

International FOCUS



UF UNIVERSITY of
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IFAS

Spotlight on IFAS Worldwide

UF/IFAS International Programs • Office of the Senior Vice President for Agriculture & Natural Resources • Gainesville, Florida

FROM THE DIRECTOR

By David Sammons
Director



Welcome to this special edition of International FOCUS, recognizing the winners of the 2008 UF/IFAS International Fellow and Achievement Awards. The award has two levels: senior faculty and non-tenured or newly-tenured faculty. This year's senior-level (International Fellow) winner is Joe Funderburk, an entomologist located at the UF/IFAS North Florida Research and Education Center in Quincy, Florida. The untenured or newly tenured (International Achievement Award) winner is Rafael Muñoz-Carpena, UF/IFAS Agricultural and Biological Engineering.

One of the ways we build our international programs is to recognize the outstanding international activities of our faculty. We do that through annual awards for outstanding contributions to international research, teaching, and Extension.

Nominees are carefully screened by the International Programs Advisory Team (IPAT), which makes the final selections. Winners receive an engraved plaque.

Winners are also nominated for the campus-wide UF International Educator of the Year Award. The UF/IFAS International Fellow and Achievement Award winners were officially recognized at the UF/IFAS Administrative Council Meeting on January 15, 2009. ♦ **Contact: David Sammons, sammons@ufl.edu**

Dr. Joseph Funderburk, the UF/IFAS International Fellow for 2008, is a world-renowned expert on thrips, an insect with 5,000 species worldwide, 87 of which are serious agricultural pests. Funderburk is an entomologist at the UF/IFAS North Florida Research and Education Center.



Joe Funderburk Named UF/IFAS International Fellow for 2008



Dr. Joseph Funderburk, an entomologist located at the North Florida Research and Education Center in Quincy, Florida, has been honored by the University of Florida as the UF/IFAS International Fellow for 2008.

Funderburk is a world expert on thrips, an insect with 5,000 species worldwide, 87 of which are agricultural pests. Funderburk's programs in the management and identification of thrips species, which threaten U.S. crops when they enter the nation through Florida, are of great domestic and international significance. Since significant quantities of agricultural imports into the U.S. arrive through the Port of Miami, it is critical to identify thrips in agricultural imports and to control them in other parts of the world, reducing the likelihood of importing them into Florida or elsewhere in the U.S.

Funderburk's work, carried out in many countries on a wide variety of crops, has benefitted the citizens of Florida, the U.S., and the world. His research, extension, and teaching programs are focused on the ecology, management, and taxonomy of thrips.

His ability to turn taxonomy research into new agricultural inspection procedures in the U.S. and abroad helps protect crops and many national economies from the invasion of new thrips species and the viruses they carry. For example, the European Union and the U.S. have zero tolerance for import of certain types of thrips from Latin America, which makes identification of these insects critical, both to Latin American exporters and to the U.S. and European countries seeking to protect their own crops while importing needed produce.

Funderburk also developed integrated pest management programs that are effective, economical, environmentally friendly, and sustainable. It was once thought that biological control of thrips with natural enemies would be ineffective due to thrips' short generation time, a broad host range, and an ability to reproduce without mating.

However, Funderburk demonstrated that biological control could be effective, using minute "pirate" bugs, *Orius insidiosus*, that occur from Canada to Patagonia including the Caribbean, as well as using parasitic nematodes specific to thrips and parasitic wasps. Funderburk also developed natural insecticides and reduced-risk insecticides that conserve the populations of minute pirate bugs and other natural enemy species, which is an effective integrated strategy that is widely used now throughout the world.

One reason these insecticides are so critical is the host interaction between thrips and the tospoviruses they carry, such as tomato spotted wilt virus. The interaction makes the applica- **See Funderburk, p. 2**

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Rafael Muñoz-Carpena Named International Achievement Award Recipient for 2008



Dr. Rafael Muñoz-Carpena, UF/IFAS International Achievement Award winner for 2008, is on faculty with UF/IFAS Agricultural and Biological Engineering.

