Florida (Florida A&M University, University of Florida Combined) Annual Report - FY2021

Report Status: Approved as of 07/08/2022

Contributing Organizations

Florida A&M University
University of Florida

Executive Summary

Overview

In 2021, the COVID-19 pandemic continued to have a significant impact on our outreach to Extension clientele. Online activity (as measured by web visits to our Extension publications, websites, blogs, etc.) among Extension clientele continues to be well above pre-pandemic levels. Use of EDIS, our online Extension publication repository, increased by 19% in 2021. UF/IFAS Extension social media metrics such as engagement, post-link clicks, video views, and click-throughs are down about one-third from the prior year but still higher than in 2019. Face-to-face programming declined slightly (11% fewer group participants). Volunteer participation continued to decline in 2021 although more than 16,000 did serve as volunteers and their hours remained fairly stable from the prior year. Florida had very high case counts in 2021 and we believe these declines in Extension activity are largely due to employee turnover and absences (employee and client) related to the pandemic, as well as public health restrictions and concerns.

UF/IFAS Extension welcomed its new dean, Dr. Andra Johnson, in November 2021. We anticipate the completion of the Extension strategic plan by the end of this year. The UF/IFAS strategic plan was completed and available here.

Our Extension teams, made up of both county agents and state specialists from UF and FAMU, continued to spend time in 2021 reviewing and refining the 90+ indicators we use in our reporting system to capture evaluation data (with a focus on behavior change) on a statewide basis. Implemented in 2018, the Workload Indicators have become increasingly integrated into the teams' plans of work and evaluation tools and methods. In addition, we continued to work on new reporting software, including a statewide registration system and an iPad check-in kiosk at county Extension offices, that will collect more information about our Extension programs and our clientele demographics. Launched in March and April 2022, we anticipate these data will be useful for needs assessment and strategic planning.

UF/IFAS faculty grantsmanship continues to be very strong, with $156 million in external contracts and grants in FY 2019/20, an increase of $15 million from the previous year. UF research expenditures in agriculture and natural resources were $234 million and UF remained number one in the nation in FY 2020 (NSF HERD survey). Our plant breeding royalties remained steady at a constant $16.8 million in 2021. UF/IFAS had a record five faculty elected as American Association for the Advancement of Science Fellows in 2021.

In late 2020, more than 27,000 rural acres near Yeehaw Junction in Florida's southern Osceola County was gifted to the University of Florida to protect one of the last natural areas of its kind and to serve as a living classroom and laboratory for students and faculty throughout the university, Elisabeth DeLuca's contribution is among the largest gifts of real estate ever to any university in the nation. In 2021, an internal funding program resulted in eight awards being given to UF faculty for DeLuca Preserve research, including baseline characterization of the entire property, which is needed to meet the promise of the property as a state-of-the-art living laboratory. Topics include but are not limited to ecosystem services, BMPs, geospatial mapping, hydrological restoration, citrus or alternative crops, prescribed fire, species identification and distribution, threatened or endangered species, and research integration with teaching and/or Extension.

More than two dozen AI-related projects were initiated or conducted in 2021, funded in part by a $70 million partnership with NVIDIA formed in 2020, including:

- Team of students is working with researchers on the ground in Immokalee and Hastings to set up diverse data streams on phosphorus applications that can help build artificial intelligence tools that will refine our IFAS P recommendations into the future.

- A multistep approach to provide a better understanding of how hurricanes might alter invasion patterns in coastal habitats of South Florida. We will pair field studies of the plant communities, including native and invasive species, and environmental and habitat factors with hyperspectral imagery to determine how storms have altered species distribution and diversity.
- Develop a smart and variable rate agrochemical sprayer utilizing sensor fusion (Lidar and RGB cameras) and artificial intelligence. It will reduce application costs, increase profit, and reduce the environmental impact of spraying applications.
- A smartphone-based detection system for two-spotted spider mites (TSSM) using deep learning. The system will automatically detect and count the number of TSSM in strawberry leaves, which would remove labor-intensive manual counting.
- Mechanisms for early detection of poor-quality produce and, by leveraging these mechanisms throughout the food production pipeline, understand how food waste can be reduced.
- Providing field-deployable quantitative tools for monitoring of horse performance and injury and enabling identification of genomic loci contributing to performance and injury, for use in selective breeding and precision health management.
- Using a computational approach called generative adversarial networks to help generate the large amounts of data required to train large-scale AI approaches for reliably predicting autoimmune disease risk.
- Users with no prior training or experience can use deep learning machine vision models trained by experts to identify nutrient deficiencies, pests, diseases, and weeds in commercial or home garden crops, and obtain guidance for remedies.

UF/IFAS had 1,809 refereed publications in 2021; complete list is available here. The number of peer-reviewed publications is down about 2% from 2020 but about 17% higher than pre-pandemic levels.

Despite repeated alerts and a notification posted in REEport, UF/IFAS faculty are continuing to submit their annual progress reports there rather than NRS since they still have access to REEport. There are limited research results submitted in NRS for FY21, but the annual reports can be accessed in REEport. We are working to manually copy the annual report info from REEport to NRS.

Although extension in Florida is made up of a collaboration between the 1862 UF/IFAS Extension and the 1890 FAMU Extension (and together they are the Florida Cooperative Extension Service), they will be reported separately as much as possible to provide a clearer picture of the strong programs and impact FAMU and UF/IFAS have individually on Florida and its citizens. FAMU Extension faculty has continually responded since the onset of the pandemic with information disseminated to clientele and the general public. In 2021, there have been increases in FAMU Extension Agent numbers to expand areas of reach selected counties across the state. FAMU Extension faculty secured over $1M in external contracts and grants. Educational programs increased threefold, exceeding pre-pandemic numbers, as new programming has been incorporated in all Extension areas. FAMU faculty conducted 1,861 educational programs and developed 212 educational materials. 1.7 million citizens were reached through educational programs and direct technical assistance activities. FAMU 4-H programming reached 5,710 youth participation, mostly from underserved communities. There were 22,474 volunteer hours valued at $542,522.

Critical Issue: Agricultural and Food Systems

- Number of producers indicating adoption of recommended practices: 13,606
    - Number of acres on which the recommended practices were implemented: 4.75M
- Number of clientele who adopted appropriate fertilizer and pesticide rates”: 8,146
- Number of producers reporting increased dollar returns or reduced costs: 4,098
- Number of farmers/ranchers who adopted a new crop variety or animal breed: 956
- Number of producers who adopted recommended livestock production practices: 5,900
- Number of producers who adopted recommended forage management practices (i.e., nutrient management, weed and pest management, species selection, etc.): 2,639
- Number of participants reporting support of keeping land in agricultural production in Florida, through engagement in the political process: 960
- Number of participants who participated in agritourism activity as determined in a follow up evaluation: 1,398
- Number of participants who increased purchases of Florida-grown food as determined in a follow up evaluation: 443
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- Number of new crop varieties and genotypes with climate adaptive traits: 26
- Number of viable technologies developed or modified for the increased sustainability, profitability, and/or competitiveness of agricultural or horticultural enterprises: 140
- Number of Extension clients who increased awareness or knowledge of topics related to farm economics, agribusiness management or marketing, the agricultural industry, or policy issues: 8,932
- Number of Extension clients who increase skill, ability, or confidence in performing tasks or making decisions related to farm economics or agribusiness management or marketing: 2,452

- Number of Extension clients who report adopting recommended agribusiness management or marketing practices: 1,163
- Number of producers who accessed financing or cost-share, accessed farmland, accessed new markets, started or expanded a business: 721

Critical Issue: Families and Communities

- Number of participants reporting they made changes that improved their physical mobility or safety within their home: 248
- Number of participants adopting one or more behaviors to improve the health of their home: 2,839
- Number of participants adopting one or more behaviors to improve their community living: 2,117
- Number of adult and youth participants demonstrating improvement in money management skills or financial capability (i.e., earnings/income, spending, saving, investing, borrowing, protecting): 9,148
- Number of participants that learned about financial capability such as earnings/income, spending, saving and investing, borrowing, protecting assets: 11,849
- Number of participants that adopted an effective financial management/consumer economics practice or behavior: 8,600
- Number of participants that completed an important financial milestone such as an improved credit score, a home purchase, taxes filed, loan paid off, or estate planning completed: 4,397
- Number of participants who increased positive interaction: 1,476
- Number of participants who decreased negative interaction: 830
- Number of participants who increased positive bonds: 741
- Number of participants who increased satisfaction/well-being: 470
- Dollar value of grants generated by organizations or communities you assisted: $22,104,382
- Dollar value of other in-kind resources contributed by organizations and communities: $5,102,207
- Number of hours that volunteers in your county work with clientele: 112,068
- Number of new or revised plans adopted that have begun to be implemented in a community, agency, local government, business or disaster: 184
- Number of new alliances formed through some type of formal agreement or MOU: 45
- Number of new alliances formed through an informal agreement without an MOU: 242

Critical Issue: Natural Resources and Environment

- Number of participants in natural resources programs that promote informed decision-making among citizens, organizations and/or governments: 27,495
- Number of outcomes resulting from informed community members taking action, such as formation of advisory groups, changes in homeowners associations rules, local initiatives and referendums related to natural resources: 361
- Number of participants in programs regarding management or sustainable use of fish and wildlife and wildlife habitat, including control of invasive species and pests, in natural areas and working landscapes including freshwater, marine, and wetland environments, rangelands, forests, parks and other green space in rural or urban areas: 40,242
- Number of acres on which recommended actions were implemented to manage or sustainably use fish and wildlife and wildlife habitat, including control of invasive species and pests, in natural areas and working landscapes including freshwater, marine, and wetland environments, rangelands, forests, parks and other green space in rural or urban areas: 2,995,514
- Number of participants who completed adult educational programs that promote environmental literacy and sustainability, including water awareness programs: 57,202
- Number of youth who completed educational programs that promote environmental literacy and sustainability, including water awareness programs: 5,549
- Number of participants who used information from environmental literacy and sustainability programs in a professional or work-related context as volunteers or employees (including docents, teachers, park rangers, ecotour guides, etc.): 7,370
- Number of adult participants who used information from environmental and sustainability programs to adopt personal stewardship behaviors (e.g., conservation of natural resources in one's home or residential community): 19,994
- Number of youth participants who used information from environmental and sustainability programs to adopt personal stewardship behaviors (e.g., conservation of natural resources in one's home or residential community): 2,773

Critical Issue: Nutrition, Health and Food Safety

- Number of new or improved value-added products sold by producers (or other members of the food supply chain): 63
- Number of new food processing facilities of any size (including inspected kitchens, niche meat processors, and larger animal/fruit/vegetable processors): 7

- Number of participants attending educational programming for small farm operators, processors (big and small), or beginning farmers/ranchers showing knowledge gain on recommended practices: 3,645
- Number of participants attending educational programming for small farm operators, processors (big and small), or beginning farmers/ranchers that adopt one or more recommended practices: 1,281
- Number of producers who developed a farm food safety plan: 45
- Number of growers, producers, food workers completing GAPs, GMPs, HACCP, PSA, PC, food safety certification (i.e., ServSafe), or farm food safety educational programs: 2,989
- Number of participants demonstrating improved knowledge of food systems including food labels, production practices, hydroponics, food production and preservation, food waste management, etc.: 9,714
- Number of participants that adopt self-reliant food system practices, including creating a home or community garden, hydroponic systems, reducing food waste, preserving food, etc.: 4,875
- Number of adults and youth participating in food safety programs who adopted one or more recommended practices (i.e., handwashing, cross contamination, time and temperature controls, refrigerator temperature): 6,039
- Number of adults who reported eating more of healthy foods (e.g., choose healthy options when eating out, increase fruit and vegetable intake, use food labels to make healthful food choices): 5,224
- Number of children and youth who reported eating more of healthy foods (e.g., choose healthy options when eating out, increase fruit and vegetable intake, use food labels to make healthful food choices): 4,736
- Number of adults who reported adopting healthier eating patterns (e.g., DASH, Mediterranean-Style, Healthy US-Style -- MyPlate): 1,424
- Number of children and youth who reported adopting healthier eating patterns (e.g., Healthy US-Style -- MyPlate): 1,112
- Number of adults reporting increased physical activity: 2,333
- Number of children and youth reporting increased physical activity: 4,006
- Number of adults reporting reduced sedentary time: 1,685
- Number of children and youth reporting reduced sedentary time: 2,695
- Number of adults demonstrating increased awareness of personal health risks (e.g., high blood pressure, prediabetes): 1,616
- Number of adults demonstrating improvement in health parameters such as physical fitness, body mass index, blood pressure, or blood glucose: 621
- Number of youth demonstrating improvement in health parameters such as physical fitness, blood pressure, or blood glucose: 156
- Number of adults reporting they had lower annual health care costs due to reduced need for medical care or prescriptions: 62

Critical Issue: Research for Management of Invasive Pest Species

- Studies on the Invasive Rice Stink Bugs Oebalus ypsilongriseus and Oebalus insularis (Hemiptera: Pentatomidae).
- Potential Invasive Pests for U.S. Rice Growers.
- Monitoring and Management of the Spotted Wing Drosophila, Drosophila suzukii (Diptera: Drosophilidae) in Florida.
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Critical Issue: Water Quality and Conservation

- Number of gallons of water saved by production program participants (e.g., producers, farmers, ranchers) for the entire year: 7.9B
- Number of producers that adopted one or more "good" water conservation practices such as reduced irrigation and use of water-saving technologies: 1,091
- Number of producers that adopted one or more "good" water quality practices such as recommended pesticides and reduced animal waste or other pollutants: 3,368
- Number of producers that adopted recommended best practices for production agriculture related to invasive species, pest management, pollutant loads, and wetlands: 5,359
- Number of gallons of water saved by adult residential program participants (e.g., residents, HOAs, community gardens, developers, businesses, government offices) for the entire year: 298.2M
- Number of gallons of water saved by landscape professionals or other Green Industry professionals for the entire year: 61.3M
- Number of adult residential participants that adopted one or more best management practices such as the Florida Friendly Landscaping™ principles of composting, efficient irrigation use, responsible pesticide use, etc.: 14,618
- Number of landscape professionals or other Green Industry professionals that adopted one or more best management practices such as GI-BMPs: 5,042
- Number of youth participants that adopted one or more best management practices such as Ag BMPs or Florida Friendly Landscape principles, home water conservation practices, etc.: 3,931

Critical Issue: Youth

- Number of youth who demonstrate improvement in communication skills: 42,893
- Number of youth who demonstrate improvement in appreciation of differences: 17,934
- Number of youth who demonstrate improvement in higher order thinking skills (e.g., decision making, critical thinking, goal setting): 27,252
- Number of volunteers who adopt best practices/behaviors that provide youth with a safe and inclusive environment (sense of belonging); a characteristic of a high quality positive youth development (PYD) program: 4,596
- Number of youth reporting evidence of a safe and inclusive environment (sense of belonging); a characteristic of a high quality PYD program: 18,661
- Number of volunteers who adopt one or more best practices/behaviors of positive developmental relationships (express care, challenge growth, provide support, share power, and expand possibilities): 2,647
- Number of youth reporting the presence of one or more best practice of positive developmental relationships (express care, challenge growth, provide support, share power, and expand possibilities) during 4-H programs: 14,820
- Number of youth demonstrating engagement beyond six hours in 4-H: 67,870
- Number of youth demonstrating engagement beyond their club program: 11,053
- Number of youth demonstrating knowledge gain in a subject matter: 65,794
- Number of youth who demonstrated behavior change in a subject matter (i.e., adoption of best practices, attained a new skill): 45,150

Merit and Scientific Peer Review Processes

Updates

County Program Reviews continue to be on hiatus due to the uncertainty created by the pandemic and concerns about sending teams out for travel and intensive in-person meetings.

Stakeholder Input

Actions to seek stakeholder input that encouraged their participation with a brief explanation

As part of our Extension strategic planning process, the following ocurred in 2021:

The UF/IFAS Center for Public Issues Education in Agriculture and Natural Resources (PIE Center) conducted a series of **13 online listening sessions** with individuals across the state via Zoom between September 21 and October 15, 2021, and **one in-person session** in October 2021 to provide guidance for the new IFAS Extension Roadmap. District and county Extension directors, Extension administrators, and Extension faculty nominated individuals to participate in the listening sessions. The PIE Center contacted each nominee, inviting them to participate in a listening session. In addition, **two online listening sessions**, conducted entirely in Spanish, took place in December 2021 to gauge how Extension could address the needs of the state's Latino population in the future.

These listening sessions yielded data from over 110 individuals from eight audience groups:

- Two groups of state/local agencies
- Two Northwest District groups
- Two Northeast District groups
- Two Central District groups
- Two Southeast District groups
- Three Southwest District groups
- Two Spanish-language groups
- One in-person group of county commissioners

An online form was also available from September to October 2021 for individuals to submit their thoughts and opinions if they were not able to attend a scheduled listening session for their district or the sessions with local and state agencies and with county commissioners. A Q-Sort Methodology project, conducted with University of Florida students focused on Extension programming, was also conducted in summer 2021.

The Client Experience Survey was conducted with 22 counties rather than the usual 12 since many counties did not participate in the survey last year.

Other changes to the POW:

- The 2020 Statewide Needs Assessment survey was completed and we are launching a similar one in May 2022.
- County Program Reviews continue to be on hiatus due to the uncertainty created by the pandemic and concerns about sending teams out for travel and intensive in-person meetings.

Methods to identify individuals and groups and brief explanation

No updates to 2021 POW.

Methods for collecting stakeholder input and brief explanation

No updates to 2021 POW.

A statement of how the input will be considered and brief explanation of what you learned from your stakeholders

- In the budget process
- To identify emerging issues
- To set priorities
- In the staff hiring process
- To redirect Extension programs
- To redirect Research programs

We are analyzing data collected in 2021 to address the above as part of our strategic planning process and onboarding of a new dean.

Highlighted Results by Project or Program

Critical Issue

Agricultural and Food Systems

Environmental and Genetic Determinants of Seed Quality and Performance
Project Director
Hector Perez
Organization
University of Florida
Accession Number
1020886

Environmental and Genetic Determinants of Seed Quality and Performance

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

This multi-state project includes the key seed scientists in academia and is the only vehicle that facilitates these seed scientists to work in a cooperative manner to address key seed problems in a systematic fashion. There is no other agency or organization in the US integrating the depth and breadth of expertise to tackle these objectives.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Objective 1: We identified 1) complex dormancy patterns; 2) strong maternal environment x harvest year interactions on seed quality; and 3) limits to freezing tolerance in seeds of Harperocallis flava. We also uncovered a significant continental-scale latitudinal effect on germination capacity of Uniola panicualta. However, we found no clear latitudinal pattern related to antioxidant capacity in seeds of U. paniculata. The thermal limits of germination for U. paniculata are also consistent across the latitudinal gradient.
We found variation in germination temperature requirements on a regional scale and different seed dormancy levles at a local scale for Balduina angustifolia. Seeds of Petunia x hybrida collected from plants grown in different maternal environments also displayed differential tolerance to stressors with subsequent differences in germination capacity and seedling vigor.
Our research with Rudbeckia mollis seeds also found no short-term relationahsip between intra-population variation in seed mass and viability loss during burial in soil. However, seeds of higher mass with thicker seed coats appear to confer greater resistance to pathogen pressure. Overall, this research supported a positive intra-population relationship between seed coat thickness and seed survival in the soil.
Objective 2: We trained 2 new gradaute students on state-of-the-art seed quality assessment equipment.
Outputs and Short-term Outcomes: Information generated from our work is useful for the conservation and restoration of our natural resources. For example, our discoveries related to environmental influences on seed quality of Harperocallis flava, Uniola paniculata, and Baluduina angustifolia can guide management decision making related to seed harvest timing, seed source quality, and conditions necessary to promote germination and seedling establishment of ecologically important species.
Similarly, our findings on Petunia x hybrida can be used in the floriculture seed industry to better understand crop management for enhancing seed production and quality. Our work with R. mollis sheds light on the need for more complete analyses on intra-specific variation to address relationships.
We published 3 peer reviewed papers and presented at 1 national conference with results related to this research.
Activities: We carried out lab- and field-based studies.
Imapcts: The impact of our research is that seed producers and seed users now have new knowledge that can facilitate decision making in terms of seed production, collection, management, and preservation. This new knowledge is also directly applicable to natural resources conservation. In fact, our H. flava findings were incorporated into the federal 5 year status review for H. flava. This information will be used to continue federal protection for this endangered species.

