



Agriculture & Natural Resources Subcommittee

**Tuesday, March 12, 2013
1:00PM
Reed Hall (102 HOB)**

**Will Weatherford
Speaker**

**Matthew H. "Matt" Caldwell
Chair**

COMMITTEE MEETING REPORT
Agriculture & Natural Resources Subcommittee
3/12/2013 1:00:00PM

Location: Reed Hall (102 HOB)

Summary:

Agriculture & Natural Resources Subcommittee

Tuesday March 12, 2013 01:00 pm

HB 927	Favorable With Committee Substitute	Yeas: 12	Nays: 0
	Amendment 524857 Withdrawn		
	Remove line 35 and insert		
	Amendment 134023 Adopted		
	Remove lines 109 -113 and insert		
PCB ANRS 13-01	Favorable With Amendments	Yeas: 12	Nays: 0
	Amendment PCB ANRS 13-01 a1 Adopted		
	Remove line 1329 and insert		
PCB ANRS 13-02	Favorable	Yeas: 12	Nays: 0

Committee meeting was reported out: Tuesday, March 12, 2013 3:04:58PM

COMMITTEE MEETING REPORT
Agriculture & Natural Resources Subcommittee

3/12/2013 1:00:00PM

Location: Reed Hall (102 HOB)

Attendance:

	<i>Present</i>	<i>Absent</i>	<i>Excused</i>
Matthew Caldwell (Chair)	X		
Halsey Beshears	X		
Jim Boyd	X		
Katie Edwards	X		
Tom Goodson	X		
Larry Lee, Jr.	X		
Cary Pigman	X		
Ray Pilon	X		
Elizabeth Porter	X		
Kevin Rader	X		
Betty Reed	X		
Patrick Rooney, Jr.	X		
Clovis Watson, Jr.	X		
Totals:	13	0	0

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COMMITTEE MEETING REPORT
Agriculture & Natural Resources Subcommittee
3/12/2013 1:00:00PM

Location: Reed Hall (102 HOB)

HB 927 : Agritourism

Favorable With Committee Substitute

	Yea	Nay	No Vote	Absentee Yea	Absentee Nay
Halsey Beshears	X				
Jim Boyd	X				
Katie Edwards	X				
Tom Goodson	X				
Larry Lee, Jr.	X				
Cary Pigman	X				
Ray Pilon	X				
Elizabeth Porter	X				
Kevin Rader	X				
Betty Reed				X	
Patrick Rooney, Jr.	X				
Clovis Watson, Jr.	X				
Matthew Caldwell (Chair)	X				
Total Yeas: 12		Total Nays: 0			

HB 927 Amendments

Amendment 524857

Withdrawn

Amendment 134023

Adopted

Appearances:

Jess, Paul (Lobbyist) - Proponent
 Florida Justice Association
 218 S Monroe St
 Tallahassee Florida 32301
 Phone: 850-224-9403

Cruz, David (Lobbyist) - Opponent
 Florida League of Cities
 P.O. Box 1751
 Tallahassee Florida 32302
 Phone: 850-701-3676

James, Stephen (Lobbyist) - Opponent
 Florida Association of Counties
 100 South Monroe Street
 Tallahassee Florida 32302
 Phone: 850-922-4300

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COMMITTEE MEETING REPORT
Agriculture & Natural Resources Subcommittee

3/12/2013 1:00:00PM

Location: Reed Hall (102 HOB)

HB 927 : Agritourism (continued)

Appearances: (continued)

Lenhart, Laura L. (Lobbyist) - Waive In Support
Florida Chamber of Commerce
136 S. Bronough Street
Tallahassee Florida 32301
Phone: 850-521-1200

Mann, Doug (Lobbyist) - Waive In Support
AIF
310 W College Ave
Tallahassee Florida 32303
Phone: 850-222-7535

Basford, Adam (Lobbyist) - Waive In Support
FL Farm Bureau
315 S Calhoun St,
Tallahassee Florida 32301
Phone: 352-538-4299

Spratt, James (Lobbyist) - Waive In Support
Florida Nursery Growers and Landscape Association
PO Box 10011
Tallahassee Florida 32302
Phone: 850-228-1296

Ard, Samuel (Lobbyist) - Waive In Support
Florida Cattlemen's Association
PO Box 10406
Tallahassee Florida 32302
Phone: 850-577-6500

Sheehan, Jamie (Lobbyist) - Waive In Support
Plum Creek Timber
310 W College Ave
Tallahassee Florida 32301
Phone: 850-443-5937

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COMMITTEE MEETING REPORT
Agriculture & Natural Resources Subcommittee
3/12/2013 1:00:00PM

Location: Reed Hall (102 HOB)

PCB ANRS 13-01 : Department of Agriculture and Consumer Services

Favorable With Amendments

	<i>Yea</i>	<i>Nay</i>	<i>No Vote</i>	<i>Absentee Yea</i>	<i>Absentee Nay</i>
Halsey Beshears	X				
Jim Boyd	X				
Katie Edwards	X				
Tom Goodson	X				
Larry Lee, Jr.	X				
Cary Pigman	X				
Ray Pilon	X				
Elizabeth Porter	X				
Kevin Rader	X				
Betty Reed	X				
Patrick Rooney, Jr.				X	
Clovis Watson, Jr.	X				
Matthew Caldwell (Chair)	X				
Total Yeas: 12		Total Nays: 0			

PCB ANRS 13-01 Amendments

Amendment PCB ANRS 13-01 a1 - Remove line 1329 and insert

Adopted

Appearances:

Lovett, Grace (Lobbyist) (State Employee) - Waive In Support
 Department of Agriculture
 PL-10 The Capitol
 Tallahassee Florida 32399
 Phone: 850-488-3022

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COMMITTEE MEETING REPORT
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3/12/2013 1:00:00PM

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PCB ANRS 13-02 : DACS Public Records Exemption

Favorable

	<i>Yea</i>	<i>Nay</i>	<i>No Vote</i>	<i>Absentee Yea</i>	<i>Absentee Nay</i>
Halsey Beshears	X				
Jim Boyd	X				
Katie Edwards	X				
Tom Goodson	X				
Larry Lee, Jr.	X				
Cary Pigman	X				
Ray Pilon	X				
Elizabeth Porter	X				
Kevin Rader	X				
Betty Reed	X				
Patrick Rooney, Jr.				X	
Clovis Watson, Jr.	X				
Matthew Caldwell (Chair)	X				
Total Yeas: 12		Total Nays: 0			

