

Center for

LANDSCAPE

CONSERVATION

and

ECOLOGY

2018-2019 Annual Report



Focusing on social, environmental, and economic issues affecting urban Florida landscapes.

Over

\$15.47 MILLION

in

TOTAL FUNDING

since 2012

In 2018-2019,

\$5.76 MILLION

in active

EXTERNAL FUNDING

and

\$295,108

in

INTERNAL FUNDING

2018-2019 at a GLANCE

14

interdisciplinary faculty

18

affiliate faculty

17

M.S. students

13

Ph.D. students

53

refereed publications
produced

10

proceedings contributed to

20

non-refereed
publications produced

191

EDIS publications produced

3

books authored

4th

Urban Landscape
Summit hosted

8,000

e-newsletter subscribers

334

in-service trainings
conducted that reached

13,491

participants

386.5 MILLION

gallons of water saved
based on educational
programs delivered - enough
water to supply the annual
indoor water needs of nearly

4,393

households and
saved more than

\$1.27 MILLION

on utility bills

13

webinars hosted
with more than

4,000

views

4,669

Florida Master Gardener
volunteers gave

387,000

hours for a value of

\$9.03 MILLION

1.35 MILLION

unique website visitors

15,247

Facebook followers

2,156

Twitter followers

1,956

Instagram followers

Director's Message



Enclosed is the 2018-2019 Center for Landscape Conservation and Ecology (CLCE) annual report. This year has been a year of transition for CLCE.

This year was a productive year despite some budget setbacks. Even though we had excellent support from our friends in the industry and legislature, we and IFAS as a whole were not successful in regaining the budget cuts that occurred last session.

In June 2018 and again in June 2019, the governor vetoed the CLCE budget. This came as a surprise to us since there was no warning, and by every measure CLCE provided benefit to the state. The veto of the CLCE budget has resulted in cutting several of our existing programs including the Urban Landscape Summit, and the graduate student support and faculty enhancement support programs. We were able to preserve our human resources and were not forced to layoff faculty, staff or students.

In January 2019, Dr. Payne announced the formation of the Center for Land Use Efficiency (CLUE) within UF/IFAS. This center combines CLCE, the Program for Resource Efficient Communities (PREC) and the Ag BMP program (not to be confused with the Green Industry BMP program). The idea of this center was to further bridge across discipline areas in IFAS and other colleges to address issues in both urban and agricultural land uses. I was appointed director of this new entity.

Despite these challenges and transitions, CLCE continued producing high-quality research and extending that research to stakeholders. We look forward a new year, a new decade and a new direction for urban landscape programming.

A blue ink signature of Michael D. Dukes, written in a cursive style.

Michael D. Dukes
Director



Message from the SVP

Dear Friends,



For more than a decade, the UF/IFAS Center for Landscape Conservation and Ecology (CLCE) has been a model for public-private partnerships to better serve Florida residents. Created by a partnership of UF/IFAS, the landscape, nursery, and turf industry, and the legislature, the CLCE has provided the latest and best science to balance urban landscapes with the need to conserve and protect our water and natural resources.

Unfortunately, funding for this program was vetoed during the last budget process. The CLCE has been advancing many programs that have resulted in significant water savings, proper use of fertilizers, and educational programs that protect, respect, and value Florida's beautiful natural environment. Unfortunately, the funding cut will have an impact on our programming.

The successful Urban Landscape Summit, which provided important new information to professionals, has been discontinued. Support for graduate students will be greatly diminished, hindering some of our ongoing research projects. In addition, seed funding programs supporting needed research and Extension education have also been discontinued. Because the work of the CLCE faculty is so critical to Florida moving forward, UF/IFAS will find a way to support these faculty but that will ultimately limit our support for other research initiatives.

The lack of state support means the end of the official CLCE name and organization. Its remaining programs will be administered by the Center for Land Use Efficiency. Our commitment to the science of urban landscape conservation and ecology remains strong. We are grateful for the ongoing support of our industry and private sponsors. Together, we will redefine our programs to best serve our greater Florida community with the resources that we have.

Sincerely,

A handwritten signature in black ink that reads "Jack M. Payne". The signature is fluid and cursive, written over a light background.

Jack M. Payne
Senior Vice President for
Agriculture and Natural Resources

CLCE Faculty and Affiliates: Interdisciplinary, Collaborative, and Innovative

The Center for Landscape Conservation and Ecology brings together an interdisciplinary team of faculty and affiliate faculty to conduct crosscutting research and deliver innovative, issues-based Extension outreach. The CLCE communications office coordinates faculty outreach efforts and ensures the center's goal and mission are at the forefront of all activities.

