A Farm-based Weather Data Collection and Display System

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Weather-related information is essential to Florida’s agricultural producers for making important decisions regarding the use of water for irrigation scheduling and cold protection. Since the mid 1990’s, The Florida Automated Weather Network (FAWN), a program of the University of Florida Institute of Food and Agricultural Sciences (UF/IFAS), has developed a variety of weather-related tools that can aid them in making these decisions. Some farms can be many miles from a FAWN station. For this reason, FAWN worked with the Florida Department of Agriculture and Consumer Services (FDACS) Office of Agricultural Water Policy (OAWP) to deploy a high-resolution farm based weather station network. Called My Florida Farm Weather (MFFW), the network provides growers with site-specific weather data that can be used to maximize water used for irrigation and cold protection. Data from the stations, updated every 15 minutes, can be viewed on a web page and via an app for the iPhone and Android platforms. Growers enrolled in FDACS Best Management Practices are eligible to participate, and FDACS established a cost-share program to reimburse each participant a portion of the cost of the weather station.

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Aquaponics for Teaching and Demonstration

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Situation: Recirculating aquaponic systems use much less water than traditional in-ground farming. Experiential learning opportunities lead to increased knowledge retention and promote positive behavior change. Experience with aquaponics will lead to increased appreciation and awareness of environmentally-friendly practices, fresh, locally-grown food, and food security. This workshop was designed to teach students, teachers, and youth advisors techniques to build their own aquaponic system. By incorporating aquaponics into daily classroom activities teachers can increase nutrition education opportunities and address childhood obesity, while providing student participation in project based learning. Aquaponic systems can be expensive and time-consuming, but this program shows participants how to build an inexpensive and user-friendly system which will produce plants and fish simultaneously.

Objectives: The objectives of the Aquaponics for Teaching and Demonstration Program are first, to provide clear instructions on building an aquaponics system using primarily recycled materials; and second, to provide supporting materials for system maintenance and related education materials for classroom use.

Methods: The program uses a miniature aquaponic system as a tool to enhance students’ experience in science, technology, engineering and math. The model system is small enough to be set up in any classroom setting. It can be used to teach plant growing techniques, the nitrogen cycle, aquaculture techniques and recycling practices, while increasing awareness of environmental issues facing Florida. Participants gain knowledge on basic principles of aquaponics, Florida rules and regulations, and instructions for constructing a small aquaponics system.

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Developing Relevant Extension Programs for Vegetable Farmers in Food Safety

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The requirements for successfully completing third party food safety audits are constantly changing for fruit and vegetable growers. Over the last five years, approximately 150 farmers in Northeast Florida were trained to develop a food safety manual for their operation. This program allowed farmers to learn how to implement their own plans without the expense of hiring a consultant. However, as the requirements from buyers and auditing companies changed, new educational programs needed to be developed. These changes have included: developing a food safety program based on the Global Food Safety Initiative (GFSI) not just a standard Good Agricultural Practices (GAP) audit, having HACCP trained staff while packing houses are in operation and refining programs for product recall and crisis management. In the past two years, Extension agents have provided leadership and partnered with key industry representatives and grower associations to provide six advanced food safety trainings. Through this process, Extension agents have emerged as leaders in providing the necessary training and certification to meet the ever changing needs. A total of 125 farmers, industry partners and Extension agents have attended these trainings. In addition, Extension agents have worked directly with farmers on their farm to help them implement their food safety plans. Furthermore, the industry as a whole has significantly raised the level of expertise in the area of food safety and now consider these practices a routine part of their business.

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Farm Incubator Educational Training for New and Beginning Farmers and Ranchers

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The New and Beginning Farmer and Ranchers Program at Alabama A&M University (AAMU) was conceived to provide and enhance opportunities for new and beginning farmers to establish and sustain viable agricultural operations in Alabama. Through the development and implementation of innovative educational training programs, services, and social networks, the Small Farmers Research Center at AAMU and its partners will train 250 new producers and reach over 2,000 additional new and beginning producers by 2015 through general outreach and information dissemination.

The purpose of this project is to deliver outreach training and provide technical assistance to beginning farmers and ranchers so they can successfully acquire, own, operate, and retain sustainable farming and ranching enterprises. Through this project, AAMU Small Farms Research Center and its partners will train farmers and deliver agricultural information, enhance and increase farm knowledge, skills and abilities that will enable beginning farmers and ranchers to participate in USDA agricultural programs, services and benefits. The project’s specific objectives are as follows:

1. Equip beginning farmers and ranchers with knowledge, skills and abilities.
2. Promote the availability of and accessibility to USDA programs and services among new and beginning farmers and ranchers.
3. Provide production and management strategies that enhance the financial viability of new and beginning farmers and ranchers.
4. Train new and beginning farmers and ranchers in areas of marketing education, business planning, and overall farm business management.