Briefly describe how your target audience benefited from your project's activities.

We trained 2 new gradaute students and 1 undergraduate research associate on advanced seed quality testing equipment.

Briefly describe how the broader public benefited from your project's activities.

We held meetings with our farmer partners to discuss research findings, consulted with conservation practitioners to incorporate results into federal documents, and published open access articles.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Nothing to report.

Closing Out (end date 09/06/2023)

Industrial Hemp Production, Processing, and Marketing in the U.S.

Project Director
Zachary Brym
Organization
University of Florida
Accession Number
1020897

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The expected outcomes of the project are to identify hemp varieties suitable for Florida and the southeastern US, develop potential hemp cropping systems for commercial production, evaluate the impacts of cultivar and management on crop yield and quality, and monitor desirable traits using
genetic tools. The project will deliver needed information for the nascent hemp industry in Florida and the southern US and engage the target audience through Extension events and publicly available information.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

1. The UF/IFAS Industrial Hemp Pilot Project completed the 2-yr research period defined by Florida law and developed a report submitted to the governor and legislature of Florida representing a transition from Pilot Project to Program. UF/IFAS Hemp Program efforts in 2021 emphasized research in nutrient management and Best Management Practices for water quality. Extension emphasized efforts to establish educational materials and engagement for hemp growers and stakeholders in Florida and beyond. Research on nitrogen rate is supporting a 100-150 lb N / ac application rate in terms of biomass, productivity, and plant health indicators. The UF/IFAS Hemp Program Extension core team expanded to 17 specially-trained agents distributed across district and specialty. A representative from Florida Department of Agriculture and Consumer Services was present at 8 of 10 meetings for state-wide regulatory and legislative updates. A virtual workshop was prepared with materials covering research and educational outcomes from 2020 launched Jan 2021. Recorded presentations and fact sheets were submitted by 20 presenters from across UF/IFAS, including state specialist, county agents, and graduate students. Farmer cooperators in the UF/IFAS Industrial Hemp Pilot Project on-farm trials participated in a series of focus groups to discuss their experience and perception of the program. Many participants identified program leaders and their Extension agent partners as instrumental to their success and positive experience.
2. Harvested samples of hemp tissue were analyzed by UF College of Pharmacy for quantification of cannabinoid content. Some hemp varieties planted in 2021 exceeded 0.3% THC content at full maturity, but harvest timing is addressing issues with hemp exceeding threshold. Leaf, seed, and flower samples were analyzed for nutrient content. Seed harvested was analyzed for thousand-seed-weight and germination. Investigation into weed and pest control have been initiated with respect
to crop production and quality.
3. A collaborative effort to multiply grain/fiber breeding populations was met with logistical and seasonal challenges. Germplasm remains for continued efforts at developing population stability.
4. Licensing of commercial farms were continued to be tracked in preparation of surveys for economic outcomes for hemp growers resulting in a publication at the Electronic Data Information System. In addition, market information was collected and
prepared for a research publication estimating acreage potential for hemp production.

Briefly describe how your target audience benefited from your project's activities.

The project graduated an MS student in hemp agronomy and agroecology and hired two additional MS students. One is specifically targeting a research chapter in the analysis of the S-1084 multi-state grain/fiber trial. An emphasis on training extension professionals is continuing with an effort in 2022 to expand the scope of the Extension core team at UF/IFAS (e.g., ag, hort, consumer services). Students and county extension agents are participating in presentations and publications on hemp topics.

Briefly describe how the broader public benefited from your project's activities.

During this reporting period I released 3 peer-reviewed publications, 3 extension publications, 7 conference abstracts, 6 extension presentations, 3 press articles reaching extension professionals, hemp growers, hemp industry members, and the general public. One notable preparation of results was through a "Science by the Slice" podcast. Another was a keynote address to the ASTM D37 Global Workshop on Cannabis. UF also hosted collaborators from Alabama State for a field visit.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Field plantings at multiple UF research locations will be continued through 2022 with a focus on crop production and environmental protection representing the second year of a nutrient management and water quality study. Analysis effort will assist in the interpretation of the multi-state grain/fiber trials. Engagement wit the multistate group will continue through to participating in S-1084 meetings and professional societies. At least two manuscripts will be prepared for publication in academic journals. Industry partnerships will be developed to continue participatory research and development of commercial
hemp cultivation.

Disruptions to research funding and execution are still being experienced due to COVID-19. For example, commercial-scale production was not feasible due to the limited research capacity at the onset of the planting season.

Increasing the sustainability, profitability, and competitiveness of agricultural and horticultural enterprises

Project Director
Diane Craig
Organization
University of Florida
Accession Number
7000006

Ag Awareness Builds Support for Farms and Food Production

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Today, only about 1.3% of people employed in the U.S. work in agriculture and this number has declined in response to increasingly efficient production and technological advances in the field (USDA 2020). For this reason, a significant disconnect exists between the public's perception and understanding of food systems, which has implications on long-term sustainability (Widener and Karides 2014;Quinn and Carlisle 2019). Florida's high levels of urban growth and development has led to less land available for agricultural production. Directly teaching people about farming and food production can lead to increased food system and agricultural literacy (Widener and Karides 2014). Likewise, this engagement with the food system can lead to changes in attitude and behaviors that can economically support local agriculture, including changes in consumer purchases and support for policies protecting agriculture.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

In Charlotte County, a recorded virtual tour explored the history of agriculture and various agricultural operations in Charlotte County, including a visit to four Charlotte County farms: Farabee Cattle, Melon 1, Iguanaland and Peace River Organics. The goal was for participants to gain a better understanding of a few of the different types of agriculture business – traditional and non-traditional -- and what they bring to our community. Since its release on March 18 as part of the Charlotte County Centennial Celebration, the Virtual Ag Tour has been viewed by 754 people, more than 10 times the number of people UF/IFAS Extension Charlotte County would have reached using the bus tour format.

In Seminole County, a farm tour has been held annually for over 20 years with the goal of connecting residents to their local farmers by bringing them on an education tour of several local farms. Considering uncertain conditions surrounding COVID-19, the annual farm tour event pivoted to a virtual format for 2021 for the very first time. In collaboration with the Seminole County Government TV crew, we developed high quality, five-minute videos touring six local agricultural operations with farmers. These videos each had an educational component on topics including organic agriculture, agritourism, livestock, citrus productions, the nursery industry, and pollinators. In a normal year, about 40-50 individuals got to attend the farm tour and learn about local food production. Through this virtual format, the farm tour was able to reach over 2,300 people and create long-lasting educational videos to share into the future.

In another program targeted at Hendry County youths and elected officials, Extension agents I conducted 42 farm tours, 10 school presentations, 11 leadership academy events, and 31 focus group presentations. Topics included: the cattle industry in Southwest Florida, the Florida cattle industry, the diversity of agriculture in Southwest Florida, policies effecting farmers and ranchers, calf depredation, the history of agriculture in Hendry County, and products derived from animal agriculture. Nearly 8,000 residents, visitors, youth, and decision makers attended 1 or more of the events.

Briefly describe how your target audience benefited from your project's activities.

In a Seminole County follow-up survey (n=67), 100% of individuals adopted a practice that supports local agriculture or food systems after watching these videos; 84% purchased more local agricultural products, 82% are trying to grow produce at home, 72% help to protect honey bees and other pollinators, 66% check the label of produce to see where it was grown, 55% participated in agritourism activities, and 45% encouraged youth to explore careers in agriculture.

Hendry County adult program participants indicated an increased awareness of the livestock industry, the contribution of agriculture to the economy and environment, and the effects of policy decisions on agriculture. Seventy-one Florida Gulf Coast University nurse students, who participated in farm tours indicated sharing evidence-based information learned with at least 2 other people.

Briefly describe how the broader public benefited from your project's activities.

As Florida urbanizes, a large and growing number of residents and visitors are unaware of the important agriculture contributions to the area's economy, environmental and social well-being. This lack of awareness leads to policy decisions that may inhibit the industry's ability to compete successfully in a global market.

Cattle Handling Equipment for Small Producers to Improve Production & Safety

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Cattle are typically worked two to three times a year to implement various herd management practices, including a herd health program. These herd management practices are essential for productivity and cost efficiency. Handling equipment that can properly restrain cattle, like a squeeze chute, effectively restrain cattle, improve processing efficiency, and increase overall safety for both workers and livestock. Livestock handling injuries account for more than one-third of on-farm injury activities in the agriculture sector. Although proper handling equipment can improve herd production and reduce injury, it is a large up-front investment, especially for small or beginning farmers. In Polk County, approximately 85% (1,100) of cattle producers operate on a "small farm" (less than 200 acres) and many of these producers have limited to no handling equipment for their cattle. These producers have the option to not work their cattle at all, hire a day laborer with a chute at an additional $50/day, or risk grave injury trying to handle cattle without a restraining system. All these options result in reduced herd productivity, additional operation expenses, and/or injury.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The Polk County Cattlemen's Association donated a livestock squeeze chute (valued at $3,500) to the Livestock Extension Program for loan to producers located in Polk County; therefore, eliminating the need for the producer to purchase this equipment. In 2021, the chute was utilized on fifty-seven (57) occasions by operators that represented approximately 3,131 head of cattle.

Briefly describe how your target audience benefited from your project's activities.

These Polk County operators benefited from reduced expenses; and increased production that results in higher economic returns. By eliminating the need to hire out use of a chute at $50/day, these operators saved $2,850. Producers that implement management practices made possible through proper handling equipment may also recognize an average annual return of $5/head which equates to approximately $15,655 for the cattle represented by these users. Lastly, by utilizing safe handling equipment, producers may have avoided injury that would result in a hospital visit or worse.

Briefly describe how the broader public benefited from your project's activities.

By reducing expenses, increasing income potential, and avoiding injury, Polk County ranchers will be more economically viable. This will enable them to continue to preserve their ranching land that is so important to our state and local economy, national food system, and environment.

Citrus Under Protective Screens Effective Against Citrus Greening

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Since it was discovered in Florida citrus in 2005, citrus greening disease has caused millions of dollars in damage to citrus trees, the fruit and those who work in the citrus industry. The Florida grapefruit crop has declined by more than 90% since pre-2005 peak production, mainly due to the greening disease. If an infected Asian citrus psyllid feeds on a citrus tree, it transmits the bacterium that causes greening, known scientifically as “Huanglongbing.” Knowing this, UF/IFAS researchers statewide have tried many methods to control the psyllid’s ability to vector the disease to trees, thus lowering the quality of the fruit.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Among the researchers trying to control the psyllid, Arnold Schumann, a professor of soil and water sciences at the UF/IFAS Citrus Research and Education Center (CREC) in Lake Alfred, developed an idea. He installed screen house structures at the CREC to prevent the psyllids from reaching the trees within. He calls them “Citrus Under Protective Screens,” or “CUPS.” CUPS has proven to be another tool, in a big box of tools, citrus growers can use to help them better cope with the citrus greening disease.

In the spring of 2021, a CUPS citrus grower reached out to a Volusia County Extension agent to host a Central District CUPS (Citrus Under Protective Screen) field day at his citrus CUPS operation in De Leon Springs. The agent organized the field day, which was aimed at providing outreach to Central Florida citrus growers, investors and specialists to understand CUPS production and provide the latest research against citrus greening.

Briefly describe how your target audience benefited from your project's activities.

In the seven years of the experiment, UF/IFAS researchers have seen psyllids in the CUPS only once after large sections of screen panels were removed and replaced for maintenance in the sixth year. The psyllids were easily controlled and only three trees became infected and were removed (0.27% of the trees in the CUPS). The protective screening has added bonuses. It disperses the sunlight entering the CUPS, providing better light distribution for the tree canopies inside. Daytime air temperatures are slightly higher inside the CUPS than outside, leading to faster tree growth. Tree growth rates in CUPS are approximately doubled, meaning full fruit production status can be reached in half the time it would take with conventional groves. The hurricanes that can often befall Florida are a concern, but well-constructed CUPS can survive hurricanes without catastrophic damage. A case in point was the CREC CUPS, which survived Hurricane Irma in 2017. CUPS also requires fewer pesticides, less fertilizer and much less irrigation per box of fruit than conventionally grown fruit, as demonstrated by the reduced timeline to reach full production, and the about 25% reduced evapotranspiration of trees in CUPS. CUPS has proven to be another in a big box of tools citrus growers can use to help them better cope with the citrus greening disease.

The Volusia County Extension agent organized a one-of-a-kind in-person/virtual field day where attendees toured the CUPS facility and growers were able to interview the grower host, specialists, and a CUPS contractor. As a direct result of this program, a grower broke ground seven months later on a new 13 acre CUPs commercial operation of grapefruit in Lake County in Central Florida. The commercial citrus grower also purchased a packinghouse in Vero Beach, FL and is currently marketing “Grapefruit to Europe” under his own label.

Briefly describe how the broader public benefited from your project's activities.

Florida is the nation's No. 2 citrus producer, just behind California, and citrus represents the most valuable fruit crop in Florida. According to a UF/IFAS study published in 2021, the citrus industry contributes $6.665 billion in total industry output (or sales revenues) throughout the state’s economy. CUPS is a key tool for growing grapefruit in Florida, since it is one of the

most vulnerable cultivars that does not survive well after becoming infected with greening disease. The public benefits from a strong agricultural economy and potentially from reduced prices for citrus at the grocery store.

Corn Silk Fly Insecticide Resistance Management

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Corn silk flies are the most severe pests of Florida sweet corn, which is grown on 30,000-45,000 acres annually and is among the five most valuable specialty crops in the state. CSFs are intensively managed with pyrethroids. However, significant crop losses still occur and the heavy reliance on pyrethroids has raised concerns of insecticide resistance.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Work in 2021 aimed to mitigate the development of pyrethroid resistance by involving crop consultants and UF/IFAS researchers and Extension agents in efforts to monitor pyrethroid susceptibility levels in field populations and to develop pyrethroid alternatives. Crop consultants and growers provided field populations of corn silk flies for testing in glass vial bioassays that showed that pyrethroid resistance was a serious threat to the sweet corn industry. This involvement of stakeholders in research efforts enhanced extension efforts by facilitating the exchange of information among researchers, Palm Beach County Extension personnel, crop consultants, and growers during farm and office visits.

Briefly describe how your target audience benefited from your project's activities.

As a result of the numerous one-on-one interactions and a Sweet Corn Pest Management Workshop at the UF/IFAS Everglades Research and Education Center, the four largest crop consulting companies in the Everglades Agricultural Area have indicated that they will implement recommended practices to mitigate the development pyrethroid resistance. These practices include the use of spinetoram and abamectin.

Briefly describe how the broader public benefited from your project's activities.

Extension programs focusing on integrated pest management are necessary to increase the sustainability of specialty crop production in Florida, which is vital to the state's economy. Agriculture is the second largest industry in Florida and sweet corn is one of its most valuable specialty crops.

Eastern Oyster Aquaculture Helps Gulf Coast Economy

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Intensive aquaculture of the eastern oyster in the Gulf of Mexico region represents a new industry sector with rapid development in the past decade. According to the NOAA Fisheries (2021), the easter oyster population has declined to a small percentage compared to what they once were because of disease, overharvesting, habitat loss, and poor water quality.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

With in-person classes restricted due to the COVID-19 pandemic, a virtual course was developed to provide educational opportunities for beginning growers and those interested in the prospects of oyster culture in the region. The course format follows the sequence of starting a farm to growing and harvesting a crop of oysters with 23 instructors from universities, industry associations, gear manufacturers and suppliers, and federal and state agencies collaborating to provide 39 presentations with videos and resource materials. Growers can download Excel-based Noninsured Crop Disaster Assistance Program (NAP) Inventory Worksheets for Cultured Clams and input their relevant culture activities monthly; the worksheets summarize the number of clams and culture bags per lease site. These educational materials assist growers in meeting the requirements of the USDA Farm Service Agency for monthly reporting of crop inventory. All members of the shellfish farming community in Florida were provided with information on current culture practices and new issues affecting their industry

through access to electronic documents via a website and social media platform, and through personal communication via phone calls, e-mails, or office visits. The website features a news blog, which replaces an industry newsletter, allowing information to the industry to be timelier (and less expensive) in its delivery. This site provides updated information about shellfish farming and related activities for the public, growers, and others involved in shellfish.

Briefly describe how your target audience benefited from your project's activities.

Within the first five months, over 350 students enrolled in the course. In a survey sent to the course participants, a 54% increase in knowledge gained was reported for business planning, financial considerations, and crop disaster assistance programs. UF/IFAS Extension, along with continued support of a local growers' association, has helped to ensure that over 40% of the clam growers in Levy County recognized the benefits of working cooperatively. Administrative support has allowed the Cedar Key Aquaculture Association to succeed with a strong volunteer base, development of industry leaders, bimonthly board of directors' meetings, and accomplishments in resolving local issues and needs.

Briefly describe how the broader public benefited from your project's activities.

New industry sectors can diversify the local economy, leading to more jobs and revenue for the community.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Online Resource Guide for Florida Shellfish Aquaculture: http://shellfish.ifas.ufl.edu

Extension Publications - New and Major Revisions

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

EDIS (Electronic Data Information Source) is the premier electronic information storage and retrieval system of peer- reviewed Extension scholarship that enables citizens to access information provided by the Cooperative Extension Service at the University of Florida. Developed in the 1990s, the EDIS library has grown to be a large collection of electronic files with a variety of purposes.

EDIS has a specialized role in UF/IFAS Extension communication. It is a collection of official longform content developed in support of Extension program area goals and objectives and co-published by Florida Cooperative Extension and one of the UF/IFAS academic departments. UF/IFAS ensures the authority and authenticity of EDIS publications through several processes:

- Authors must include current UF/IFAS academic faculty. County faculty may author publications in collaboration with UF/IFAS academic faculty.
- Fact sheets and major revisions of fact sheets have been peer reviewed by internal and external reviewers that have been selected by the corresponding author's Department or Center EDIS editors.
- Internal reviewers should include at least one UF/IFAS specialist who can provide expert review on content.
- External reviewers should review content and include at least one individual with expertise in the subject matter who is not employed by the home Department/Center.
- All EDIS publications and creative works have been approved by the Department Chair and Center Director of the corresponding author and the statewide leader of the relevant Extension program(s).

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

EDIS publications share four essential qualities:

1. They support or contribute to Extension programs.

2. They communicate information pertinent to target audiences and their issues, including ways to foster healthy lifestyles, environment, or economy.