CLCE FACULTY

Michael Dukes, CLCE Director, Agricultural & Biological Engineering, Water Conservation and Irrigation

Eban Bean, Agricultural and Biological Engineering, Urban Water Resources Engineer

Gail Hansen, Environmental Horticulture, Sustainable Landscape Design

Basil Iannone, Forest Resources and Conservation, Geospatial Analytics

Hayk Khachatryan, Food and Resource Economics, Horticultural Economics

Andrew Koeser, Environmental Horticulture, Landscape Maintenance

Mary Lusk, Soil and Water Science, Urban Water Quality

Chris Marble, Environmental Horticulture, Urban Weed Management

Chris Martinez, Agricultural and Biological Engineering, Water Resource Management

Esen Momol, Florida-Friendly Landscaping™ Program

Paul Monaghan, Agricultural Education and Communication, Community-Based Social Marketing

AJ Reisinger, Soil and Water Science, Urban Soil and Water Quality

Laura Warner, Agricultural Education & Communication, Social Marketing and Program Evaluation

Wendy Wilber, Florida Master Gardener Program

AFFILIATES

Lynn Barber, Hillsborough County, Urban Horticulture

Tatiana Borisova, Food and Resource Economics, Horticulture Economics

Adam Dale, Entomology and Nematology, Landscape Entomology

Zhanao Deng, Environmental Horticulture, Plant Breeding

Erin Harlow, Duval County, Commercial Horticulture

Kevin Kenworthy, Agronomy, Turfgrass Breeding

Lisa Krimsky, Water Resources

Jason Kruse, Environmental Horticulture, Sports Turf Management

Matt Orwat, Washington County, Urban Horticulture

Brian Pearson, Environmental Horticulture, Landscape Management

Joe Sowards, Volusia County, Urban Horticulture

Laurie Trenholm, Environmental Horticulture,
Urban Turfgrass Management

Bryan Unruh, Environmental Horticulture, Urban
Turfgrass Management

Sandy Wilson, Environmental Horticulture,
Ornamental and Invasive Plants

CLCE STAFF

Emily Eubanks, Communications Coordinator

Melissa Friedman, Research Coordinator

Caraline Stephens, Horticulture Writer

Jennifer Sykes, Web Coordinator

FLORIDA-FRIENDLY LANDSCAPING™ STAFF

CJ Bain, FFL Website and Information
Tech Coordinator

John Bossart, FFL Education and
Extension Manager

Claire Lewis, Florida-Friendly Communities
Statewide Coordinator

Jen Marvin, FFL/FYN Statewide Coordinator

Tom Wichman, GI-BMP Statewide Coordinator

Elisha Cash, GI-BMP Regional Coordinator

Cesar Peralta, GI-BMP Regional Coordinator

Barry Sawicki, FFL/GI-BMP Program Assistant

Lyn Ward, FFL /GI-BMP Program Assistant



CLCE Graduate Students

M.S. STUDENTS

Mary Bammer, Agricultural Education and Communication

CLCE Faculty: Laura Warner

Seth Blair, Environmental Horticulture

CLCE Faculty: Andrew Koeser

Kristi Dobra, Soil and Water Science

CLCE Faculty: Chris Martinez

Daniel Fahr, Soil and Water Science

CLCE Faculty: AJ Reisinger

Audrey Goeckner, Soil and Water Science

CLCE Faculty: Mary Lusk, AJ Reisinger

Traci Goodhart, Soil and Water Science

CLCE Faculty: Eban Bean

Keir Hamilton, Environmental Horticulture

CLCE Faculty: Andrew Koeser

Excy Herrera, Soil and Water Science

CLCE Faculty: AJ Reisinger

Kayla Hess, Forest Resources and Conservation

CLCE Faculty: Eban Bean, Basil Iannone

Steven Hohman, Soil and Water Science

CLCE Faculty: AJ Reisinger

Erin Josephitis, Soil and Water Science

CLCE Faculty: Mary Lusk

Daniel Leonard, Agricultural Education and Communication

CLCE Faculty: Laura Warner

Kayla Lovely, Soil and Water Science

CLCE Faculty: Chris Martinez

Joseph Molenda, Soil and Water Science

CLCE Faculty: Mary Lusk, AJ Reisinger

Gisele Nighswander, Forest Resources and Conservation

CLCE Faculty: Basil Iannone

Jovana Radovanovic, Agricultural and Biological Engineering

CLCE Faculty: Eban Bean

Julia Rycyna, Environmental Horticulture