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Presentation/Workshop/Other Business Appearances:

Presentation by the State President of Florida Future Farmers of America
Willis, Clayton (At Request Of Chair) - Information Only
Florida FFA Association
9611 Dr. Baker Road
Goveland Florida 34736
Phone: 352-345-7111

Presentation on the University of Florida's Institute of Food and Agricultural Sciences
Gosa, Mary (Lobbyist) - Information Only
University of Florida Institute of Food & Agricultural Sciences
215 S Monroe St, Suite 110
Tallahassee Florida 32301
Phone: 850-681-0000

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Institute of Food and Agricultural Sciences



Public Investment in UF/IFAS Yields Significant **ECONOMIC BENEFITS AND JOBS**



Agricultural and Natural Resources, Research and Extension

\$10 IN BENEFITS FOR EVERY \$1 INVESTED

Investments in UF/IFAS Research and Extension programs have shown significant returns that hold great promise for creating jobs and improving the economic vitality of Florida.

According to the United States Department of Agriculture, every dollar invested in U.S. agricultural research returns \$10 in benefits from increased productivity by agricultural producers and lower prices for consumers.¹ Agricultural research also improves environmental quality, increases food safety and enhances our health and quality of life.

The State of Florida invests approximately \$136 million annually in agricultural research and extension, which in return contributes about \$1.3 billion in economic benefits to the state, based on the 10:1 benefit-cost ratio.

Florida Agriculture and Natural Resources

\$121.24 BILLION IN DIRECT OUTPUT, 2.01 MILLION JOBS

In 2010, agriculture and natural resource industries collectively generated over 2.01 million jobs in the state, \$121.24 billion in direct output (revenues), and \$11.87 billion in business taxes to state, local and federal governments.² These industries span the market chain, including commodity production, supporting services and food distribution to consumers (FIGURE 1).

Due to Florida's subtropical climate, the specialized nature of its agriculture, and access to international ports, exports from Florida to domestic and international markets account for almost \$50 billion in revenues. As globalization continues to increase the level of market competition, as well as the influx of invasive pests and diseases, greater demands will be made on the research and extension system to maintain the gains made in agricultural productivity and to develop new technologies that can further increase competitiveness.

New Crop Varieties

CULTIVATING NEW MARKETS

Crop cultivar development programs supported by the Florida Agricultural Experiment Station have greatly expanded Florida's agricultural economy. The development of new cultivation practices has increased cold and drought tolerance, disease resistance and even improved the flavor of many of the state's crops. IFAS breeding programs have produced more than 46 new blueberry varieties, increasing the value of Florida's blueberry crop by 351 percent over the past 10 years (FIGURE 2). IFAS has continued to bolster and protect the state's agricultural industries with new varieties of flavorful produce that have great consumer appeal (FIGURE 3), such as the popular, traditionally bred Tasti-Lee tomato, as well as research using transgenic technology to define desirable volatile combinations that will help breeders develop appealing, great-tasting, high-yield tomatoes.

FIGURE 1. Economic Benefits of Agriculture and Natural Resource Industries, 2010



FIGURE 2. Value of Florida Blueberries, 2001-11

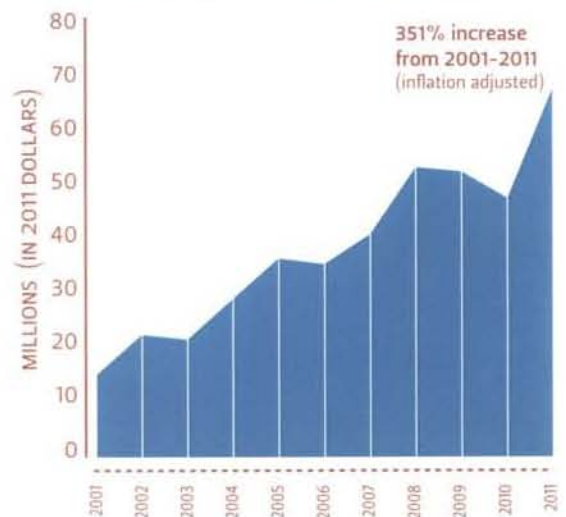


FIGURE 3. Crop Cultivars Released, 1891-2010



Florida Shellfish and Aquaculture

REBUILDING A BROKEN INDUSTRY

FIGURE 4. Economic Benefits of Aquaculture Industry

\$74.5
MILLION IN
VALUE ADDED

1,841
AQUACULTURE
INDUSTRY JOBS

Following the implementation of net bans in the mid-1990s that impacted the state's commercial fishing industry, IFAS technical expertise helped reposition many displaced fishermen as commercial hard clam farmers — in essence, creating an industry from the ground up. UF/IFAS scientists also work with aquaculture producers of tropical ornamental fish in the Tampa Bay area, to develop new products such as the red-tipped shark. These two aquaculture industries generate \$74.5 million in value added contribution to Gross State Product, and over 1,800 jobs (FIGURE 4). IFAS officials have also lent valuable expertise to the shellfish industry — in the aftermath of the 2010 oil spill in the Gulf of Mexico and more recently, with the formation of the UF Oyster Recovery Team, which is working to offset economic damage from a decline in the Apalachicola area's fall and winter oyster harvest. The team is seeking causes behind the current oyster decline as well as looking for ways the industry can move toward a more adaptive and resilient approach to oyster management.

Best Management Practices Reduce Nitrogen Use

SUWANNEE VALLEY AGRONOMIC CROP BMP IMPLEMENTATION

IFAS Extension and the Best Management Practices (BMP) Implementation Team have cooperated with Suwannee Valley farmers to reduce nitrogen use and improve efficiency. Since we began working with Suwannee producers in 2006 with the Vegetable and Agronomic Crop BMP program, over 200,000 acres have been enrolled with Notices of Intent to Implement. One of the "Progressive Farms" that we have cooperated with to showcase BMPs is in Gilchrist County (FIGURE 5). This large corn and peanut farm has significantly decreased nitrogen applications to their crops since we first introduced them to BMPs. The farm has reduced nitrogen rates from 325 lbs/acre to 240 lbs/acre on 2600 acres of corn production, and from 60 lbs/acre to 12 lbs/acre on 5000 acres of peanut production. The adoption of several BMPs has contributed to these reduced applications and increased efficiency.

