. 104: 1771-1773.
- Haseeb, M., R. W. Flowers, M.T.K. Kairo and T. Walters. 2011. Web based digital identification: Our progress, challenges and opportunities. *American Entomologist* 57 (4) 222-223.
- Haseeb, M., M. T. K. Kairo and R. W. Flowers. 2011. New approaches and possibilities for invasive pest identification using web based tools. *American Entomologist* 57 (4) 223-226.
- Kariuki, E.M., R.L. Hix, S. Reitz, S. Hight, and M.T. Kairo. 2011. Tropical soda apple (*Solanum viarum*) mediated competition via induced resistance: Interaction between *Gratiana boliviana*, *Spodoptera exigua* and *Frankliniella occidentalis*. *Florida Entomologist* 94: 608-612.
- Legaspi, J. C., C. Mannion, D. Amalin and B. C. Legaspi, Jr. 2011. Life table analysis and development of *Singhiella simplex* (Hemiptera: Aleyrodidae) under different constant temperatures. *Annals of the Entomological Society of America*. 104(3): 451-458.
- Mankin, R.W., D.W. Hagstrum, M.T. Smith, A.L. Roda, and M.T.K. Kairo. 2011. Perspective and Promise: a Century of Insect Acoustic Detection and Monitoring. *American Entomologist*, 57(1) 30-44.
- Manrique, V., R. Diaz, S.D. Hight, and W.A. Overholt. 2011. Evaluation of mortality factors using life table analysis of *Gratiana boliviana*, a biological control agent of tropical soda apple in Florida. *Biological Control* 59:354-360.
- Northfield, T.D., D.R. Paini, S. R. Reitz, & J.E. Funderburk. 2011. Within plant interspecific competition does not limit the highly invasive thrips, *Frankliniella occidentalis* in Florida. *Ecological Entomology* 36: 181-187.
- Pancholy, N., M.H. Thomas, D. Solis and N. Stratis. 2011. The Impact of Biofuels on the Propensity of Land-Use Conversion among Non-Industrial Private Forest Landowners in Florida. *Forest Policy and Economics*, 13: 570-574.
- Paraiso, O., S. Hight, M.T.K. Kairo, and S. Bloem. 2011. Egg Parasitoids attacking *Cactoblastis cactorum* (Lepidoptera: Pyralidae) in North Florida. *Florida Entomologist* 94: 81-90.
- Paraiso, O., S. Hight, M.T.K. Kairo, S. Bloem, J. Carpenter, and S. Reitz. 2012. Evaluation of Biological Parameters of *Trichogramma fuentesi*, an Egg Parasitoid of *Cactoblastis cactorum*. *Florida Entomologist* (in press).
- Roda, A., Kairo, M.; Damian, T.; Franken, F.; Heidweiller, K.; Johanns, C.; Mankin, R.; (2011) Red palm weevil (*Rhynchophorus ferrugineus*), an invasive pest recently found in the Caribbean that threatens the region. *Bulletin OEPP/EPPO Bulletin*, 2011, 41, 2, pp116-121.
- Van Driesche, R.G., Carruthers, R.I., Center, T., Hoddle, M.S., Hough-Goldstein, J., Morin, L., Smith, L., Wagner, D.L., Blossey, B., Brancatini, V., Casagrande, R., Causton, C.E., Coetzee, J.A., Cuda, J., Ding, J., Fowler, S.V., Frank, J.H., Fuester, R., Goolsby, J., Grodowitz, M., Heard, T.A., Hill, M.P., Hoffmann, J.H., Huber, J., Julien, M., Kairo, M.T.K., Kenis, M., Mason, P., Medal, J., Messing, R., Miller, R., Moore, A., Neuenschwander, P., Newman, R., Norambuena, H., Palmer, W.A., Pemberton, R., Perez Panduro, A., Pratt, P.D., Rayamajhi, M., Salom, S., Sands, D., Schooler, S., Schwarzländer, M., Sheppard, A., Shaw, R., Tipping, P.W., van Klinken, R.D. 2010. Classical biological control for the protection of natural ecosystems. *Biological Control*. 54, (1), S2 - S33.
- Webster, C. G., S. R. Reitz, K. L. Perry, & S. Adkins. 2011. A natural M RNA reassortant arising from two species of plant- and insect-infecting bunyaviruses and comparison of its sequence and biological properties to parental species. *Virology*. 413: 216-225.