CLCE Faculty: Basil Iannone

Qian Yao Si, Soil and Water Science

CLCE Faculty: Mary Lusk

Emily Taylor, Soil and Water Science

CLCE Faculty: AJ Reisinger

Rain Yates, Forest Resources and Conservation

CLCE Faculty: Basil Iannone

PH.D. STUDENTS

Andrew Benson, School of Forestry, University of Canterbury

CLCE Faculty: Andrew Koeser

Lorna Bravo, Environmental Horticulture

CLCE Faculty: Gail Hansen

Sean Campbell, Environmental Horticulture

CLCE Faculty: Chris Marble

Isaac Duerr, Statistics

CLCE Faculty: Michael Dukes

Sujit Ekka, Biological and Agricultural Engineering, North Carolina State University

CLCE Faculty: Eban Bean

Deborah Hilbert, Environmental Horticulture

CLCE Faculty: Gail Hansen, Andrew Koeser

Siti Jariani Mohd Jani, Soil and Water Science

CLCE Faculty: Andrew Koeser, Mary Lusk

Balwinda Kaur, Entomology and Nematology

CLCE Faculty: Basil Iannone

Yuvraj Khamare, Environmental Horticulture
CLCE Faculty: Chris Marble

Ryan Klein, Environmental Horticulture
CLCE Faculty: Gail Hansen, Andrew Koeser,
Laura Warner

Sara Komenda, Forest Resources
and Conservation
CLCE Faculty: Michael Dukes

Tricia Kyzar, Urban and Regional Planning
CLCE Faculty: Eban Bean

Dongso Lee, Food and Resource Economics
CLCE Faculty: Hayk Khachatryan

Hunter Merrill, Statistics
CLCE Faculty: Michael Dukes

Julio Pachon, Soil and Water Science
CLCE Faculty: Eban Bean

Aaron Petri, Department of Urban
Regional Planning, University of Illinois at
Urbana-Champaign
CLCE Faculty: Andrew Koeser

John Roberts, Environmental Horticulture
CLCE Faculty: Gail Hansen, Andrew Koeser

Debalina Saha, Environmental Horticulture
CLCE Faculty: Chris Marble

Oguz Sariyildiz, School of Forest Resources
and Conservation
CLCE Faculty: Gail Hansen, Basil Iannone

Charlie Stillwell, Biological and Agricultural
Engineering, North Carolina State University
CLCE Faculty: Eban Bean

Mary Szoka, Agricultural and
Biological Engineering
CLCE Faculty: Eban Bean

Erin Yafuso, Environmental Horticulture
CLCE Faculty: Andrew Koeser, Laura Warner

Quiyan Yu, Environmental Horticulture
CLCE Faculty: Andrew Koeser

Xumin Zhang, Food and Resource Economics
CLCE Faculty: Hayk Khachatryan, Gail Hansen



Research and Extension Highlighted at the Fourth CLCE Urban Landscape Summit

CLCE hosted its fourth Urban Landscape Summit in March 2019. More than 100 faculty, staff, and stakeholders participated in research and Extension presentations throughout the two-day event.

A new addition to the Summit was a speaker panel to discuss external forces accelerating the need for more alternatives to conventional landscaping. Organizations participating in the panel included Audobon Florida, Florida Department of Environmental Protection, Toho Water Authority, Southwest Florida Water Management District, Alachua County Environmental Protection Department, and the Environmental Research and Education Foundation.

Invited speakers also presented topics related to sustainable Florida landscapes. County faculty and

state specialists presented in either a lightning round or extended format on topics relating to homeowner insights, landscapes and plants, invasives and pests, and water supply and conservation.

Graduate students also competed in a 2-minute lightning round presentation and poster session. Award winners received \$500 towards their research programs. Carlee Steppe, environmental horticulture master's student, won for her presentation on "Landscape performance and fruiting of eight *Lantana montevidensis* (trailing lantana) selections grown in north and south Florida." Xumin Zhang, food and resource economics PhD student, won for his presentation, "Relating environmental attitudes to homeowners preference or Florida-Friendly Landscaping™."



