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GROUND-BREAKING CEREMONY FOR THE
USDA-ARS CENTER FOR BIOLOGICAL CONTROL FACILITY



From left to right: **Dr. Bobby R. Phillips** (Dean - College of Engineering Sciences, Technology, and Agriculture-Florida A&M University [CESTA-FAMU]), **Dr. Jesusa C. Legaspi** (USDA-ARS-CBC, Research Entom. & Assoc. Prof.), **Dr. Henry Lewis, III** (Former Acting President of FAMU), **Dr. James H. Tumlinson, III** (Former USDA-ARS, Acting Center Director, Center for Medical Agricultural and Veterinarian Entomology [CMAVE], Gainesville, FL), **Dr. Alfred Handler** (USDA-ARS-CMAVE, Acting Research Leader - Behavior and Biocontrol Laboratory Unit), **Congressman Allen Boyd** (Congressman for the 2nd Congressional District), **Dr. Stephen D. Hight** (USDA-ARS-CBC, Research Entom. & Assoc. Prof.), **Dr. Andrew Hammond** (USDA-ARS, South Atlantic Area Associate Area Director), **Dr. Stuart R. Reitz** (USDA-ARS-CBC, Co-Director & Assoc. Prof.), **Dr. Calvin E. Arnold** (USDA-ARS, Horticultural Research Laboratory Director, Ft. Pierce, FL), **Dr. Lawrence Carter** (Associate Dean, CESTA -FAMU Cooperative Extension & Outreach Programs).

On January 22, 2002, the ground breaking ceremony for the U.S. Department of Agriculture, Agricultural Research Service, Center for Biological Control (USDA-ARS-CBC) was celebrated.

The Center for Biological Control is based at Florida A&M University (FAMU) in Tallahassee, Florida. This facility is the direct result of efforts made by Congressman F. Allen Boyd, 2nd Congressional District, who provided the leadership in securing a \$1 million permanent line item in the ARS budget on behalf of the FAMU

College of Engineering Sciences Technology and Agriculture (CESTA). This effort marks the first time that USDA has established permanent facilities on an 1890 campus in furtherance of the federal-state land-grant partnership. ARS will use these facilities as the foundation to assist FAMU faculty in the scientific training of undergraduate and graduate students, while enhancing the University's overall ability to address clientele needs through agricultural research and technology development.

Dr. Charles W. O'Brien
Director, FAMU-CBC

Dr. Stuart R. Reitz
Co-Director, USDA-ARS-CBC

Dr. Ken A. Bloem
Co-Director, USDA-ARS-CBC

Dr. Sunil K. Pancholy
Associate Dean for Research in
FAMU-CESTA

Dr. Bobby R. Phillips
Dean and Director, Land Grant
Programs in CESTA



Ignacio Baez during thesis presentation.



Dr. Stuart Reitz and Erika Yearby



Sylvia Joseph and Dr. Ken Bloem



Mohamed Soumare (left) and Dr. James Cilek (right).

FIRST GRADUATES OF THE CENTER FOR BIOLOGICAL CONTROL

During the year of 2002, four graduate students of the Center for Biological Control graduated with a Master of Science degree in agricultural sciences with a major in entomology, these students were:

- **Ignacio Baez** - Thesis defense: March 15, 2002. Major professor: Dr. Stuart Reitz. Thesis title: Population dynamics of flower thrips (Thysanoptera: Thripidae: *Frankliniella*) and the predator *Orius insidiosus* (Say) (Heteroptera: Anthocoridae) in tomato and pepper.
- **Erika L. Yearby** - Thesis defense: May 1, 2002. Major professor: Dr. Stuart Reitz. Thesis title: The integrated effects of plastic mulches and insecticides

on population dynamics of thrips (Thysanoptera: Thripidae) and their natural enemies in pepper.

- **Sylvia Joseph** - Thesis defense: July 2, 2002. Major professor: Dr. Ken Bloem. Thesis title: Radiation to sterilize pest mite eggs used as a food source for predatory mites.
- **Mohamed K. F. Soumare** - Thesis defense: November 8, 2002. Major professor: Dr. James Cilek. Thesis title: Predation by *Mesocyclops longisetus* [Thiebaud] (Crustacea: Copepoda) of container-inhabiting mosquito (Diptera: Culicidae) larvae under laboratory and field conditions.