Dr. Rafael Muñoz-Carpena is one of the most internationally active young faculty members in the UF/IFAS Agricultural and Biological Engineering Department. He has collaborated with scientists in Europe, Latin America, and Africa for many years. Educated in the U.S. and Spain, he is naturally comfortable in multiple cultures.

Muñoz-Carpena collaborates on research projects and co-publishes with international colleagues. For example, a recent book on an integrated approach to soil-water-solute characterization was co-authored with a professor in Spain with contributions from 53 international authors across 3 continents.

His dedication to international engagement began early in his career, when he worked for the government of Spain to

develop and deliver short courses in South and Central America, such as a series of intensive 7-day “train the trainer” courses, delivered over three years in Argentina, Bolivia, Colombia, and Guatemala.

At UF/IFAS, Muñoz-Carpena initiated a program with Dr. Bruce Schaffer (TREC-Homestead) that brought undergraduate students from EARTH University in Costa Rica to UF/IFAS to complete internships required for their degrees, with the hope of attracting them as graduate students. The EARTH collaboration grew into a well-established CALS short-term scholars program that helps recruit top Latin American students to UF.

Working with Dr. Michael Dukes, also of UF/IFAS Agricultural and Biological Engineering, Muñoz-Carpena expanded that program in 2007 to launch an undergraduate/graduate pilot exchange program that teams up EARTH undergraduates with UF graduate students. They develop joint research that is conducted in both the U.S. and Costa Rica. The students also create Extension programs delivered in Costa Rica that benefit local communities. This pilot program has been given continued funding by UF, through the Vice President for Research, for three years.

To provide teaching internationalization for undergraduate students, Muñoz-Carpena worked with Virginia Tech to secure a 4-year U.S. Department of Education FIPSE/CAPES program with Brazil, allowing UF and Brazilian students interested in water resources to take courses in both Brazil and the U.S.

Water resources and planning in Africa offers critical research opportunities for UF/IFAS faculty and students. Muñoz-Carpena currently chairs a Ph.D. student whose work is focused on assessing the impact of uncertainty in the trans-boundary management of the Okavango Delta, a Ramsar Wetland of International Significance.¹ The future of the environmentally sensitive site depends on collaboration between three countries with different goals and needs: Angola (post-war reconstruction), Botswana (conservation), and Namibia (agricultural development). Muñoz-Carpena traveled with col-

leagues and a Ph.D. student to southern Africa during the summer of 2008 to establish contacts and gather information for the three-nation project. While there, Muñoz-Carpena established other collaborations in the region, with two new projects now under development.



Muñoz-Carpena, center, does joint research with international students and colleagues in Costa Rica.

Additionally, BAYER Crop-Science in Germany and its U.S. division are adopting the modeling system Muñoz-Carpena designed for vegetative filter strips (VFSSMOD) to develop pesticide pollution control management plans. The European company funded participation for Muñoz-Carpena’s group at a European Union stakeholder’s workshop (AIM) in October 2008 in Brussels to inform the European Union on the use of the technology, as part of the development by the European Union of a new European Directive on Pesticide Use.

Rafa Muñoz-Carpena serves as an excellent international ambassador, actively promoting UF and IFAS throughout the global agricultural and biological engineering community. ❖ **CONTACT: Rafael Muñoz-Carpena, carpena@ufl.edu**

Funderburk, from page 1

tion of broad-spectrum, toxic pesticides ineffective at stopping the spread of the viruses, partly because the thrips, themselves, are resistant to these pesticides. Another reason is that spraying these broad-spectrum insecticides allows population explosions of thrips, because natural enemies and other competing non-pest species are eliminated, allowing thrips pest populations to expand explosively.

When these two reasons are combined, the result can be catastrophic, such as last year’s total loss of Ecuador’s onion and asparagus crops or the 1996 loss of \$600 million in table grapes in Chile due to damage by the western flower thrips. That one species has spread from the western U.S. to become a worldwide pest species, damaging crops in multiple countries.

Because the western flower thrips has developed resistance to spinosyn insecticides, more than \$100 million dollars’ worth of vegetable crops in just two Florida counties are now at risk. Funderburk has responded with education and management plans tailored both to Florida and to other areas of the world, combating these pests and the viruses they carry.