Workforce Training

CREATING NEW JOB OPPORTUNITIES

Working in partnership with state agencies, professional organizations and industry, UF/IFAS provides training for thousands of Florida's workers each year to help improve their skills, increase their wages and expand their job opportunities (FIGURE 6). Those who complete UF/IFAS certification programs can see their earnings increase dramatically. The average wage for a licensed pesticide applicator is 32 percent higher than for a regular landscaping worker, and companies benefit by greater profits and reduced liability. The average annual salary of a certified food service manager or first-line supervisor is between \$14,000 and \$35,000 higher than it is for a food preparation worker. Other programs educate Florida's building professionals on water and energy efficiency, wind mitigation, and sustainable landscaping. Many contractors, engineers, architects and building inspectors participate in IFAS' green building certification programs that promote healthier buildings for both on-site workers and occupants, lower building costs, and a more collaborative work environment. UF/IFAS continues to look for opportunities to contribute to Florida's prosperity through a well-trained workforce.

FIGURE 5. Gilchrist County Farm Example, LLC Nitrogen Use

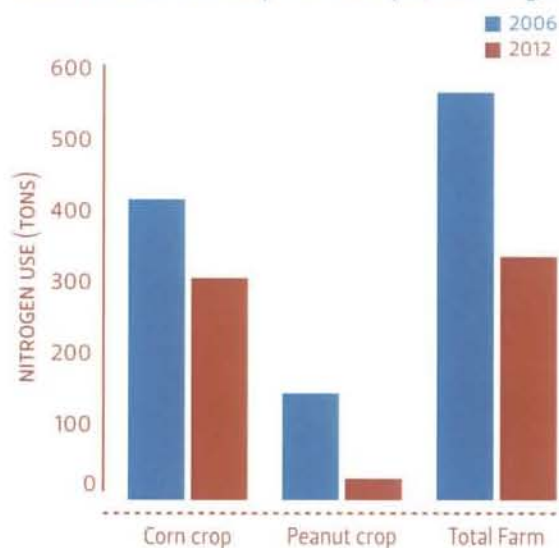


FIGURE 6. Number of People Trained, 2007 -2012

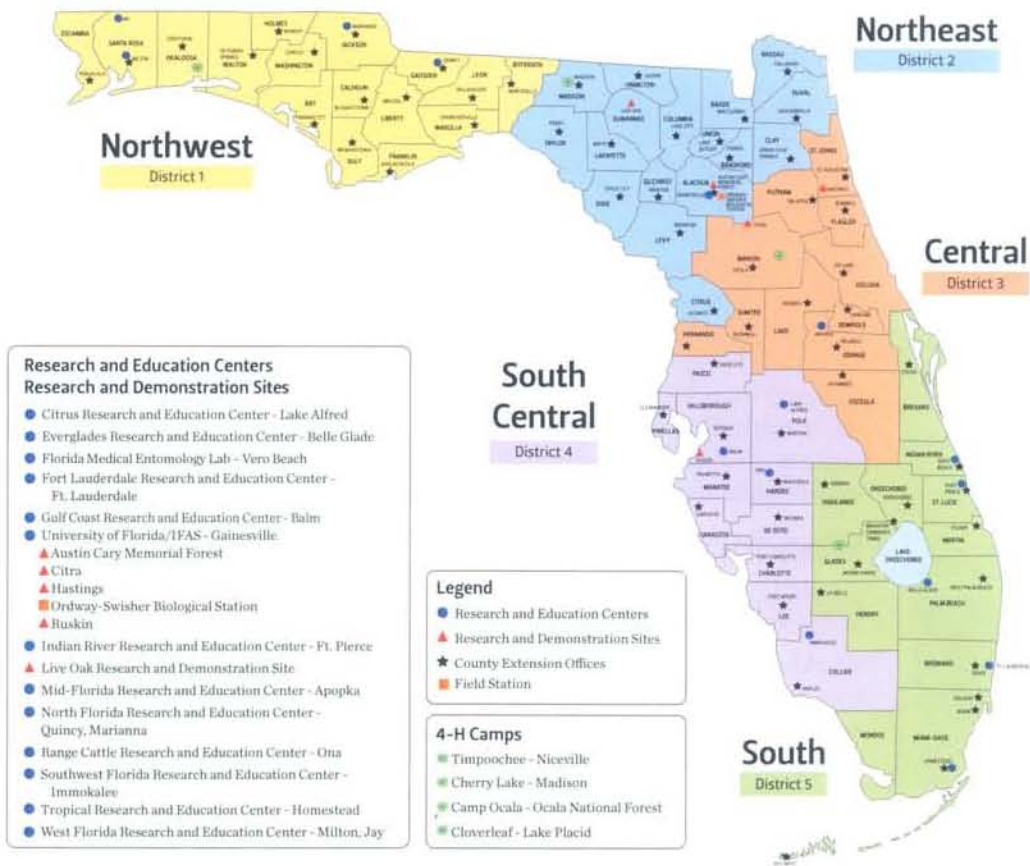




The Land Grant University System

The University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) is a proud part of the nation's land grant university system, a system of public institutions established by the U.S. Congress through the Morrill Act of 1862 to provide higher education to citizens of average means. The land grant mission was later expanded through federal legislation that created and helps fund the Florida Agricultural Experiment Station for the purpose of conducting research, and the Florida Cooperative Extension Service, which brings information and technology gained through research to the public. UF/IFAS and Florida A&M University deliver land grant services to the state of Florida. To fulfill its mission, UF/IFAS has 17 academic departments at the main campus in Gainesville, 13 research and education centers at 19 locations, and an extension office in each of Florida's 67 counties.

