The Department of Earth and Environment at Florida International University (FIU) will now offer a Bachelor of Sciences degree program in Environmental Studies with a choice of majors in Agricultural Sciences or Natural Resource Sciences. These majors have been designed to provide students with broad academic knowledge and experience to pursue careers in environmental professions or in advanced agricultural sciences fields.

Students in the new Agri-Science major have the opportunity to take the following courses: Introduction to Horticulture and Lab, Integrated Pest Management, Agroecology, Sustainable Agriculture, Entomology, Soils and Ecosystem, Economic Botany, and many more! Students will also have the opportunity to participate in field trips, internships, and hands-on learning experiential learning.

Undergraduate Research Experience | Undergraduate Scholarship Opportunity
Assistance with Internship and Job Placement | Gain Professional Experience
Preparation for Graduate School

The new Agri-Science major will prepare students to meet course requirement and relative experience required for various USDA and industry positions. Students in the new major will have greater access to scholarship and training opportunities to help build the necessary skills to succeed in today’s job market.

For more information, visit the Agroecology Website or make an appointment to see the Academic Advisor for Arts and Sciences, Cristina Ugar in ECS 313, 305-348-2978.
FIU Agroecology Graduates showcase Latino Success

This spring, Agroecology graduates Nina De La Rosa, Lucas Estevez, Ana Guzman, and Ramon Salazar were among the 20 Hispanic graduate students selected to participate in the 2015 National Career Preparation Institute held by the American Association of Hispanics in Higher Education (AAHHE) in partnership with Texas A&M University-Corpus Christi (TAMUCC) and the USDA. The program is centered on building the professional base and creating a network of Hispanic graduate students. The program is focused on issues surrounding Latino success in higher education. Issues presented included re-conceptualizing the Latino male educational imperative. Other topics explored the concept of equity in higher education while offering strategies and policies to help close the gap among minority graduates.

Miles Medina, Agroecology MS alumni, received the 2nd place award in the National Outstanding Thesis Competition for his work on aquaponics.

As part of the institute, the students participated in workshops focusing on issues surrounding Latino success in higher education. Issues presented included re-conceptualizing the Latino male educational imperative, while other topics explored the concept of equity in higher education while offering strategies and policies to help close the gap among minority graduates. Ramon Salazar, recent EVR MS graduate, shared some input from participating in the Hispanic-Male workshop: We got to discuss facts on how low are the Hispanic high school and college graduation rates are [for males] in some locations, as well as practices and strategies that we, by our own experience, feel could help make it better. It was an exercise of defining ourselves, rather than letting others define us.

Lucas Estevez, also an EVR MS alumna, shares that "the AAHHE conference is an invaluable experience for those Hispanic looking to join the ranks of academia or want to be more effective leaders in their community. The conference provides unparalleled opportunities to network and learn from Hispanic who are trail blazers and a great inspiration to my generation."

Veteran and Small Farmers Outreach

The Florida International University’s Veteran and Small Farmers Outreach Program (VeSFO) is an important initiative of the newly established Catalyst for Agroecology and Sustainable Agriculture (CASA). This program is looking to enhance the sustainability of farm operations of veterans, socially disadvantaged, and new farmers in South Florida. The program is funded by the USDA Office of Advocacy and Outreach under the 2501 Program for Socially Disadvantaged and Veteran farmers. This is a collaboration between the FIU CASA and Redland Ahead, Inc., which is a non-profit organization dedicated to serving veterans interested in entering into farming, and supporting FIU in its role as a USDA-designated Hispanic Serving Agricultural College and University. The long term goal of the project is to equip the above groups of individuals with necessary technical know-how, farm entrepreneurial skills, and most importantly, increased access to government assistance programs so that they will launch and/or sustain viable farm operations.

What We Do

Farm Assistance and Technical Workshops:

We gather industry professionals to train small farmers, particularly underserved farmers and veteran farmers, on how to gain access to USDA assistance and grants programs, and on general technical and business aspects of farming. Over the past six months, these free workshop have educated farmers in USDA loans and conservation programs, beekeeping, laurel wilt disease, risk management, accounting and other management skills.

