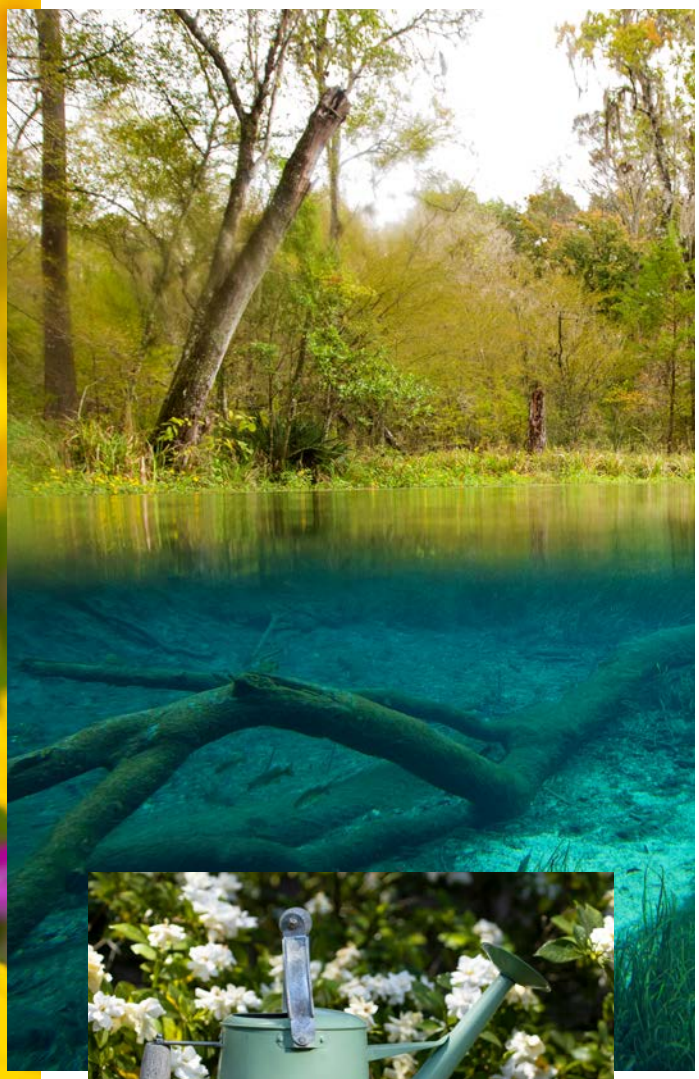
CENTER FOR LAND USE EFFICIENCY

2023 Annual Report

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

UF IFAS UNIVERSITY of FLORIDA

CLUE | CENTER FOR LAND USE EFFICIENCY



Mission

Promote the adoption of science-based policies and practices that measurably create an environmentally, economically, and socially vibrant life for Florida's citizens.

Our work is *focused* on three areas:

- Agriculture,
- Urban and suburban landscapes,
- Large-scale development,

And is largely related to water *quality* and *quantity* and various best management practices (BMPs).

Major Extension Programs

- Florida Master Gardener Volunteer Program,
- Florida-Friendly Landscaping™ Program,
- Program for Resource Efficient Communities,
- H_2OSAV,
- Sustainable Floridians℠, and
- Florida Agricultural Best Management Practices.

2023 By the Numbers

$5,022,853
Total active external funding in 2023 resulting from CLUE seed funding

$224,083
Internal Funding

$22,602,016
Active External Funding

28
Interdisciplinary Faculty

15
Affiliated Faculty

21
Staff

36
Chaired M.S.

25
Chaired Ph.D.

81
Refereed Pubs

26
Proceedings

48
EDIS

31
Non-refereed Pubs

489
Trainings & Workshops with 22,318 participants

9,363
E-newsletter subscribers

55
webinars with more than 38,000 live and recorded views

4.9 million
Website Views

39,224
Facebook followers and 1.15 million reached (yearly increase of 114%)

12,770
Instagram followers with 68,176 reached

YouTube Channels
CLUE
37, 178
views, with 1,672 channel subscribers

FFL (New in 2023)
18,153
views, with 556 channel subscribers

Behavior change brought about by UF/IFAS Extension programs in 2022 led to an estimated **340,124,479** gallons of water saved annually in Florida, a direct impact through the Center's major Extension programs. This savings is valued at **$1,465,937** on Floridians' utility bills and is enough water to supply the annual indoor water needs of 3,865 households.