UF/IFAS Statewide Facilities



Sources Cited

1. Fuglies, K.O. and P.W. Helsey. 2007. *Economic Returns to Public Agricultural Research* (Economic Brief #10). USDA Economic Research Service. <http://www.ers.usda.gov/Publications/EB10/>
2. Hodges, A.W., M. Rahmani, and T.J. Stevens. 2011. *Economic Contributions of Agriculture, Natural Resources, and Related Industries in Florida in 2010*. University of Florida/IFAS Extension publication FE906. <http://edis.ifas.ufl.edu/fe906>

For more information, contact:

Jack Payne
Senior Vice President
Agriculture and Natural Resources
1008 McCarty Hall
P.O. Box 110180
Gainesville, FL 32611
(352) 392-1971
jackpayne@ufl.edu
<http://ifas.ufl.edu>

Mary Ann Gosa
Director
IFAS Governmental Affairs
215 South Monroe Street
Tallahassee, FL 32301
(850) 681-0000
mgosa@ufl.edu
http://svp.ifas.ufl.edu/governmental_relations.html

This report and other IFAS Extension economic contribution reports can be found at:
<http://ifas.ufl.edu/economicimpacts.html>

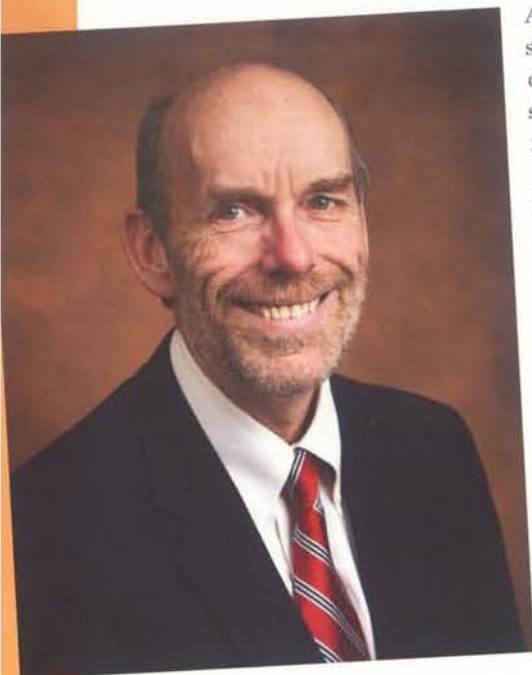
IFAS RESEARCH UPDATE

INTERDISCIPLINARY RESEARCH

Institute of Food and Agricultural Sciences
Florida Agricultural Experiment Station
2012



When the Morrill Land-Grant Act was signed into law in 1862, establishing the framework for land-grant institutions like the University of Florida, many aspects of life differed greatly from today.



Although tremendous social and technological changes have occurred since that time, the core mission of land-grant universities — generating new knowledge to address critical societal needs and sharing that understanding with the public and the next generation of professionals and leaders — is more relevant than ever.

In line with our land-grant heritage, research at the UF Institute of Food and Agricultural Sciences (UF/IFAS) remains focused on

food, agriculture, and natural resources. But the important questions in agriculture and natural resources facing today's society are increasingly intertwined and complex.

To address the challenges of the 21st century, our research programs must be built on strong disciplinary foundations, but at the same time they must be structured to integrate across disciplines. The complexity of the challenges we face today demands understanding that cuts across traditional disciplines. Indeed, as we look at the history of innovation, we see that the most significant breakthroughs generally occur when multiple perspectives are brought to the table.

Here we present a brief overview of a few integrated research projects being pursued by UF/IFAS scientists. Each of the projects highlighted brings together UF/IFAS scientists with different specializations and expertise to address key issues in agriculture and natural resources.

For example, a project aimed at improving the production and sustainability of sweet sorghum as an energy crop brings together a team including scientists from the departments of Agronomy, Microbiology and Cell Science, Agricultural and Biological Engineering, and Materials Science and Engineering. In another project, a team of researchers from the Mid-Florida Research and Education Center in Apopka and the departments of Agricultural and Biological Engineering, Soil and Water Science, and Agronomy are working to determine the minimum irrigation requirements for mixed landscapes while maintaining an aesthetically acceptable appearance.

In all, this report looks at seven program areas where UF/IFAS researchers are taking an integrated approach to the issues of sustainability, energy, climate change, water, food systems and human health, ecosystem health and services, and resource production.

I hope you enjoy learning about these efforts, and invite you to visit our web page ([HTTP://RESEARCH.IFAS.UFL.EDU](http://RESEARCH.IFAS.UFL.EDU)) for more information about our research programs.

JOHN P. HAYES

Interim Dean for Research, UF/IFAS
Director, Florida Agricultural Experiment Station



“ The complexity of the challenges we face today demands understanding that cuts across traditional disciplines. ”

UF/IFAS Researchers Conducting World-Class Research at PSREU

JUST A SHORT DRIVE

from Gainesville, the Plant Science Research and Education Unit (PSREU) in Citra is home to a staggering amount of research on everything from underground irrigation to the use of satellite technology to monitor agricultural production.

Nearly 150 UF/IFAS researchers have 680 experiments under way at the 1,100-acre site. Some are original studies, others replicate experiments conducted elsewhere in the state to determine if researchers get the same results under North Florida weather conditions.

A great many of these studies are interdisciplinary in nature, such as Diane Rowland's agronomy work, which involves agronomists and irrigation scientists from Texas Tech and Texas A&M universities, the United States Department of Agriculture and Florida Cooperative Extension. The researchers are trying to determine whether castor bean can become a viable commercial crop for biofuel in Florida. UF agronomist Kevin Kenworthy's turf-breeding work is another example; he's collaborated with nematologist Billy Crow and plant pathologist Phil Harmon to create turfgrass that is both nematode- and disease-resistant.

The PSREU facility, which began with just one shed and a single-wide mobile home office, now includes 27 buildings, including a new conference facility where IFAS faculty will host academic classes, field days and seminars.

PSREU Director Danny Colvin said he believes the facility is one of the best of its kind in the country.

"Basically, if it's got anything to do with a plant — cotton, soybeans, new varieties of flowers, every variety of turf that can



be grown in Florida, a three-hole golf course — we are studying it," Colvin said.

The facility helps UF send students into agriculture-related careers with hands-on growing experience, which gives them an edge in the job market, he said.

Colvin said that while there is a tremendous amount of research ongoing, the Citra unit has room for additional research. The number of field workshops held at the site — currently 10 to 15 per year — will almost certainly increase with the recent construction of the conference facility.

IFAS officials also expect to begin holding several academic classes at PSREU each week.

SUSTAINABILITY

UF/IFAS Computer Model Aids Fishery Management Policies



Sustainability is a cornerstone of sound fisheries management policies. In Florida, they must provide enough fish for recreational and commercial anglers today while ensuring that fish communities thrive for future generations.

A UF/IFAS interdisciplinary research team has developed a computer-generated modeling tool that examines the many interactions of species in the Gulf of Mexico alongside the economic impacts to commercial and recreational fishing in Florida, which generates \$17 billion annually. The model uses data from the Gulf fishing area to generate complex scenarios of how different policies may affect Florida's economy and fish communities, ranging from species with a high dollar value, such as grouper, to sea turtles and birds, which may have no market value but are integral to the ecosystem's health.