One-on-One Advice:

We are available at our Redlands office to assist you with applications for loans and grants from the USDA Farm Service Agency and Farm Credit Administration, and programs from other USDA agencies such as the Rural Service and the Natural Resource Conservation Service.

Farm Apprenticeship for New Farmers:

Our program is currently formed by 20 participants who are trained in tropical fruits, vegetables, livestock and nursery plant production in South Florida and farm management. The Farm Apprenticeship lasts 100 hours and apprentices are paid up to $1000 for their volunteer hours.

If interested in participating in the VeSFO program, please contact our Farm Outreach Coordinator: Nina De La Rosa | ndela017@fiu.edu | 954-557-2905
NEW!!! Scholarships Available

High School Summer Internship
Young Minds Cultivating Agroecology

The Agroecology Program offers a paid ($500) six week internship for high school students to gain hands on experience on problems related to agri-sciences in FIU faculty labs or field sites in South Florida. This summer program ran from June 15th-July 24th 2015.

The program is gaining interest among students from various high schools around Miami-Dade. Although only 5 positions were available, 5 additional students were accommodated on volunteer basis. Over a course of six weeks the students conducted research and experiments on the following topics: Extraction and Quantification of Beta carotene from Chlorella sp.150-1-1; Effect of pH on Lipid Production in Algae; Assessment of Ecosystem Services in Permaculture Systems; Effects of mycorrhizae fungi on nematodes; and soil analysis of Everglades’s soils.

Students also participated in field trips to Fairchild Tropical Botanic Gardens, USDA’s Agriculture Research Service, and Possum Trot. They also participated in professional development workshops and developed educational posters for the FIU Organic Garden.

For Undergraduates:

We are looking for highly motivated, underrepresented minority students to join our scholarship programs! We have various scholarship opportunities for students in amounts ranging from $500-$2000 per semester. The scholarship program requires student time and commitment in participating in:

(a) Hands-on research
(b) Experiential learning at the FIU Organic Garden
(c) Community Engagement
(d) Professional development training
(e) USDA Internships
(f) Conference and Educational Travel

Students in the Agri-Science Major and in their junior/senior year will be given higher consideration. For more information and scholarship application packet, visit http://agroecology.fiu.edu/projects/

For Masters and PhD students:

The Agroecology Program proudly won its third consecutive National Needs Fellowships competitive grant from USDA-NIFA to support additional THREE PhD students in interdisciplinary agriculture and natural resources sciences. The program:

(a) Delivers training to doctoral level students in Integrative Biosciences for Sustainable Food and Agricultural Systems;
(b) Provides these doctoral Fellows with opportunities for frontier research in 21st century emerging agricultural issues and innovative teaching and outreach activities;
(c) Enhances multicultural diversity in the scientific agricultural workforce by recruiting from traditionally underrepresented groups

The program is an innovative and cost-effective model for training students in Interdisciplinary, Sustainable Food, Agricultural and Environmental Sciences, Social Sciences and Economics. Fellows will focus on soil, crop plants, microbiology, water resources, and agriculture economics areas through sustainable urban agriculture/horticulture. Fellows will go through a rigorous course curriculum in basic, agricultural and quantitative sciences, and problem solving dissertation research. We anticipate that these activities will train students in cutting-edge lab and field techniques and prepare them to pursue USDA career jobs or academic positions. Through this groundwork effort, we see a solid foundation and development for Agroecology graduate level concentration. This funding is made possible by the team Drs. Krish Jayachandran, Mahadev Bhat, and Len Scinto. We would like to thank our collaborators particularly Dr. Stewart Reed, USDA-ARS, Miami, FL.