The cost to remove a pound of nitrogen from Florida waters is estimated at $500 or more per pound. In 2022, FFL efforts prevented an estimated **128,714** pounds of nitrogen from entering Florida waters with an estimated statewide annual savings of **$64.4 million**.

Message from the Director

Just when you think things couldn't get busier, here comes 2023. This year was full of activity for CLUE with many accomplishments. The center started the year with faculty and staff associated with the Future of Florida Landscapes team holding a planning retreat. You will find an update on that event in this report. We onboarded new team members Rebecca Clapp, Communications Manager, and Natasha Atlas, Science Writer, at the Tropical Plant International Expo. In addition, the Florida-Friendly Landscaping™ (FFL) program celebrated its 30th anniversary.

We organized sessions at the IFAS Extension Symposium focused on water that included presentations on alternative landscapes, FFL and the Future of Urban Landscapes theme. This year travel to professional meetings and scientific conferences resumed to normal or above normal levels as we sought to reconnect with people after the long delay from Covid-19 travel restrictions. As a result, the FFL program was represented at many events and the year culminated with the FFL program, receiving the Emmy Award for best magazine program at the 47th Annual Suncoast Regional Emmy® Awards. In addition, the FFL program was recognized with seven major awards including the NUEL Southern Region Program Innovator Award for expanding the FFL/GI-BMP audiences in correctional facilities and the 2023 James App Award for Outstanding Extension Team.

It's not just awards for the FFL program. Due to increasing demand on water supplies in Florida, the FFL program is sought after to help solve the problem by using irrigation efficiently and designing landscapes that aren't as thirsty as traditional landscapes. As an example, many local governments in central Florida have adopted FFL in their landscape code. When the city of Zephyrhills took the unprecedented step of imposing a moratorium on new construction due to water supply limitations, they looked to FFL. They are now taking steps to adopt FFL principles to reduce irrigation waste and increase water supply. I can think of no better impact for the FFL program than decision makers adopting the tried-and-true principles and practices to make our landscapes more sustainable. Furthermore, the H_2OSAV program will allow us to measure and verify water conservation and efficiency impacts of FFL programs. In this report there is a story showing H_2OSAV's impact on water conservation programs in the state. And finally, the FFL program is launching the FFL Natural designation reserved for landscapes that have the strictest requirements on irrigation and manmade inputs.

The legislature tasked UF/IFAS with a study to determine the effectiveness of fertilizer ordinances around the state that limit the times of year fertilizer can be applied. Nine CLUE faculty and staff assembled a 56-page report on the state of the science with respect to fertilizer ordinances and their effect on water quality. We thank the legislature for this opportunity, since a singular effort to track the effect of these ordinances had not been conducted to date. See the story and the report for details, but in summary the authors found that for the most part, studies to date have not been designed to determine fertilizer ordinance effectiveness.

I have no doubt that 2024 will be as busy if not busier for CLUE but I have confidence in our faculty and staff that we will continue to bring science-based information to our decision makers on important issues around agricultural and urban land use in the state.

Michael D. Dukes
Director

Message from the SVP

There's change afoot at UF. As I write this, we are still in our first year with a new president, just the 13th in more than a century and a half of UF history. President Sasse has tapped the leader of UF/IFAS to serve as his provost, who in turn has appointed me interim senior vice president, a job I'm likely to serve in through at least mid-2025.

Everyone in UF/IFAS will experience change in the coming year. So I'm glad we have at CLUE someone who is experienced *with* change. In fact, Michael Dukes went through it again in 2023, when Dean Andra Johnson took the enlightened step of appointing Michael as associate dean for UF/IFAS Extension special initiatives.

In this newly created position, Michael will oversee administration of programs such as Florida-Friendly Landscaping™ and the Florida Master Gardener Volunteer program. He will also continue to lead the UF/IFAS Center for Land Use Efficiency (CLUE) as its director. So he'll be doing two big jobs (some things never change at IFAS!).