Teaming Up to Select Tough Urban Trees for Florida

Urban forests are important resources for communities, but their resilience relies on factors such as species age and diversity. Studies have shown that many urban forests have low species diversity, which leaves them vulnerable to stressors like pests, diseases, and major storms. Threats like these can devastate an urban landscape and can create substantial economic, environmental, and emotional costs for the community.

CLCE PhD student, Deborah Hilbert, and the Urban Tree and Landscape Management Lab collaborated with the Central Florida Urban Forest Diversity Working Group to create a list of trees that can potentially survive Central Florida's urban environment.

In the summer of 2017, the team planted 200 trees in four Central Florida counties in both park and roadside locations. For the first two years after planting, they monitored the trees' growth and survival and collected microclimate and planting site data.

One year after planting, 179 trees were alive (89.5% survival). Survival rates differed by species, with *Taxodium ascendens* having the lowest survival rate (75%). Survival rates also differed by site type ($p = 0.038$), with parks having a lower survival rate than roadside trees (85% vs. 94%).

One conclusion from this ongoing research is that forming partnerships between local municipalities, growers, and researchers can be an effective strategy for managing diversity in urban forests. The tree selection process used for this trial can serve as a guide for others who are choosing underutilized trees to test in their communities. Lastly, the final selection of our trial trees was greatly limited by availability from growers, so future research should investigate why there is a limited selection of trees for purchase and how this might be changed.

Deborah Hilbert and Andrew Koeser, CLCE
Faculty and Students



Stormwater Ponds Serve as Habitat for Ornamental Plant Invaders

Stormwater ponds are an increasingly common best management practice in urban and residential landscapes. Being designed to prevent stormwater runoff and associated pollutants such as nutrients from entering nearby water bodies, stormwater ponds can be hydrologically dynamic and nutrient rich environments. In addition, there are more than 76,000 stormwater ponds in Florida alone and take up as much area in urbanized landscapes as institutional and recreational land cover types. Because they create a nutrient rich environment, these ecosystems are more susceptible to the establishment and spread of invasion plants.

With support from a UF/IFAS Interdisciplinary Research on Invasive Species grant, Dr. Basil Iannone and his team designed a study to determine the degree to which stormwater ponds

harbored invasive plant species and the traits of these species.

The team found high diversity of invasive plants in the stormwater ponds of Gainesville (28 species found in 30 ponds). This creates challenges for invasive plant management which tends to emphasize single species approaches. There is also high variability among ponds in invasive plant species richness. Dry retention ponds tended to be more invaded than permanently flooded detention ponds, and ponds managed via bank mowing and controlled plantings were less invaded than ponds where vegetation was allowed to establish; although management also prevented native plant establishment.

Despite the high number of invasive species found, the invasive species shared many traits. (See sidebar.)





Trait differences did occur between heavily managed and non-managed ponds. Heavily managed ponds harbored more herbaceous invaders. Non-managed ponds harbored larger woody invaders.

The overarching commonality found among invasive plant traits may help when devising control strategies. The high percentage of invaders

introduced as ornamental plants confirms that landscaping plant choice can have environmental impacts that extend beyond the yard(s) into which these species are introduced.

The next steps include determining the degree to which stormwater ponds facilitate invasive plant spread and determining how to design stormwater ponds to be more resistant to plant invasions. In addition, this study reveals the need to determine the degree to which traits of plant invaders in other urban ecosystems resemble (or differ from) those found in stormwater ponds and how to prevent the introduction of future plant invaders into urban and residential landscapes.

Basil Iannone, James Sinclair, Eban Bean, AJ Reisinger, Lindsey Reisinger, and Carrie Adams, CLCE Faculty and Affiliates

COMMON TRAITS ON INVASIVE SPECIES IN STORMWATER PONDS

- All perennial
- Favored acidic soils
- Tolerant of disturbance
- 95% reproduced asexually
- 72% drought and/or flood tolerant
- 71% introduced as ornamental species

Marketing Florida-Friendly Landscapes to Florida Homeowners

Floridians are increasingly participating in do-it-yourself (DIY) activities around their houses and yards. These activities provide several benefits. Do-it-yourselfers embark on creative projects that can enhance their lives and their homes, enjoying the creative process and instilling a sense of pride in their own personal space. Gardening and landscaping are two activities that are frequently performed by DIYers. Landscape projects and maintenance have become easier than ever before due to increased information available online, popularity of crafting and DIY-focused stores, and easy access to gardening supplies at large retailers. Recently, consumers have become more interested in sustainable gardening and landscaping, especially if they are able to do it themselves.