Book chapters

Legaspi, J. C., B. C. Legaspi, Jr. and A. M. Simmons. 2011. Recent research trends in the use of predators in biological control. pp. 95-122, In *Biological Control of Insect Pests*. Ninfa Rosas-Garcia, ed. Studium Press, LLC., Houston, Texas, USA.

Publications in Proceedings, Abstracts, Newsletters

Haseeb, M., C.W.O'Brien and M.T.K.Kairo. 2011. Potentially invasive weevil species from the Caribbean countries to the United States. Developed and deployed in cooperation with the CBC, FAMU., USDA, APHIS, PPQ, CPHST., and CSREES. Available online at: <http://famu.org/biocontrol/piweevil/> (Beta version).

Kairo, M.T.K., Roda, A., De Chi, W., Damian, T., Franken, F., Heidweiller, K., Johanns, C. and Leon, J. 2010. The Red Palm Weevil, *Rhynchophorus ferrugineus*, a new pest threat in the Caribbean: Biology and options for management. In, United States Department of Agriculture, T-STAR Sponsored Invasive Species Symposium; Toward a Collective Safeguarding System for the Greater Caribbean Region: Assessing Accomplishments since the first Symposium in Grenada (2003) and Coping with Current Threats to the Region. Edward A. Evans, Waldemar Klassen and Carlton G. Davis (Eds.). *Proceedings of the Caribbean Food Crops Society. Proceedings of the Caribbean Food Crops Society.* 46(1): 87-96.

Kairo, M.T.K. 2010. Synthesis and the way forward. In, United States Department of Agriculture, T-STAR Sponsored Invasive Species Symposium; Toward a Collective Safeguarding System for the Greater Caribbean Region: Assessing Accomplishments since the first Symposium in Grenada (2003) and Coping with Current Threats to the Region. Edward A. Evans, Waldemar Klassen and Carlton G. Davis (Eds.). *Proceedings of the Caribbean Food Crops Society.* 46(1): 216-218.

Legaspi, J. C. and N. Miller. 2011. Investigating giant red mustard as a deterrent of silverleaf whitefly oviposition in vegetable crops. p. 218. *Proceedings of the Global Conference on Entomology, Chiang Mai, Thailand, Mar. 5-9, 2011.*

Legaspi, J. C., N. Miller, C. Mannion and D. Amalin. 2010. Fecundity of the ficus whitefly, *Singhiella simplex* (Hemiptera: Aleyrodidae) and its predation by *Delphastus catalinae* (Coleoptera: Coccinellidae). p. 39. *Abstracts of the Potential Invasive Pests Workshop, Coconut Grove, FL, October 10-14, 2010.*

Legaspi, B. C. Jr., J. C. Legaspi, J. C. Isaacs and S. Y. Foo. 2009. Application of ant colony optimization to optimal foraging theory: comparison of simulation and field results. Pp. 134-154. *Proceedings of the Florida A&M University 1st Annual Research Summit, Center for Faculty Development and Research, Mar. 25-27, 2009, Tallahassee, FL.*

Presentations, Seminars, Extension Activities

Divate, N. M.H. Thomas and D. Harding (2011) "The economic impact of TSA on cattle production in Florida." Florida Exotic Pest Plant Council 25th Annual Symposium., April 5 – 8, 2011, Crystal River, Florida.

Haseeb, M. and M.T.K. Kairo. Development of Digital Identification Resources for Potentially Invasive Coleoptera from the Caribbean. Research talk presented at the Annual Meeting of Southeastern Branch of Entomological Society of America, held in San Juan, Puerto Rico, USA (19-22 March 2011).