3. They provide production and management recommendations by UF/IFAS.

4. They are both sufficient to the topic and written in a way that is relevant to our partners and target audiences.

Briefly describe how your target audience benefited from your project's activities.

Typically, target audiences include agricultural and horticultural producers, homeowners, Extension agents, industry or governmental staff, land managers, other professionals, youth and interested citizens. In most cases, EDIS publications help answer the questions any UF/IFAS Extension clientele would have about the topic of interest. In cases where the target audience will have specialized expertise, such as crop irrigation managers or veterinary students, EDIS is an appropriate venue for sharing information with them.

Briefly describe how the broader public benefited from your project's activities.

New EDIS publications (DOIs only due to character limits):

1. 10.32473/edis-in1341-2021
2. 10.32473/edis-ag410-2021
3. 10.32473/edis-ag453-2021
4. 10.32473/edis-in849-2021
5. 10.32473/edis-cg038-2021
6. 10.32473/edis-cg024-2021
7. 10.32473/edis-cg004-2021
8. 10.32473/edis-an316-2021
9. 10.32473/edis-ss702-2021
10. 10.32473/edis-VM245-2021
11. 10.32473/edis-fr441-2021

12. 10.32473/edis-in1313-2021

13. 10.32473/edis-fy1500-2021

14. 10.32473/edis-fr432-2021

15. 10.32473/edis-fe1095-2021

16. 10.32473/edis-fe1106-2021

17. 10.32473/edis-an375-2021

18. 10.32473/edis-an379-2021

19. 10.32473/edis-ae552-2021

20. 10.32473/edis-ae553-2021

21. 10.32473/edis-in1336-2021

22. 10.32473/edis-hs1412-2021

23. 10.32473/edis-pp362-2021

24. 10.32473/edis-in1342-2021

25. 10.32473/edis-ag456-2021

26. 10.32473/edis-ep610-2021

27. 10.32473/edis-ep613-2021

28. 10.32473/edis-ep606-2021

29. 10.32473/edis-ep615-2021

30. 10.32473/edis-in1318-2021

31. 10.32473/edis-ep611-2021

32. 10.32473/edis-an365-2021

33. 10.32473/edis-fa236-2021

34. 10.32473/edis-fs432-2021

35. 10.32473/edis-cv100-2021

36. 10.32473/edis-hs1419-2021

37. 10.32473/edis-hs1402-2021

38. 10.32473/edis-an368-2021

39. 10.32473/edis-hs1431-2021

40. 10.32473/edis-ep604-2021

41. 10.32473/edis-hs1408-2021

42. 10.32473/edis-fe1110-2021

43. 10.32473/edis-fe1097-2021

44. 10.32473/edis-in1338-2021

45. 10.32473/edis-hs1409-2021

46. 10.32473/edis-in1335-2021

47. 10.32473/edis-ag451-2021

48. 10.32473/edis-ae554-2021

49. 10.32473/edis-hs1403-2021

50. 10.32473/edis-ae560-2021

51. 10.32473/edis-in1334-2021

52. 10.32473/edis-hs1421-2021

53. 10.32473/edis-fe1093-2021

54. 10.32473/edis-in1337-2021

55. 10.32473/edis-ag450-2021

56. 10.32473/edis-hs1420-2021

57. 10.32473/edis-in1329-2021

58. 10.32473/edis-an374-2021

59. 10.32473/edis-pi292-2021

60. 10.32473/edis-fa234-2021

61. 10.32473/edis-fe1108-2021

62. 10.32473/edis-pi293-2021

63. 10.32473/edis-an377-2021

64. 10.32473/edis-in1310-2021

65. 10.32473/edis-hs1424-2021

66. 10.32473/edis-hs1422-2021

67. 10.32473/edis-fy1497-2021

68. 10.32473/edis-hs1418-2021

69. 10.32473/edis-an381-2021

70. 10.32473/edis-an366-2021

71. 10.32473/edis-hs1425-2021

72. 10.32473/edis-ag458-2021

73. 10.32473/edis-hs1432-2021

74. 10.32473/edis-ep600-2021

75. 10.32473/edis-ep608-2021

76. 10.32473/edis-ep601-2021

77. 10.32473/edis-FE1103-2021

78. 10.32473/edis-lh083-2021

79. 10.32473/edis-ep598-2021

80. 10.32473/edis-ss698-2021

81. 10.32473/edis-in1339-2021

82. 10.32473/edis-an367-2021

83. 10.32473/edis-ae563-2021

84. 10.32473/edis-an369-2021

85. 10.32473/edis-ae562-2021

86. 10.32473/edis-IN531-2021

87. 10.32473/edis-hs1428-2021

88. 10.32473/edis-hs1429-2021

89. 10.32473/edis-hs1400-2021

90. 10.32473/edis-pp363-2021

91. 10.32473/edis-fe1101-2021

92. 10.32473/edis-ag447-2021

93. 10.32473/edis-in1311-2021

94. 10.32473/edis-an378-2021

95. 10.32473/edis-hs1417-2021

96. 10.32473/edis-an373-2021

97. 10.32473/edis-fe1105-2021

98. 10.32473/edis-hs1407-2021

99. 10.32473/edis-an371-2021

100. 10.32473/edis-an376-2021

101. 10.32473/edis-ae550-2021

102. 10.32473/edis-hs1410-2021

103. 10.32473/edis-an364-2021

104. 10.32473/edis-UW488-2021

105. 10.32473/edis-IN1331-2021

106. 10.32473/edis-ae567-2021

107. 10.32473/edis-an370-2021

108. 10.32473/edis-in1325-2021

109. 10.32473/edis-in1332-2021

110. 10.32473/edis-hs1414-2021

111. 10.32473/edis-ep602-2021

112. 10.32473/edis-ep603-2021

113. 10.32473/edis-ss697-2021

114. 10.32473/edis-ss699-2021

115. 10.32473/edis-in1333-2021

116. 10.32473/edis-fr433-2021

117. 10.32473/edis-pi291-2021

118. 10.32473/edis-hs1423-2021

119. 10.32473/edis-ae556-2021

120. 10.32473/edis-ag449-2021

121. 10.32473/edis-in704-2021

122. 10.32473/edis-ae555-2021

123. 10.32473/edis-fy1496-2021

124. 10.32473/edis-in1328-2021

125. 10.32473/edis-fa230-2021

126. 10.32473/edis-fe1094-2021

127. 10.32473/edis-hs1406-2021

128. 10.32473/edis-ss679-2021

129. 10.32473/edis-fr435-2021

130. 10.32473/edis-fa233-2021

131. 10.32473/edis-an380-2021

132. 10.32473/edis-in1323-2021

133. 10.32473/edis-hs1426-2021

134. 10.32473/edis-ae565-2021

135. 10.32473/edis-hs1411-2021

136. 10.32473/edis-hs1299-2021

137. 10.32473/edis-hs1293-2021

138. 10.32473/edis-hs1237-2021

139. 10.32473/edis-hs1277-2021

140. 10.32473/edis-hs1404-2021

141. 10.32473/edis-hs1405-2021

142. 10.32473/edis-ag459-2021

143. 10.32473/edis-hs1415-2021

144. 10.32473/edis-fe1104-2021

145. 10.32473/edis-ag457-2021

146. 10.32473/edis-fa232-2021

147. 10.32473/edis-in1171-2021

148. 10.32473/edis-ae564-2021

149. 10.32473/edis-ag455-2021

150. 10.32473/edis-wc304-2018

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

EDIS publications with major revisions:

1. 10.32473/edis-aa266-2021

2. 10.32473/edis-cg021-2021

3. 10.32473/edis-cg097-2021

4. 10.32473/edis-cg027-2021

5. 10.32473/edis-cg022-2021

6. 10.32473/edis-hs1303-2021

7. 10.32473/edis-cg088-2021

8. 10.32473/edis-cg040-2021

9. 10.32473/edis-cg095-2021

10. 10.32473/edis-cg098-2021

11. 10.32473/edis-cg006-2021

12. 10.32473/edis-cg020-2021

13. 10.32473/edis-hs1304-2021

14. 10.32473/edis-cg096-2021

15. 10.32473/edis-ch081-2021

16. 10.32473/edis-cg037-2021

17. 10.32473/edis-cg092-2021

18. 10.32473/edis-cg090-2021

19. 10.32473/edis-hs1301-2021

20. 10.32473/edis-cg018-2021

21. 10.32473/edis-hs1302-2021

22. 10.32473/edis-cg086-2021

23. 10.32473/edis-cg031-2021

24. 10.32473/edis-cg033-2021

25. 10.32473/edis-cg093-2021

26. 10.32473/edis-cg019-2021

27. 10.32473/edis-cg010-2021

28. 10.32473/edis-cg091-2021

29. 10.32473/edis-cg026-2021

30. 10.32473/edis-cg017-2021

31. 10.32473/edis-cg009-2021

32. 10.32473/edis-cg005-2021

33. 10.32473/edis-hs1310-2021

34. 10.32473/edis-cg099-2021

35. 10.32473/edis-cg007-2021

36. 10.32473/edis-cg036-2021

37. 10.32473/edis-cg094-2021

38. 10.32473/edis-hs1308-2021

39. 10.32473/edis-cg002-2021

40. 10.32473/edis-cg039-2021

41. 10.32473/edis-cg030-2021

42. 10.32473/edis-cg0100-2021

43. 10.32473/edis-cg013-2021

44. 10.32473/edis-in807-2021

45. 10.32473/edis-pp275-2021

46. 10.32473/edis-hs380-2021

47. 10.32473/edis-ag139-2021

48. 10.32473/edis-lh007-2021

49. 10.32473/edis-ag390-2021

50. 10.32473/edis-ag313-2021

51. 10.32473/edis-ep350-2021

52. 10.32473/edis-ag366-2021

53. 10.32473/edis-cv294-2021

54. 10.32473/edis-cv125-2021

55. 10.32473/edis-cv299-2021

56. 10.32473/edis-cv130-2021

57. 10.32473/edis-cv131-2021

58. 10.32473/edis-cv300-2021

59. 10.32473/edis-cv134-2021

60. 10.32473/edis-cv135-2021

61. 10.32473/edis-cv137-2021

62. 10.32473/edis-cv295-2021

63. 10.32473/edis-cv296-2021

64. 10.32473/edis-cv298-2021

65. 10.32473/edis-cv301-2021

66. 10.32473/edis-cv122-2021

67. 10.32473/edis-cv123-2021

68. 10.32473/edis-cv124-2021

69. 10.32473/edis-cv293-2021

70. 10.32473/edis-hs1246-2021

71. 10.32473/edis-pi138-2021

72. 10.32473/edis-hs1262-2021

73. 10.32473/edis-wg051-2021

74. 10.32473/edis-ag420-2021

75. 10.32473/edis-ag391-2021

76. 10.32473/edis-ig153-2021

77. 10.32473/edis-hs1196-2021

78. 10.32473/edis-ae175-2021

79. 10.32473/edis-in978-2021

80. 10.32473/edis-an336-2021

81. 10.32473/edis-lh010-2021

82. 10.32473/edis-an305-2021

83. 10.32473/edis-ss163-2021

84. 10.32473/edis-cv002-2021

85. 10.32473/edis-hs1294-2021

86. 10.32473/edis-hs1298-2021

87. 10.32473/edis-hs1278-2021

88. 10.32473/edis-hs1295-2021

89. 10.32473/edis-hs1286-2021

90. 10.32473/edis-ag414-2021

91. 10.32473/edis-pp273-2021

92. 10.32473/edis-ag290-2021

93. 10.32473/EDIS-ag396-2021

94. 10.32473/edis-wg010-2021

95. 10.32473/edis-wg004-2021

96. 10.32473/edis-sc013-2021

Florida Peanut Diagnostic Survey

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

In recent years, peanut growers in the North Central and Panhandle regions of Florida have observed an increase in plant health issues during the growing season. Some of these issues are associated with higher rates of disease, insect pests, nematodes, reduced germination, and weather induced stress. In 2017 the phenomenon, called peanut collapse or peanut decline by many growers and researchers, affected an estimated 25,000 acres of peanuts in the state, and caused yield reductions of more than 1,000 pounds per acre on average in these locations. At that time, UF/IFAS extension agents and researchers teamed up with the University of Georgia and regional producers to investigate the cause, but no main culprit was found.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The Peanut Survey was developed to help form a database of information on a regional scale. The database was intended to help correlate factors, predict these events, and ultimately lead to solutions. In previous years, the project was focused on areas of peanut decline in North Central Florida but has been extended statewide since 2020. Currently, the Peanut Survey has taken on a new life as it is now being used to monitor trends of diseases over time at key farm sites. In addition to this monitoring plan, if growers experience unknown disease or stress related issues during the season, the survey can be used to collect random samples at any time for analysis. Growers are encouraged to take advantage of this resource to help them identify problems in unhealthy peanuts. A new key aspect of the survey is its integration into a Geographic Information System (GIS). By using the ArcGIS online platform agents and specialists from across the state can submit, edit, store, and archive georeferenced sample level data and photos conveniently in one platform. This allows for the survey data to be integrated with climatic, soil and management data from across the region to hopefully better understand regional and local

peanut disease trends. Participating farmers receive free analysis reports on disease and nematode diagnostics as well as tests on water, soil, and foliar tissue nutrients. Extension agents can use the reports to help growers troubleshoot field level issues and offer consultation advice.

Briefly describe how your target audience benefited from your project's activities.

Extension agents and growers from 15 counties in North Florida have participated to date, with a total of 534 samples collected on farms. The implementation of this survey has allowed agents across the region an opportunity to assist growers in making better decisions with disease and pest management of their peanut crops. This helps save producers money on expensive crop inputs through improved recommendations as a result of the effort. Savings to producers in lab costs totaled $11,177 for 2020 and 2021 combined. The project provided $89,600 in agricultural services to growers who participated for the surveys duration. All cost savings are associated with field scouting and professional consulting advice for improved management decisions. This includes 8,960 acres represented at $10/acre as the standard rate per acre for row crop consulting. A total of $100,777 was provided to assist the participating peanut producers across the state on this effort.

Briefly describe how the broader public benefited from your project's activities.

Long term benefits include helping scientists understand how peanut diseases are progressing in relation to our climatic conditions and management decisions. The information derived will help guide more research initiatives and strengthen the peanut industry in Florida over time. This benefits Florida by increasing farm income and improve rural community vitality.

Helping Florida's Farmers Prosper

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Florida has 47,590 farm operations on 9.73 million acres. Access to land and capital are two of the biggest challenges for new farmers and ranchers (USDA, 2019). By assisting current and aspiring farmers to access financing, acquire farmland, write a business plan, and use economic analysis to inform business decisions, UF/IFAS Extension can improve rates of farm business startup and farm profitability.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

UF/IFAS statewide programs in farm economics, entrepreneurship and management reach beginning and experienced farmers; food entrepreneurs; agricultural input and service providers; and government agencies. In 2021, 53 faculty (18.1 FTE) taught more than 14,000 farm economics, entreneurship, and management program participants in person or virtually via online platforms like Zoom and Microsoft Teams. They conducted more than 22,000 consultations (face to face or through email, phone or text) and educated an additional 300,000 participants through social media such as Facebook Live, podcasts, and videos.

Briefly describe how your target audience benefited from your project's activities.

In 2021, faculty reported the following outcomes:

4,098 producers reported increased dollar returns or reduced costs.

8,932 program participants increased awareness or knowledge of topics related to farm economics, agribusiness management or marketing, the agricultural industry, or policy issues.

2,452 particpants reported increased skill, ability, or confidence in performing tasks or making decisions related to farm economics or agribusiness management and marketing.

1,163 participants reported they adopted recommended agribusiness management or marketing practices.

721 participants accessed financing or cost-share, farmland, or new markets; or started or expanded a business.

Briefly describe how the broader public benefited from your project's activities.

Agriculture, natural resources, and food systems are major industry and economic drivers in Florida, generating an estimated 2.4 million jobs and $150 billion in revenues.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Infographic was developed this year to share results with stakeholders: https://pdec.ifas.ufl.edu/impacts/FarmEcon.pdf.

Keeping H-2A Workers Safe Benefits Workers and Employers

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Florida hosted nearly 200,000 H-2A workers during 2021, and seven of the ten counties with the highest number of Covid19 cases were also home to the highest numbers of workers. Seven of these counties sold $3.179B of agricultural products which are dependent on human labor to harvest, process, store, transport and distribute to the final consumer. These labor costs represent anywhere from 30-80% of total operating costs incurred by the farm operation, indicating the need for access to farmworkers who are reliable, trained, and healthy and able to work under stressful and challenging physical conditions. In 2021, the US Department of Labor reported numerous cases where farm labor contractors and growers were investigated and fined due to violations of the federal H-2A guest worker visa program.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Since 2005, the UF/IFAS Farm Labor Supervisor (FLS) Basic Training 101 course has been taught in person across the state of Florida, educating more than 1,500 farm labor supervisors in concurrent English and Spanish sessions. Given the continued concerns and limited access to UF facilities due to the ongoing COVID-19 pandemic, we offered the trainings as requested by our clientele, which included both 100% live in-person on-site trainings and a hybrid Zoom/in-person training hosted at Southwest Florida Research and Education Center (SWFREC). As Florida growers continue to seek ways to access reliable human resources needed to achieve sustainable profitability, the FLS program has adapted its administrative and human resources content goals to meet the needs of H2A employers. Currently there are about 1,650 registered Florida Farm Labor Contractors (FLCs) and an estimated 195,000 H-2A farmworkers employed by Florida growers in 2021. Our audience in 2021 consisted of 54 of these FLCs, who manage crews consisting of approximately 50-100 farmworkers each and contract with more than a dozen medium to large-sized Florida growers, packinghouses, harvesters, and hauling companies. Instructors included UF-IFAS SWFREC faculty, staff, regional and county specialists and agents, public partners, and private consultants (from the Department of Labor, EPA, OSHA, the Sheriff's office, etc.), with decades of experience specific to the eight learning objectives of the FLS Basic Training 101 program. In September of 2021, we held our first FLS Program Advisory Committee meeting, hosting members of the agricultural community who work closely with Florida's farmworkers. During a four-hour hybrid meeting with the committee members, we developed a SWOT analysis to identify and prioritize the internal strengths and weaknesses and external opportunities and threats facing the existing training program from their "boots-on-the-ground" perspective. We shared these SWOT results with our FLS Training team during an October 2021 meeting and identified priority areas needing improvement and new areas of content needed by our clientele.

Briefly describe how your target audience benefited from your project's activities.

On average, an H-2A worker represents expenses totaling $10,500 to $15,000 each, to cover H-2A visa application fees, transportation to and from their home country to the work site, and transport costs to and from local stores, medical facilities, etc., and housing costs, in addition to wages and training expenses. Given our target audience represented between 2,700 and 5,400 H-2A workers, assuming a 5% improvement in worker productivity, and applying the evaluation results of a 76% increase in knowledge, UF/IFAS researchers estimate a potential reduction in H-2A labor expenses of between $1.08 and $3.08M in 2021.

Briefly describe how the broader public benefited from your project's activities.

This online course, facilitated by UF-IFAS Extension personnel and experts' contributions, aims to improve awareness and knowledge of the current legal compliance and human resource management expectations of regulatory agencies charged with oversight of farmworker safety and health. The purpose of this course is to provide farm labor supervisors with the administrative skills, knowledge, resources, and tools necessary to cultivate and maintain a culture of safety for farmworkers, who are essential to the profitability of Florida's agricultural industry.