For further details about these positions please contact:
Dr. Krish Jayachandran, 305-348-6553, jayachan@fiu.edu
Dr. Mahadev Bhat, 305-348-1210, bhatm@fiu.edu
LEAF FUNCTIONAL TRAITS AND FOREST STRUCTURE OF TROPICAL DRY FOREST SPECIES ALONG A RAINFALL GRADIENT IN FLORIDA AND PUERTO RICO

Ramon Salazar

This study examined how different rainfall regimes affect a set of leaf functional traits related to plant stress and forest structure in tropical dry forest (TDF) species on limestone substrate. One hundred fifty eight individuals of four tree species were sampled in six ecological sites in south Florida and Puerto Rico, ranging in mean annual rainfall from 858 to 1933 mm yr\(^{-1}\). Leaf nitrogen content, specific leaf area (SLA), and N:P ratio of evergreen species, but not deciduous species, responded positively to increasing rainfall. Phosphorus content was unaffected in both groups. Canopy height and basal area reached maxima of 10.3 m and 31.4 m\(^2\) ha\(^{-1}\), respectively, at 1168 mm annual rainfall. Leaf traits reflected soil properties only to a small extent. This led us to the conclusion that water is a major limiting factor in TDF and some species that comprise TDF ecosystems are limited by nitrogen in limestone sites with less than ~1012 mm rainfall, but organismal, biological and/or abiotic forces other than rainfall control forest structure in moister sites.

The findings are relevant because they exemplify, and can potentially be used to predict, how Caribbean TDF forest structure would respond to long-term changes in rainfall as the ones forecasted as a cause of anthropogenic climate modification. On the basis of the evidence previously available, it was reasonable to suggest that an increase in rainfall and nutrient availability, at any level of the rainfall gradient, would result in a forest stand with structural attributes associated with greater productivity (i.e. greater canopy height and basal area); and consequently, a stand with different resources and ecological services, not only relevant to biodiversity but also to societal aspects.

A MARKET STUDY OF ORGANIC AND FAIR TRADE COFFEE IN BOLIVIA

Lucas Estevez

The purpose of this research is to study the commercialization of Fairtrade and Organic coffee in Bolivia. Fairtrade and Organic coffee are alternative trade systems designed to promote the equitable and environmentally sustainable production of coffee. However, these alternative trading systems often fail to meet these goals. The producers and environment these systems are intended to protect remain marginalized. These failures are due to a number of local institutions. In order to better understand these institutions, this research conducted interviews of various stakeholders including producers, cooperative leaders, organic/Fair Trade certifiers, government agencies and private buyers. All these stakeholders influence the success of the alternative trade systems.

By better understanding how these stakeholders impact the commercialization of coffee in Bolivia; new policies can be develop to improve the outcomes of alternative trade, to benefit both producers and the environment. This is especially critical in Bolivia because of the environmentally sensitive area in which coffee is grown, the potentially damaging impact of coca on the region and, the devastating economic impact to farmers.
Mangos (*Mangifera indica* L.) are tropical/subtropical fruits that belong to the plant family Anacardiaceae. Anthracnose is the most deleterious disease of mango both in the field and during postharvest handling. It is most commonly caused by a complex of fungi called the *Colletotrichum gloeosporioides* complex (*C. gloeosporioides* Penz. and Sacc. *In Penz*; *C. asianum*; and the *nom. nov. C. queenslandicum*). Mangiferin, a xanthanoid compound found in at least twelve plant families worldwide (Luo et al., 2012), is present in large amounts of the leaves and edible mangos. Even though this compound plays a pivotal role in the plant’s defense against biotic and abiotic stressors, no correlations have been made between the compound and mango anthracnose resistance.

Mangos were collected, grouped according to their countries of origin, and evaluated for their mangiferin concentrations at four different stages of development. Extracts of interest were then tested against different strains of *C. gloeosporioides*. The results demonstrated that mangiferin concentrations are significantly different at different stages in fruit development. The antifungal assays were inconclusive.
FIU Agroecology Program had the privilege to host a national conference on Agri-Science Education for the 21st Century: Diversity, Access and Success in Miami from November 19th to 22nd, 2014, under the auspices of the USDA National Institute of Food and Agriculture’s (NIFA) Hispanic-Serving Institutions (HSI) Higher Education Grants Program.

The conference served as a platform for education leaders, agency professionals and students from all across the country to share ideas on best educational practices in order to promote student diversity, access and success in higher agricultural education and career placement. Dr. Muquarrab Qureshi, Deputy Director of NIFA Institute of Youth, Family, and Community inaugurated the conference. Dr. Michael Heithaus, Dean of FIU College of Arts and Sciences, and Dr. Irma Lawrence, National Program Leader, USDA NIFA HSI Higher Education Program welcomed the participants.