Haseeb, M., M.T.K. Kairo and A. Roda. The Red Palm Weevil, *Rhynchophorus ferrugineus*, a Serious New Pest Threat to the United States and Caribbean. Research talk presented at the Global Food Security and Plant Biosecurity Symposium organized by the Southern University, USDA, ARS, and APHIS held in Baton Rouge, LA, USA (9-10 November 2010).

Haseeb, M. and M.T.K. Kairo. Weevils of Cultivated Palms in the United States and Caribbean Countries. Research poster presented at the 93rd annual meeting of Florida Entomological Society, held in Jupiter, Florida, USA (25-28 July 2010).

Hight, S.D. and J.E. Carpenter. Program Symposia. The Multiple "Personalities" of *Cactoblastis cactorum*: A Multi-Disciplinary Response to the Biological Impacts of the Moth's Geographical Wanderings. Annual Meeting of the Entomological Society of America, San Diego, CA, 12-15 December 2010.

Hight, S.D. and J.E. Carpenter. Welcome and Background to *Cactoblastis cactorum* symposium. Symposium on The Multiple "Personalities" of *Cactoblastis cactorum*: A Multi-Disciplinary Response to the Biological Impacts of the Moth's Geographical Wanderings. Annual Meeting of the Entomological Society of America, San Diego, CA, 12-15 December 2010.

Hight, S.D. and J.E. Carpenter. *Cactoblastis cactorum* at the Crossroads: Symposium on The Multiple "Personalities" of *Cactoblastis cactorum*: A Multi-Disciplinary Response to the Biological Impacts of the Moth's Geographical Wanderings. Where Do We Go From Here? Annual Meeting of the Entomological Society of America, San Diego, CA, 12-15 December 2010.

Hight, S. D. and J.E. Carpenter. Regarding the Role of New Host Associations in the Success of *Cactoblastis cactorum* as both a Biological Control Agent and Invasive Species. XIII International Symposium on Biological Control of Weeds, Waikaloa, Hawai'i, 11-17 September 2011.

Hight, S.D., J.E. Carpenter, T. Blomefield, and M. Addison. Laboratory and Field Bioassays to Evaluate Quality of Irradiated Codling Moths. The 2nd Research Coordination Meeting of Coordinated Research Project on Increasing the Efficiency of Lepidoptera SIT Through Enhanced Quality Control, Stellenbosch, South Africa, 15-22 November 2010.

Hight, S.D. and J.E. Carpenter. Using Laboratory and Field Quality Assessments to Improve Insectary Protocols and Field Performance of *Cactoblastis cactorum*. FAO/IAEA Workshop on Evaluation of Field Cages for Lepidoptera SIT Behavioural Assessments, Stellenbosch, South Africa, 21-22 November 2010.

Hight, S.D. and J.E. Carpenter. Control Tactics Developed Against the Argentine Cactus Moth, *Cactoblastis cactorum*. 38th Annual Natural Areas Conference: Adaptation and Protection of Biodiversity in a Changing World, Tallahassee, FL, 1-4 November 2011.

Hight, S.D. The Push that Started a Domino Effect of Researchable Topics for a Weed Biological Control Practitioner. Symposium on Celebrating the Career of Pedro Barbosa: A Passion for Insects and Plants. Annual Meeting of the Entomological Society of America, Reno, NV, 13-16 November 2011.

Kariuki, E. M. Effect of Sun and Shade Conditions on Distribution and Herbivory Activity of a Biological Control Agent of TSA, *Gratiana boliviana* (Coleoptera: Chrysomelidae). Orally Presented at the 16th Biennial Research Symposium of Association of Research Directors, Inc. held in Atlanta, Georgia, USA (9-13 April, 2011).

Kariuki, E. M., R. L. Hix, S. Reitz, and S. Hight. Effect of Sun and Shade Conditions on Distribution and Herbivory Activity of a Biological Control Agent of Tropical Soda Apple, *Gratiana boliviana* (Coleoptera: Chrysomelidae). Orally Presented at the 26th Career Fair and Training Conference of MANRRS, held in Overland Park, Kansas, USA (March 31 - April 2, 2011).