Rapid Turfgrass Diagnostic Service Saves Clients Money

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The Rapid Turfgrass Diagnostic Service in the Florida Extension Plant Disease Clinic is offered to turfgrass managers from homeowners to golf course superintendents worldwide. In 2021 we processed 722 samples originating from several states and a handful of other countries.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Management recommendations based on UF/IFAS research were provided to clientele. In each case, clientele had an increase in knowledge directly resulting from our Extension effort to educate them on which diseases were occurring in their submitted sample. Clientele were given the most economical and environmentally responsible management options with the potential to reduce unnecessary use of ineffective chemical and non-chemical management inputs.

Briefly describe how your target audience benefited from your project's activities.

In 2021 approximately 10% (72) of samples processed were found to have problems not caused by plant disease. A conservative estimate based on client telephone interview would be that this service prevented at least one fungicide application for each of these samples or a minimum of 70 unnecessary applications. Fungicide applications for an average golf course having 3 acres of greens range in cost for product average around $1,000 per application. These turfgrass managers saved a minimum of $72,000 in unnecessary fungicide costs by using the Rapid Turfgrass Diagnostic Service. Other turfgrass managers that did have a disease diagnosed also were given management options that saved several hundred additional applications that may have targeted the wrong disease issue.

Briefly describe how the broader public benefited from your project's activities.

The Rapid Turfgrass Diagnostic Service provides research-based guidance and recommendations that save homeowners and turfgrass managers money by reducing reduce the use of uneccessary or inappropriate fungicides. This leads to a better use of time, money and possibly help to retain or create new jobs in the golf course or turfgrass industry. Additionally, the the use of pesticides and fertilizers, and how to conserve and protect water resources. This education leads to better use of time and money, which in turn, may help retain and create agricultural jobs.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

IPM infographic created: https://pdec.ifas.ufl.edu/impacts/IPM.pdf

Supporting the Growing Craft Brewing Industry

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The craft brewing industry in Florida continues to expand, increasing by more than 700% over the past decade according to the Brewers Association (2021). There are over 426 breweries across the state, with an estimated $3 billion impact on the state economy. Beer has four ingredients, water, barley, hops, and yeast. With the exception of water, all ingredients are imported from other states. Demand for craft and boutique fermentation products is growing rapidly and is increasing the demand for local products. The rapid growth of this sector has resulted in many small businesses looking for methods to promote their product, such as the use of local ingredients.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

This integrated research and Extension program screened for potential barley varieties for Florida, identify ideal planting dates for barley, evaluated the quality and sensory parameters of malted and unmalted barley and it is currently working on the identification of potential challenges and barriers to malting barley production and commercialization in Florida. Through these efforts, UF/IFAS researchers and agents determined high-quality barley can be produced in North Florida and fits into the current crop rotation schemes.

Briefly describe how your target audience benefited from your project's activities.

One grower has cultivated 5 acres of barley in the 2021/22 winter season in Live Oak, FL.

Briefly describe how the broader public benefited from your project's activities.

New and diversified agriculture industries help improve the economic viability of the state and attract new entreprenuers and businesses to the state.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Although there are challenges to producing malting barley in north Florida, these results are encouraging and have led to a new grant award to support future research on malting barley production for Florida. The Support for Emerging Enterprise Development Integration Teams (SEEDIT) award from the UF/IFAS Dean for Research Office and Dean for Extension Office in partnership with the Senior Vice President for Agriculture and Natural Resources will provide financial support to continue the testing of barley varieties. The expected outcomes of this project are to identify 3–5 barley varieties for Florida that produce at levels that are potentially profitable and maintain desirable quality; determine the optimum planting date; identify potential markets and barriers to commercialization; and explore the feasibility, quality, and sensory properties of malted and unmalted barley. A separate but related SEEDIT project is researching the Florida brewery and distillery markets for locally grown barley and hops.

This is an ongoing project and the initial information has been shared with stakeholders via EDIS publication, https://edis.ifas.ufl.edu/publication/HS1420.

Critical Issue

Families and Communities

Empowering families and communities to achieve social and economic success

Project Director
Diane Craig
Organization
University of Florida
Accession Number
7000012

Extension Publications – New and Major Revisions

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

EDIS (Electronic Data Information Source) is the premier electronic information storage and retrieval system of peer- reviewed Extension scholarship that enables citizens to access information provided by the Cooperative Extension Service at the University of Florida. Developed in the 1990s, the EDIS library has grown to be a large collection of electronic files with a variety of purposes.

EDIS has a specialized role in UF/IFAS Extension communication. It is a collection of official longform content developed in support of Extension program area goals and objectives and co-published by Florida Cooperative Extension and one of the UF/IFAS academic departments. UF/IFAS ensures the authority and authenticity of EDIS publications through several processes:

> Authors must include current UF/IFAS academic faculty. County faculty may author publications in collaboration with UF/IFAS academic faculty.
>
> Fact sheets and major revisions of fact sheets have been peer reviewed by internal and external reviewers that have been selected by the corresponding author's Department or Center EDIS editors.
>
> Internal reviewers should include at least one UF/IFAS specialist who can provide expert review on content.
>
> External reviewers should review content and include at least one individual with expertise in the subject matter who is not employed by the home Department/Center.
>
> All EDIS publications and creative works have been approved by the Department Chair and Center Director of the corresponding author and the statewide leader of the relevant Extension program(s).

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

EDIS publications share four essential qualities:

1. They support or contribute to Extension programs.

2. They communicate information pertinent to target audiences and their issues, including ways to foster healthy lifestyles, environment, or economy.

3. They provide production and management recommendations by UF/IFAS.

4. They are both sufficient to the topic and written in a way that is relevant to our partners and target audiences.

Briefly describe how your target audience benefited from your project's activities.

Typically, target audiences include agricultural and horticultural producers, homeowners, Extension agents, industry or governmental staff, land managers, other professionals, youth and interested citizens. In most cases, EDIS publications help answer the questions any UF/IFAS Extension clientele would have about the topic of interest. In cases where the target audience will have specialized expertise, such as teachers or financial advisors, EDIS is an appropriate venue for sharing information with them.

Briefly describe how the broader public benefited from your project's activities.

New EDIS publications:

1. ¿Cuánto Dinero debo de Ahorrar para mi Retiro? FCS7251-Span/FY1495, 05/2021, DOI:10.32473/edis-fy1495-2021

2. Am I Ready? Competencies and Skill Sets Needed for Virtual Conference Hosts: WC390/AEC728, 5/2021, DOI:10.32473/edis-wc390-2021

3. An Introduction to Utilizing Community Leaders to Expand Resiliency Efforts Following a Disaster: WC383/AEC721, 2/2021, DOI:10.32473/edis-wc383-2021

4. Brochures and Newsletters: WC131, 3/2021, DOI:10.32473/edis-wc131-2021

5. Conducting the Needs Assessment #3: Educator Motivations, Barriers, and Objections: WC386/AEC724, 3/2021, DOI:10.32473/edis-wc386-2021

6. Conducting the Needs Assessment #5: Phase 1—Pre-assessment: WC393/AEC732, 6/2021, DOI:10.32473/edis-wc393-2021

7. Defining and Performing the Functions of Extension Mentors: WC401/AEC740, 11/2021, DOI:10.32473/edis-wc401-2021

8. Don’t Fake It, Make It! Technology and Tools for Virtual Hosts: WC391/AEC729, 5/2021, DOI:10.32473/edis-wc391-2021

9. Elements of Document Design: WC129, 4/2021, DOI:10.32473/edis-wc129-2021

10. Engaging Learners via Live Online Learning: WC395/AEC734, 8/2021, DOI:10.32473/edis-wc395-2021

11. Generations at a Glance: WC398/AEC737, 11/2021, DOI:10.32473/edis-wc398-2021

12. Getting the Most out of Social Media: Creating a Social Media Plan: WC221/AEC559, 7/2021, DOI:10.32473/edis-wc221-2021

13. Getting the Most out of Social Media: Strategic Practices When Using Social Media: WC223/AEC561, 7/2021, DOI:10.32473/edis-wc223-2021

14. Getting the Most out of Social Media: Successfully Using Social Media: WC222/AEC560, 7/2021, DOI:10.32473/edis-wc222-2021

15. Getting the Most out of Social Media: What Is Social Media? WC220/AEC558, 7/2021, DOI:10.32473/edis-wc220-2021

16. Leading Difficult Conversations Series #2: Preparing for the Conversation: AEC715/WC378, 1/2021, DOI:10.32473/edis-wc378-2021

17. Leading Difficult Conversations Series #3: Creating a Safe Conversation Environment: WC384/AEC722, 3/2021, DOI:10.32473/edis-wc384-2021

18. Leading Difficult Conversations Series #4: Communication Styles under Stress: WC404/AEC743, 12/2021, DOI:10.32473/edis-wc404-2021

19. Mapping the US Census Data Using the TIGER/Line Shapefiles: AE557/AE557, 05/2021, DOI:10.32473/edis-ae557-2021

20. Mental Health Effects of Media Exposure Following a Natural Disaster: FCS3360/FY1499, 10/2021, DOI:10.32473/edis-fy1499-2021

21. Plant Selection Behavior and Promotion Use by Garden Center Customers: FE1098/FE1098, 05/2021, DOI:10.32473/edis-fe1098-2021

22. Prepare Your Property for Hurricane Season: FOR367/FR436, DOI:10.32473/edis-fr436-2021

23. Preparing for a News Interview: WC021/AEC338, 5/2021, DOI:10.32473/edis-wc021-2021

24. Producing an Educational Video: AEC343/WC024, 6/2021, DOI:10.32473/edis-wc024-2021

25. Purchasing Car Insurance: What College Students Should Know: FCS3356/FY1493, 01/2021, DOI:10.32473/edis-fy1493-2021

26. Setting Transparent Expectations for Successful Group Work: WC389/AEC727, 4/2021, DOI:10.32473/edis-wc389-2021

27. The Savvy Survey #6e: Understanding How Question Type Impacts Future Analysis: AEC719/PD083, 2/2021, DOI:10.32473/edis-pd083-2021

28. The Savvy Survey #9: Gaining Institutional Review Board Approval for Surveys: PD84/AEC730, 6/2021, DOI:10.32473/edis-pd084-2021

29. The Road to Recovery #1: Introduction: WC379/AEC716, 1/2021, DOI:10.32473/edis-wc379-2021

30. The Road to Recovery #3: Facilitating Community Resilience for Effective Pandemic Response: WC380/AEC717, 1/2021, DOI:10.32473/edis-wc380-2021

31. The Road to Recovery #4: Evaluating Virtual Techniques to Reach Clientele and Promote Equity: WC387/AEC725, 3/2021, DOI:10.32473/edis-wc387-2021

32. The Road to Recovery #5: Self-Assessment of Virtual Facilitation to Build Trust: WC388/AEC726, 3/2021, DOI:10.32473/edis-wc388-2021

33. The Road to Recovery #6: Evaluating Virtual Strategies to Build Community Capacity and Resilience: WC385/AEC723, 3/2021, DOI:10.32473/edis-wc385-2021

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

EDIS publications with major revisions:

1. Conducting Interviews for News Stories: WC194/AEC532, rev. 6/2021, DOI:10.32473/edis-wc194-2021
2. Developing Effective Media Relations for Your County Program: WC020/AEC339, rev. 6/2021, DOI:10.32473/edis-wc020-2021
3. Document Design: WC127, rev. 3/2021, DOI:10.32473/edis-wc127-2021
4. Grammar and Punctuation: AEC530/WC192, rev. 5/2021, DOI:10.32473/edis-wc192-2021
5. Graphic File Formats: WC130, rev. 4/2021, DOI:10.32473/edis-wc130-2021
6. Media Relations: WC111, rev. 6/2021, DOI:10.32473/edis-wc111-2021
7. News Media Writing: WC190/AEC528, rev. 6/2021, DOI:10.32473/edis-wc190-2021
8. News Releases and Public Service Announcements: WC113, rev. 6/2021, DOI:10.32473/edis-wc113-2021
9. News Writing for Print: WC191/AEC529, rev. 6/2021, DOI:10.32473/edis-wc191-2021
10. News Writing for Television and Radio: WC193/AEC531, rev. 6/2021, DOI:10.32473/edis-wc193-2021
11. Principles of Document Design: WC128, rev. 4/2021, DOI:10.32473/edis-wc128-2021
12. Producing Your Own Video Program: AEC340/WC022, rev. 7/2021, DOI:10.32473/edis-wc022-2021
13. Video Editing: WC126, rev. 7/2021, DOI:10.32473/edis-wc126-2021
14. Video Equipment and Video Shot Composition: WC125, rev. 7/2021, DOI:10.32473/edis-wc125-2021
15. Video Production: Getting Started: WC123, rev. 6/2021, DOI:10.32473/edis-wc123-2021

Affordable Housing Program Provides Financial Help and Stability

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Affordable housing is a critical problem in Florida. The Florida Housing Coalition (2020) reports that 59% of residents are housing cost-burdened because they expend more than 30% of their income on housing. Housing stability is a fundamental requirement for educational success, good health, and building wealth.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

UF/IFAS Extension is a HUD-approved housing counseling agency. We provide education and counseling for renters, homebuyers, and homeowners that help families manage resources to obtain and maintain stable housing. HUD-approved agency status authorizes agents to provide classes required to access financial assistance for rental assistance, home purchase, and home rehabilitation. Agents work collaboratively to deliver monthly virtual homebuyer education workshops and home maintenance classes (e.g., healthy homes, integrated pest management), as well as financial literacy classes on diverse topics. In 2021, the team submitted its first HUD grant application. The funding will support a partnership with FAMU to deliver housing counseling and education to Florida Panhandle counties. Classes are offered in Spanish and English, and available on days, evenings, and weekends. Individual counseling is available to all participants. Florida Master Money Mentor volunteers expand the capacity of the affordable housing team.

The team includes 20 Extension agents serving 24 Florida counties. The team is supported by county staff, one part-time HUD-certified housing counselor, one regional specialist, two UF faculty members, and Dr. Michael Gutter, Associate Dean and Program Leader. UF/IFAS Extension partners with local governments, Bank of America, Regions Bank, Habitat for Humanity on affordable housing programs.

Briefly describe how your target audience benefited from your project's activities.

- 1,287 participants completed homebuyer education in 2021.
- 167 participants completed financial literacy classes in 2021.
- Agents provided 288 households with individual counseling in 2021.
- Florida Master Money Mentor volunteers served over 300 hours.
- 26% of participants purchased homes within 6 months following the homebuyer workshop.
- 10% of participants received down payment assistance in the amount of $10,000 - $30,000.
- Six-month follow-up surveys found: 77% reported improved budgeting, 75% reported improved credit scores, 60% paid down debt, and 57% increased savings.

Briefly describe how the broader public benefited from your project's activities.

Communities benefit from increased home ownership by expanding tax base, increasing financial stability in and property values in neighborhoods, and lower chance of bankruptcies. Employers benefit through the reduction in amount of time financially distressed workers spend focused on financial issues at work and reduced absenteeism and turnover that may occur due to stress.

Economic Recovery Through Commercial Incubator Kitchens

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

A commercial kitchen incubator program was started as a direct result of a community needs assessments. UF/IFAS Extension Pasco County surveyed 1,348 citizens and found they wanted commercial kitchen space and entrepreneurial training to start new food-based businesses. In the assessment, the Extension agent identified barriers, included insufficient business knowledge (27%); a need for food safety training (35%); a lack of access to local and regional markets, lack of resources and funds (61%), a need to understand state and local licenses, laws and regulations (34%) and a lack of commercial kitchen space (88%).

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

UF/IFAS Extension Pasco County developed a partnership with Welbilt, Inc., to donate the commercial kitchen equipment, Extension, along with Pasco County Facilities Management redesigned a county-owned building to support a licensed commercial kitchen. The Pasco County Commercial Incubator Kitchen is a partnership between Pasco County government, the Pasco County EDC, Welbilt, Inc. and UF/IFAS Extension Pasco County. In the kitchen, UF/IFAS Extension Pasco County teaches food-safety certification and preservation classes. At the same facility, the Pasco County Economic Development Council (EDC) offers SMARTstart Small Business entrepreneurial classes. The program aims to help citizens start new food-based businesses, while removing many of the identified barriers. The program uses strategies such as certifying new food business owners and ensuring compliance with state and local regulations, as well as offering entrepreneurial trainings, resource sharing and commercial kitchen space.

Briefly describe how your target audience benefited from your project's activities.

The commercial kitchen opened in August 2019. Since then, 22 new businesses have been started with 13 starting after the pandemic began. Currently, 17 of the 22 businesses are minority owned, and two of those are also veterans. One veteran business owner recently opened a storefront because of the program. Six people are now back to work after losing jobs caused by the pandemic, and a food truck has been started. Eight of the new business owners now operate online sales and five owners have been certified in food safety. We estimate that 20 new jobs have been started with thousands of dollars infused into the local economy. Three food items, developed by these incubator businesses, are now featured in restaurants and grocery stores throughout Florida.

Briefly describe how the broader public benefited from your project's activities.

As a result of new or expanded businesses created by this program, the greater community benefits through additional income and tax revenue, lower unemployment, more business diversity, and additional goods and services.

Empowering Florida's Communities to Thrive

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Challenges are abundant in Florida’s rural and urban communities. Extension is well-positioned to help local communities and governments navigate these social, civic, cultural, financial, environmental, developmental, and growth management challenges.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Florida Extension’s Community Resource Development (CRD) program seeks to engage and empower communities to bring about change through economic development, capacity building, public policy education, and civic engagement. Many other Extension programs lead, directly or indirectly, to better jobs, new or expanded businesses, and leadership opportunities at work or in the community. In 2021, the Community Resource Development leadership team focused on increased training of Extension professionals on CRD-related topics, including helping them to develop a better understanding of what is CRD, how to evaluate these programs, and how to report their impact.

Briefly describe how your target audience benefited from your project's activities.

Based on data submitted by UF/IFAS faculty we saw a large increase in CRD program activity among Extension agents and particularly County Extension Directors.

Among all program areas in 2021, facuty reported:

5,849 businesses created, retained or expanded (either directly or indirectly)

16,439 jobs created or retained (either directly or indirectly)

25,191 adult program participants reporting new leadership roles or new opportunities taken

Among those faculty who report under the UF/IFAS Community Resource Development initiative team (N=57; FTE=21.4):

287 new alliances formed through some type of formal method such as a Memo of Understanding (MOU) or informal agreements

Volunteers worked 112,068 hours with Extension clientele on CRD-related issues, valued at $3.2 million (source: IndependentSector.Org value of volunteer time of $28.54.)

184 new or revised plans adopted that have begun to be implemented in a community, local government, business or relating to a disaster

$22.1 million in grants generated by organizations or communities with assistance from CRD Extension agents

$5.1 million in other in-kind resources contributed by organizations and communities with assistance from CRD Extension agents

Briefly describe how the broader public benefited from your project's activities.