The team studied how both DIY and non-DIY homeowners (i.e., those who hire professional landscaping service providers) perceive the value of residential landscapes and the best methods to encourage both types of homeowners to purchase or install FFL.

Encouraging homeowners to install FFL is one means of increasing sustainability in the urban environment. However, both the benefits of encouraging homeowners to install FFL and the best means of doing so likely vary according to the homeowners' involvement with their landscapes.



Respondents were also asked to indicate the best methods to encourage them to purchase and install FFLs. Respondents indicated that:

- A greater availability of FFL plants and easier identification of FFL plants would be the most effective means of encouraging them to install FFL.
- More practical information about the benefits of FFL, tax deductions, rebates, lower installation costs, and information on the financial and environmental benefits of FFL would be effective.
- Less effective methods include landscape ordinances limiting irrigation water use and turfgrass areas.

Best Methods to Encourage Purchase and Installation of Florida-Friendly Landscapes

DIY	Non-DIY
Tax deductions	FFL benefits
Rebates	Easier plant ID
	Financial benefits of FFL

The differences in perceived landscape value and means of encouraging FFL between DIY and non-DIY homeowners in central Florida were assessed. Overall, both DIY and non-DIY homeowners perceive landscapes as adding to their properties’ value. DIYers have a slightly higher perceived landscape value. Respondents indicated that greater product availability and information about FFL benefits were the most impactful ways to encourage them to install FFL. Additionally, DIY homeowners are more interested in financial incentives, such as rebates or tax deductions, that reduce the overall investment as a motivator for installation. Non-DIY homeowners are the most interested in benefit information and easier identification of FFL plants. Results can be used by firms to tailor their in-store/online marketing strategies to target DIY, non-DIY, or both customer groups.

Hayk Khachatryan, Alicia Rihn, and Caroline Warwick, CLCE Faculty and Staff

RECOMMENDATIONS FOR RETAILERS TO INCREASE SALES OR INSTALLATIONS OF FFL

1. Provide customers with FFL plants, products, and landscape designs to increase availability.
2. Use point-of-sale promotions (signs, labels, etc.) and website space to inform customers and assist them in identifying which products or designs are Florida-Friendly and the benefits associated with those products.
3. Provide customers with information about the possible benefits of FFL.
4. For firms targeting DIY customers, identify and inform customers about possible price-reducing options such as tax deductions and rebates.
5. For agencies and homeowner associations wanting to encourage FFL participation, provide information to homeowners about the available Florida-Friendly options and consider implementing ordinances, such as limiting irrigation and turfgrass area, to promote landscapes and landscaping practices that align with FFL principles.



Landscape Performance and Fruiting of Non-Invasive *Lantana* spp. Grown in North and Central Florida

CLCE graduate student Carlee Steppe compared the growth, flowering and fruit production of six commercial cultivars of *Lantana montevidensis* to naturalized varieties found in Texas and Australia. She also evaluated the growth, flowering and fruit production of four 'sterile' varieties of *Lantana camara*.

Steppe took cuttings from all eight varieties of *L. montevidensis* and four varieties of *L. camara* and grew them in Balm and Citra, Florida. Height,

width, flowering, plant quality, and available fruit measurements were collected.

Plants with high performance and little to no fruit will be submitted to the UF/IFAS assessment infraspecific taxon protocol for recommendation of use in Florida.

Carlee Steppe, Sandy Wilson, and Zhanao Deng,
CLCE Graduate Student and Faculty



Compost Topdressing as a Sustainable Management Approach to Multipurpose Fields in Gainesville City Parks

This project is investigating the effectiveness of compost topdressing as an alternative management practice for multipurpose fields in city parks and to identify additional management requirements associated with this alternative approach.

Partners on the project include the City of Gainesville Parks, Recreation and Cultural Affairs Department. The team set up an experiment testing the effectiveness of compost topdressing on soil health and aboveground plant responses at the multipurpose field at Fred Cone Park.

In February 2019, the entire multipurpose field was treated with a pre-emergent herbicide and a fertilizer treatment. This was followed with a compost treatment into the project.

Preliminary soil sampling was completed in March 2019. Aerial imagery flights were completed in March 2019 (pre-treatment) and May 2019

(post-treatment). Initial turfgrass management workshops and BioBlitz events were completed in March and April 2019. Aeration and topdressing of half of the field was completed in early April, and fertilizer application was completed on a different half of the field in late April.