Legaspi, J. C. 2011. Sugarcane IPM in south Texas: Population Dynamics and Natural Enemies, Ecology of Food class, Florida State University, Tallahassee, FL, Oct. 20, 2011.

Legaspi, J. C. 2011. Biology and population dynamics of the cactus moth, *Cactoblastis cactorum*. S-1034 Symposium on Weed Biological Control, SEB-Entomological Society of America annual meeting, San Juan, Puerto Rico, Mar. 19-22, 2011.

Legaspi, J. C. 2011. Investigating giant red mustard as a deterrent of silverleaf whitefly oviposition in vegetable crops. Global Conference of Entomology, Chiang Mai, Thailand, Mar. 5-9, 2011.

Legaspi, J. C. 2011. Pest population dynamics and natural enemies: Sugarcane IPM in south Texas. Food Expo Technical Conference: Production Sustainability, World Trade Center, Manila, Philippines, Feb. 24-25, 2011.

Legaspi, J. C. 2011. The cactus moth, *Cactoblastis cactorum*: Lessons in Biological Control. University of the Philippines Botany Centennial Anniversary Seminars, Los Banos, Philippines, Feb. 23, 2011.

Legaspi, J. C., N. Miller, C. Mannion, and D. Amalin. 2010. Fecundity of ficus whitefly, *Singhiella simplex* (Hemiptera: Aleyrodidae), and its predation by *Delphastus catalinae* (Coleoptera: Coccinellidae). Potential Invasive Pests Workshop, Coconut Grove, FL, October 10-14, 2010.

- Pancholy, N., M.H. Thomas, D. Solis, and N. Stratis (2011) "The Impact of Biofuels on the Propensity of Land-Use Conversion Among Non-Industrial Private Forest Landowners in Florida," presented to the 108th Annual Meeting of the Southern Agricultural Economics Association, Corpus Christi, Texas, February 6 – 8, 2011.
- Thomas, M.H. and M. Kairo. (2011) "The economics of classical biological control: a meta-analysis of historic literature and suggested framework for future studies." Presented to the XIII Annual International Symposium for Biological Control of Weeds (ISBCW) in Hawaii, September 15, 2011

Poster presentations

- Divate, N., M.H. Thomas and M.T.K. Kairo. "The Economic Impact of Tropical Soda Apple (*Solanum viarum* Dunal) on Ranches in Florida Following the Implementation of Biological Control." Poster presented to the XIII Annual International Symposium for Biological Control of Weeds (ISBCW) in Hawaii, September 15, 2011.
- Haseeb, M. and M.T.K. Kairo. Potentially Invasive Weevil Species from the Caribbean Countries to the United States. Research poster presented at the 16th Biennial Research Symposium, held in Atlanta, GA, USA (9-13 April, 2011).
- Haseeb, M. and M.T.K. Kairo. Identification and Diagnostics of Potential Invasive Weevil Species from the Caribbean Countries to the United States. Research poster presented at the 58th Annual Meeting of Entomological Society of America, held in San Diego, CA, USA (12-15 December 2011).
- Haseeb, M. and M.T.K. Kairo. Identification Resources for Weevils of Cultivated Palms in the United States and Caribbean Countries. Research poster presented at the USDA, NIFA Project Directors Conference organized by NIFA, Washington DC, USA (30 November-3 December 2010).
- Kariuki, E. M., R. L. Hix, S. Reitz, and S. Hight. Effect of light intensity on distribution and herbivory activity of *Gratiana boliviana* along the light intensity gradient. Poster presented at the 85th Annual Meeting of the Southeastern Branch of the Entomological Society of America, held in San Juan, Puerto Rico (19-22 March, 2011).
- Legaspi, J.C., N. Miller, C. Mannion, and D. Amalin. 2010. Reproduction of the ficus whitefly, *Singhiella simplex* (Hemiptera: Aleyrodidae): a new invasive pest in the USA. Entomological Society of America Annual Meeting, San Diego, CA, Dec. 12-15, 2010.
- Solis, D., N. Pancholy, M.H. Thomas, and N. Stratis (2011) "The Impact of Biofuels and Land-Use Conversion in Florida. Poster session at symposium for Climate Information for Managing Risks, Orlando, FL, May 24 – 27, 2011.
- Williamson, J., A. Somorin, M. Haseeb, and M.T.K. Kairo. Susceptibility of Southern Green Stink Bug, *Nezara viridula* (L.) to different isolates of the mycopathogen, *Beauveria bassiana* under laboratory conditions. Research poster presented at the 93rd annual meeting of Florida Entomological Society, held in Jupiter, Florida, USA (25-28 July 2010).