The ability for local governments to manage and tackle community problems and issues effectively is key to building trust in government. According to the OECD, "[t]rust is essential for social cohesion and well-being as it affects governments' ability to govern and enables them to act without having to resort to coercion." (Government at a Glance, 2013). Studies show that a high level of trust in government may lead to increased efficiency and effectiveness of government operations.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Infographic used to educate stakeholders on the scope and impact of UF/IFAS CRD programs: https://pdec.ifas.ufl.edu/impacts/CRD.pdf

Critical Issue

Natural Resources and Environment

Data Driven Discovery in Ecology

Project Director
Ethan White
Organization
University of Florida
Accession Number
1023956

Data Driven Discovery in Ecology

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

We will use data-driven discovery, where large amounts of data are used to generate understanding of patterns and processes, to provide an improved understanding of ecological systems and make predictions for how they will change in the future. This work includes the development and assessment of ecological models and cyberinfrastructure for the purpose of

understanding
how ecological systems change through time and making forecasts for their future states.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

1. Development & assessment of ecological models: Development of new models for the population dynamics of small mammals in Arizona.
2. Ecological forecasting: Ongoing development and improvements to ecological forecasts for small mammals in Arizona, including a shift of high performance computing infrastructure for makign forcasts and a new dynamic website for displaying the results of the forecasts.
3. Cyberinfrastructure development: Ongoing developement of the Data Retriever software in Python, R, and Julia.
4. Remote sensing: Development of a new pipeline for conducting end-to-end processing of remote sensing imagery of birds in the Everglades. Development of new AI deep learning models to detect birds in remote sensing imagery.
5. Training in data-driven discovery: Improvements to the Data Carpentry for Biologists course including development of a full set of video lectures that have been viewed thousands of times on YouTube.

Briefly describe how your target audience benefited from your project's activities.

Two graduate students and one undergraduate were recieved training in interdisciplinary collaboration and networking opportunities for professional development.

Briefly describe how the broader public benefited from your project's activities.

Publications, software releases, research related social media posts, new websites.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Nothing to report.

Enhancing and conserving Florida's natural resources and environmental quality

Project Director
Diane Craig
Organization
University of Florida
Accession Number
7000010

Back to Nature Program Builds Awareness and Advocacy

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Osceola County is one of the fastest growing counties in Florida. The county manages 40 conservation areas that many residents are not aware of, including the many free recreational opportunities these parks provide. Increasing visits to these parks has the opportunity for people to receive the benefits time in nature provides. Twenty minutes outside has been shown to reduce stress cortisol levels and improve mood and the program aimed to encourage the use of free outdoor conservation areas for healthier living. Both improved mood and low-cost or free activities are of high interest at the time of this programs development due to impacts COVID-19 has had on individuals and families.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

To raise awareness and encourage increased time in natural areas, UF/IFAS Extension Osceola County developed the Back to Nature program. The virtual class covered the benefits of outdoor recreation, hiking tips, local conservation areas and conservation management practices. The county's urban forester joined the meetings and highlighted conservation areas open to the public and their recreation opportunities.

Briefly describe how your target audience benefited from your project's activities.

The class of 39 participants showed a 44% knowledge gain about the conservation areas in their county and 90% of respondents indicated they were somewhat or very likely to visit a local park due to the class. While the class group was small in scope, the project develops the potential for a framework to measure ecosystem services these outdoor areas provide. Additionally, raising awareness of these parks can also raise support for parks, green spaces and land conservation. With rapid development within the county, this awareness is critical to the conservation of these areas and will be paramount to help avoid negative impacts to local natural habitats. In the future, Extension agents hope to expand these classes to larger programs.

Briefly describe how the broader public benefited from your project's activities.

When COVID-19 sent people indoors and sheltered at home to avoid illness, UF/IFAS Extension developed the Back to Nature program to encourage safe, affordable outdoor activities for families and individuals. The program created a two-fold outcome getting people outside to enjoy outdoor spaces and increasing the value the public places on outdoor areas.

Climate Resiliency Program Helps Reduce Costs for Communities and Individuals

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

In 2017, Moody's Investors Service issued a report to cities that they will be evaluated, in part, on how they prepare for both short-term climate "shocks" and longer-term trends associated with climate change. According to the House Select Committee on the Climate Crisis, cities that invest in climate preparedness would see a higher bond rating, allowing them to attract more low-interest capital to invest in a broader range of strategies to prepare for the short and long-term impacts of climate change. Cities that have not developed a climate resilient policies and investment could be at a credit disadvantage.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

A UF/IFAS Extension climate resiliency program in Monroe County increases climate resilient actions by individuals and governments through education, outreach and tools to reduce risk. Extension agents provide training and direct assistance to local governments, allowing Florida cities to develop local solutions specific to their "shocks" and climate trends. For individuals, this program increases critical decision-making skills about the impacts of individual choices on climate change. Residents learn about climate change and risk in terms that are understandable to the general public. Individuals learn to change daily habits around consumption and waste and implement home efficiency improvements. These behaviors can increase efficiency, reduce spending and encourage a healthier lifestyle of the individual. Educational outreach provided in this program supports the National Flood Insurance Program (NFIP) Community Rating System (CRS) and Program for Public Information (PPI) so that people in the community are educated about the flood hazard, flood insurance, the natural functions of floodplains, and flood loss reduction measures. The PPI program credits educational outreach initiatives through flood insurance premium reductions determined by a community's CRS Class.

Briefly describe how your target audience benefited from your project's activities.

The combined effort of the UF/IFAS Extension agent, eight community members and 11 municipal staff has enabled Monroe County to reach CRS Level 4 designation which saves each flood policy holder in the county 25% for an average of $373 per year for a county-wide total of $5.3 million. The program is set to receive level 3 designation in April 2022 for a discount of 35%, one of only two communities in Florida to earn that designation.

Briefly describe how the broader public benefited from your project's activities.

To address the problem of climate change people must be given the knowledge and resources to act to reduce risks. Extension programs that are targeting local government and citizens results in improved economic prospects through high bond ratings and reduced cost of flood insurance.

Extension Publications – New and Major Revisions

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

EDIS (Electronic Data Information Source) is the premier electronic information storage and retrieval system of peer- reviewed Extension scholarship that enables citizens to access information provided by the Cooperative Extension Service at the University of Florida. Developed in the 1990s, the EDIS library has grown to be a large collection of electronic files with a variety of purposes.

EDIS has a specialized role in UF/IFAS Extension communication. It is a collection of official longform content developed in support of Extension program area goals and objectives and co-published by Florida Cooperative Extension and one of the UF/IFAS academic departments. UF/IFAS ensures the authority and authenticity of EDIS publications through several processes:

Authors must include current UF/IFAS academic faculty. County faculty may author publications in collaboration with UF/IFAS academic faculty.

Fact sheets and major revisions of fact sheets have been peer reviewed by internal and external reviewers that have been selected by the corresponding author's Department or Center EDIS editors.

Internal reviewers should include at least one UF/IFAS specialist who can provide expert review on content.

External reviewers should review content and include at least one individual with expertise in the subject matter who is not employed by the home Department/Center.

All EDIS publications and creative works have been approved by the Department Chair and Center Director of the corresponding author and the statewide leader of the relevant Extension program(s).

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

EDIS publications share four essential qualities:

1. They support or contribute to Extension programs.

2. They communicate information pertinent to target audiences and their issues, including ways to foster healthy lifestyles, environment, or economy.

3. They provide production and management recommendations by UF/IFAS.

4. They are both sufficient to the topic and written in a way that is relevant to our partners and target audiences.

Briefly describe how your target audience benefited from your project's activities.

Typically, target audiences include agricultural and horticultural producers, homeowners, Extension agents, industry or governmental staff, land managers, other professionals, youth and interested citizens. In most cases, EDIS publications help answer the questions any UF/IFAS Extension clientele would have about the topic of interest. In cases where the target audience will have specialized expertise, such as beekeepers or golf course managers, EDIS is an appropriate venue for sharing information with them.

Briefly describe how the broader public benefited from your project's activities.

New EDIS publications:

1. A Guide to Nesting Sea Turtles in Florida: FA235, 9/2021, DOI:10.32473/edis-fa235-2021

2. Artificial Reefs and People: How We Create Them and How They Affect Us: FA231, 02/2021, DOI:10.32473/edis-fa231-2021

3. Biology and Management of Poison Ivy (Toxicodendron radicans) in the Home Landscape: EP609/ENH1345, 7/2021, DOI:10.32473/edis-ep609-2021

4. Concepts for Sustainable Landscape Mosaics: ENH1341/EP605, 6/2021, DOI:10.32473/edis-ep605-2021

5. Creating Wildflower Habitats in Golf Course Out-Of-Play Areas: ENY2059/IN1316, 3/2021, DOI:10.32473/edis-in1316-2021

6. Cues to Care: Are city landowners willing to make ecological landscapes? WEC444/UW489, 12/2021, DOI:10.32473/edis-uw489-2021

7. Deep Learning Classification of High-Resolution Drone Images Using the ArcGIS Pro Software: FOR374/FR444, 10/2021, DOI:10.32473/edis-fr444-2021

8. Florida's Introduced Reptiles: Brown Anole (Anolis sagrei): WEC441/UW485, 7/2021, DOI:10.32473/edis-uw486-2021

9. Florida's Introduced Reptiles: Green Iguana (Iguana iguana): WEC440/UW485, 7/2021, DOI:10.32473/edis-uw485-2021

10. Growth and Spread of the Argentine Black and White Tegu in Florida: WEC347/UW482, 6/2021, DOI:10.32473/edis-uw482-2021

11. La ecología de las algas carofíceas (Charales): SS-AGR-448-Span/AG452, 05/2021, DOI:10.32473/edis-ag452-2021

12. Large Snake Lineup for South Florida: WEC439/UW434, 6/2021, DOI:10.32473/edis-uw484-2021

13. Living Shoreline Monitoring—How do I evaluate the environmental benefits of my living shoreline? SS694/SL481, 1/2021, DOI:10.32473/edis-ss694-2021

14. Navigating the Non-Native Planting Rule: Permit Requirements for Large-Scale Plantings of Non-Native Species in Florida: SS-AGR-453/AG454, 06/2021, DOI:10.32473/edis-ag454-2021

15. Oriental Rat Flea Xenopsylla cheopsis (Rothschild, 1903) (Insecta: Siphonaptera: Pulicidae): EENY-775/IN1330, 8/2021, DOI:10.32473/edis-IN1330-2021

16. Salvaging Native Plants from Sites Slated for Development: Stop Wasting Resources: FOR373/FR442, 10/2021, DOI:10.32473/edis-fr442-2021

17. Standardized invasive species terminology for effective education of Floridians: FOR730/FR439, 8/2021, DOI:10.32473/edis-fr439-2021

18. Streaming Science #1: An Introduction to Using Mobile Technologies for Engagement with Your Target Audience: WC397/AEC736, 10/2021, DOI:10.32473/edis-wc397-2021

19. The Ecology of Charophyte Algae (Charales): SS-AGR-448/AG448, 01/2021, DOI:10.32473/edis-ag448-2021

20. The Economic Benefits Associated with Florida's Artificial Reefs: FE649, 7/2021, DOI:10.32473/edis-fe649-2021

21. Top 10 Raptors of Northern Belize: WEC348/UW483, 6/2021, DOI:10.32473/edis-uw483-2021

22. What is oyster shell recycling? SS703/SL490, 7/2021, DOI:10.32473/edis-ss703-2021

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

EDIS publications with major revisions:

1. Invasive Plants in Natural Areas: Air Potato (Dioscorea bulbifera): SS AGR 164/AG112, rev. 12/2021, DOI:10.32473/edis-ag112-2021

2. Brazilian Peppertree Control: SS-AGR-17/AA219, rev. 11/2021, DOI:10.32473/edis-aa219-2021

Living Shorelines Course for Marine Contractors Benefits Environment and Businesses

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Living shorelines are softer, greener alternatives to stabilize shorelines from erosion, sea level rise, and other damage. They protect, restore, or enhance natural shoreline habitat and maintain coastal processes through the strategic placement of plants, oyster shell, and other structural organic materials. Demand for these structures is increasing, and a new course offers a mechanism to increase the supply of contractors who can fill this need.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The national award-winning Extension program “Living Shorelines Course for Marine Contractors” was developed by Sea Grant agents with the Florida Fish and Wildlife Conservation Commission (FWC) and other partners in 2019. In 2021, the Sea Grant team adapted the curriculum to a virtual format and offered the course multiple times throughout the year. The curriculum develops skills contractors need to design, permit, implement, monitor, and maintain living shorelines for property owners, either alone or in addition to an existing seawall or other structure. The course covers the entire curriculum

created by FWC and includes a self-guided shoreline site visit. Contractors, regulatory staff, and other living shoreline practitioners from around Florida are invited to participate in this course. The course fee includes a full-color copy of the manual, continuing education units and instructional resources.

Briefly describe how your target audience benefited from your project's activities.

The Living Shorelines Training for Marine Contractors Training program provided 36 private-sector businesses with a new set of skills that helped them add new services to their business. This program supported 44 jobs worth between $3,222,120 and $4,053,280 (44 people * average wage of $73,230/yr to $92,120/yr). Salary data are from the Bureau of Labor Statistics and are specific to the Environmental Scientists and Specialists (low end) and Environmental Engineers (high end). The total investment by participants is valued at $12,394 to $15,590 (44 participants * 8 contact hours * $35.21 to $44.29 hourly wage) and participants also invested $3,300 to obtain the training.

One consultant who participated in the program in Sarasota County diversified her business and formed a strategic partnership with anothe program participant to expand their businesses. To aid that partnership effort, one company hired a new engineer to assist in design of new projects. As a result, this company has been able to expand into projects in counties which have strict regulations on shoreline stabilization and have prioritized living shorelines for new projects. They are currently working on residential projects to install living shorelines or hybrid approaches that result in more gradual shoreline slopes vs. a vertical seawall.

Briefly describe how the broader public benefited from your project's activities.

Extension programs can help businesses can diversify, leading to increased opportunities and revenues, while helping homeowners meet the enviromental needs and regulations set by Florida's counties. Counties benefit through increased tax revenue from successful businesses with high-paying jobs, and through reduced outlay for erosion control and mitigation.

Repurposed Artificial Reefs Helps Local Economy

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Three offshore trips from the Port of Panama City were made from July through September 2021 to deploy 5 large industrial spools provided by Oceaneering, Panama City, FL. The new reefs are 11.5 NM SSW of the St Andrew Bay Pass in the Gulf of Mexico. The industrial spools (or reels) were previously used in the storage and manufacturing of multi-purpose cable for the oil and gas industry. Once the reels became warped or bent after prolonged use, they were no longer suitable in the production process.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The largest reel used was about 35 feet high and weighed 60 tons, while the smallest reel was 22 feet high and weighed 40 tons. These reels are highly prized by anglers and divers as artificial reef material. The equivalent value of an engineered concrete artificial reef is $75,000.

Briefly describe how your target audience benefited from your project's activities.

UF/IFAS Extension Bay County worked closely with the Port of Panama City, Oceaneering, the Bay County Tourist Development Council (TDC) and Board of County Commissioners (BOCC), and Mar-K Towing to complete the project. Over 60 volunteers and organizational representatives contributed to the project’s success. Regulatory agencies also provided guidance and support for the reef deployments. Extension personnel, along with funding provided for the project from the TDC and BOCC, served as a steppingstone to create a cohesive group ready to work together on future artificial reef projects that will benefit local tourism, commercial, and recreational interests.

Briefly describe how the broader public benefited from your project's activities.

An economic study conducted by researchers at the University of West Florida in 2015 estimated 49 million dollars in personal income can be attributed to offshore artificial reefs in Bay County. The researchers also reported artificial reefs support approximately 1,900 jobs in the fishing and diving industry in Bay County.

Routine Visit to Local Bait Shops Results in Big Savings for Owner

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Farm gate sales of Florida aquaculture products (in real dollars) as reported by the USDA is approximately $72 million. Based on sales data, Florida ranked 9th in the nation for total overall aquaculture value in 2018.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

While conducting a routine stakeholder visit to a local bait shop the agent mentioned his aquaculture experience and asked if he could help answer any questions regarding animal husbandry or recirculating aquaculture system components. The owner stated that everything was fine but after some conversation he mentioned they have been experiencing reduced bait quality from their supplier and as a result drive further to restock their supply of quality baits. The agent began asking questions regarding the system's current water parameters. The owner stated the shop regularly uses dry salt to create new system water and that the system was filled with full strength sea water. The agent then observed the species in the bait system and discovered that they were estuarine of origin and are capable living in reduced salinities. The agent made recommendations to lower the system's salinity as this change would reduce osmoregulatory stress and potentially decrease mortalities while saving on operating costs. The agent then followed up in an email further explaining osmoregulation and provided species specific peer reviewed literature to support his claim.

Briefly describe how your target audience benefited from your project's activities.

A few days later the owner of the shop sent an email thanking the agent as they implemented his changes and already observed a difference survival and quality of the baits. Through a routine stakeholder visit the agent may save this local business thousands of dollars by reducing the amount of product loss, salt used, and resources spent during resupply efforts. This story also has positive environmental effects through the reduction of salt discharged from the shop into the municipal sewer system and reducing the need to harvest baits.

After following up with the bait shop owners and consulting with Sea Grant economists for values in reduction of dead loss and savings on salt use the agent was able to get an accurate estimate on savings and potential increase in revenue. The owner's self-reported $100 savings a month on prepared salt for the system accounts for $1200 in annual savings. The bait shop owners did not report quantifiable data on how other species in the system were affected by the change in salinity but reported a 20 percent reduction of shrimp dead loss which at $4.00 a dozen equates to $8,528 increase in revenue of shrimp that otherwise would have died in the system.

Briefly describe how the broader public benefited from your project's activities.

Assisting business owners with research-based education and practices can lead to their increased profits and success, which benefits the local and state economy.

Seagrass Monitoring Program Engages Citizen Scientists

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Eyes on Seagrass is a community science monitoring program that began based on a community need to evaluate the abundance of seagrasses and macroalgae in Charlotte Harbor. When there are too many nutrients in the water, macroalgae have a competitive advantage over seagrasses, and anglers reported seeing a shift from seagrass to macroalgae. As

macroalgae increase in abundance, they may shade seagrasses, decreasing productivity and impacting important fish habitats. Macroalgal blooms can result if development, canals, and climate change increase loads of nutrients.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Community science programs have been monitoring macroalgae and seagrasses in Florida for years. The Sarasota County Seagrass Survey began engaging community members in the annual monitoring of Sarasota Bay's seagrass habitats in 2014. The Eyes on Seagrass program, started by a Florida Sea Grant extension agent and a UF/IFAS biogeochemistry researcher in Charlotte Harbor in 2019, expanded to Escambia, Brevard, and Pinellas counties in 2021.

In this program, volunteer snorkelers monitor drift macroalgae and their impacts on seagrass meadows at multiple sites within each estuary. Management agencies can incorporate these data into historical datasets to fill gaps in knowledge. Working with community scientists increases public interest in estuarine habitats and stewardship. Volunteers collected seagrass and macroalgae abundance data, species composition, epiphyte density, seagrass blade lengths, and macroalgae wet weight.

Briefly describe how your target audience benefited from your project's activities.

In 2021, a natural disaster occurred in Tampa Bay when nutrient-rich wastewater from Piney Point flowed into Tampa Bay. The Tampa Bay Estuary Program utilized the Eyes on Seagrass monitoring protocols as a rapid assessment tool to respond efficiently and quickly. State management agencies such as the Florida Department of Environmental Protection (DEP) and the Florida Fish and Wildlife Conservation Commission (FWC) lack the resources to monitor and manage several aspects of Florida's coastal/natural ecosystems. This results in gaps in data sets that are critical for the management of these systems. Such data include coastal water quality, seagrass cover, and macroalgae abundance. Management data gaps have been filled using Eyes on Seagrass data and protocols, allowing important partners to gain the data they need to make improved policies.

Briefly describe how the broader public benefited from your project's activities.