Compost and fertilizer treatments have been successfully applied and post-treatment sampling has been completed. Visual differences in compost plots have been found based on aerial imagery. No associated difference in turf quality was found as scored by a turfgrass specialist. Compost applications did increase organic nitrogen leaching and total phosphorus leaching relative to fertilizer or control plots.

A.J. Reisinger, Eban Bean, Eben Broadbent, Taylor Clem, Basil Iannone, Laurie Trenholm, and Pierce Jones, CLCE Faculty

Photos by Eben Broadbent.



Attends International Interdisciplinary Conference on Land Use and Water Quality in Denmark

Members of the FFL team participated in the poster session to showcase the program in an international forum. During the session, the FFL team met and interacted with more than 30 fellow conference attendees from across western Europe including Belgium, The Netherlands, Germany, England, Ireland, and Denmark.

POSTERS PRESENTED:

- Florida Fertilizer Ordinance Mobile Web App Matches Work Locations to Applicable Regulations

- Florida's Green Industries Best Management Practices Training Promotes Sustainable Urban Landscapes
- Comparing Various Irrigation, Plant, and Turfgrass Combinations to Improve Water Conservation and Quality in Florida's Urban Landscapes
- Implementing Irrigation Best Management Practices for Water Resource Protection in Central Florida

UF/IFAS EXTENSION FLORIDA-FRIENDLY LANDSCAPING™
A Statewide Best Management Practices Training Program
that Promotes Urban Environmental Stewardship in Florida

Taylor Chen, Yoon Wichman, Kiana Mubarek, Lauren Threlkeld, Elissa LaBri, Cesar Peralta, CJ Ross, Barry Swartz
 This program is funded in part by UF IFAS Extension and IFAS-PI with a grant from




SITUATION

Private sector are overwhelmed by the rising and unclear market demands, especially in the area of agricultural and horticultural. (Shah, 2016). However, the private sector is not yet fully equipped to contribute to economic growth and job creation. The government is not yet fully equipped to provide the necessary support and training to the private sector. The government is not yet fully equipped to provide the necessary support and training to the private sector.

TRAINING METHOD

Training Course
 1. The training course is designed to provide the necessary support and training to the private sector.
 2. The training course is designed to provide the necessary support and training to the private sector.
 3. The training course is designed to provide the necessary support and training to the private sector.




PROGRAM OVERVIEW

The program is designed to provide the necessary support and training to the private sector. The program is designed to provide the necessary support and training to the private sector. The program is designed to provide the necessary support and training to the private sector.

GO-BMP TOTAL ATTENDANCE/CERTIFICATION

	Female	Male	Female	Male
Bo. Service	100000	100000	100000	100000
Bo. Service	100000	100000	100000	100000
Bo. Service	100000	100000	100000	100000
Bo. Service	100000	100000	100000	100000
Bo. Service	100000	100000	100000	100000

OBJECTIVES

1. To assist the private sector in the area of agricultural and horticultural.
 2. To assist the private sector in the area of agricultural and horticultural.
 3. To assist the private sector in the area of agricultural and horticultural.

RESULTS

Training Results
 1. The training results are as follows:
 2. The training results are as follows:
 3. The training results are as follows.

PRIMARY AUDIENCE

Category	Percentage
Environmental Science/Engineering	42%
Environmental Science/Engineering	31%
Environmental Science/Engineering	17%
Environmental Science/Engineering	14%
Environmental Science/Engineering	13%
Environmental Science/Engineering	12%
Environmental Science/Engineering	10%
Environmental Science/Engineering	9%
Environmental Science/Engineering	8%
Environmental Science/Engineering	7%
Environmental Science/Engineering	6%
Environmental Science/Engineering	5%
Environmental Science/Engineering	4%
Environmental Science/Engineering	3%
Environmental Science/Engineering	2%
Environmental Science/Engineering	1%
Environmental Science/Engineering	0%

2018 FLORIDA GI-EMP STATE WIDE PRACTICE FOLLOW-UP SURVEY

Results based on 1,000 responses (100% response rate) for the 2018 Florida GI-EMP State Wide Practice Follow-Up Survey.