Continuing Education:

- Haseeb, Legaspi, et al. USDA, NIFA Grantsmanship Workshop. Organized by the United States Department of Agriculture – National Institute of Food and Agriculture (NIFA), held in Washington DC, USA (29-30 December 2010).
- Legaspi, J. C. Coaching and Mentoring for Excellence, Western Management Development Center, Aurora, CO, Jan. 31 – Feb. 3, 2011.
- Paraiso, O. USDA-ARS, Beltsville Agricultural Research Center, MD, 08/22-08-30, Population Genetics/Molecular Techniques: Insect DNA extraction, PCR purification, interpretation of sequencing chromatograms, DNA sequence analysis using the Sequencher software, development of insect species phylogenetic tree.

Public Service and Outreach Activities:

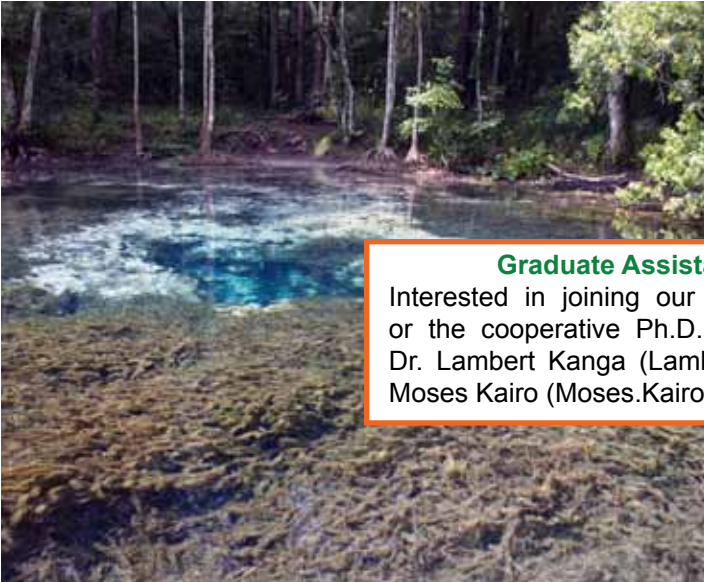
- Monarch Butterfly Festival, Entomology Club, St. Marks National Wildlife Refuge, St. Marks, FL. October 29, 2011
- Miller, N.W. Biological Control and IPM strategies against insect pests in vegetables and horticulture crops. Red Hills Small Farm Alliance, Orchard Pond Farm (July 23, 2011) and FAMU Small Farm Cooperative Extension Program, Crescent Moon Farm, Sopchoppy, FL, (Sept. 17, 2010)
- Haseeb, Hight, Kanga, Kairo, Legaspi, Reitz et al. FAMU Grape Harvest Festival, Tallahassee, FL, August 27, 2011.
- Haseeb, Hight, Hix, Kairo, Legaspi, Kairo, Reitz et al. Vegetable and Small Farm Fruit IPM workshop, Center for Viticulture, FAMU, May 26, 2011
- Haseeb, Kairo, Legaspi, Reitz et al. IPM Fall Field Day, Center for Viticulture, FAMU, Tallahassee, FL, Oct. 20, 2011
- Hix, R. L. Program Co-Chair, Southeastern Branch-Entomological Society of America, San Juan Puerto Rico, March 2011.
- Hossain, Tanjim. Ant Biology. Entomology children's summer camp. Mary Brogan Science Museum, Tallahassee, FL, July 1, 2011
- Kanga, Legaspi, et al. Peters 35th Annual Field Day and Workshop in Entomology - FAMU, Tallahassee, FL, November 2-4, 2011
- Legaspi, J. C. Activities at the Center for Biological Control. Beginning Farmer and Rancher Workshop, FAMU Cooperative Extension Service, Research and Education Center, Quincy, FL, Oct. 14, 2011
- Legaspi, J. C. Stakeholder liaison committee meeting, USDA, ARS, CMAVE, Gainesville, FL, Aug. 31, 2011
- Legaspi, J. C. CESTA Youth Development Summit, FAMU, Tallahassee, FL, June 25, 2011
- Legaspi, J. C. RATLR High School Summer Youth Program, FAMU, June 29, 2011
- Legaspi, J. C., Member-at-large, Executive Committee, SEB-Entomological Society of America Meeting, 2011-2012