UF/IFAS Extension is uniquely positioned to unite the public with opportunities to engage with several natural resource activities that can help address these issues and be prepared for rapid responses when disasters occur. By engaging Florida's residents, UF/IFAS Extension can address both needs: the need for enhanced natural resource literacy and the need for more boots on the ground to collect valuable scientific data, improve habitat quality, and respond to other environmental concerns.

Stormwater Management Reduces Pollution

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Stormwater runoff pollution is one of the most important water quality issues facing northwest Florida. The Panhandle has the highest rainfall averages in the state (65" annually), and communities face increased flooding and erosion from record-breaking hurricanes and rainstorms. When developers complete the construction and sale of a new neighborhood, it often becomes part of the neighborhood association covenants that the residents are responsible for the stormwater ponds. Homeowners' associations (HOAs) are generally led and populated by laypersons with little experience or information about the specifically engineered stormwater ponds. Unless local municipalities take over pond maintenance, HOA's are frequently left with erosion problems, clogged ponds, overgrown or inappropriate pond vegetation, and malfunctioning filters. Providing education to these homeowners about stormwater treatment can prevent expensive problems that may affect the health and safety of the neighborhood.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

I write a weekly blog, explaining a wide variety of plants, wildlife, and environmental concepts that might be of interest to residents. In late December 2020, I wrote an article explaining the purpose, types, and maintenance needs of residential stormwater ponds. Based on the information in this article, I was contacted early in 2021 by representatives from two large

homeowners' associations in southwest Escambia County for help in finding solutions to concerns about their ponds. I met each group in the field in February to walk their neighborhoods, discuss solutions for erosion problems, and explain why certain stormwater features had been put into place.

Briefly describe how your target audience benefited from your project's activities.

As part of the Stormwater Management in a Changing Florida Panhandle 2021 Webinar Series, eighteen (18) participants responded to a 5-month follow-up survey. Seventy-three percent (73%) stated they used the information in their line of work, 42% stated they modified decisions related to stormwater management based on webinar information presented, and 67% had shared the information they learned about Green Stormwater Infrastructure and Low Impact Development with others.

Briefly describe how the broader public benefited from your project's activities.

In addition to the improved water quality in Florida due to stormwater education and research, the knowledge gained can lead to new initiatives that can provided even greater environmental benefits. For example, a recent Coastal Shoreline Restoration Master Naturalist graduate, an employee with Santa Rosa County, parlayed her new knowledge into a $499,000 grant and partnership to create green infrastructure in the county. https://ssrnews.com/santa-rosa-county-wins-499k-to-build-and-promote-green-stormwater-infrastructure/?fbclid=IwAR0PZfF-epHWLpyeJwFzKwOghjgeCntZuHJ36gEXsmiWQ1eGe-fFtYIcC9w

Critical Issue

Nutrition, Health and Food Safety

Elimination of norovirus from food and agricultural water using chitosan microparticles

Project Director
Naim Montazeri
Organization
University of Florida
Accession Number
1019933

Elimination of norovirus from food and agricultural water using chitosan microparticles

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

This overall goal of this study is to improve the microbial safety of water and food with regard to human norovirus, which, according to the WHO, is the leading cause of foodborne diarrheal diseases worldwide. Human norovirus is persistent in the environment and resistant to many conventional chemical disinfectants at the recommended use concentrations.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

• Optimized the concentration of chitosan microparticles to obtain a significant reduction in viral load
• Provided evidence on the capability of chitosan microparticles to remove virus particles from water as alternative environmental-friendly chemicals to reduce the risks of pathogen transmission in the environment
• Even though agricultural water was not tested in this research, it is anticipated that chitosan microparticles can provide additional protection on reducing the viral load of water prior to its utilization for irrigation purposes.

Briefly describe how your target audience benefited from your project's activities.

• This research provided opportunities for undergraduate and graduate students to learn about the fundamentals and research skills in food virology and exercised practical skills in the laboratory for the conduct of the research.
• The students learned and participated in technical writing, such as peer-reviewed manuscripts, abstracts, protocols, etc.
• The antibacterial activity of chitosan microparticles was demonstrated and exercised in the Food Microbiology Laboratory

(FOS 4222L/5225C), where I serve as the instructor. My graduate student who conducted the research served as a teaching assistant on this course and incorporated the exercise into the laboratory session on the use of antimicrobials. In this laboratory exercise, the students determined the Minimum Inhibitory Concentration (MIC) of chitosan microparticles against Salmonella.

Briefly describe how the broader public benefited from your project's activities.

Nothing to report at this time.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

The objective on the application of CM on food contact surfaces was not pursued as the antiviral efficacy of CM seems to be through the attachment and removal rather than destruction of virus particles. Further efforts will focus on the use of CM in the filtration of environmental water. The progress of research was impacted by COVID-19 related issues and it was not possible to accomplish several sub-objectives where the fund and personnel were available.

Closing Out (end date 09/06/2023)

Combating Antibiotic Resistance

Project Director
Daniel Czyz
Organization
University of Florida
Accession Number
1017902

Combating Antibiotic Resistance

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The importance of this project is underlined by a desperate need to develop, alternative to antibiotics, treatment options that will
prevent and treat infections by MDR bacteria and inhibit the spread of antibiotic resistance. The results of this project can have
a direct and immediate application not only in healthcare, but also in farm animals where the problem of antimicrobial resistant
infections is constantly increasing. This research proposal falls at the center stage of my laboratory's long-term goals to identify
and develop novel host-targeting prophylactics and therapeutics for bacterial infections.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The Czyz Laboratory finished a screen of 2,400 approved drugs for ones that target phagocytic cells and either enhance or inhibit the uptake of E. coli. We are currently working on determining the mechanisms by which the identified small-molecules
modulator of bacterial uptake function. Additionally, we are currently deciphering the effect by which bacteria from the gut microbiome affect protein folding upon colonization of the C. elegans intestine. We finished screening all culturable isolates from the Human Microbiome Project and found bacteria that are beneficial (suppress toxic protein aggregation) and detrimental (enhance toxic protein aggregation). Characterizing the effect of gut residents on protein folding could potentially reveal new diagnoses, prophylactics, and therapeutic approaches against protein conformational diseases.

Briefly describe how your target audience benefited from your project's activities.

Principal Investigator:
• IPEC Faculty Development Institute: Building a Framework for Interprofessional Education for Collaborative Practice & Health Equity (2021)
• University of Florida: Diversity and Inclusion Workshop (2021)
• Annual NIAMRRE Conference Planning Committee (University of Nebraska - Lincoln) (2021)
• Southeastern/Florida Branch American Society for Microbiology Awards Committee (2021)
• Southeastern Branch of the American Society for Microbiology Policy Committee Member (2021)
• National Institute of Antimicrobial Resistance Research and Education, Chair of the Advisory Council (2021)
• National Institute of Antimicrobial Resistance Research and Education, Vice-Chair of the Advisory Council (2020)
?
Students:
• Dr. Czyz serves on nine graduate student committees. He actively trains and mentors undergraduate and graduate students
• Michael Butcher was selected for the University Scholar Program to continue research on phages in the Czyz lab (2021-2022).
• Autumn Dove, a graduate student, received a first-place Graduate Outstanding Poster Talk at the FL/SEB ASM Virtual Join Meeting. March 26, 2021.
• Alyssa Walker, a graduate student, received a first-place Graduate Presentation at the North Central Florida Chapter of the Society for Neuroscience. Alyssa C Walker, Alfonso S. Vaziriyan-Sani, Emily T. Donahue, Rohan Bhargava, Autumn S. Dove, Keelnatham T. Shanmugam, Daniel M. Czy?. Colonization of the C. elegans gut with human enteric bacterial pathogens leads to proteostasis disruption that is rescued by butyrate. North Central Florida Society for Neuroscience Virtual Chapter Conference. Abstract/Poster. February 19, 2021.

Briefly describe how the broader public benefited from your project's activities.

The results have been disseminated through scientific meetings, conferences, and publications.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

There are no changes in addition to what was emphasized during the previous reporting period.

Empowering individuals and families to build healthy lives through nutrition, wellness, and food safety

Project Director
Diane Craig
Organization
University of Florida
Accession Number
7000011

Building Partnerships to Reduce Food Insecurity

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Approximately 44,300 Manatee County residents were experiencing food insecurity before COVID-19. Feeding America estimates that the number of those in the county affected since COVID-19 has increased to 58,040.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Manatee Elementary School, in partnership with Feeding Tampa Bay and The University of Florida IFAS Extension office in Manatee County, opened its first school pantry in March 2021. The pantry serves community members every Wednesday. A table is set up outside with signs in English and Spanish directing families on the procedure to pick up their food. Visitors to the pantry receive bags packed with pasta, beans, oatmeal, and other food products. Healthy recipes are on display for meals that can be made with the food provided, and QR codes are available with links to USDA recipes. The Food and Nutrition program provided by UF/IFAS Extension encourages the incorporation of fruits and vegetables in daily diets. Feeding Tampa Bay provides fresh produce, dairy and meat that will safely be stored for pantry visitors in two new refrigerators. After the pandemic, the pantry will transition to a client choice model, allowing families to choose their food supplies while UF/IFAS Extension Manatee County will provide educational literature encouraging healthier eating habits. Manatee Elementary, with 546 students, also has cultural enrichment activities, including a garden and nutrition classes, supported by the Food Nutrition Program and the UF/IFAS Extension Manatee County.

Briefly describe how your target audience benefited from your project's activities.

In 2021, 43 families were served on the first day. In the first six months, the pantry served 620 people who have children at the school.

Briefly describe how the broader public benefited from your project's activities.

Lack of food and nutrition can have impact on one's health and wellbeing. For children, poor nutrition can also impact their learning and physical growth. Food insecurity can have a detrimental impact on the economy due to higher health care costs and/or increased financial needs of low-income citizens.

Extension Publications – New and Major Revisions

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

EDIS (Electronic Data Information Source) is the premier electronic information storage and retrieval system of peer- reviewed Extension scholarship that enables citizens to access information provided by the Cooperative Extension Service at the University of Florida. Developed in the 1990s, the EDIS library has grown to be a large collection of electronic files with a variety of purposes.

EDIS has a specialized role in UF/IFAS Extension communication. It is a collection of official longform content developed in support of Extension program area goals and objectives and co-published by Florida Cooperative Extension and one of the UF/IFAS academic departments. UF/IFAS ensures the authority and authenticity of EDIS publications through several processes:

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Fact sheets and major revisions of fact sheets have been peer reviewed by internal and external reviewers that have been selected by the corresponding author’s Department or Center EDIS editors.

Internal reviewers should include at least one UF/IFAS specialist who can provide expert review on content.

External reviewers should review content and include at least one individual with expertise in the subject matter who is not employed by the home Department/Center.

All EDIS publications and creative works have been approved by the Department Chair and Center Director of the corresponding author and the statewide leader of the relevant Extension program(s).

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1. They support or contribute to Extension programs.

2. They communicate information pertinent to target audiences and their issues, including ways to foster healthy lifestyles, environment, or economy.

3. They provide production and management recommendations by UF/IFAS.

4. They are both sufficient to the topic and written in a way that is relevant to our partners and target audiences.

Briefly describe how your target audience benefited from your project's activities.

Typically, target audiences include agricultural and horticultural producers, homeowners, Extension agents, industry or governmental staff, land managers, other professionals, youth and interested citizens. In most cases, EDIS publications help answer the questions any UF/IFAS Extension clientele would have about the topic of interest. In cases where the target audience will have specialized expertise, such as dieticians and food service managers, EDIS is an appropriate venue for sharing information with them.

Briefly describe how the broader public benefited from your project's activities.

New EDIS publications:

1. 2010–2019 Florida Agricultural Deaths Summary: AE559/AE559, 05/2021, DOI:10.32473/edis-ae559-2021

2. A Practical Guide to Healthy Living: FCS3359/FY1498, 9/2021, DOI:10.32473/edis-fy1498-2021

3. Certified Beef Programs: What's in a Name? AN372/AN372, 10/2021, DOI:10.32473/edis-an372-2021

4. Chronic Kidney Disease and Nutrition: FS429/FSHN21-1, 2/2021, DOI:10.32473/edis-fs429-2021

5. Costs and Benefits of Vegetable Gardening: FE1092, 02/2021, DOI:10.32473/edis-fe1092-2021

6. Cottage Food in Florida: FSHN20-55/FS425, 2/2021, DOI:10.32473/edis-fs425-2021

7. Creating Healthier Salad Dressings at Home: FCS3363/FY1502, 12/2021, DOI:10.32473/edis-FY1502-2021

8. Dry Heat: Baking, Roasting, and Broiling: FCS3362/FY1501, 11/2021, DOI:10.32473/edis-fy1501-2021

9. Ehrlichia and Anaplasma: ENY2067/IN1327, 9/2021, DOI:10.32473/edis-in1327-2021

10. Fact Sheet: Mayaro Virus: ENY2074/IN1344, 12/2021, DOI:10.32473/edis-in1344-2021

11. Florida Container Mosquitoes: ENY-2057/IN1315, 07/2021, DOI:10.32473/edis-in1315-2021

12. Genetically Modified Mosquitoes: ENY2066/IN1326, 8/2021, DOI:10.32473/edis-in1326-2021

13. Leches a base de plantas: Arroz: FS428/FSHN20-50s, 2/2021, DOI:10.32473/edis-fs428-2021

14. Leches a base de plantas: Avena: FS427/FSHN20-52s, 1/2021, DOI:10.32473/edis-fs427-2021

15. Leches a base de plantas: Cáñamo: FS431/FSHN20-53s, 5/2021, DOI:10.32473/edis-fs431-2021

16. Leches a base de plantas: Soya: FS430/FSHN20-54s, 2/2021, DOI:10.32473/edis-fs430-2021

17. Mosquitoes and Bromeliads: ENY2073/IN1343, 12/2021, DOI:10.32473/edis-in1343-2021

18. Natural Heat-Related Deaths in Florida: 2010-2020: AE558/AE558, 05/2021, DOI:10.32473/edis-ae558-2021

19. Nutritional Benefits of Lettuce Consumed at Recommended Portion Sizes: HS1416, 6/2021, DOI:10.32473/edis-hs1416-2021

20. Pandemic Impacts on Florida Farmworkers: Emerging Takeaways to Inform Outreach and Policymaking: AEC741/WC402, 12/2021, DOI:10.32473/edis-wc402-2021

21. Recycling Organic Materials to Improve Your Florida-Friendly Edible Landscape: ENH1335/EP599, 2/2021, DOI:10.32473/edis-ep599-2021

22. Soil Arsenic in Miami-Dade County: SS696/SL483, 3/2021, DOI:10.32473/edis-ss696-2021

23. The (IN1324) northern house mosquito: Culex pipiens Linnaeus, DOI:10.32473/edis-in1324-2021

24. The Facts about Mothballs: PI289, 2/2021, DOI:10.32473/edis-pi289-2021

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

EDIS publications with major revisions:

1. 2021 Guidelines for Operation and Usage of County Kitchens in the State of Florida: FCS3338/FY1469, rev. 02/2021, DOI:10.32473/edis-fy1469-2021

2. Choose MyPlate: Reduce Your Sodium: FCS80027/FY1360, rev. 11/2021, DOI:10.32473/edis-fy1360-2021

3. Growing Strawberries in the Florida Home Garden: HS1154/HS403, rev. 9/2021, DOI:10.32473/edis-hs403-2021

4. Herbs and Spices in the Florida Garden: VH020/CIR570, rev. 12/2021, DOI:10.32473/edis-vh020-2021

5. Outbreaks of Foodborne Illness Associated with Melons: FS258/FSHN14-11, rev. 8/2021, DOI:10.32473/edis-fs258-2021

6. Seeding the Garden: HS506/VH026, rev. 2/2021, DOI:10.32473/edis-vh026-2021

Food Safety Training Important to Health and Economy

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

According to the CDC, about 1 in 6 US citizens contract a foodborne illnesses each year, with an estimated 128,000 hospitalizations and 3,000 deaths. The USDA estimates an annual economic burden of $17.6 billion dollars in medical costs and lost wages. A Public Health Reports article (Bartsch et al., 2018) estimated the cost of one foodborne illness outbreak ranged from about $4000 to $2 million for a fast-food restaurant, with higher costs attributed to other indoor dining restaurants. Florida ranks among the top ten states for incidence of foodborne diseases.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

SafeStaff® Florida Food Handler Training is a three-year certification required for all food handlers in the state of Florida. At any given time, there are 20 FCS Extension agents who are formally certified as ServSafe® Instructors. In this program, students learn about proper food handling, personal hygiene, receiving and storage, internal temperatures, pest control, and food borne illness. Educational methods included a mixture of experiential (case studies, demonstration, skill practice), reinforcement (training manual, handouts, multimedia slide presentation), and integrative (demonstrations, group discussion, and quiz games) activities. In Leon County, 19 Capital Area Community Action Agency childcare staff and center managers of the Head Start regional sites participated in 4-hour virtual training workshops for new certification or renewal certification. In Jefferson County, led by Extension agents and a local certified chef, 48 middle and high school students participated in three days of 1- hour sessions. These are just two examples of SafeStaff® food handler training programs held by UF/IFAS Extension agents in 2021.

Briefly describe how your target audience benefited from your project's activities.

Of the 48 youths who received SafeStaff training in Jefferson County, 37 received their SafeStaff® certification. In Leon County, 14 of the 19 Head Start staff or managers completed the training. The SafeStaff certifications allows a food-service employee to increase their pay and advancement in the State of Florida.

Statewide, the Food Safety and Qualtiy program delivered food safety training (recognized at the state level) for 185 4-H volunteers who are involved with fundraising efforts with foods. Since 2001, more than 16,000 people have participated in this UF/IFAS Extension program.

Briefly describe how the broader public benefited from your project's activities.

High quality food handling training can help reduce the incidence in foodborne illness among patrons, leading to lower associated health costs and lost wages for the individuals impacted but also for the businesses who face considerable costs when dealing with an outbreak.

Let's Walk Florida!

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Low levels of physical activity are a risk factor for many chronic diseases and obesity. According to the Florida Department of Health, 57% of Floridians ages 20 years and older are inactive or insufficiently physically active. Overall, about 24% of Americans are physically inactive, meaning they did not engage in any leisure-time physical activity during the reporting period. Florida has physical inactivity rate of 28%, according to the CDC. Moreover, physical inactivity rates vary by racial and ethnic groups with the rate being 31.7% among Hispanics, 30.3% among non-Hispanic blacks, and 23.4% among non-Hispanic whites.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Let's Walk Florida! is a virtual educational program and challenge designed to help Floridians achieve and maintain health through physical activity. The statewide program is operated at the county level by FCS agents in 20 counties, with assistance from a state specialist and her team. During this 10-week program, participants will track their physical activity minutes, connect with county health educators and other walkers to form a supportive virtual community, and learn lifestyle change strategies that support mental and physical wellness, weight management, and chronic disease prevention and management. CAFÉ Latino, a coalition of Florida faculty and Extension professionals for Latinx Communities, partnered with Let's Walk Florida to adapt the curriculum and materials for Spanish-speaking audiences.

To encourage physical activity among the central Florida community, six Extension agents across five counties collaborated to expand the Let's Walk Florida! statewide Extension program to develop an online community. Agents shared e-guides and handouts, delivered weekly online education sessions and a certified personal trainer shared weekly exercises. In the Florida Panhandle, Extension agents from four counties collaborated and attracted 46 participants. Participants gained information about different exercises, nutritious recipes and tips for healthy eating and stress management from three webinars and bi-weekly newsletters (one statewide and one local per week).