ACTIVITIES

Center for Biological Control Students Awarded with Scholarship

In November during the 26th Annual Field Day Workshop in Entomology, Mohamed Soumare and Jeffery Head were awarded with the William L. Peters Memorial Scholarship provided by the Ruben Capelouto Foundation.



Mohamed Soumare



Jeffery Head

Training Workshops

Dr. Muhammad Haseeb, C. W. O'Brien & R. Wills Flowers - Development of an expert/information system for weevil biological control agents at Department of Army Engineer Research and Development Center, Corps of Engineers, Waterways Experiment Station, Vicksburg, MS (15-16 April & 3-4 September, 2002).

Ignacio Baez - Parasitic Hymenoptera training session XII, Department of Entomology, University of Maryland, College Park, MD (10-14 June, 2002).



Dr. Muhammad Haseeb (right) observes a culture of *Salvinia*.

CBC Sponsored Seminars

Dr. Ken A. Bloem organized a seminar series of topics related to biological control during 2002 spring and fall semesters. Dr. Jesusa C. Legaspi assisted in scheduling and coordinating some talks. The invited speakers and titles of their talks were:

- **Dr. Jeffrey P. Shapiro** - USDA-ARS, CMAVE, Gainesville, FL. "Productive reproduction: Measuring egg development in insect predators for biological control", February 1, 2002.
- **Dr. John Sivinski** - USDA-ARS, CMAVE, Gainesville, FL. "Fruit flies: A different problem in biological control", March 1, 2002.
- **Dr. Robert Meagher** - USDA-ARS, CMAVE, Gainesville, FL. "Areawide biological control of fall armyworm", April 12, 2002.
- **Dr. Mamoudou Setamou** - Texas A&M University, Dept. of Entomology, College Station, TX. "Snowdrop lectin expressing transgenic sugarcane: Impacts on fitness and biological control potential of *Cotesia flavipes* (Hymenoptera: Braconidae)", July 24, 2002.
- **Dr. Joe Funderburk** - Univ. of Florida, IFAS, NFREC, Quincy, FL. "Biology and ecology of *Thripinema* parasites (Allantonematidae) and their thrips host", September 13, 2002.
- **Dr. Raghavan Charudattan** - Univ. of Florida, Plant Pathology, Gainesville, FL. "Biological control of weeds using plant pathogens", October 4, 2002.
- **Dr. Oghenekome U. Onokpise** - Florida A&M University, Tallahassee, FL. "Using native plant species to control cogon grass: Biological control or competition?", November 15, 2002.

Student Programs

During the summer of 2002, many students of Florida A&M University participated in summer internships working at the Center for Biological Control. Through these internships students were exposed to hands-on research related to current biological control projects. The students awarded with these internships were:

William Allen - Project: Effect of prey species on fecundity of spined soldier bug *Podisus maculiventris*; Mentor: Dr. Jesusa C. Legaspi (USDA-ARS summer internship program).

Aliya Donnell - Project: Surveying plant and insect composition of homeowner landscapes in Tallahassee, FL.; Mentor: Dr. Jesusa C. Legaspi (USDA-FAMU cooperative agreement).

Carla Evans - Project: Surveying, rearing and maintenance of the cactus moth, *Cactoblastis cactorum*; Mentor: Dr. Stephen Hight (USDA-FAMU cooperative agreement).

BJ Franklin - Maintenance and rearing of the diamondback moth (*Plutella xylostella*), diamondback moth parasitoid (*Cotesia plutellae*) and the spined soldier bug (*P. maculiventris*); Mentor: Dr.

Stuart Reitz (USDA-APHIS undergraduate student career development program).

Jeffery Head - Project: Body weight comparison of laboratory insects vs. field insects of the predatory bug *P. maculiventris*; Mentor: Dr. Jesusa C. Legaspi (USDA-FAMU cooperative agreement).

John Mass - Project: Surveying, rearing and maintenance of the cactus moth, *Cactoblastis cactorum*; Mentor: Dr. Stephen Hight (USDA-FAMU cooperative agreement).

Ricardo Smith - Project: Maintenance and rearing of the diamondback moth (*Plutella xylostella*), diamondback moth parasitoid (*Cotesia plutellae*) and the spined soldier bug (*P. maculiventris*); Mentor: Dr. Stuart Reitz (USDA-APHIS undergraduate student career development program).