Symposium Organized:

- Kairo, M.T.K. and M. Haseeb. Invasive Alien Species in the Caribbean Basin of Concern to the United States. Symposium organized at the Southeastern Branch Meeting of Entomological Society of America, held in San Juan, Puerto Rico, USA (18-22 March 2011).
- Haseeb, M. and R. Wills Flowers. Introduction to the Lucid software for creating and editing digital identification keys – workshop organized at the University of Kansas, Lawrence, KS, USA (15-16 April, 2011).
- Haseeb, M., T.W. Walters and M.T.K. Kairo. Web-based Digital Insect Identification: Our Progress, Challenges and Opportunities. Section symposium organized at the 59th Annual Meeting of Entomological Society of America, Reno, NV, USA (13-16 November 2011)

Awards:

- Kanga, L.H.B. Received the 2011 Researcher of the Year Award, April 22, 2011.
- Kariuki, E.M. 1st Place in the M.S. Graduate Student Poster competition at the 85th Annual Meeting of the Southeastern Branch of the Entomological Society of America on March 20, 2011 in San Juan, Puerto Rico.
- Hight, S.D., and J.L. Mass. 2010 Achievement Award for Team Research on Tropical Soda Apple, Florida Entomological Society, Jupiter Beach, 2010. Other recipients of the Team Award were Amy Roda, Bill Overholt, Julio Medal, Abbie Fox, Ken Hibbard, Joe DeMarco, Divina Amalin, Juang-Hong Chong, Rodrigo Diaz, Phil Stansly, Luis Bradshaw, Bridget Carlise, Kenneth Gioeli, and John Walter.
- Francis, A.W. and Kairo M.T.K. USDA-APHIS award in recognition on research conducted on the passion vine mealybug in Trinidad. Dr. Lambert Kanga selected as "FAMU Researcher of Excellence" at the 2011 Principal Investigator Appreciation and Research of the Year Awards Luncheon (Fri. 04/22/11).
- Scholarship Awards presented by Grant Capelouto of the Reuben Capelouto Foundation to FAMU Entomology students – Enger S. German-Ramirez, Sandra Wheeler, Jordan Williamson – awarded \$500 each; Eutyclus Kariuki, Julius Eason, Omotola Dosunmu, Angela Hutcherson, Courtnee Eddington, Latasha Tanner – awarded \$250 each



The invasive weed *Hydrilla verticillata* chokes Cassidy Spring on the Wacissa River.



Eutyclus Kariuki (Ph.D. Student) surveys the invasive weed *Hydrilla verticillata* on the Wacissa River.

Graduate Assistantships Available
Interested in joining our M.S. Entomology Program or the cooperative Ph.D. Program? Please write to Dr. Lambert Kanga (Lambert.Kanga@FAMU.EDU) or Moses Kairo (Moses.Kairo@FAMU.EDU).

Website Links:

FAMU: <http://www.famu.edu/index.cfm?a=cesta&p=CenterforBiologicalControl>
USDA-ARS: www.ars.usda.gov/saa/cmave/ibbru

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