The Florida Sea Grant-funded project combines the expertise of researchers representing the departments of Food and Resource Economics, Wildlife Ecology and Conservation, and the School of Forest Resources and Conservation.

Throughout the project, the UF/IFAS team has cooperated with the Florida Fish and Wildlife Conservation Commission. The aim is to show anglers, businesspeople and policymakers how the model can help them explore economic and ecological trade-offs of future management actions.

RESEARCH TEAM: Micheal Allen, William Lindberg, Carl Walters, School of Forest Resources and Conservation; Sherry Larkin, Department of Food and Resource Economics; William Pine, Department of Wildlife Ecology and Conservation; Behzad Mahmoudi, Florida Fish and Wildlife Conservation Commission

Discovering New Possibilities for Sweet Sorghum

UF/IFAS researchers are discovering ways to use sweet sorghum and the waste generated from its processing to help meet societal needs using profitable, environmentally friendly approaches.

Researchers from the departments of Agronomy, Microbiology and Cell Science, Materials Science and Engineering, and Agricultural and Biological Engineering are working to develop improved sweet sorghum cultivars that don't require as much water as traditional varieties for production in Florida. Such production is anticipated to create more jobs in rural communities, sustainable production of plastics and biofuels, and medical advances.

Sugars collected from sweet sorghum's juice and stems can be fermented into the biofuel ethanol. Researchers are discovering ways in which carbon dioxide captured during the fermentation process can be turned into succinic acid, which can replace petroleum in the production of various biodegradable plastics, thus helping to reduce America's reliance on foreign oil.

The research team is also finding ways to use lignin, another waste component resulting from processing sorghum, to generate heat for the fermentation — creating a more energy efficient pathway for the process. Researchers are also looking into an important medical use for lignin: as nanotubes for drug delivery in humans. Flexible plant-based nanotubes are likely more

compatible with the body than traditional nanotubes. They can follow the shape of arteries and veins and can be easily modified, offering opportunities for targeted drug delivery.



RESEARCH TEAM: Wilfred Vermerris, John Erickson, Department of Agronomy; Lonnie Ingram, Jim Preston, and K.T. Shanmugam, Department of Microbiology and Cell Science; Amelia Dempere, Department of Materials Science and Engineering; Zhaohui Tong, Department of Agricultural and Biological Engineering and Bradley Krohn, Highlands EnviroFuels

CLIMATE CHANGE

With a \$20 Million Federal Grant, PINEMAP Aims to Help Trees Beat the Heat

Florida is known for its oranges, but also grows 5 million acres of planted pine, used for lumber, paper, pulp, bioenergy, and environmental services. To sustain these forests and help mitigate global climate change, a UF-led consortium has obtained a five-year, \$20 million USDA grant to develop new management techniques.

The project, called PINEMAP, is part of a federal effort to improve major U.S. cropping systems to sequester more carbon, a component of the greenhouse gas carbon dioxide and a vital part of plant cells. The project will also help growers cope with the effects of climate change — rising temperatures, decreased rainfall and increased disease and pest pressures.

The project involves faculty from UF's School of Forest Resources and Conservation, Soil and Water Science, and Agricultural and Biological Engineering departments, along with other southeastern land-grant universities, industry research cooperatives and government agencies. Collaborators include geneticists, entomologists, economists, climatologists and soil scientists, among others. PINEMAP will involve students in the work, preparing the next generation of forest scientists and educators.

PINEMAP will focus on growers' needs, because its ultimate success hinges on growers adopting its recommendations.



Researchers and extension specialists will seek input and feedback from large and small landowners and will provide workshops, webinars and other programs.

RESEARCH TEAM: Damian Adams, Doug Carter, Wendell Cropper, John Davis, Eric Jokela, Tim Martin, Martha Monroe, Gary Peter, School of Forest Resources and Conservation; Sabine Grunwald, Department of Soil and Water Science; Jim Jones, Department of Agricultural and Biological Engineering

IFAS Research Keeps Lawns — and Consumers' Wallets — Green Year-Round



To help Floridians conserve money and water, UF/IFAS scientists from the departments of Agricultural and Biological Engineering, Agronomy, Environmental Horticulture, and Soil and Water Science are searching for just the right amount of irrigation needed to keep mixed-use landscapes aesthetically

pleasing year-round. Most current recommendations are based on the needs of young turfgrass, which requires regular watering — this can lead to over-irrigation, water waste and environmental issues when applied indiscriminately in mixed-use landscapes. Different plants have different water requirements, and in established landscapes, plants need less frequent irrigation as they mature. The experiment examines tree, shrub, and turfgrass quality and growth extending long past the establishment period. Using weather station data and lysimeters — large concrete planters that measure root system water and fertilizer absorption — scientists are determining the amount of water needed for various landscapes based on percentage of grass, trees and shrubs. The experiment has shown that older plants thrive with less frequent irrigation. Mature St. Augustinegrass stayed lush through summer with irrigation only every 10 days. Another promising finding is that the expansive root systems of woody ornamentals may reduce leachate and nutrient loss from the landscape as these plants grow.

RESEARCH TEAM: Richard Beeson Jr., Mid-Florida Research and Education Center; Michael Dukes, Department of Agricultural and Biological Engineering; Amy Shoher, Gulf Coast Research and Education Center; Thomas Sinclair, Department of Agronomy and Grady Miller, North Carolina State University

UF Researchers Study Development and Prevention of Type 1 Diabetes

The cause of Type 1 diabetes — a disease that afflicts some 3 million Americans — is unknown, but University of Florida researchers are working to solve the mystery in hopes of someday preventing new cases. Type 1 diabetes affects all ages and is often diagnosed in children.

“We’re hoping we can prevent children from getting sick,” said Eric Triplett, the IFAS microbiologist leading an interdisciplinary team including researchers from the departments of

Microbiology and Cell Science, Statistics, and UF’s College of Medicine.

The research team has shown that digestive tract bacteria could be linked to developing Type 1 diabetes. For example, they found healthy children have more bacterial diversity in their digestive tracts than children who later develop the disease.

Coupling DNA sequencing with powerful computer analysis, they’ve begun learning the functions of the bacteria they’ve identified. Their data suggests that those who develop Type 1 diabetes lack bacteria that produce substances known to maintain healthy digestive tracts. Knowing the bacterial environment associated with the disease could allow for early identification and treatment.

The researchers have also introduced beneficial bacteria to mice that helped prevent them from developing Type 1 diabetes, and hope to soon attempt this promising experimental treatment in humans.