Ryan Stype - Project: Interactions between the spined soldier bug (*P. maculiventris*), diamondback moth (*Plutella xylostella*), and diamondback moth parasitoid (*Cotesia plutellae*) in cabbage; Mentor: Dr. Stuart Reitz (USDA-ARS Summer internship program).



Undergraduate Students, Aliya Donnell, William Allen and Jeffery Head (left to right) preparing pheromone for spined soldier bug.



Summer intern student Ryan Stype rearing diamondback moth.

Activities of Dr. Charles O'Brien

Dr. Charles O'Brien was on Sabbatical for the spring semester (2002), worked on developing expertise with the computer and did major research with his colleague, Dr. Guillermo Wibmer, towards the completion of a monographic revision of the aquatic weevils of the New World.

During the summer, he and his wife Lois traveled to Europe to study in archival natural history museums in London, Paris, Stockholm, Copenhagen, Berlin, Potsdam, and Dresden. While there he studied the type materials of early workers such as Linnaeus and Fabricius, with emphasis on citrus fruit weevils such as *Diaprepes* and its relatives.

In the fall he traveled to Vicksburg to the Waterways Experiment Station of the U.S. Army Corps of Engineers for training in the development of a computer expert/information system, to complete

an ongoing project to be used by specialists and non-specialists to identify all weevil biological control agents used in the United States and Canada.

In November he attended the Annual meetings of the Entomological Collections Network, the Coleopterist Society, and the Entomological Society of America in Fort Lauderdale FL, where he presented a poster and a 10 minute talk. He also served as Chairperson of an Informal Conference on weevils attended by 15 weevil specialists from throughout the world.

He published 5 papers during the past year, and has 3 others in press.

Dr. O'Brien will retire from the University on June 30, 2003 following the completion of 30 years of service. He intends to continue to do research on weevils during the years to come.



Undergraduate students, John Mass and Carla Evans planting different species of prickly pear cacti.

GRANTS

- Legaspi, J. C. (PI). "Development of an Integrated Pest Management Plan for Jimmy Carter National Historic Site", National Park Service and South Florida Ecosystems Studies Unit Cooperative Agreement.
- Legaspi, J. C. (PI). Travel grant to the United States-Mexico Agricultural Research and Education Exchange Program, USDA-Office of International Research Program.
- Leppla, N., J. Cuda, C. Gardner and J. C. Legaspi (Co-PI). "Demonstrating Emerging Pest Management Technologies To Resource-Limited

Producers" to the Center for Cooperative Agricultural Program, University of Florida and Florida A&M University.

- Herrick, N. Analysis of a Biological Control Strategy and its Potential in a Pest Management Program in Florida Cabbage 2002-04. U.S. Department of Agriculture, Southern Region SARE Program.
- Cooperative Agreement between USDA-APHIS and the FAMU-CBC 2002-2003, "Biological Control and Host Plant Resistance of Selected Pests in Florida", for \$249,938 was signed on Sept. 24, 2002.



Undergraduate students, BJ Franklin (left) and Ricardo Smith (right) observing cages for a field experiment.

U.S.-Mexico Exchange Program



Dr. Aurora Garza-Zuniga (Professor, UANL), Dr. Jesusa C. Legaspi, Dr. Luis Galan-Wong (President, UANL), and Ignacio Baez (left to right) at the Universidad Autonoma de Nuevo Leon (UANL), Mexico.



Dr. Jesusa C. Legaspi and MS. Jose Luis Navarrete-Heredia (Professor) at the Department of Botany and Zoology of the Universidad de Guadalajara, Mexico.



Dr. Alfredo Lorenzo, Students, Jeffory Head, Aliya Donnell and William Allen, and Technician Ignacio Baez (left to right), surveying ornamental plants of Mrs. Williams (foreground).



Left to right: Dr. Jesusa C. Legaspi, undergraduate student Jeffory Head and National Park Service Staff Alan Marsh, at the Jimmy Carter National Historic Site, in Plains, GA.