This poster will discuss, in greater detail, how AAMU’s farm incubator educational training program operates and assists in growing a new generation of farmers and ranchers. It will also highlight some of the project’s success and not so successful lessons learned.

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Florida – America’s Culinary Paradise Trails Guide and Culinary Academy Awards

Noreen Kinney
Florida Culinary Academy Awards, St. Petersburg, FL

The Culinary Trails Educational Guide and Culinary Academy Awards recognize the work of individuals, groups or organizations involved in the Florida World of Food. They are showcased through the Legend of the Diamonds Chart. The symbol of a Quality Diamond, featured in different colors, identifies the different Culinary Arenas found across the State. A Green Diamond represents a Farm or Ranch, while a Red Diamond identifies Slow Food. Or a deep Mauve Diamond indicates a Vineyard & Winery, and a Purple Diamond stands for a Conference, Trade Show or Festival. The purpose of the educational guide is to help visitors to locate various food scenes across Florida. The goal is to establish Florida as America's Culinary Paradise and the Culinary Capital of the USA.

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Fostering an Agritourism Industry

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From buy local slogans to specialty logos communicating the value of the origin of products, consumers are looking for opportunities to connect with growers. This trend in consumer preference may also offer a profitable business opportunity for agritourism operations prepared to take on the challenge. Though many Extension programs currently feature limited farm tours, a comprehensive statewide agritourism program is lacking. The Agricultural Awareness Initiative in the current UF/IFAS Extension Strategic Plan seeks to eventually provide some guidance and framework and future statewide efforts are expected to be modeled after existing successful programs. A recently passed law limits the liability of agricultural operations engaged in agritourism, but is yet untested, thus participating farms should be prepared to take on some risk.

Though existing agritourism options are hit or miss, located within about an hour of both Tampa and Orlando, Polk County is strategically to benefit from tourist destinations such as Walt Disney World, Busch Gardens and Legoland Florida. An inaugural blueberry tour conducted in April 2014 by UF/IFAS Extension Polk County featured a blueberry U-Pick, a blueberry winery and packinghouse. Open to the public and advertised with cooperating County departments and industry outlets, the objectives of the program were to foster the development of an agritourism industry by providing a test of the potential interest and willingness of consumers to pay for such activities.

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Giant African Land Snail (GALS): A Threat to Florida Agriculture and Natural Resources

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The Giant African Land Snail (GALS), *Lisachatina fulica*, is one of the largest and most damaging land snails in the world. It grows up to ten inches in length and more than four inches in diameter. GALS is a serious plant pest because of their rapid reproductive cycle and plant voracity. This snail feeds on more than 500 host plants and has the potential to destroy crops, forests, ornamental plants and natural environments. It also may be a vector of fungal plant pathogens and a parasite rat lungworm, causing a public health concern. For these reasons, GALS is listed as one of the 100 worst invasive species in the world.

In September of 2011, Florida Department of Agriculture and Consumer Services (FDACS) Division of Plant Industry (DPI) confirmed the presence of GALS in Miami-Dade County, Florida. Since then, FDACS/DPI has been conducting an active eradication program in collaboration with state and federal agencies. As of February of 2014, there is a total snail count of 140,201 GALS collected in 26 areas since their initial detection.

Public and agricultural community’s education plays an important role in the early detection control of this invasive snail. Plant trading is the main factor causing this invasive pest to spread. UF/IFAS Extension in collaboration with FDACS/DPI have delivered trainings on accurate identification and management of GALS. Awareness of the general public enables their active participation in eradicating these snails. Outreach efforts will continue to contain and suppress the invasive snail until complete eradication is achieved.

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Growing Food, Growing Farms, Growing Community

Kevin Osburn and Natalie B. Parkell
Vertical Horizon Farm, Hobe Sound, FL

As the “locally-grown food” movement in the United States gains in popularity, there is an increased interest with families and farm operations for specialty crop production of vegetables. Whether it be for personal consumption or to supplement a family’s income or to enhance and diversify a farm’s existing business operation, hydroponics is one method of crop production that presents itself as a system of growing for this purpose. One Florida farm that has established a thriving business model worth replicating is Vertical Horizon Farm in Hobe Sound, FL – featuring seven hydroponic growing systems and 45 vegetable varieties during peak season. They supplement their “locavore” community as well by networking with school groups, garden clubs, artists and chefs to educate and inspire interest in the movement. By providing consultation and implementation of small farms in their neighborhood and by serving as a manager for their town’s farmer’s market, this farm operation helps to promote a thriving local food network and marketplace. Their modern, diversified farm business model presents an opportunity for others to learn some small farm “best practices”: crop diversity, professional consulting, community outreach and education. This example may provide the seeds for other farm operations to flourish in the Florida small farm business landscape.