RESEARCH TEAM: Eric Triplett, Joseph Larkin, Claudio Gonzalez, Graciela Lorca, Bryan Kolaczowski, Department of Microbiology and Cell Science; Mark Atkinson, Desmond Schatz, Josef Neu, UF College of Medicine; George Casella, Department of Statistics

Farming with Sod-Based Rotation Raises Yields, Reduces Environmental Impacts

UF/IFAS researchers are uncovering profitable approaches to farming that helps maintain ecosystem health while providing high food and fiber yields.

Known as sod-based rotation, the system takes cattle-grazed, perennial grass pastureland and rotates it with row crops such as cotton and peanuts.

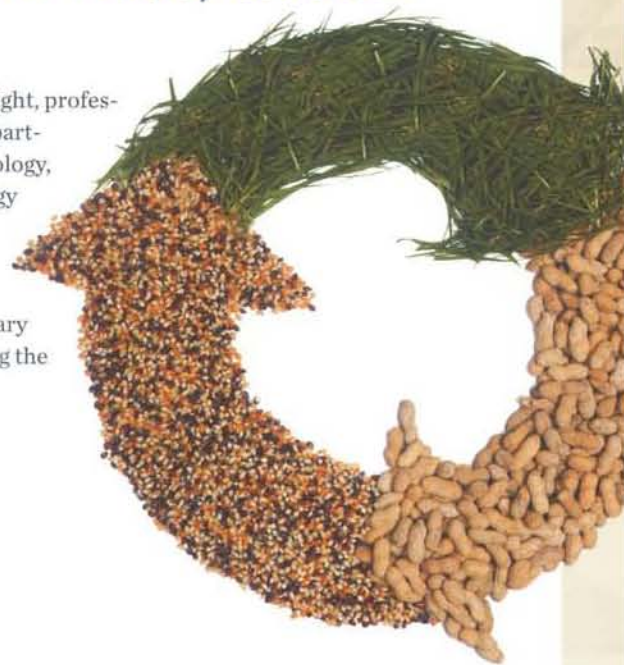
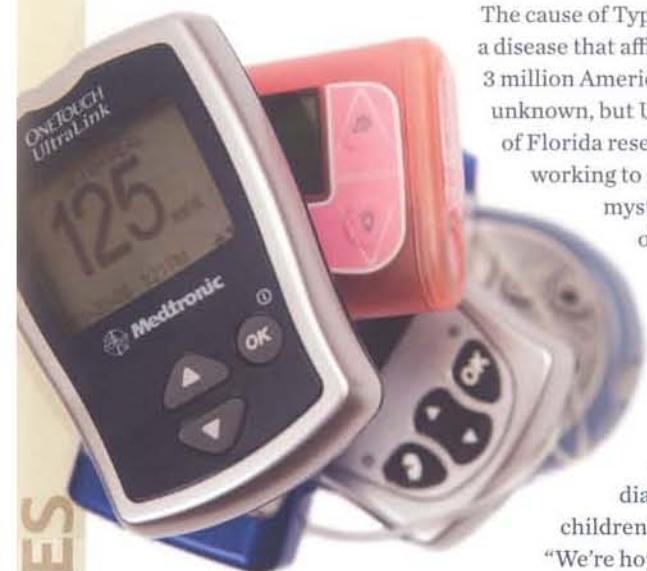
The perennial grasses planted on row crop land are key. For crops following grasses, UF researchers have found there is better yield, drought resistance, reduced fertilizer application and runoff and fewer nematodes. Rotating in legumes, such as peanuts, adds nitrogen.

On a 40-acre field of cotton using this system, revenue increased approximately \$200-\$300 per acre, and nitrogen application was reduced by 140 pounds per acre.

“There were not necessarily a lot of data to verify the system worked until now, even though it was used for many years,” said David Wright, one of the research team members and an agronomy professor at UF’s North Florida Research and Education Center.

Besides Wright, professors in the departments of Sociology, Plant Pathology and Animal Sciences are part of the interdisciplinary team analyzing the system.


RESEARCH TEAM: David Wright, Jim Marois, Cliff Lamb, Nicolas DiLorenzo, North Florida Research and Education Center



RESOURCE PRODUCTION

Creating Best Possible Fruit Key to Florida's Success in Global Peach Industry

UF/IFAS researchers are helping Florida peach growers carve a new niche in the fresh fruit market — and giving Floridians an estimated \$5 million annual crop of quality fruit grown closer to home. Florida's warmer climate has led to an earlier peach crop, giving growers an edge in national and global markets, and bringing better prices than later-harvested crops. Researchers with UF's Horticultural Sciences and Soil and Water Science departments, the Florida Department of Agriculture and Consumer Services, and Mississippi State University are working together to examine nitrogen fertilization, irrigation, fertigation, disease control, leaching and frost protection and other factors, hoping to create better-tasting eating and canning fruit that has a longer shelf life and is grown on healthier, longer-living trees. Experimental nitrogen applications range from zero to 240 pounds per acre, and the results will be instrumental as the process is fine-tuned to minimize under- and over-fertilization. UF has bred such peach varieties as UFSun, TropicBeauty and UFL. Their newest and most ambitious variety, UFBest, promises a first full crop in 2014 with larger, sweeter, more durable fruit that could secure Florida's spot in the global peach market.

carbon 6 C 12.011		oxygen 8 O 15.999
silicon 14 Si 28.086	phosphorus 15 P 30.974	sulfur 16 S 32.065

RESEARCH TEAM: Mercy Olmstead, Jose Chaparro, Lincoln Zotarelli, Jeff Brecht, Department of Horticultural Sciences; Tom Obreza, Department of Soil and Water Science; researchers from Mississippi State University

IFAS Research Facilities

Off-Campus Research and Education Centers

- 1 Citrus REC | LAKE ALFRED
- 2 Everglades REC | BELLE GLADE
- 3 Florida Medical Entomology Lab | VERO BEACH
- 4 Fort Lauderdale REC | FORT LAUDERDALE
- 5 Gulf Coast REC | WIMAUMA, PLANT CITY
- 6 Indian River REC | FORT PIERCE
- 7 Mid-Florida REC | APOPKA
- 8 North Florida REC | MARIANNA, QUINCY
- 9 Range Cattle REC | ONA
- 10 Southwest Florida REC | IMMOKALEE
- 11 Tropical REC | HOMESTEAD
- 12 West Florida REC | JAY, MILTON