In August 2002, Dr. Jesusa C. Legaspi and Ignacio Baez (first M.S. graduate from the Center for Biological Control) traveled to Monterrey and Guadalajara, Mexico. The trip was funded through a travel grant obtained from the USDA-Office of International Research Programs in support of a pilot activity of the U.S.- Mexico Agricultural Research and Education Exchange program. One of the objectives of the program was to initiate an exchange of scientists, graduate students, and postdoctoral research associates between Universities in Mexico and ARS laboratories located in U.S. Universities. This will support educational improvement and career enhancement activity of U.S. and Mexican agricultural scientists. Dr. J. C. Legaspi and Mr. I. Baez visited with administrators, faculty, students and postdoctoral associates from the Universidad Autonoma de Nuevo Leon (UANL) in Monterrey and the Universidad de Guadalajara in the city of Guadalajara. Several areas of mutual research interest between ARS and Mexican scientists were identified. These included but were not limited to

the following: biological control using parasites, predators and entomopathogens in vegetable crops, small fruits and native plants such as cactus, ecophysiology, chemical ecology, systematics, medical entomology and integrated pest management.

Dr. Aurora Garza Zuniga (Head of Biological Control and coordinator of institutional relations) at UANL and M. En C. Jose Luis Navarrete Heredia (faculty in Dept. of Botany and Zoology) at Universidad de Guadalajara coordinated the visits with the university scientists and staff and gave a tour of the campus facilities. As a follow-up to this trip to Mexico, two faculty from Universidad de Guadalajara, Ms. Analilia Viguera and Mr. Libertado Portillo, visited the ARS-Center for Biological Control at FAMU in Tallahassee, FL in November 2002. The Mexican scientists visited with ARS and FAMU faculty and toured the campus facilities. Discussions are ongoing regarding collaborative work between ARS and Mexican scientists specifically on biological control of invasive pests of field crops and native vegetation important to both countries.

Surveying Insect / Plant Diversity in Tallahassee Residential Yards

In summer 2002, FAMU, ARS and Cooperative Extension Service (Univ. of Florida) scientists and staff initiated a research project to assess the effects of alternative landscape design and management on insect diversity in Tallahassee, Leon Co., Florida. With increasing urbanization in Florida, the loss of vegetation particularly key host plants will impact insect pests and beneficial species populations. Efforts to replant using non-native plants will similarly impact emergence of other insects and pests in the landscape. Drs. Alfredo Lorenzo, Manuel Pescador (both FAMU), Jesusa C. Legaspi (ARS), and Mr. David Marshall (Coop. Ext. Serv., Univ. of FL) collaborated to identify participants from the Florida Yards and Neighborhood Program or Capital City

Garden Club and to develop the research protocol. Using geographic information system (GIS) technology, locations of residential homes in the city of Tallahassee were geocoded and mapped. FAMU undergraduate students (Jeffory Head, William Allen, Aliya Donnell, Carla Evans) assisted in measuring insect and plant species in each of the sample locations using various sampling techniques. Other measurements included yard size, composition, spatial and temporal arrangements and diversity index. Preliminary analysis of the data suggest positive relationships between the number of insects pests in the landscape and the type, total number and plant species at each sample site.

Integrated Pest Management Plan for the Jimmy Carter National Historic Site

A collaborative project between scientists and staff from the USDA-ARS, Florida A&M University (FAMU) and the National Park Service (NPS) was initiated in 2001 through a cooperative agreement administered by the South Florida/Carribbean Cooperative Ecosystem Studies Unit. The project leader, Dr. Jesusa C. Legaspi coordinated with Mr. Alan Marsh, NPS Cultural Resources Program Manager, and university and private consultants to develop an integrated pest management (IPM) plan for the Jimmy Carter National Historic Site located in Plains, GA. The IPM plan will address management strategies (biological, cultural, physical and chemical) to control target urban and agricultural insect and arthropod pests at the historic site. Several study site visits were con-

ducted in 2001 and 2002 with NPS, ARS and FAMU staff (including undergraduate students) to tour and sample at the various museum structures. The latter included the old high school which is now the visitors' museum, train depot which used to be the campaign headquarters, former president's current residential compound and surrounding landscapes and President Carter's boyhood home and farm. Current insect and arthropod pests and their natural enemies were assessed using sticky, bait and pheromone traps. Identification of some of the urban insect pests and beneficial species was made by Ms. Janice Peters (FAMU). Samples continue to be processed and analyzed and study site visits with consultants will continue through 2003.