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How Do Pesticides Get Registered for Specialty Crops and Minor Uses? Focus on “The IR-4 Project Minor Use Pesticide Program” at the University of Florida

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Have you ever wondered how pesticides for specialty crops get registered? The IR-4 project is the organization that since 1963, has been helping growers of specialty crops in Florida and around the nation solve their pest management issues. IR-4 is a federally funded cooperative unit whose mission is to “facilitate registration of sustainable pest management technology for specialty crops and minor uses.” This is achieved by developing data from field residue trials according to US Environmental Protection Agency (EPA) mandated good laboratory practices (GLP) guidelines to support new tolerances and labeled product uses. Specialty crops include fruits, vegetables, tree nuts, herbs, ornamentals and other high value horticultural crops that are grown on 300,000 acres or less.

Chemical companies that develop and sell plant protection products (pesticides) usually focus their resources on major markets. Potential sales in small markets do not justify investments in initial or continuing registration of commercial pesticides due to the smaller market base. This results in a major void for specialty crop growers, as in order for a pesticide to be legally used in the US, its use must be registered or exempted by the US EPA as mandated by the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). IR-4 fills this void and is the only program that generates GLP data in support of petitions submitted to the US EPA to secure the establishment of new tolerances and labelled uses for specialty crops.

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Improving Small Farms Operations in Tanzania

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UF/IFAS Miami-Dade County Extension Director Teresa Olczyk visited Tanzania in November 2013. She was invited by Tanzania Horticultural Association (TAHA) to introduce the U.S. Extension model to multiple stakeholders including TAHA, Ministry of Agriculture, Crop Production and Cooperatives and the Sokoine University of Agriculture (SUA) and help these organizations develop collaborative agreements (MOUs) to work together on dissemination of practical information to small and medium farmers by the Tanzanian governments and private Extension Services. The overall objective is to improve efficiency and skills of small to medium farmers by exchanging information on good agricultural practices, postharvest, food safety and business management and improving farmers’ knowledge through hands-on training, producing publications and coordination of efforts of these organizations to improve Extension Service in Tanzania. The CED had opportunity to visit several small and medium farms in two regions of Tanzania near Arusha and Morogoro and learned about simple postharvest technologies introduced by TAHA, SUA and other organizations helping small farmers not only to produce for the local market but also export fresh and dried produce to United Kingdom and other European countries. She was also invited to visit packing facility, seed improvement center, tissue culture lab and small “agribusiness incubator” for SUA graduates who want to start small agriculture related businesses. Several of these ideas and technologies could be potentially implemented by UF/IFAS Extension staff in their work with small farmers and agricultural businesses in Florida.

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North Florida School of Special Education

Tim Armstrong
Farm Manager, Jacksonville, FL

These days the average household features a quarter acre yard with more shade than sun. This doesn’t seem like a plausible environment for a vegetable garden but according to the Farm Manager, Tim Armstrong, every yard has potential. Located off of Mill Creek Road in Jacksonville, Florida, Berry Good Farms sprouted quite literally out of the backyard of the North Florida School of Special Education. What once began as a modest wheat grass operation has now blossomed into a facility that produces berries, micro greens, herbs and aquaculture. Berry Good Farms takes up an acre of land behind the school that it shares with the playground and portable classrooms which house the Culinary and Art classes. Students can go from the playground into a thriving garden in two steps. The culinary program utilizes produce grown and harvested right outside the kitchen. The Art students gather leaves and sticks for art supplies and even decorate pots for use in the garden. This creates a fascinating and productive unity. All of the students are involved in the farm, from the post-grads to the five year olds in Elementary One. The farm isn’t just about horticulture, it’s about the empowerment that stems from learning and creating. It’s about community. It’s about growth. And it’s berry, berry good.