Research and Demonstration Sites

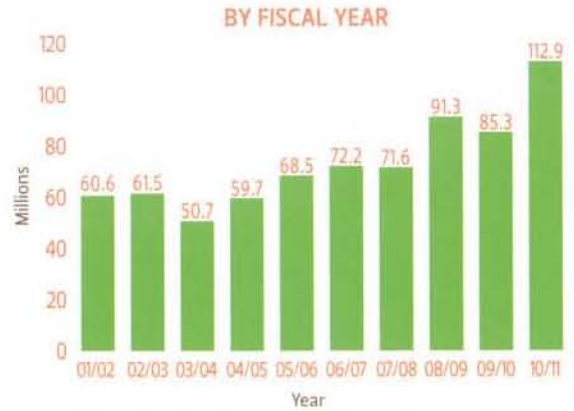
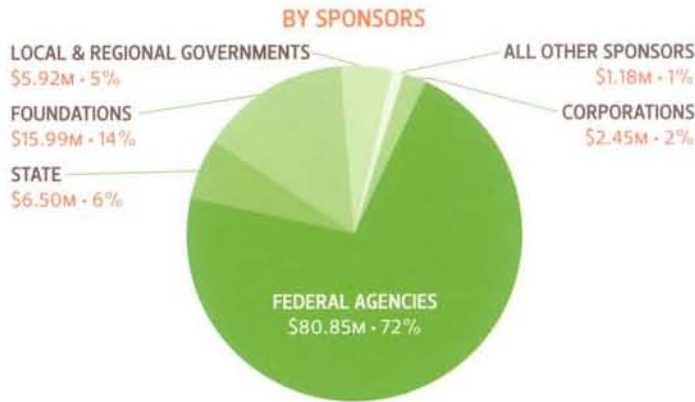
- 13 Austin Cary Memorial Forest | GAINESVILLE
- 14 Florida Partnership for Water, Agricultural and Community Sustainability | HASTINGS
- 15 Ordway-Swisher Biological Station (OSBS) | MELROSE
- 16 Plant Science Research and Education Unit | CITRA
- 17 Tropical Aquaculture Laboratory | RUSKIN



IFAS Sponsored Research Funding, FY 10-11

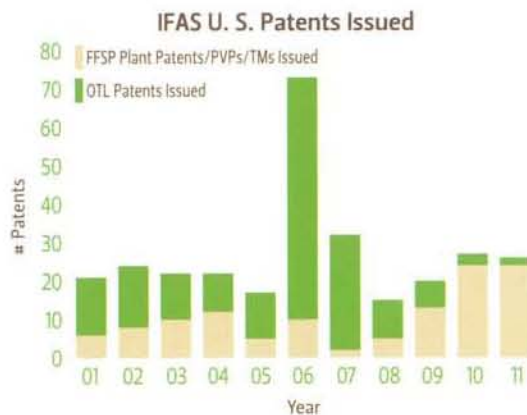
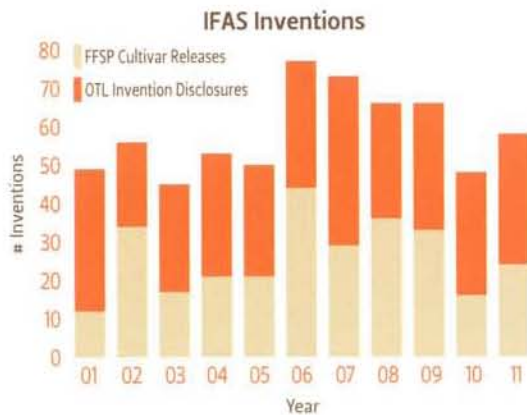
1,034 AWARDS RECEIVED, TOTALING

\$112.89M



IFAS Patents and Licenses

Florida Foundation Seed Producers (FFSP) and Office of Technology Licensing (OTL)



Economic Impacts

Agricultural and related industries generate

156,451 jobs (14.8% of total) in Broward County.

\$8.10 billion in revenues.

10.1% contribution to gross regional product.

Based on a 2010 UF study

It is estimated that for every **\$1** invested in agricultural research and extension, there is a return of **\$10** to the community.

Based on a 2007 USDA study

Funding

State funds for Extension **\$332,417**
Federal funds for Extension **\$42,582**
County funds for Extension **\$516,805**

Volunteers

Number of volunteers **897**
Hours worked **40,754**
Dollar value of hours worked **\$888,030**

Giving

Recent donors residing in county **24,770**
FY 2012 donors residing in county **9,627**
Gifts to UF from county residents **\$3,342,036**
Gifts to IFAS from county residents **\$60,540**

Statewide Client Satisfaction

Quality

96% Residents who used Extension services and were satisfied with the service provided.

Effectiveness

80% Clients who had an opportunity to use the information received, and...

90% Said it solved their problem or answered their question.

Leverage

75% Clients who shared the information with someone else.

Clientele Contacts

Field and office consultations **3,289**
Participants at group learning events **87,150**
Phone and email consultations **52,085**
Educational materials created **236**

Statewide Clientele Outcomes

Clients reporting an increase in knowledge or skill **92%**
Clients reporting a change in behavior or attitude **76%**
Clients adopting best practices resulting in societal, economic, or environmental benefits to community **59%**

Students and Alumni

UF students from county **4,796**
CALs students from county **386**
UF alumni residing in county **20,117**
IFAS alumni residing in county **1,247**

EXTENSION: 4-H youth development; Family and consumer sciences/ Nutrition; Master Gardener training and activities; Environmental education; Commercial horticulture/Urban forestry

COMMODITIES: Palms, Turfgrass, Ornamentals, Termites, Ants, Bees,

Geomatics, Aquatic plants, Wildlife ecology

RESEARCH: Technologies for sustainable maintenance & management of structures & landscapes. Reduce the impact of invasive animals & plants on natural & urban habitats.

Broward Co. Cooperative Extension Service
3245 College Avenue
Davie, FL 33314-7798
954-357-5270
Director: Brenda Marty-Jimenez
Email: bjimenez@broward.org
Web: <http://broward.org/extension/>

Fort Lauderdale Research and Education Center
3205 College Avenue
Ft. Lauderdale, FL 33314-7719
954-577-6315
Director: Dr. Monica Elliott (Acting)
Email: melliott@ufl.edu
Web: <http://flrec.ifas.ufl.edu>
FY 2012 Expenditures: 5,708,719

ECONOMIC CONTRIBUTIONS

of agriculture, natural resources and related industries in Florida



Agriculture, natural resources and related industries are an economic powerhouse in Florida, providing over 2 million jobs, \$121.2 billion in direct output (revenues), \$108.7 billion in value added contributions, and accounting for 14.2 percent of total economic activity in 2010.