Research Attracts International Interest

The accidentally introduced Argentine cactus moth, *Cactoblastis cactorum*, was discovered in the Florida Keys in 1989. This insect is a well-known and successful biological control agent of invasive *Opuntia* cactus species in Australia, South Africa, Hawaii, and Mauritius. Research at the CBC has identified the cactus moth attacking native North American cacti from coastal South Carolina into the Florida Panhandle. It is feared that the moth will spread into the Southwestern US and Mexico and create devastating impacts in these cactus dominated ecosystems. Mexican scientists, administrators (M.S. Ana Lilia Viguera, M.S. Liberato Portillo, and Dr. Mayra Pérez Sandí y Cuen) and a Republic of South African scientist (Dr. Helmut G. Zimmermann) visited the CBC in November 2002 to

evaluate the cactus moth situation and discuss cooperative projects. International cooperation is underway with a visit by a CBC scientist (Dr. Stephen Hight) to South Africa in March and reciprocal research being planned between CBC and Mexico. Control and trapping methods are being developed that will allow early detection when this insect invades western North America and limit its spread from the eastern US.

Other international researchers visited the Center for Biological Control. Entomologist Dr. Young Nam from Chungnam National University, South Korea, and Dr. Hae'Keun Yun and Dr. Hua Wang from the Center for Viticultural Sciences & Small Fruit Research, FAMU, visited Dr. Jesusa C. Legaspi.



Mexican researchers, MS. Liberato Portillo and MS. Ana Lilia Viguera, with Carla Evans (CBC)(left to right) surveying for cactus moth, *Cactoblastis cactorum*, at St. Marks NWR, FL.



Left to Right: South Korean researcher Dr. Nam Youn, Dr. Jesusa C. Legaspi, Chinese researcher Dr. Hua Wang and undergraduate student Jeffery Head at the USDA-ARS-CBC laboratory.

Sabbatical Achievements in Costa Rica

From June to late August Dr. R. Wills Flowers worked at the National Biodiversity Institute (INBio) on several projects including the species-level taxonomy of eumolpine Chrysomelidae, Chrysomelidae feeding on Melastomataceae, and the melastome-feeding weevil *Penestes*. He is also doing a long-term study of Chrysomelidae in two recently opened areas of the Guanacaste Conservation Area; a lowland Atlantic rainforest and a dwarf dry forest on a very ancient serpentine rock area in Costa Rica.

From August to December Dr. Flowers taught a full course at the Universidad de Costa Rica (UCR), "Avances en Ecología: Biomonitorio en Sistemas Acuáticos" (Advances in Ecology: Biomonitoring in Aquatic Systems) to 16 students on the graduate and advanced undergraduate levels. Also, he gave a seminar on this topic at INBio, and a seminar at UCR "Insectos Bajo Fuego" (Insects under fire).

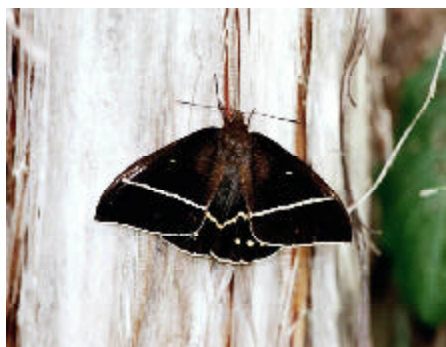
IPM-CRSP in Ecuador

Dr. R. Wills Flowers visited Ecuador twice in 2002. In the first trip (March) he finally obtained reared adults of the Castniidae attacking plantain in the Andean areas of their project. The moth is *Amauta cacica angusta*, a species not previously recorded as causing economic damage. Since March, a technician from INIAP has been working at the Orongo station for three weeks a month, in part to rear and make field observations on the moth. When Dr. Flowers visited a second time in September, he

had located a wild host plant, a large species of *Heliconia*, and had developed a method of rearing the large caterpillars in cut stems of plantain. Between the two visits, the same species (but different subspecies) was discovered in Costa Rica in the Guanacaste Conservation Area by the staff of Dan Janzen's Caterpillar Project. The Costa Rican subspecies also attacks plantain, and the same species of *Heliconia* is present nearby as a potential reservoir.



Dr. Wills Flowers giving a seminar to students of the University of Costa Rica during his sabbatical at the National Biodiversity Institute.



Adult of *Amauta cacica angusta*, new pest insect of plantain in Ecuador.



Pupa of *A. cacica angusta*, collected from plantain.



Left to right: Ing. Ivonne Carranza, Dr. R. W. Flowers, Ing. Fernando Echeverría, and Marco de la Torre installing a Lingren funnel in the cafetal of Estación Orongo, Ecuador.