Question	Response
1. How many years have you been practicing in the field?	1-5 years: 10%, 6-10 years: 20%, 11-15 years: 30%, 16-20 years: 20%, 21+ years: 20%
2. How many years have you been practicing in the field?	1-5 years: 10%, 6-10 years: 20%, 11-15 years: 30%, 16-20 years: 20%, 21+ years: 20%
3. How many years have you been practicing in the field?	1-5 years: 10%, 6-10 years: 20%, 11-15 years: 30%, 16-20 years: 20%, 21+ years: 20%
4. How many years have you been practicing in the field?	1-5 years: 10%, 6-10 years: 20%, 11-15 years: 30%, 16-20 years: 20%, 21+ years: 20%
5. How many years have you been practicing in the field?	1-5 years: 10%, 6-10 years: 20%, 11-15 years: 30%, 16-20 years: 20%, 21+ years: 20%
6. How many years have you been practicing in the field?	1-5 years: 10%, 6-10 years: 20%, 11-15 years: 30%, 16-20 years: 20%, 21+ years: 20%
7. How many years have you been practicing in the field?	1-5 years: 10%, 6-10 years: 20%, 11-15 years: 30%, 16-20 years: 20%, 21+ years: 20%
8. How many years have you been practicing in the field?	1-5 years: 10%, 6-10 years: 20%, 11-15 years: 30%, 16-20 years: 20%, 21+ years: 20%
9. How many years have you been practicing in the field?	1-5 years: 10%, 6-10 years: 20%, 11-15 years: 30%, 16-20 years: 20%, 21+ years: 20%
10. How many years have you been practicing in the field?	1-5 years: 10%, 6-10 years: 20%, 11-15 years: 30%, 16-20 years: 20%, 21+ years: 20%

IMPLEMENTING IRRIGATION BEST MANAGEMENT PRACTICES FOR WATER RESOURCE PROTECTION IN CENTRAL FLORIDA

INTRODUCTION

According to the Florida Department of Agriculture and Consumer Services (FDACS), in 2015, there were approximately 1.6 million acres of irrigated land in agriculture in the state of Florida and Florida agricultural water demand use estimates were 2.1 billion gallons per day (BGD). In 2040, FDACS projects water use demand for agriculture to be 2.4 BGD. According to the Florida water management district (WMDs), in 2015, public water use demands were 2.8 BGD, and the public water demand for 2035 will be 3.362 BGD. Public supply and agriculture use represents 80 percent of the total water demand estimates in Florida. Considering the top 10 agricultural products (see Table 1) of these countries, by value, are in Central Florida and their future potential consumption of the public water supply as the public demand in these counties is projected to

method

To be proactive and meet the water demand and maintain or improve water quality, the needs of a growing population and agriculture in the central Florida, Florida Department of Environmental Protection (DOW), three SWFWMD, St. Johns, South Florida, and Southwest Florida and FACS for Central Florida water resources (CFWR) in part to resolve a 250 million gallons per day (MGD) deficit for 2035, as well as to coordinate activities in the region.

CFWR Water Quality Analysis

Results

In January 2016, the Florida Legislature passed a comprehensive policy, but which focused on water quality, but not address the demand and water quality for the region and the state. The high agricultural production and water demand is expected to increase at MGD water balance without negative impacts to natural resource. To calculate water demand saving for agriculture required some crop type, irrigation system, and characteristics, drainage, and management practices (BMPs), and participation rates for single of both. A programmatic approach was developed to measure use, improved efficiency, irrigation system, maintenance, and water conservation, fall water recovery, frost/freeze, and additional practices.

Results

From 2013 to 2017 the agricultural conservation sub team reviewed irrigation BMPs from the SWFWMD and WACS and created a programmatic BMPs for irrigation efficiency. From this review, 6 agricultural had saved 3.4 MG of water through efficiency. This metric is now being incorporated into the 2030 implementation as a tool to determine cost benefits in determining which BMPs the leading source Florida's growing water demands while improve will require addressing public, increased conservation, alternative strategies, and resource acquisition strategies.

CFWR BMP Water Savings Summary

CROP/TYPE	EST. ACREAGE OF CROP	EST. SAVINGS IN GAL/ACRE	EST. SAVINGS IN GAL/ACRE
Soil Moisture Sensor Auto On/Off	69.3	3,500	
Weather Sensor Auto On/Off	69.3	3,500	



FLORIDA STATE UNIVERSITY



**Florida Fertilizer Ordinance
Mobile Web App**

Matches Work Locations to
Applicable Regulations

Alachua, Escambia, Bay County, Citrus, Duval, Franklin, Gadsden, Hamilton, Hardee, Hendry, Hernando, Hillsborough, Indian River, Lake, Manatee, Marion, Nassau, Oklawaha, Orange, Osceola, Palm Beach, Pasco, Pinellas, Polk, Santa Fe, Seminole, St. Johns, St. Lucie, Volusia, and Washington County