Funderburk presents his research results in extension publications and websites to provide a continuous connection to end-users. He also presents workshops in Florida, the USA, Central America, South America, and the Caribbean, teaching the principles and practices of integrated pest management from his research.

The success of Joe Funderburk’s research and extension program is reflected in his 2004 USDA Honor Award for Excellence, USDA’s highest recognition for service to agriculture and the public. ❖ **CONTACT: Joe Funderburk, jef@ufl.edu**

2 ¹A Ramsar wetland is one covered under the Ramsar Convention, which was signed in Ramsar, Iran, 1971. It was the first intergovernmental, global treaty on wetlands conservation, designed to support global sustainable development.

On the Trail of Brazil's Big Cats



Martin Main, Ph.D., Professor in the Department of Wildlife Ecology & Conservation and his PhD graduate student, Emiliano Ramalho, are on the trail of Brazil's big cats, the elusive, ecologically important jaguars. With their range shrinking in a north-south squeeze play, jaguars are caught in the middle, where human development is fragmenting their habitat.

Those facts make the Amazon Basin critical to the conservation of jaguars. According to some estimates, it holds the largest population of jaguars, contains the largest non-fragmented stretches of habitat, and maintains connections with other ecosystems critical to jaguars' survival.

Jaguars function as top predators, regulating the populations of their prey and of smaller predators. That fact makes jaguars important to the health of their native ecosystems. However, no one knows how many jaguars still exist. They are solitary animals and their preferred habitat is dense tropical forest with access to plenty of water. They are hard to find and hard to count.

Populations of jaguars have been studied in other biomes, but not in the Amazon *varzea*



Caught in the flare of a camera trap's flash, this jaguar carries a caiman, which is related to crocodiles.

(flooded rainforest). The jaguar's plight brought Main to Brazil, where he is working with Ramalho, a CAPES/Fulbright scholar and native Brazilian. Together, they are working to estimate density and study the ecology of jaguars in the Mamirauá Sustainable Development Reserve in the *varzea*.

Ramalho has worked for several years at the Mamirauá Reserve and is tracking the big cats in two ways. Infrared-triggered cameras are strategically placed across an area of some 350 km² to estimate jaguar density. The cameras have revealed a high density, roughly 13 jaguars per 100 km², with many females and cubs, suggesting the habitat is an important breeding ground.

Ramalho and Main also captured the first of what they hope will eventually be eleven jaguars. They fitted the female with a GPS

collar that will record her location every 2 hours for the next year. The data will determine her range and possible migration pattern as water levels change with the pulse floods from the Amazon River.

The floods change water levels by 11 vertical meters (~36 feet), driving the lateral movement of wildlife, possibly including jaguars.



Sleeping Beauty: Dr. Main's team captured the young jaguar above, dubbed Elvira, which may be pregnant. The team will track her movements through a GPS-system collar. Left to right: Joana Macedo, project assistant; Martin Main, UF/IFAS faculty; Emiliano Ramalho, Ph.D. student; and Dairen Simpson, wildlife capture specialist.

No one knows for sure if jaguars migrate in the flooded forests or where they go if they do. In an effort to find out, the team is collecting information on density and movement of jaguars, their diets, and the availability of prey for jaguars in the study area.

A UF/IFAS travel grant helped set up the study in collaboration with Mamirauá Reserve, which assists with funding, equipment, and a "floating camp" from which Main and Ramalho stage their research activities. Local village trackers provide important assistance with all phases of the research, including collecting jaguar "scat" so Ramalho can determine which animals the jaguars have consumed.

Main and Ramalho hope to gather data crucial to the conservation of the jaguar, which comes into conflict with humans outside the Mamirauá Reserve. The main conflict is with cattle ranchers and villagers, who often shoot jaguars on sight. Ramalho is educating local villagers about jaguars in efforts to change these behaviors.

Unfortunately, human presence in the *varzea* has expanded enormously, as the region is important in the local economy and in the economies of major cities. The increasing human population in the region spells trouble for the *varzea*'s top predator. Main and Ramalho hope to gather information that will give the jaguar a fighting chance. ❖ **Contact: Martin Main, mmain@ufl.edu**

UF/IFAS International Programs Office Activity in 2008

The UF/IFAS International Programs (IP) office had a busy year in 2008. Here are highlights of the new projects initiated by or in collaboration with the IP office in calendar year 2008.