Public Outreach Activities

- April, 2002. Legaspi, J. C., I. Baez. Florida Department of Education Child Care Center, Tallahassee, FL.
- May, 2002. Reitz, S. Thrips Workshop for Florida Extension Agents, Quincy, FL.
- June, 2002. Reitz, S. Pest Management for Organic Growers, FAMU Organic Workshop, Quincy, FL.
- June, 2002. Reitz, S. Institute of Food and Agricultural Sciences Field Day, UF, Quincy, FL.
- July, 2002. Legaspi, J. C. RATLR program (Raising Agriculturally and Technologically Literate Rattlers) Florida A&M University, Tallahassee, FL.
- October, 2002. Hight, S., S. Reitz and B. Marshall. Sunbelt Agriculture Expo Moultrie, GA.
- October, 2002. Baez, I., K. Bowers and N. Herrick. Monarch Festival, St. Marks National Wildlife Refuge, FL.
- November, 2002. Legaspi, J., I. Baez and J. Head. Buck Lake Elementary School, Tallahassee, FL.



Graduate student Nathan Herrick and Technicians Ignacio Baez and Kristen Bowers (left to right) creating awareness of biological control during the St. Marks National Wildlife Refuge Monarch festival held on October 19, 2002.



Undergraduate student Jeffery Head showing an insect display to kindergarten students at Buck Lake Elementary School, Tallahassee, FL.



Dr. Jesusa C. Legaspi showing insect boxes to pre-kindergarten students at the Florida Department of Education Child Care Center.



Participants in the RATLR (Raising Agriculturally and Technologically Literate Rattlers) summer camp at Florida A&M University looking at insect displays and live insects reared at USDA-ARS CBC.

PUBLICATIONS

Bloem, S., R. F. Mizell & C. W. O'Brien. 2002. Old traps for new weevils: New records for Curculionids, Brentids and Anthribids from Jefferson County, Florida. *Fl. Entomol.* 85: 635-647.

Carpenter, J. E. & S. Bloem. 2002. Interactions between insect strain and artificial diet in diamondback moth development and reproduction. *Entomol. Exp. Appl.* 102: 285-294.

Haseeb, M. and H. Amano. 2002. Effects of contact, oral and persistent toxicity of selected pesticides on *Cotesia plutellae* (Hym., Braconidae), a potential parasitoid of *Plutella xylostella* (Lep., Plutellidae). *J. App. Ent.* 126: 8-13.

Hight, S. D., J. E. Carpenter, K. A. Bloem, S. Bloem, R. W. Pemberton, and P. Stilling. 2002. Expanding geographical range of *Cactoblastis cactorum* (Lepidoptera: Pyralidae) in North America. *Florida Entomologist* 85(3): 527-529.

Hight, S.D., J.P. Cuda, and J.C. Medal. 2002. Brazilian peppertree. pp. 311-321. In R. Van Driesche, B. Blossey, M. Hoddle, S. Lyon, and R. Reardon (eds.), *Biological Control of Invasive Plants in the Eastern United States*. USDA Forest Service, FHTET-2002-4, Morgantown, WV.

Lauziere, I., J. C. Legaspi, B. C. Legaspi, Jr., and W. A. Jones. 2002. Effect of temperature on the life cycle of *Lydella jalisco* Woodley (Diptera: Tachinidae), a parasitoid of *Eoreuma loftini* (Dyar) (Lepidoptera: Pyralidae). *Environ. Entomol.* 31(3): 432-437.

Lauziere, I. J. C. Legaspi, B. C. Legaspi, Jr. and R. R. Saldaña. 2001. Field release of *Lydella jalisco* Woodley (Diptera: Tachinidae) in sugarcane and other graminaceous crops for biological control of *Eoreuma loftini* (Dyar) (Lepidoptera: Pyralidae) in Texas. *Subtropical Plant Science.* 53: 34-49.

Legaspi, J. C. 2002. Parasitism of the silverleaf whitefly in north Florida. *Proceedings of the Silverleaf Whitefly National Research, Action and Technology Transfer Plan.* USDA-ARS. p. 161.

Leppla, N. C., K. A. Bloem & R. F. Luck (Eds.). 2002. *Quality Control for Mass-Reared Arthropods: Proceedings of the Eighth and Ninth Workshops of the International Organization for Biological Control Working Group on Quality Control of Mass-Reared Arthropods*, 171 pp.