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Seepage vs. Center-Pivot Irrigation for Potato Production

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Seepage irrigation is most widely used for potato production in Florida but inefficient in water use. Central pivot irrigation is significantly more efficient. To evaluate the potential of water-saving under central pivot, field trials were conducted on Jones Potato Farm in Parrish, Florida, where both central pivot and seepage irrigation systems are implemented. The water usage, potato yields and quality were compared between the two irrigation systems in 2013 spring growing season at four locations. Two 20-feet long rows were used for tuber yield measurement. Our results showed seepage irrigation had slightly greater tuber yields (13.5 ± 2.3 ton/acre) than center pivot irrigation (12.6 ± 2.1 ton/acre). The total water applied for seepage irrigation and center pivot irrigation ranged from 28 to 36 inches and 15 to 20 inches, respectively. Center pivot irrigation saved 40% water and had significantly greater efficiency in water use compared to seepage irrigation. Additionally, in two freeze events of 2013, higher foliage coverage, greener plants, and less freeze damage were found under central pivot. Central-pivot provided freeze protection. More research is required to fully evaluate the potential of switching the conventional seepage irrigation to the overhead irrigation.

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Success Tips for Beginner Vegetable Farmers in Miami-Dade County

Qingren Wang and Teresa Olczyk

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There are always opportunities for growers interested in winter fresh market vegetable farming with a favorable weather in Miami-Dade County or south Florida. However, it is commonly frustrating to start a new and small farming business on fresh produce of vegetables due to a lot of concerns and uncertainties, governmental regulations, and technical problems. To assist new growers for success, general tips might be helpful, which include budget planning, marketing strategies, food safety guidelines, scientific sound programs, and risk prevention. As fresh produce, marketing, packing, handling, and transportation are top priorities because in order to keep fresh, growers have to put their produce on the market as soon as possible. For marketing, a rule of thumb is that “do not try to grow anything before knowing where the customers are”. There are a number of possibilities to explore the market, for instance, grocery stores, restaurants, flea market, roadside fruit and vegetable stands, and u-picks based on the farming budget, scale, and location. Food safety is of great importance because any outbreak of foodborne illness can cause the growers run out of business due to a huge cost and litigation procedures. To avoid such a consequence, Good Agricultural Practices (GAPs) with a comprehensive traceback system have to be considered. For instance, in tomato production, T-GAP has become a mandatory practice in Florida. In addition, pest management, especially Integrated Pest Management (IPM), soil nutrient and water Best Management Practices (BMPs), and freeze protection for high value vegetable crops are essentially required.

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Survey of Microbial Quality of Fresh Herbs from Supermarkets, Local Markets and Farmer's Markets

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Introduction: Herbs such as basil, parsley, cilantro, and green onions are often used in uncooked dishes and sauces such as salsa. In recent years, salsa and guacamole have been cited as emerging vehicles of foodborne illness in the US. As a part of a need assessment for educational programs for fresh produce handlers (including producers, managers, and restaurant owners), we evaluated total microbial populations of Salmonella, E. coli O157:H7 and Shigella on cilantro, green onions, jalapeños, and serrano peppers from supermarkets, local markets, and farmer’s markets. A total of 201 cilantro, green onion, jalapeño, and serrano pepper samples from seven cities were purchased and analyzed. For aerobic plate count (APC), coliform bacteria (CB), and E. coli detection, petrifilms were used. U.S. Food and Drug Administration Bacteriological Analytical Manual procedures were followed for Salmonella, E. coli O157:H7 and Shigella assays. Populations of microbial loads were calculated and analyzed by ANOVA (SAS 9.4).

Results: E. coli loads ranged from 1.18 to 2.42 log CFU/g in four positive samples. APC load on collected samples varied from 4.61 to 8.56 log CFU/g, and CB levels ranged from 0 to 5.68 log CFU/g, respectively. Levels of CB and APC on cilantro were significantly higher than loads on the other three types of produce \( (P <0.05) \). CB levels on farmer’s market produce samples were significantly higher than levels on samples from local markets and supermarkets \( (P <0.05) \). No Salmonella, E. coli O157:H7, or Shigella was detected.

Significance: This study provides more information on the microbial loads of cilantro, green onions, jalapeños, and serrano peppers purchased at different venues. The results will provide insights and understanding of risk for producers, handlers, and consumers who handle these items, particularly since they are often consumed raw.