- Improving incomes of smallholder rice farmers in coastal Ecuador;
- Florida-Spain partnership to strengthen organic agriculture research and education;
- Uganda organic coffee certification training program;
- Collaboration with Brazilian universities through the Fund for the Improvement of Postsecondary Education (FIPSE) program, U.S. Department of Education;
- Vietnam Codex Office Internship to the U.S. Codex Office on seafood safety standards training;
- Grant to strengthen agribusiness training in the Faculté d'Agronomie

et de Médecine Vétérinaire (FAMV) of Haiti's National University;

- 44th Annual Meeting of the Caribbean Food Crops Society (CFCS), Miami Beach, July 13-17, 2008;
- Training program on Crop Growth Simulation Models, Tegucigalpa, Honduras, August 25-28, 2008;
- Study tour of biofuels industry in São Paulo state, Brazil, June 2008, with eight UF/IFAS faculty and five Florida county commissioners;
- International Conference on Research & Educational Opportunities in Bio-Fuel Crop Production, EARTH University, Costa Rica, November 17-19, 2008
- Scientific Cooperation Exchange Program linking the People's Republic of China to the International Distance Diagnostic and Identification System Network.

For additional information about the projects listed above and about the many ongoing projects at the IP office, go to the web version of FOCUS listed below. ❖

http://international.ifas.ufl.edu/focus_newsletters/january2009

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UF/IFAS Student Conducts Potato Economic Research in Peru



Small potato producers in Peru are receiving help in the production and marketing of a native potato known as the yellow Tumbay, thanks to a joint agreement between UF/IFAS and the International Potato Center (Centro Internacional de la Papa or CIP).

UF/IFAS and CIP are jointly coordinating a study through CIP's Program Papa Andina ("Andean Potato") to study production and marketing costs of the yellow Tumbay, a variety identified as having the greatest commercial potential of any native potatoes in the region. The yellow Tumbay was identified by ADERS, the Association for Sustainable Development, a non-profit group that works extensively with small potato producers.

The UF/IFAS researcher on this project is Mike Jones, an undergraduate student in the Food and Resource Economics Department, studying under Dr. James Sterns. Jones traveled to Huánuco and Cayna, Peru from June 24, 2008 to July 15, 2008, collecting data for the study. Jones' research is a cost analysis of yellow Tumbay potato production in this region. He is looking at both economic feasibility

and at the additional information needed from producers to increase the accuracy of the cost analysis, since some of the data—such as production expenses—simply do not currently exist due to cultural factors.

Jones conducted much of his research during the multi-day Festival of Saint Peter, which drew a large number of people from the countryside, concentrating them in Cayna's main square. The concentration of farmers in Cayna greatly helped Jones locate farmers meeting the parameters of his study.

Once farmers qualifying for the study had been identified, Jones administered a 16-page questionnaire compiled with help from CIP and their consulting associates. Interviewing farmers from dawn to well past darkness, he asked producers about a wide variety of economic factors such as cost of soil preparation methods, seed type and cost, chemical input costs, labor costs, etc.

A surprising number of producers did not know their production costs nor did they see the significance of knowing them. They buy; they sell; but they do not track expenses: that's just the way it's always been done. Some of the information could



Mike Jones, UF/IFAS undergraduate student, conducts native potato economic research in Peru, where farming is largely done on steep slopes, like the ones behind him.

be reconstructed, which helped Jones' task. Much of the labor is done by hand, partly due to the steep terrain. The terrain, small farm sizes, and lack of credit make the purchase of a tractor impractical and far too expensive to justify the cost. So manual labor is the norm, much of it unpaid family labor. Access to credit is extremely limited outside membership in cooperative organizations such as ECOMUSA, the Empresa Comunal de Servicios Agropecuarios. For more on Jones' project, visit the website listed below! ♦ **CONTACT: Mike Jones, mikejones2010@gmail.com@ufl.edu**