Reitz, S. R., J. E. Funderburk, E. A. Hansen, I. Baez, S. Waring, and S. Ramachandran. 2002. Interspecific variation in behavior and its role in thrips ecology pp. 133-140. In *Thrips and Tospoviruses: Proceedings of the 7th International Congress on Thysanoptera*. (R. Marullo and L. A. Mound, eds.), CSIRO Entomology, Canberra.

Reitz, S. R. 2002. Seasonal and within plant distribution of *Frankliniella* Species. *Florida Entomologist.* 85: 431-439.

Reitz, S. R. & J. T. Trumble. 2002. Interspecific and intraspecific variation in *Liriomyza* leafminers in California. *Entomol. Exp. Appl.* 102: 101-113.

Reitz, S. R. & J. T. Trumble. 2002. Competitive displacement among insects and arachnids. *Ann. Rev. Entomol.* 47: 435-465.

Setamou, M., J. S. Bernal, J. C. Legaspi, E. T. Mirkov and B. Legaspi, Jr. 2002. Evaluation of lectin-expressing transgenic sugarcane against stalkborers (Lepidoptera: Pyralidae): effects on life history parameters and damage. *J. Econ. Entomol.* 95(2): 469-477.

Setamou, M., J. S. Bernal, J. C. Legaspi, and E. T. Mirkov. 2002. Effects of snowdrop lectin (*Galanthus nivalis* Agglutinin) expressed in transgenic sugarcane on fitness of *Cotesia flavipes* (Hymenoptera: Braconidae), a parasitoid of the non-target pest *Diatraea saccharalis* (Lepidoptera: Crambidae). *Ann Entomol. Soc. Am.* 95(1): 75-83.



PRESENTATIONS

- Baez, I., S. Reitz, J. Funderburk. Prey preference of *Orius insidiosus* (Say) (Heteroptera: Anthracoridae) for species of *Frankliniella* flower thrips (Thysanoptera: Thripidae) in pepper flowers. Annual Meeting of the Entomol. Soc. Am. Ft. Lauderdale, FL., November 17-20, 2002 (Poster).
- Bloem, S., J. E. Carpenter, and K. A. Bloem. Applications of F_1 sterility for research and management of *C. cactorum*. Annual Meeting of the Entomol. Soc. Am. Ft. Lauderdale, FL., November 17-20, 2002 (Talk).
- Bloem, S., P. Rotstein, and R. F. Mizell. Anything and everything you ever wanted to know about weevils. Annual Meeting of the Entomol. Soc. Am. Ft. Lauderdale, FL., November 17-20, 2002 (Poster).
- Carpenter, J. E., K. A. Bloem, S. Bloem. Developing offshore SIT capabilities for key invasive Lepidoptera from Caribbean to Africa and beyond. Annual Meeting of the Entomol. Soc. Am. Ft. Lauderdale, FL., November 17-20, 2002 (Talk).
- Haseeb, M. and C. W. O'Brien. Implications of a weevil expert information system and biological control of weeds in the United States and Canada. Annual Meeting of the Entomol. Soc. Am. Ft. Lauderdale, FL., November 17-20, 2002 (Poster).
- Haseeb, M. and C. W. O'Brien. Weevil Biological Control Agents of Aquatic and Terrestrial Weeds in the United States and Canada. Annual Meeting of the Entomol. Soc. Am. Ft. Lauderdale, FL., November 17-20, 2002 (Demonstration).
- Herrick, N. J. and S. Reitz. Synthetic guild analysis of *Podisus maculiventris* (Say) (Heteroptera: Pentatomidae) and *Cotesia plutellae* Kurdj (Hymenoptera: Braconidae): Their effects on *Plutella xylostella* (L.) (Lepidoptera: Plutellidae) populations in cabbage. Annual Meeting of the Entomol. Soc. Am. Ft. Lauderdale, FL., November 17-20, 2002 (Talk).
- Hight, S., J. E. Carpenter, K. A. Bloem, S. Bloem, and R. W. Pemberton. Current distribution of *C. cactorum* in the U.S. and its interaction with native natural enemies. Annual Meeting of the Entomol. Soc. Am. Ft. Lauderdale, FL., November 17-20, 2002 (Talk).
- Jones, R. W. and C. W. O'Brien. Diversity and biogeographic affinities of weevils (Coleoptera: Curculionidae) from the El Cielo Biosphere Reserve of northeastern Mexico. Annual Meeting of the Entomol. Soc. Am. Ft. Lauderdale, FL., November 17-20, 2002 (Talk).
- Legaspi, J. C. Parasitism of the silverleaf whitefly, *Bemisia argentifolii*, in north Florida. Silverleaf Whitefly National Research, Action, and Technology Transfer Plan. Fourth Annual Review of the Second 5-year Plan. San Diego, CA, February 9-12, 2002 (Talk).
- Legaspi, J. C., I. Baez, E. Duke, and R. Sprengel. Biological control of silverleaf whitefly (*Bemisia argentifolii*) using parasites in north Florida. First Annual CESTA Research Forum, Florida A&M University, Tallahassee, FL., April 19, 2002. (Awarded first place in faculty poster competition)
- Legaspi, J. C. and I. Baez. Predation rate, prey preference and reproduction of a generalist predator, *Podisus maculiventris* (Heteroptera: Pentatomidae). Annual Meeting of the Entomol. Soc. Am. Ft. Lauderdale, FL., November 17-20, 2002 (Poster).
- Liu, T. X. and M. Haseeb. 2002. Effects of selected pesticides on *Cotesia plutellae* (Hymenoptera: Braconidae), parasitoid of diamondback moth (Lepidoptera: Plutellidae). Southwestern Branch Meeting of the Entomol. Soc. Am. Guanajuato, Mexico, February 25-27, 2002 (Poster).
- Reitz, S. R. Behavioral ecology of thrips: Implications for the management of thrips and tospoviruses in vegetables. USDA-ARS, Parlier CA, May 2002 (Seminar).
- Reitz, S. R. Dynamics of thrips in peppers and management program integrating biological control, UV-reflective mulches, and reduced-risk pesticides. Thrips Biology and Management Workshop, Quincy, FL. May 2002 (Invited Talk).
- Reitz, S., E. Yearby, J. Funderburk, and J. Stavisky. Integrated management tactics for *Frankliniella* thrips (Thysanoptera: Thripidae) in field-grown pepper. Annual Meeting of the Entomol. Soc. Am. Ft. Lauderdale, FL., November 17-20, 2002 (Poster).