Briefly describe how your target audience benefited from your project's activities.

2021 Statewide results:

Participants average minutes of physical activity increased from 169 minutes/week before the program to 303 min/wk after completing the program. The majority reported participating at high (14%) or moderate (50%) intensity.

In a retrospective post-program survey, 85% of participants reported increased time spent walking, 85% increased the number of days they engaged in physical activity, and 80% increased new or existing form of physical activity.

77% of program participants expressed their intention to remain active at the conclusion of the program.

Significant numbers of participants reported improvements in health outcomes in a follow-up survey:

a majority of the participants reported lowering their blood pressure (52%) or lowering their HbA1c (57%)

nearly one in three (29%) indicated they had decreased medications

more than 4 in 5 said they decreased stress, increased energy, or improved their mood

about 3 in 4 said they increased strength or increased focus

two-thirds reported improved sleep

about one-half reported losing weight

Briefly describe how the broader public benefited from your project's activities.

The health and economic burden associated with chronic diseases and associated health disparities are many – the loss of lives due to premature death, loss of work productivity due to illness, greater stress on healthcare systems, and increased healthcare expenditures.

Critical Issue

Water Quality and Conservation

Enhancing and protecting water quality, quantity, and supply

Project Director

Diane Craig

Organization

University of Florida

Accession Number

7000009

Cover Crops Benefit Producers, Economy & Environment

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

In the Florida Panhandle, planting cover crops during the winter months is a recommended best management practice (BMP) to improve water quality and quantity. Cover crops provide numerous benefits including reducing soil erosion and increasing soil organic matter. Organic matter improves soil moisture retention, soil structure and increases soil health through enhanced biological activity. For producers without irrigation systems (dryland farmers), increased soil moisture retention is a particularly important benefit. However, cost-share funds to help producers defray cover crop costs have not been available through the Florida Department of Agriculture and Consumer Services (FDACS) BMP Program, and many producers leave their fields fallow in the winter. UF/IFAS Agriculture BMP Working Groups identified cover crop cost-share funds for producers as a major need in the Panhandle.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Through multiple partnerships developed in the working groups, members sought and obtained funding to provide cost-share funds to producers to plant cover crops. Staff from SARP (Southern Aquatic Resources Partnership) obtained a $1 millon EPA Farmer-to-Farmer grant that included cover crop cost-share in the Chipola River Basin. Additionally, The Agriculture Liaison from the Northwest Florida Water Management District and the FDACS Environmental Manager for the Eastern Panhandle region coordinated efforts to request that Hurricane Michael relief funds for Jackson County producers include cost-share for cover crops. Hurricane Michael caused tremendous damage in the county in 2018.

Briefly describe how your target audience benefited from your project's activities.

Collaborative efforts by group members have enabled Panhandle producers to plant 3,868 acres with cover crops. As part of the EPA grant, producers were paid $45 to $55/acre when they plant cover crops for single species or a mix of species, respectively. This has resulted in 700 acres planted with cover crops in the Chipola River Basin, for a total of $31,500 to $38,500 in savings for producers over the 700 acres. Hurricane Michael relief funds resulted in 3,168 acres of cover crops planted in Jackson County. Producers received cost-share funds of $75/acre/year for 2 years. This has resulted in producer savings of $425,200.

Briefly describe how the broader public benefited from your project's activities.

Extension's promotion and education on the use of cover crops leads to defrayed farmer costs, improved soil health conditions, and improved water quality and quantity conditions.

Environmentally Safe Landscaping Practices Help Protect Florida's Waters

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Florida law states that all commercial fertilizer applicators must have a Limited Certification from the Florida Department of Agriculture and Consumer Services (FDACS) (s. 482.1562, F.S.). To get this certification, each commercial applicator must be trained in the GI-BMPs and receive a certificate of completion from UF/IFAS and FDEP. Local ordinances may require that non-commercial fertilizer applicators also be trained.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Florida-Friendly Landscaping™ Green Industries Best Management Practices (GI-BMP) training program is a partnership between the Florida Department of Environmental Protection and UF/IFAS Extension to provide science-based information and techniques to urban landscape maintenance professionals. Classes, offered in English and Spanish, are taught by more than 200 certified instructors from UF/IFAS Extension, industry, government agencies and other volunteers.GI-BMP training promotes behaviors and practices that conserve water and reduce pollutants from urban landscapes making their way into Florida's canals, lakes, rivers, springs, aquifers and wetlands.

Briefly describe how your target audience benefited from your project's activities.

Since 2006, 72,411 green industry professionals have received GI-BMP training, valued at $10.9 million. Estimate based on a 6-hour GI-BMP training valued at $150 (based on cost per hour of comparable professional training) multiplied by the number of participants. In addition, 71,040 CEUs required for FDACS pesticide and fertilizer licenses have been earned by participants, valued at $1.8 million.

Other 2021 highlights:

94-99% of GI-BMP training participants are using best practices for irrigation, maintenance, fertilization, and pesticide application on a regular basis.

73% use soil tests to determine fertilization needs.

82% use soil moisture or other sensing devices to ensure effective water use.

31% average increase in ALWAYS using the following practices:

Apply no more than ½ - ¾" water per irrigation event saving an estimated 25-50% of water, according to UF/IFAS research,

Avoid mulching around tree trunks and shrub bases,

Reset irrigation controls/ timers seasonally,

Reduce fertilizer application, and

Use IPM to determine pest control methods.

Nine in ten participants share what they learn in GI-BMP training with their clients and coworkers.

Briefly describe how the broader public benefited from your project's activities.

Clean and abundant water is important to all aspects of society.

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GI-BMP infographic.: https://pdec.ifas.ufl.edu/impacts/GI-BMP.pdf

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Briefly describe how the broader public benefited from your project's activities.

New EDIS publications:

1. [FE1091] Regulations Governing the Usage of Reclaimed Water as an Alternative Water Source for Agricultural Irrigation in Florida: FE1091, 01/2021, DOI:10.32473/edis-fe1091-2021

2. 2021 Handbook of Florida Water Regulation: Clean Water Act: fe582, 6/2021, DOI:10.32473/edis-fe582-2021

3. 2021 Handbook of Florida Water Regulation: Contact Agencies: fe616, 6/2021, DOI:10.32473/edis-fe616-2021

4. 2021 Handbook of Florida Water Regulation: Florida Springs and Aquifer Protection Act: fe1019, 6/2021, DOI:10.32473/edis-fe1019-2021

5. 2021 Handbook of Florida Water Regulation: Notes and Glossary: fe617, 6/2021, DOI:10.32473/edis-fe617-2021

6. 2021 Handbook of Florida Water Regulation: Soil and Water Conservation Districts: fe1017, 6/2021, DOI:10.32473/edis-fe1017-2021

7. A Practical Guide for Peach Irrigation Scheduling in Florida: HS1413, 5/2021, DOI:10.32473/edis-hs1413-2021

8. Best Management Practices for Irrigating Lawns and Urban Green Spaces with Reclaimed Water: SL491/SS704, 12/2021, DOI:10.32473/edis-ss704-2021

9. Chapter 3. Principles and Practices of Irrigation Management for Vegetables: CV297, 5/2021, DOI:10.32473/edis-cv297-2021

10. Cluster Analysis for Extension and Other Behavior Change Practitioners: Introduction: WC399/AEC738, 11/2021, DOI:10.32473/edis-wc399-2021

11. Common Bark Beetle Pests of Florida: 4H417, 9/2021, DOI:10.32473/edis-4h417-2021

12. Common Questions When Using Soil Moisture Sensors for Citrus and Other Fruit Trees: AE551, 02/2021, DOI:10.32473/edis-ae551-2021

13. Example Ordinance for Compost Amending Soil in Urban Landscaping: AE566/AE566, 10/2021, DOI:10.32473/edis-ae566-2021

14. Florida H2OSAV Insights: Home Water Use in Orange County: AE561/AE561, 06/2021, DOI:10.32473/edis-ae561-2021

15. Florida H2OSAV Insights: Home Water Use in Osceola County: AE568/AE568, 11/2021, DOI:10.32473/edis-ae568-2021

16. Floridian Households' Perceptions of Florida-Friendly Landscapes: FE1099/FE1099, 05/2021, DOI:10.32473/edis-fe1099-2021

17. How to Properly Read Your Irrigation Water Analysis for Turf and Landscape: ENH1352/EP616, 12/2021, DOI:10.32473/edis-ep616-2021

18. Integrating "Connectedness to Water" into Water-Related Extension Programs: WC394/AEC733, 8/2021, DOI:10.32473/edis-wc394-2021

19. La Grama St. Augustine Para Patios de Florida: EP552/ENH1288, 9/2021, DOI:10.32473/edis-ep552-2021

20. Nutrition and Irrigation Management for Florida HLB-Affected Trees: HS1367, 2/2021, DOI:10.32473/edis-hs1367-2021

21. Optimizing Irrigation and Young Tree Management: SS701/SL488, 4/2021, DOI:10.32473/edis-ss701-2021

22. Private Wells 101: Bacterial Contamination and Shock Chlorination: SS700/SL487, 2/2021, DOI:10.32473/edis-ss700-2021

23. Quantifying Water Quality and Economic Impacts of Fertilizer Workshops: A Case Study: SL492/SS705, 12/2021, DOI:10.32473/edis-ss705-2021

24. Stormwater Pond Management: What You Need to Know about Aeration: SS695/SL482, 1/2021, DOI:10.32473/edis-ss695-2021

25. Synthetic Turfgrass and the Nine Principles of Florida-Friendly Landscaping™: ENH1348/EP612, 12/2021, DOI:10.32473/edis-ep612-2021

26. The Basics of Agricultural BMPs in Northern Florida and Southwestern Georgia: FOR368/FR437, 6/2021, DOI:10.32473/edis-fr437-2021

27. Towards Sustainable Urban Landscape Management: Floridians' Perceptions of Residential Landscapes and Their Maintenance Requirements: FE1090, 01/2021, DOI:10.32473/edis-fe1090-2021

28. Valuing Florida Water Resources: Ecosystem services that we do not notice, but still value: FE1096, 9/2021, DOI:10.32473/edis-fe1096-2021

29. Valuing Florida Water Resources: Summary by Regions: FE1100, 9/2021, DOI:10.32473/edis-fe1100-2021

30. Water availability in southwest Georgia and northeast Florida: FOR368/FR438, 10/2021, DOI:10.32473/edis-fr438-2021

31. What is Florida-Friendly Landscaping™? EP607/ENH1343, 7/2021, DOI:10.32473/edis-ep607-2021

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

EDIS publications with major revisions:

1. 2021 Handbook of Florida Water Regulation: Activities in Wetlands: FE606, rev. 6/2021, DOI:10.32473/edis-fe606-2021

2. 2021 Handbook of Florida Water Regulation: Agricultural Best Management Practices: FE600, rev. 6/2021, DOI:10.32473/edis-fe600-2021

3. 2021 Handbook of Florida Water Regulation: Appendix: FE615, rev. 6/2021, DOI:10.32473/edis-fe615-2021

4. 2021 Handbook of Florida Water Regulation: Comprehensive Environmental Response, Compensation, and Liability Act (Superfund): FE584, rev. 6/2021, DOI:10.32473/edis-fe584-2021

5. 2021 Handbook of Florida Water Regulation: Consumptive Use: FE604, rev. 6/2021, DOI:10.32473/edis-fe604-2021

6. 2021 Handbook of Florida Water Regulation: Emergency Planning and Community Right-to-Know Act: FE586, rev. 6/2021, DOI:10.32473/edis-fe586-2021

7. 2021 Handbook of Florida Water Regulation: Federal Groundwater Discharge Regulations: FE602, rev. 6/2021, DOI:10.32473/edis-fe602-2021

8. 2021 Handbook of Florida Water Regulation: Federal Insecticide, Fungicide, and Rodenticide Act: FE588, rev. 6/2021, DOI:10.32473/edis-fe588-2021

9. 2021 Handbook of Florida Water Regulation: Florida Air and Water Pollution Control Act: FE607, rev. 6/2021, DOI:10.32473/edis-fe607-2021

10. 2021 Handbook of Florida Water Regulation: Florida Department of Agriculture and Consumer Services: FE596, rev. 6/2021, DOI:10.32473/edis-fe596-2021

11. 2021 Handbook of Florida Water Regulation: Florida Department of Environmental Protection: FE593, rev. 6/2021, DOI:10.32473/edis-fe593-2021

12. 2021 Handbook of Florida Water Regulation: Florida Department of Health: FE597, rev. 6/2021, DOI:10.32473/edis-fe597-2021

13. 2021 Handbook of Florida Water Regulation: Florida Everglades Forever Act: FE609, rev. 6/2021, DOI:10.32473/edis-fe609-2021

14. 2021 Handbook of Florida Water Regulation: Florida Fish and Wildlife Conservation Commission: FE595, rev. 6/2021, DOI:10.32473/edis-fe595-2021

15. 2021 Handbook of Florida Water Regulation: Florida Pesticide Law: FE590, rev. 6/2021, DOI:10.32473/edis-fe590-2021

16. 2021 Handbook of Florida Water Regulation: Florida Pollutant Discharge Prevention and Control Act: FE585, rev. 6/2021, DOI:10.32473/edis-fe585-2021

17. 2021 Handbook of Florida Water Regulation: Florida Right-to-Farm Act: FE599, rev. 6/2021, DOI:10.32473/edis-fe599-2021

18. 2021 Handbook of Florida Water Regulation: Florida Water Management Districts: FE594, rev. 6/2021, DOI:10.32473/edis-fe594-2021

19. 2021 Handbook of Florida Water Regulation: Florida Water Resources Policy: FE1043, rev. 6/2021, DOI:10.32473/edis-fe1043-2021

20. 2021 Handbook of Florida Water Regulation: Florida Watershed Restoration Act: FE608, rev. 6/2021, DOI:10.32473/edis-fe608-2021

21. 2021 Handbook of Florida Water Regulation: Food Quality Protection Act: FE589, rev. 6/2021, DOI:10.32473/edis-fe589-2021

22. 2021 Handbook of Florida Water Regulation: Hazardous Waste Management: FE612, rev. 6/2021, DOI:10.32473/edis-fe612-2021

23. 2021 Handbook of Florida Water Regulation: Introduction: FE580, rev. 6/2021, DOI:10.32473/edis-fe580-2021

24. 2021 Handbook of Florida Water Regulation: Management and Storage of Surface Waters: FE605, rev. 6/2021, DOI:10.32473/edis-fe605-2021

25. 2021 Handbook of Florida Water Regulation: Northern Everglades and Estuaries Protection Program: FE610, rev. 6/2021, DOI:10.32473/edis-fe610-2021

26. 2021 Handbook of Florida Water Regulation: Onsite Sewage Treatment and Disposal Systems: FE614, rev. 6/2021, DOI:10.32473/edis-fe614-2021

27. 2021 Handbook of Florida Water Regulation: Pollutant Storage Tank Systems: FE613, rev. 6/2021, DOI:10.32473/edis-fe613-2021

28. 2021 Handbook of Florida Water Regulation: Private Regulation: FE598, rev. 6/2021, DOI:10.32473/edis-fe598-2021

29. 2021 Handbook of Florida Water Regulation: Protection and Management of Endangered Species: FE592, rev. 6/2021, DOI:10.32473/edis-fe592-2021

30. 2021 Handbook of Florida Water Regulation: Resource Conservation and Recovery Act: FE583, rev. 6/2021, DOI:10.32473/edis-fe583-2021

31. 2021 Handbook of Florida Water Regulation: Safe Drinking Water Act: FE587, rev. 6/2021, DOI:10.32473/edis-fe587-2021

32. 2021 Handbook of Florida Water Regulation: Solid Waste Management: FE611, rev. 6/2021, DOI:10.32473/edis-fe611-2021

33. 2021 Handbook of Florida Water Regulation: State Groundwater Discharge Regulations: FE601, rev. 6/2021, DOI:10.32473/edis-fe601-2021

34. 2021 Handbook of Florida Water Regulation: State Regulatory Powers: FE581, rev. 6/2021, DOI:10.32473/edis-fe581-2021

35. 2021 Handbook of Florida Water Regulation: Table of Contents: FE579, rev. 6/2021, DOI:10.32473/edis-fe579-2021

36. 2021 Handbook of Florida Water Regulation: Toxic Substances Control Act and the Lautenberg Chemical Safety Act: FE591, rev. 6/2021, DOI:10.32473/edis-fe591-2021

37. 2021 Handbook of Florida Water Regulation: Water Wells: FE603, rev. 6/2021, DOI:10.32473/edis-fe603-2021

38. Best Management Practices (BMPs): Perimeter Borders: AE439/AE439, rev. 05/2021, DOI:10.32473/edis-ae439-2021

39. Glosario de términos usados en riego por goteo y su traducción al inglés (A Glossary of Drip Irrigation Terms and Their Translations in English): HS1192, rev. 4/2021, DOI:10.32473/edis-hs1192-2021

Improving Agriculture Irrigation Practices Conserves Water

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Water demand already exceeds supply in some parts of Florida, and projections show the state could double its current water usage by 2070 if population growth, water-use habits, and irrigation practices do not change, according to the Water 2070 project (Florida Department of Agriculture and Consumer Services, UF Geoplan Center, 1000 Friends of Florida).

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Between 2011 and January 2022, aproximately 7,000 acres of cultivated land have been improved to more efficient irrigation methods in the state through Florida Cost-Share Program. In northeast Florida, 4,704 acres have been converted from seepage to drain tile irrigation; 1,650 acres converted to sprinkler irrigation and about 600 acres converted to subsurface drip for the water table control, with estimated water conservation of 525 million gallons of fresh water per year.

Briefly describe how your target audience benefited from your project's activities.

The potential water conservation of these alternative irrigation methods, when properly operated, can reach up to 50% compared to traditional seepage without compromising yield. Research findings from field studies conducted at the Hastings Agricultural Extension Center (HAEC) indicated a reduction in irrigation water use was 51%, 58%, and 68% for tile drainage, subsurface drip irrigation and overhead irrigation compared to the conventional seepage. Similar water savings were reported by da Silva (2018) (see section 16.f) and Liao et al., (2016) for overhead irrigation in potatoes cultivated in Manatee county.

Briefly describe how the broader public benefited from your project's activities.

Florida's fresh water supply is critical for the state to function, from drinking water to power generation. The state's natural environment also requires adequate supply to function properly.

Quantifying Impacts of Fertilizer Workshops

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The University of Florida Institute of Food and Agricultural Sciences (UF|IFAS) has multiple programs targeted at reducing nutrient pollution from residential landscapes while still maintaining acceptable landscape quality. In an effort to protect and improve Florida’s water quality by minimizing nitrogen (N) pollution of surface waters, these programs are used or adopted by counties, IFAS Extension offices, utility providers and other entities throughout the state. Despite the various programs and numerous individuals working towards minimizing residential landscape management effects on water quality, it remains difficult to quantify the impacts these programs have on water quality.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

A UF/IFAS soil and water science research teamed up with a Seminole County Extension agent on a pilot roject to demonstrate a quantitatively-based approach to estimating the water quality and subsequent economic benefits of UF|IFAS Extension programming related to nutrient management in residential landscapes. Specifically, we provide calculations for estimating the effects of a residential fertilizer extension program on nitrogen (N) leaching from residential landscapes into groundwater and associated economic impacts when:

1. there is an increase in the proportion or percent of slow-release N in fertilizer products applied

2. the regulations of a fertilizer ordinance are followed in comparison to UF|IFAS and commercial recommendations that were developed without fertilizer ordinances in mind.