During the first two days, there were various keynote speeches and special panels on student success, leadership building, USDA career placement and research, and educational experiences. Over 100 undergraduate and graduate students competed in the oral and poster presentations on their research, outreach and USDA internships for top prizes. In one of the sessions, students had a round-table discussions with the representatives of various local USDA agencies. This gave students a chance to understand the career opportunities available within USDA and how to pursue those opportunities. Jessica Herrera, FIU Sociology Senior, said "Each session, discussion, and networking event contributed to my understanding of the tools and resources available to me that would help make my dream of working with the USDA or an entity involved in agriculture. During the session Panel on USDA Career Success Dr. Alexis Racelis from UTPA said that obtaining success would require positivity, persistence, and perseverance. His words strongly resonated with me, and it goes to show that workshops such as these are not only insightful, but also significantly inspirational."

One of the key goals of the conference was to facilitate the diverse body of students from different parts of the country to build social and professional network. Several student-led group activities offered such opportunity. In an after-hour leadership building exercise, students came forward to define leadership and construct strategies to acquire one. So, here it is; for students, the leadership meant: “Inspiring”, “Role Model”, “Composure”, and our favorite, “Me”.

So many students came forward to share their personal stories of overcoming personal challenges and striving for academic success. On the last day of the conference, the participants visited various South Florida agriculture farms, businesses and natural areas, including the FIU Organic Garden.

Joshua Muñoz, FIU Agri-Science Senior, earned 2nd place for his educational poster on: 2 Years: Zero to Upcoming Farmer - Experiential Learning

Students gather to showcase Leadership Word Map
Cultivating beyond the books
Evaluating Food Systems in California
Sustainable Agriculture & Biotechnology Educational Tour

Learning is not restricted to classroom alone; it can happen everywhere. Educational tours and experiences outside the classroom provide great opportunities for students to gain new insights and perspectives. During the summer break, a group of FIU Agroecology students, faculty and staff went to California for a seven-day trip to learn more about the state’s agriculture, agriculture educational institutions and communities involved in supporting local food movement.

On the first day the group flew into the San Francisco airport and drove to Santa Cruz. In the afternoon the group had a relaxing time at a local winery, tasting different selections of wines and learning about local/sustainable wine production. The next day group visited an organic strawberry field in Watsonville, there Dr. Amber Sciligo, a post-doctoral researcher from UC Berkeley, explained about her ongoing research project on survey and preservation of biodiversity in agroecosystems. During the visit Mr. Dean, the organic strawberry farmer joined the group and shared his real world insights on conventional and organic strawberry farming. Students also learnt about fertilization, pest management and application of ASD (anaerobic soil disinfestation) in the management of soil-borne pathogens.

The group then went to UC Santa Cruz university campus, had a tour of CASFS (Center for Agroecology & Sustainable Food Systems) Organic farm and the Alan Chadwick Garden under the expert guidance of Dr. Damian Paar. After a quick lunch the students spent their afternoon inside the Life Lab, a 2-acre model school garden. Life Lab is a national leader in farm- and garden-based education for educators and pre K–12 students.

From Santa Cruz the group went to “The Farm” in Salinas to learn all about the Salinas Valley agriculture industry otherwise known as the “Salad Bowl of the World”. Observed the organic farm growing lettuce, broccoli, artichokes, spinach, asparagus, strawberries, grapes, etc. During the latter part of the day students visited the Alba organic CSA farm training and research center.

Next the group traveled to UC Berkeley campus, listened to the presentations on food security and sustainable agriculture by Dr. Claire Kremen, and on pollinators and agroecosystem biodiversity by her graduate students. During the afternoon the students went on a tour of student farm in Oxford. The following day the group visited Amyris, a private company specializing in producing artemisinin (antimalarial drug), sustainable alternatives to a broad range of petroleum-sourced products, and renewable diesel and jet fuels using genetically modified yeast. Students saw robotic instruments being employed in the genomics and biotechnology projects. Next the students visited JBEI (Joint BioEnergy Institute) research facilities. At JBEI students were introduced to various ongoing breakthrough biotechnology projects geared towards producing carbon-neutral biofuels from non-food bioenergy crops with very low lignin content. Next day the students were on the road to their next destination, UC Davis. At UC Davis students visited student farm and ecological garden, later they visited the USDA Forest service. The last day students visited the Ferry Plaza Farmers Market and spent some time enjoying the natural beauty of redwood trees students at the John Muir National forest before heading back to Miami.