INVITED PRESENTATIONS

- Bloem, K. A. Co-Organizer and Co-Moderator, Informal conference on "Emerging ecological concerns for *Cactoblastis cactorum* in North America: Issues and actions", ESA National Meeting, Ft. Lauderdale, November 2002.
- Bloem, K. A.. Organizer and moderator, formal conference on insect rearing, "Rearing in support of programs against invasive species: examples ripped from the headlines", ESA National Meeting, Ft. Lauderdale, November 2002.
- Bloem, S. Scientific Coordinator and lecturer, FAO/IAEA interregional training course on the use of the sterile insect and related techniques for the integrated areawide management of insect pests, Okanagan University College, Kelowna, BC, Canada, August 2002.
- Bloem, S. Consultant to South Africa for the International Atomic Energy Agency, to conduct radiation biology studies on the false codling moth, *Cryptophlebia leucotreta* (Lepidoptera: Tortricidae), June & October 2002.
- Legaspi, J. C. Foreign exploration and international cooperation in biological control. Faculty Seminar Series. Florida A&M University, Tallahassee, FL, March 28, 2002
- Legaspi, J. C. Sugarcane integrated pest management. Seminar Series. Department of Entomology, University of Florida, Gainesville, FL, March 21, 2002
- Legaspi, J. C. Assessment of biological control of the silverleaf whitefly, *Bemisia argentifolii*. Vegetable Insect Symposium. Southeastern Branch of the Entomological Society of America Meeting. Little Rock, AK, March 5, 2002
- Legaspi, J. C. Sugarcane biotechnology. Lecture to Department of Agronomy Honors Class, University of Florida, Gainesville, FL, February 20, 2002; Biotechnology class, Florida A&M University, November 4, 2002; USDA-ARS Seminar series, November 13, 2001



Dr. Stephanie Bloem in South Africa conducting collaborative field research on the cactus moth, *Cactoblastis cactorum*.

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The cactus moth, *Cactoblastis cactorum*, a succesful biological control agent for prickly pear in Australia and South Africa, is now a danger for native cacti in N. America.

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