This approach sought to estimate how much less N would leach through the soil given targeted behavior changes implemented through educational efforts. They are currently working to internally review and publish all data and calculations into a UF/IFAS EDIS publication, as these estimations can have larger impacts for many other extension professionals and programs around the state.

This program has been recognized at the local, state and national levels. The agent received both state and national awards for this work and was an invited speaker to the Southwest Florida Water Management District Springs Coast as well as numerous conferences and professional meetings.This work is groundbreaking on many levels because there was no current way to calculate the impacts of fertilizer behavior changes until the development of this valuable tool for Extension and industry.

Briefly describe how your target audience benefited from your project's activities.

The project team calculated the impacts of using Slow-Release Nitrogen (SRN) based on two UF/IFAS studies: Saham et. al. (2007) and Wang and Alva (1996). Then used those studies to estimate the amount of nitrogen prevented from entering the environment collectively from all participants that completed a follow-up survey for a fertilizer workshop. They assumed an average lawn size of 3,000 ft2, and a value of $500 per lb./Nitrogen (N) removed from the environment. An individual who followed IFAS recommendations and used 50% SRN would reduce N leaching by 0.15 (well-vegetated) to 1.79 (bare soil) lbs. N leached / year. Multiplying this by the 514 participants who attended fertilizer workshops and stated they had used a 50%+ SRN product, they reduced annual N leaching by 78.5 – 921.3 pounds and provided an economic benefit of $39,268 to $460,674. The pounds reduced are based on the referenced study results and the dollar amounts are based on the actual dollar amount Seminole County Watershed Division budgets for nutrient removal from waterbodies. The team also calculated the N leaching reduction from participants following the summertime fertilizer ordinance of Seminole County, a June – Sept. restricted period. One individual following the ordinance would reduce N leaching by 0.25 (well-vegetated) to 1.8 (bare soil) lbs. N /year. Based on the 434 individuals who, when surveyed, reported following the restricted period requirements, this equated to a total reduction of nitrogen leaching of 109.4 – 781.2 pounds, with a monetary value estimated at $54,684 to $390,600.

Combined, these two behaviors alone amount to 859.7 – 1,030.7 pounds N prevented or $93,952 - $851,274 in savings among Seminole County program participants.

Briefly describe how the broader public benefited from your project's activities.

The Florida Department of Environmental Protection (FDEP) regulates the county and requires officials to spend county funds to bring waterbodies back into compliance. If people were fertilizing per UF/IFAS FFL Best Management Practices (BMPs) and the laws of our county, the taxpayers would save a significant amount in water quality improvement dollars. By educating the public about FFL and getting them to adopt the BMPs, we prevent the nitrogen from entering our waterways, which truly preserves the integrity of our water and helps the county better meet state and national compliance requirements.

Reducing Nitrogen Pollution in Florida Waters

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Polluted runoff from rainfall or overwatering is a major source of excess nitrogen (N) and a major contributor to poor water quality. On the agriculture side, farm fertilizer attributes 60% to the load to receiving waters. The Suwannee Basin Management Action Plan (BMAP) calls for 4 million pounds of nitrogen reduction from farm fertilizer sources over the next 20 years.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Since 1993 the Florida-Friendly Landscaping™ (FFL) program has partnered with the Florida Department of Environmental Protection (FDEP) to reduce pollution in Florida waters. FFL was designed to help residents and business owners create and maintain beautiful yards using research-based, environmentally-sustainable landscaping practices. This program provides training opportunities and educational services that teach homeowners, landscaping professionals, and green industries how to water efficiently, fertilize appropriately, manage yard pests responsibly, and more. FFL is an integral component of many Basin Management Action Plans (BMAPs) and helps to reduce nitrogen loading into Florida waters.

Briefly describe how your target audience benefited from your project's activities.

FFL efforts prevented an estimated 114,650 pounds of nitrogen from entering Florida waters in 2020. According to a 2020 study conducted by the Florida Department of Environmental Protection (FDEP), every pound of nitrogen that FFL prevents from entering Florida waters saves $500 or more in nitrogen removal costs, such as stormwater pond construction. They estimate annual savings of $57.3 million.

3,000 landscape professionals adopted one or more green industry best management practices (GI-BMP). Ninety-six percent of landscape professionals reported using UF/IFAS green industry best management practices for fertilizer use, compared to just 60% before attending the FFL training.

15,000 adults who participated of FFL Extension programs adopted one or more best management practices for residential landscapes. Ninety-three percent of residential participants said they adopted one or more FFL water conservation practices. On average, participants shared what they learned through FFL with 10 other people.

Corn growers in the Suwannee Valley have indicated they have made an estimated 1.3M lb N/yr reduction in application. This estimated reduction is more than 25% of the N reduction goal for the entire watershed.

Briefly describe how the broader public benefited from your project's activities.

Water is the state's most valuable resource and it's quality has a direct impact on the health of people, plants, and animals. The reduction of nitrogen in our water leads to significant savings to the state, local communities, and its citizens.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Infographic about the FFL program: https://pdec.ifas.ufl.edu/impacts/FFL.pdf

Soil Moisture Sensor Network

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

With 31.6 thousand acres of vegetable production in Southwest Florida, nutrient and water management are key to protect the surrounding natural resources. Soil moisture sensors are a key tool that provide growers the data they need to reduce water use and minimize nutrient leaching.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

As part of the Statewide Soil Moisture Sensor Network, a Hendry County Extension agent seek to get sensors onto growers' farms, assisting them in understanding the data and implementing behavior change. In late spring of 2021, the agent was able to provide four specialty crop growers with nine sensors. Two of these growers were willing to connect on a regular basis to interpret the data together and make action plans.

Briefly describe how your target audience benefited from your project's activities.

One of the growers the agent worked with was a large, multi-generational farmer who produces a single crop at multiple locations in Florida and up the eastern seaboard. He used the probes just for observation, as it was late in the production cycle that the sensors were installed. After using these sensors had has since installed sensors at farms up through Tennessee, and has been amazed at the amount of water he can save.

The other grower was a small (50 acre) industry research farm. After observing a sensor's performance, the grower purchased multiple soil moisture sensors to install throughout the farm for the 2021-2022 production season. He plants about half of his acreage in the fall, and if he saves just a 1/4 inch of water each week on 25 acres, this would amount to
(1/4 in/week x 20 weeks x 25 acres x 27154 gal/acre-in).

Briefly describe how the broader public benefited from your project's activities.

Irrigation management has a direct impact on nutrient use efficiency and plays a vital role in promoting water conservation and protecting water resources.

Critical Issue

Youth

Preparing youth to be responsible citizens and productive members of the workforce

Project Director

Diane Craig

Organization

University of Florida

Accession Number

7000013

4-H Helps Build Next Generation of Agriculture-related Workers

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Florida counties are becoming increasingly more urban and national trends suggest that there is less incidence of agricultural topics being taught in schools, particularly in Florida (Pinkerton et al. 2021). About one-fifth of Florida's population is under 18 and the average of Florida's farmers is 59, with many farmers approaching retirement age (USDA 2019). According to the United States Department of Agriculture, there are many opportunities for careers in agriculture or related fields, but not enough young adults are graduating with agricultural sciences and policy skills needed to fill these open positions (USDA 2015). According to a study done by Dyer, Lacey, & Osborne, students who are exposed to agriculture at a young age are more likely to decide to participate in higher education agricultural education programs in the future, along with choosing a degree related to agriculture.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

In Putnam County, a 4-H agent's in-depth programming and drone pilot certification program designed to give youth the opportunity to learn new skills, apply the latest technology to agricultural systems, and to explore technology-based careers. In Hernando County, a one-day program was developed to engage 4th graders in agriculture through hands-on STEM activities. With help from agents in neighboring counties and other professionals in the agricultural industry, this program specifically seeks to increase fourth graders' understanding of food production from planting to market and careers in agriculture through the integration of STEM activities. In Hillsborough County, 842 youth learned about horticulture, ecosystem services, the UF/IFAS Extension, and/or science careers. In Cedar Key, high school students participated in the *On the Farm Program*, allowing them to gain hands-on experiences in growing a crop of clams. Skills to be learned through field sessions included: husbandry, biology, subsampling methods and measurements, quality control, weather, water quality, and teamwork. The farm was initiated last summer with planting of seed donated by commercial suppliers and gear provided by UF on a small plot within the UF experimental lease. This year, students harvested their first crop and planted additional seed purchased with revenue from clam sales, for next year's students to harvest.

Briefly describe how your target audience benefited from your project's activities.

In Putnam County, all participants earned their Part 107 FAA Drone Certification and marketable skills. In Nassau County, four recent 4-H'ers contacted their 4-H agent to report on having chosen college careers focused in the animal science industry. Among the 4th graders in Hernando County, 47% of the students showed a knowledge gain of food production and 70% demonstrated improvement in the connection between STEM and agriculture. In Seminole County, participants demonstrated increase knowledge levels of youth in Florida on topics and careers related to STEM and particularly focusing on agriculture, horticulture and food systems. Thus far, this program has contributed to increased knowledge on STEM topics as well as increased awareness and interest in related careers. In Hillsborough County, youth, teachers, and guardians gained knowledge of agriculture and ecosystem services. Among the high schoolers attending the *On the Farm Program*, eight students earned their aquaculture certification by working at an aquaculture facility and passing the certification exam.

Briefly describe how the broader public benefited from your project's activities.

The need for agricultural education, appreciation and awareness for youth is vital as we work to inspire youth to pursue careers in agriculture which are needed to meet the food and clothing demands of our growing population and aging farmers.

4-H Programs Teach Critical Work and Life Skills

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

Youth who participate in the 4-H Youth Development Programs have greater levels of contribution to their communities; school engagement; participation and interest in science, engineering, and technology; and healthier habits than youth involved in any other out-of-school time activities or none at all (Lerner et al, 2012). Youth participating in competitive events such as judging teams, livestock shows, and speaking competitions also indicate that their 4-H program involvement has helped them develop life skills such as communication, decision making, teamwork, and critical thinking. According to Lerner (2005), youth that develop critical workforce preparedness skills such as oral and written communications are more prepared to succeed in college and later in their career.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

Pasco County 4-H offered a series of 11 different day camping programs to fill the void for those missed 4-H summer programs. Throughout June and July, Pasco 4-H partnered with multiple different Agents, organizations, and county departments to bring this Day Camping Series to life. Each day camp consisted of a different topic and the youth involved participated in a full eight-hour day filled with games, activities and adventures designed to be education and fun. These camps provided opportunities for around 70 youth to learn, make new friends and try something new. This was also a great opportunity to introduce 4-H to a large audience of youth who had not previously been involved. Over 70% of the youth involved in the day camp had no previous experience with 4-H.

Briefly describe how your target audience benefited from your project's activities.

Of those that complete surveys, all the youth reported learning valuable life skills such as decision making, teamwork, responsibility, healthy lifestyle choices and more. They also reported that they learned something new about important topics such as water conservation, environmental stewardship, wildlife ecology, engineering, money management and more. Over 90% of youth stated that they would like to attend future camps and 4-H activities and would also like to share the information that they learned with friends and family. Over 90% also reported that they were interested in learning about careers within the fields of STEM (Science Technology, Engineering, Math) and/or Environmental Science and Education as a result from participating in these camps.

Briefly describe how the broader public benefited from your project's activities.

4-H programs teach youth the critical skills needed by future employers but just as importantly, these partipants will also develop essential life and leadership skills that can benefit their communities and society at large through civic engagement, entrepreneurship, public service, etc.

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

Infographic - https://pdec.ifas.ufl.edu/impacts/4Hworkforce.pdf

Engaging Media Savvy Youth Volunteers Benefits Youths and Extension

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

The Panhandle Youth Expo is a volunteer-led event that allows youth from the tri-state area to enter their livestock projects as well as their creative exhibits. The board is made up of part-time volunteers who seek out monetary donations, plan and execute the livestock shows, and secure awards for the winners of each contest. Due to the existing workload of each board member, very little effort has gone into increasing the visibility of the Panhandle Youth Expo.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

The Jackson County Extension agent proposed to the board that they appoint a local youth as a communications intern for the Panhandle Youth Expo. The board approved the proposal, and the Agent posted the opportunity and performed an interview process. Two candidates stood out and the Agent suggested that the board appoint both as interns. The board approved the suggestion and the agent met with each inter prior to the Panhandle Youth Expo to brief them on their responsibilities. Both interns developed social media content, conducted livestreams, and assisted in coordinating events when necessary.

Briefly describe how your target audience benefited from your project's activities.

The interns successfully increased the visibility of the event. During the week of the Panhandle Youth Expo, social media posts reached 4,816 people and their livestreams of all of the livestock shows reached 4,960 people.

Briefly describe how the broader public benefited from your project's activities.

Youth engaged in Extension programs can fill imporant program needs that can't be met by adult volunteers due to lack of time or skill, while also providing them useful experiences they can use for future employment.

Extension Publications – New and Major Revisions

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

EDIS (Electronic Data Information Source) is the premier electronic information storage and retrieval system of peer- reviewed Extension scholarship that enables citizens to access information provided by the Cooperative Extension Service at the University of Florida. Developed in the 1990s, the EDIS library has grown to be a large collection of electronic files with a variety of purposes.

EDIS has a specialized role in UF/IFAS Extension communication. It is a collection of official longform content developed in support of Extension program area goals and objectives and co-published by Florida Cooperative Extension and one of the UF/IFAS academic departments. UF/IFAS ensures the authority and authenticity of EDIS publications through several processes:

Authors must include current UF/IFAS academic faculty. County faculty may author publications in collaboration with UF/IFAS academic faculty.

Fact sheets and major revisions of fact sheets have been peer reviewed by internal and external reviewers that have been selected by the corresponding author’s Department or Center EDIS editors.

Internal reviewers should include at least one UF/IFAS specialist who can provide expert review on content.

External reviewers should review content and include at least one individual with expertise in the subject matter who is not employed by the home Department/Center.

All EDIS publications and creative works have been approved by the Department Chair and Center Director of the corresponding author and the statewide leader of the relevant Extension program(s).

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

EDIS publications share four essential qualities:

1. They support or contribute to Extension programs.

2. They communicate information pertinent to target audiences and their issues, including ways to foster healthy lifestyles, environment, or economy.

3. They provide production and management recommendations by UF/IFAS.

4. They are both sufficient to the topic and written in a way that is relevant to our partners and target audiences.

Briefly describe how your target audience benefited from your project's activities.

Typically, target audiences include agricultural and horticultural producers, homeowners, Extension agents, industry or governmental staff, land managers, other professionals, youth and interested citizens. In most cases, EDIS publications help answer the questions any UF/IFAS Extension clientele would have about the topic of interest. In cases where the target audience will have specialized expertise, such as teachers or child care providers, EDIS is an appropriate venue for sharing information with them.

Briefly describe how the broader public benefited from your project's activities.

New EDIS publications:

1. 4-H Florida-Friendly Landscaping™ Leader Guide: 4H411, 9/2021, DOI:10.32473/edis-4h411-2021

2. 4-H Florida-Friendly Landscaping™ Workbook: 4H422, 9/2021, DOI:10.32473/edis-4h422-2021

3. Best Practices of Advisory Councils for School-Based Agricultural Education Programs: WC392/AEC731, 6/2021, DOI:10.32473/edis-wc392-2021

4. Engaging Volunteers through ISOTURES: Selecting for Volunteer Involvement: 4-H 6.5/4H303, 11/2021, DOI:10.32473/edis-4h303-2021

5. Florida 4-H Senior Horse Record Book: 4H418, 9/2021, DOI:10.32473/edis-4h418-2021

6. Foundations of Effective Classroom Management: WC381/AEC718, 2/2021, DOI:10.32473/edis-wc381-2021

7. Fundamentals of Volunteer Orientation: AEC720/WC382, 2/2021, DOI:10.32473/edis-wc382-2021

8. Life Skills in a Minute: Ironing Versus Pressing: 4H415, 8/2021, DOI:10.32473/edis-4h415-2021

9. Life Skills in a Minute: Sending a Card: 4H416, 8/2021, DOI:10.32473/edis-4h416-2021

10. Life Skills in a Minute: Sewing on a Button: 4H414, 8/2021, DOI:10.32473/edis-4h414-2021

11. Life Skills in a Minute: Threading a Needle: 4H413, 8/2021, DOI:10.32473/edis-4h413-2021

12. The Benefits of Extension Program Area Specialization: A Look at Client Satisfaction and Outcomes: WC396/AEC735, 8/2021, DOI:10.32473/edis-wc396-2021

13. Tips on Halterbreaking Cattle: 4H421, 11/2021, DOI:10.32473/edis-4h421-2021

14. Understanding Volunteer Management in 4-H: 4H 6.3/4H301, 11/2021, DOI:10.32473/edis-4h301-2021

15. Utilizing Mindfulness as an Evening Reflection at Residential Camp: 4H412, 3/2021, DOI:10.32473/edis-4h412-2021

Describe and explain any major changes or problems encountered in approach. Additionally, note opportunities for training and professional development provided, how results have been disseminated to communities of interest, and any new details regarding what the project or program plans to do during the next reporting period to accomplish the goals.

EDIS pubications with major revisions:

1. Florida 4-H Cloverbud Project Report: 4H032/4HGCR11, rev. 8/2021, DOI:10.32473/edis-4h032-2021

2. Florida 4-H Intermediate Project Report: 4H034/4HGCR13, rev. 8/2021, DOI:10.32473/edis-4h034-2021

3. Florida 4-H Junior Project Report: 4H033/4HGCR12, rev. 8/2021, DOI:10.32473/edis-4h033-2021

4. Florida 4-H Senior Project Report: 4H035/4HGCR14, rev. 8/2021, DOI:10.32473/edis-4h035-2021

Reaching youth during the Covid-19 pandemic

In 2-3 sentences, briefly describe the issue or problem that your project addresses.

During the Covid-19 pandemic, participation in youth programs declined dramatically. In-person events and activities were minimized and many schools moved to an online format. With the suspension and reduction of many 4-H events and activities, a new approach was needed to reach youth.

Briefly describe in non-technical terms how your major activities helped you achieve, or make significant progress toward, the goals and objectives described in your non-technical summary.

4-H agents from Hamilton, Lafayette, Madison, Suwannee, and Taylor counties joined together to create project-based, theme-focused activities to encourage experiential learning and youth-adult engagement. This project become known as 4-H Take-out. A take-away grab bag was developed which contained lessons, materials, and a project book that the 4-H'er could then pick up from the county office, while maintaining CDC protocols, and work on at home. The take-away bags were completed either at home or as part of a virtual 4-H club experience. A wide variety of topics were included in the monthly 4-H take-out grab bags including: Physics, Outdoor Exploration, Kitchen Science, and Watch it Grow (Plants).

Briefly describe how your target audience benefited from your project's activities.

4-H Take-out supported youth learning in science, engineering, and communication. 86% (n=232) of youth indicated they gained knowledge about the topics. Forty-seven youth turned in record books for awards, which included 94% first timers. The program's versatility allowed it to be used in virtual club meetings and by families in home settings. This new collaborative effort strengthened agent relationships across five counties and kept youth engaged in 4-H programs during a time of limited in-person club meetings.

Briefly describe how the broader public benefited from your project's activities.

4-H provides positive youth development to youth. UF/IFAS 4-H continued to provide positive youth development programs that continued to meet the needs of youth during the Covid-19 pandemic.

Type	Projects / Programs
Projects / Programs without a Critical Issue	**0**

Not Provided