The most important aspect of the tour was the first-hand look at the impacts of climate change and continued drought on California agriculture and economy. California agriculture consumes about 80 percent of the state’s delivered water. Due to the water shortage, farmers had to start changing and improving the water management. With drought plants become stressed, making the plant susceptible to pests and ultimately reducing the quality and quantity of produce. Climate factors that aid in pest and disease invasions are mostly temperature related. Besides the effect on the plants, the bees and their keepers, and the native pollinators are also affected by the climate change, all leading to negative impact on the state’s agriculture productivity. On the bright side the students noted that the local farm-to-table is very efficient due to public demand, and also by having community gardens in almost every corner.

Overall it was a very successful and fun trip! Students all agreed that the getting out of their comfort zone was a good thing and the tour really helped broaden their knowledge and experience. Everyone has their own favorites and special memories, but all have come to appreciate the importance of conservation and the practice of sustainability.
Horticulture Certificate Program

FIU’s Catalyst for Agroecology and Sustainable Agriculture (CASA), in collaboration with the Florida Nursery, Growers and Landscape Association (FNGLA), is pleased to offer the FIU Horticulture Professional Certificate Program. Satisfactory completion of this course enables you to sit for the FNGLA Certified Horticulture Professional Certificate exam.

What is the FIU Horticulture Professional Certificate Program?
This non-credit survey course of horticulture provides students with core horticultural information appropriate for employees and owners of landscape nurseries, landscape maintenance businesses, botanical gardens, farms, parks and golf courses. All major aspects of horticultural concepts will be covered both in theory and in hands-on, practical applications.

Students enrolled in the course will explore the fundamentals of horticulture; botanical identification, classification and nomenclature; selecting appropriate plants for horticulture and landscape; plant propagation techniques; and managing horticulture business. While a training course is not required to sit for the FNGLA exam, this course will help you expand your horticulture knowledge and increase your certification success rate. To earn FNGLA Certified Horticulture Professional designation means you have taken the next step of professionalism by demonstrating your horticultural knowledge. It shows that you “Know What Grows!”

Dates: Classes will take place Saturdays, September 12 — November 14, 2015.
Time: 9 a.m. — 12 p.m. A 30 to 45 minute classroom lecture will be followed by hands-on training activities.
Location: Classes for the FIU Horticulture Professional Certificate Program will take place at 22200 SW 152nd Avenue, Agroecology Building, Miami, FL 33170. The facility is adjacent to a 40-acre organic farm.
Cost: $500 per participant*. This includes the Florida Nursery, Growers and Landscapers Association (FNGLA) training manual. * All fees are subject to change
Registration: To register for the FIU Horticulture Professional Certificate Program taught by expert faculty, visit agroecology.fiu.edu/events/fhpc-workshop
Contact: K. Jayachandran at jayachan@fiu.edu

Registration deadline: September 2, 2015

2015 Upcoming Events
Join us as we participate in, or host, these upcoming events:

Sept-Dec: VeSFO Workshops
Location: CASA | Last Thurs of every month

Aug 25-27th: MSP & NNF Conference
Location: Washington, DC

Sept 4 & Oct 2: Various Agroecology Seminars on Medicinal, Poisonous, and Aromatic Plants
Location: FIU | MMC | ECS143 @11am

Sept-Nov: Plant Talks
Location: FIU | MMC | WC 130 | Weds @12pm

Oct 10-12: HACU Conference
Location: Miami Beach, FL

Oct 17-18: GrowFest
Location: Fruit & Spice Park

Nov 13th: Agroecology Symposium
Location: TBA

Nov 21st: Eighth Annual Agroecology Thanksgiving Celebration
FIU Organic Garden

Mar28-April 2: MANRRS Conference
Jacksonville, FL