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Training and Demonstration of Best Management Practices in Vegetables and Fruits on Small Farms in North Florida

Gohar Umar, Bobby Phillis, and Muhammad Haseeb
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Fruits and vegetables production in North Florida at small farms has not achieved its full potentials due to limited new knowledge and improved farm technology including new cultivars availability. To find the solution to these challenges, vegetable demonstration plots were setup with 72 raised beds in 2 blocks and 28 rows (60 feet long) in 2 blocks as a part of FAMU’s Small Fruits and Vegetables Outreach Program using best management practices. The selected vegetables were planted in early March to April and grown throughout summer and fall. The crops consisted of okra, mustard greens, red bell pepper, green beans, mustard, turnips, collard greens, eggplants, and tomatoes. Fruit trees were planted around vegetable production area that included peach, plum, nectarine, grapes, apple, pear, citrus and persimmon. They were evaluated for small farm productivity and profitability for small growers. To train small farmers, extension agents and students in horticultural best management practices, several hand-on workshop and trainings were conducted throughout the year that included., workshop on soil preparation, seed sowing, fertilization, irrigation, pruning, grafting; pesticide training and Grape Harvest Festival. On-farm training and demonstrations were carried out to disseminate the improved technology. Also, we provided experiential learning experiences to K12 participants. All participants received extensive hands-on experiential learning on best management practices from our trained outreach and extension faculty, collaborators and staff. The linkages and partnerships developed under this program have enhanced the extension component of the College of Agriculture and Food Sciences in serving the underserved communities in urban settings.

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University of Florida Living Extension IPM Field Laboratory

Robert C. Hochmuth, Lei Lani Davis, Norm Leppla, Carolyn Saft and Matthew C. Lollar
University of Florida, IFAS Extension

A new long range plan to teach hands-on IPM principles and practices was developed at the Suwannee Valley Agricultural Extension Center in response to increased interest among small farmers in Florida to adopt innovative pest management strategies. A three year Extension IPM grant from USDA, NIFA was secured to transform a 330 acre farm at the Suwannee Valley Agricultural Extension Center in Live Oak, FL into a teaching field laboratory. The teaching field laboratory addresses three primary objectives to: 1) create a model that can be used to teach IPM principles and techniques beyond the classroom, 2) teach clientele whole farm IPM approaches, and 3) build a sustainable education infrastructure and networking capacity for future IPM information delivery. The IPM strategies emphasized at the site include: maintaining annual and permanent plantings that attract beneficial organisms and provide year round habitats, demonstrating strategic trap cropping systems, providing beneficial vertebrate habitats (e.g., bat houses, bird houses, and brush piles), utilizing banker plant systems (especially in greenhouse programs), demonstrating how to increase natural pollinators, and enhancing the ecological contribution of the lake, surrounding forest and other natural resources on the farm. Since 2011, the Living IPM Laboratory has increased awareness, internally to IFAS and associated agencies, of the opportunities to improve the adoption of IPM practices on a wide range of farm sizes and for a variety of cropping systems. The project has been implemented by a diverse multi-disciplinary team of over 25 members of University of Florida faculty and staff members along with associated agency cooperators. Educational programs on the farm include “Greenhouse and High Tunnel Vegetable IPM”, “Vegetable Cropping Systems for IPM on Small Farms”, “Farmscaping and IPM Training for Vegetable Gardening IPM for Master Gardeners”, and “Advanced Special Topic Small Farmer IPM Training”. A total of 17 trainings, attracting a total of 472 participants have been conducted at the Living IPM Laboratory in a three year span.

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Vegetable Growers in the Suwannee Valley Optimize Fertilizer Use by Implementing Best Management Practices


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Vegetable growers in the Suwannee Valley have adopted drip irrigation and plastic mulch over the past 25 years to produce vegetable crops. Soils in the area are sandy with low water holding capacity and low organic matter content. Consequently, vegetable production in the Suwannee Valley requires intense irrigation and fertilization management. Extension agents have been working with vegetable growers to refine their management of the technology. The goal has been to improve efficiency of water and nutrient management by conducting on-farm weekly sap testing. Plant nutrient status can be determined in the field by squeezing plant sap onto meters that measure either nitrogen or potassium giving a grower an instant result to guide the weekly fertilizer program. In addition, updates on nutrient and irrigation management are offered to growers at annual meetings. The benefits of improved management have been multifold as reported by cooperating producers: reduction in fertilizer use, improved fruit quality, reduced environmental losses of nitrogen, fertilizer applications to match plant requirements, and improved economic returns to the farms. Area vegetable growers have adopted several best management practices (BMPs) including: irrigation sensors, petiole-sap testing, and refining fertilization rates; resulting in adoption of recommendations on nearly 100% of the area. This project impacted 31 operations that grow a combined 1,500 acres of mixed vegetables. These educational programs have made a great impact toward adopting BMPs voluntarily. Growers see and learn on their own farm and often serve as early adopters that help teach other growers.

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