These industries are supported by a \$130 million investment from the state of Florida in UF/IFAS Research and Extension programs. Studies show that agricultural research provides a 40% or greater social rate of return on investment, which translates into a 10:1 benefit-cost ratio, based on the average

long term cost of capital. In other words, for every \$1 of public investment in agricultural research and extension, there is a \$10 benefit to producers and consumers in terms of greater productivity and lower food prices.

Driven by innovation and new technology, agriculture and related industries will continue to increase jobs and economic well-being in Florida.

This sheet and additional information can be found at <http://ifas.ufl.edu/economicimpacts.html>.

Florida Total		Jobs (Share of total employment)			Value Added Impacts (million \$)			Share of Gross Regional Product	
		2,008,369 (19.3%)			\$108,742			14.2%	
Florida County	Jobs (full- and part-time)	Share of Total County Employment	Value Added impacts* (million \$)	Share of Gross Regional Product	Florida County	Jobs (full- and part-time)	Share of Total County Employment	Value Added impacts* (million \$)	Share of Gross Regional Product
Alachua	37,147	23.4%	1,666	16.0%	Lee	58,672	19.7%	2,801	14.0%
Baker	1,462	15.2%	48	8.8%	Leon	30,088	15.1%	1,205	9.3%
Bay	24,092	22.5%	1,303	17.5%	Levy	3,574	26.3%	156	18.7%
Bradford	2,444	21.3%	148	21.0%	Liberty	1,010	26.7%	81	32.4%
Brevard	35,323	12.6%	1,483	7.0%	Madison	2,300	34.1%	122	31.9%
Broward	156,451	14.8%	8,063	10.1%	Manatee	49,099	29.8%	2,461	22.4%
Calhoun	1,217	25.8%	58	24.2%	Marion	27,515	20.0%	1,180	14.2%
Charlotte	12,548	18.2%	501	12.4%	Martin	19,836	21.5%	984	15.0%
Citrus	7,600	13.5%	289	8.0%	Miami-Dade	230,789	15.8%	13,570	12.0%
Clay	12,164	17.4%	489	11.3%	Monroe	17,830	30.8%	930	22.9%
Collier	42,681	23.2%	2,290	16.8%	Nassau	12,295	45.6%	889	46.2%
Columbia	6,772	23.6%	308	17.7%	Okaloosa	19,961	15.6%	821	7.9%
De Soto	7,354	55.9%	432	57.3%	Okeechobee	5,715	40.9%	309	38.7%
Dixie	1,854	38.6%	79	33.5%	Orange	159,556	18.7%	8,672	13.4%
Duval	114,409	17.8%	8,547	15.9%	Osceola	28,678	29.5%	1,283	20.6%
Escambia	27,835	15.3%	1,434	10.4%	Palm Beach	146,714	18.9%	7,850	13.0%
Flagler	5,656	22.7%	263	16.7%	Pasco	26,352	19.3%	1,104	12.9%
Franklin	1,441	22.6%	69	16.9%	Pinellas	76,898	13.7%	3,608	8.9%
Gadsden	4,681	24.7%	274	24.4%	Polk	96,926	35.6%	6,421	34.1%
Gilchrist	1,889	32.5%	111	32.7%	Putnam	13,482	56.2%	1,000	57.4%
Glades	1,674	35.2%	97	33.8%	Santa Rosa	8,878	17.7%	340	10.0%
Gulf	1,048	17.0%	39	9.8%	Sarasota	35,431	16.3%	1,649	10.7%
Hamilton	2,744	59.5%	239	75.4%	Seminole	40,026	17.0%	2,030	11.4%
Hardee	8,017	68.6%	478	64.3%	St. Johns	19,883	25.6%	884	16.2%
Hendry	14,883	80.9%	827	82.2%	St. Lucie	21,827	21.6%	1,169	18.7%
Hernando	15,849	25.7%	525	15.8%	Sumter	8,990	31.1%	404	21.8%
Highlands	15,190	39.7%	691	32.7%	Suwannee	6,633	38.0%	316	35.2%
Hillsborough	155,130	19.9%	9,925	15.4%	Taylor	7,708	77.7%	567	87.3%
Holmes	1,950	25.8%	58	17.3%	Union	957	17.4%	44	14.8%
Indian River	19,020	27.6%	975	20.7%	Volusia	42,789	20.4%	1,928	14.7%
Jackson	4,488	21.7%	215	17.8%	Wakulla	1,811	18.6%	55	9.6%
Jefferson	1,621	33.3%	81	31.4%	Walton	9,630	34.2%	431	26.0%
Lafayette	902	35.3%	66	43.7%	Washington	1,587	17.5%	59	12.6%
Lake	27,393	23.0%	1,351	18.8%	State Total	2,008,369	19.3%	108,742	14.2%

Hodges, A.W., M. Rahinani and T.J. Stevens. Economic Contributions of Agriculture, Natural Resources, and Related Industries in Florida for 2010. University of Florida/IFAS, Food and Resource Economics Department, August 2012, 27 pages, available at <http://edis.ifas.ufl.edu/906>.

Fuglies, K.O. and P.W. Heisey. Economic returns to public agricultural research. Economic Brief #10, U.S. Department of Agriculture, Economic Research Service, 9 pages, Sept. 2007. Available at <http://www.ers.usda.gov/Publications/EB10/>.



Mary Ann Gosa

Director of Governmental Affairs
Institute of Food and Agricultural Sciences

215 S. Monroe St., Ste. 110
Tallahassee, FL 32301

850-681-0000
850-322-7259 Cell
850-681-2500 Fax
mgosa@ufl.edu



Valerie Jones

Legislative Assistant
Office of Governmental Affairs
Institute of Food and Agricultural Sciences

215 S. Monroe St., Ste. 110
Tallahassee, FL 32301

850-681-0000
850-643-7194 Cell
850-681-2500 Fax
vjones01@ufl.edu

UF/IFAS Statewide Research and Education Network

- Gainesville Campus
- ▲ Research and Education Centers (REC)
- Research Sites/Demonstration Units Administered by RECs/Departments
- County Extension Offices
- ◇ Degree Program Partnerships