UF IFAS Extension
University of Florida

Florida-Friendly
Landscaping
certified

Florida enjoys an abundance of lakes, rivers and

The intended target audiences for the app are landscapers and

The diagram illustrates a feedback loop between a homeowner and a fertilizer company. At the top, a green box labeled 'Homeowner' contains the text: 'I have a home in [City, State] and I want to know when I can fertilize my lawn. I also want to know what restrictions I need to follow.' An arrow points from the homeowner to a blue box labeled 'Fertilizer Company'. The company box contains: 'I will determine the correct amount of fertilizer and the best time to apply it based on the location and property information you provided. I will also provide you with a prescription and application instructions.' An arrow points from the company back to the homeowner. The cycle is labeled 'No Fertilizer' and 'Use Fertilizer'.

Florida Master Gardener Volunteer Program celebrates 40th Anniversary

The UF/IFAS Extension Florida Master Gardener Volunteer program celebrated 40 years of service to the state of Florida in 2019.

The Master Gardener Volunteers' mission is to deliver unbiased, research-based information from UF to the public; a mission they have delivered on for 40 years.

"For four decades, Master Gardener Volunteers have been the most trusted resource for horticulture information to Florida residents," Wendy Wilber, UF/IFAS Extension Florida Master Gardener Volunteer state coordinator said. "Master Gardener Volunteer programs have amazing successes and touch citizens from Pensacola to Key West."

In 2018, Master Gardener Volunteers delivered over 400,000 hours of service to Florida residents amounting to an \$8.1 million economic impact. The program, active in 60 of Florida's counties, reaches over 500,000 Florida citizens each year.

"The Master Gardener Volunteer program is a critical aspect of UF/IFAS Extension," Nick Place, UF/IFAS Extension dean and director said. "Through our program, hundreds of volunteers have deepened their knowledge and skills and thousands more have received help and advice over the 40 years of this program. Ultimately this results in tremendous

impacts for the state. I'm so proud to be part of this great program."

Master Gardener Volunteers provide educational outreach to citizens across the state, including special projects within local communities. These projects range from developing community gardens in rural, food insecure areas to citizen education on Florida-Friendly Landscaping™ topics.

"There are so many success stories, it is difficult to share just one," Wilber said. In Orange County, the Master Gardener Volunteers and Nemours Children Hospital partnered with Head Start to teach children about gardening and nutrition through a hands-on school garden program. Head Start, a federally funded program was designed to promote school readiness to low-income families. The program is in its fourth year and has reached over 1,000 children in 2019. Nineteen out of 22 Head Start locations in Orange County have educational gardens and the volunteers hope to reach all 22 sites this year.

"Forming partnerships with other organizations to do amazing things within Florida communities is what the Master Gardener Volunteer program is all about," Wilber said.

Written by [Tory Moore](#), UF/IFAS Public Relations Specialist

"Master Gardener Volunteer programs have **AMAZING SUCCESSSES** and **TOUCH CITIZENS** from Pensacola to Key West."

Wendy Wilber, UF/IFAS Extension Master Gardener Volunteer state coordinator

Through our program, **HUNDREDS OF VOLUNTEERS** have **DEEPEENED THEIR KNOWLEDGE** and **SKILLS** and **THOUSANDS MORE** have **RECEIVED HELP** and **ADVICE...**

Nick Place, UF/IFAS Extension dean and director

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Center for
LANDSCAPE
Conservation & Ecology

MISSION

To conduct interdisciplinary research and provide science-based education on urban landscape practices to protect and conserve Florida's natural resources

VISION

To be the leading source of science-based information and innovations for landscape practices in the urban environment in Florida

GOAL

Seeks to promote research-based best management practices among landscape professionals and other members of the agricultural industry, and to educate homeowners on sustainable landscape practices through its research, education, and outreach. CLCE also seeks to train students who will enter careers that allow them to engage in and promote sustainable landscape practices.

HISTORY

The center was established in 2006 by an act of the Florida Legislature in response to concerns about the sustainability of current landscape management practices and interests in water availability and quality. With Florida's ever-growing population, it was recognized that a large focus needed to be placed on landscapes, urban water and fertilizer use, plant choice, and maintenance practices. The center serves multiple stakeholders including landscape professionals, trade organizations, commercial developers, urban planners, policy makers, Extension agents, and Florida residents, providing research findings, recommendations, and education.