Michael has adapted to the advance of technology in both the lab and the office, Florida's rapid population growth, 1,000 Friends of Florida's warnings about the implications of that growth, and budgetary complications that led to an evolution from the former Center for Landscape Conservation and Ecology to the current CLUE.

That's a lot of change. UF/IFAS leadership recognizes how adept Michael has been at managing it and continuing to thrive through it. That's why I'm glad Dean Johnson promoted him.

Michael has also been increasingly recognized outside of UF/IFAS. In January 2023, Michael was honored by the American Society of Civil Engineers Environmental and Water Resources Institute to receive the Royce J. Tipton Award for work contributing to improving irrigation efficiency.

Michael joined UF in 2000 as an assistant professor in the Agricultural and Biological Engineering Department. His work has focused mostly on the use of efficient irrigation technologies such as smart irrigation controllers in both agricultural and residential areas. His leadership has been central to how we have built our social, physical and biological science expertise as it applies to Florida's largest crop by acreage – residential lawns and landscapes.

The pages that follow are replete with examples of that expertise in action. Enjoy!

Kind Regards,

Rob Gilbert
Interim Senior Vice President of Agriculture and Natural Resources

CLUE Faculty, Affiliates, and Staff

Interdisciplinary, Collaborative, and Innovative

CLUE Faculty

Michael DUKES
Associate Dean for Extension, CLUE Director, Agricultural & Biological Engineering, Water Conservation & Irrigation

Andrea ALBERTIN
Water Resources Regional Specialized Agent

Eban BEAN
Agricultural & Biological Engineering, Urban Water Resources Engineer

Catherine CAMPBELL
Family, Youth & Community Sciences, Community Food Systems

Jay CAPASSO
Water Resources Regional Specialized Agent

Gail HANSEN
Environmental Horticulture, Sustainable Landscape Design

Basil IANNONE
Forest, Fisheries and Geomatic Sciences, Geospatial

Pierce JONES
Director, Program for Resource Efficient Communities

Hayk KHACHATRYAN
Food & Resource Economics, Horticulture Economics

Ryan KLEIN
Environmental Horticulture, Arboriculture

Andrew KOESER
Environmental Horticulture, Landscape Management

Lisa KRIMSKY
Water Resources Regional Specialized Agent

AJ LINDSEY
Environmental Horticulture, Urban Turfgrass Management

Mary LUSK
Soil & Water Sciences, Urban Water Quality

Chris MARBLE
Environmental Horticulture, Invasive Weed Management

Craig MILLER
Program for Resource Efficient Communities, Energy & Water Efficiency

Paul MONAGHAN
Agricultural Education & Communication, Community Based Social Marketing

Gerald E. MURPHY
State Specialized Program Agent, Flood Resilient Communities

Don RAINEY
Water Resources Regional Specialized Agent

AJ REISINGER
Soil & Water Sciences, Urban Soil & Water Quality

Jennison KIPP
Sustainable Floridians(SM) Program, Communities State Specialized Agent

Lakesh SHARMA
Soil & Water Sciences, Director, Agricultural BMP Program

Nick TAYLOR
Program for Resource Efficient Communities, H_2OSAV State Specialized Agent

Laura WARNER
Agricultural Education & Communication, Social Marketing & Program Evaluation

Wendy WILBER
Florida Master Gardener Volunteer Program State Specialized Agent

Yilin ZHUANG
Water Resources Regional Specialized Agent

Affiliated Faculty

Michelle ATKINSON
Manatee County, Urban Horticulture

Lynn BARBER
Hillsborough County, Urban Horticulture

Haimanote **BAYABIL**
Agricultural & Biological Engineering, Hydrology

Taylor **CLEM**
Nassau County, Landscape Design

Adam **DALE**
Entomology & Nematology, Landscape Entomology

Zhanao **DENG**
Environmental Horticulture, Plant Breeding

Erin **HARLOW**
Columbia County, Environmental Horticulture

Mark **HOSTETLER**
Wildlife Ecology & Conservation, Biodiversity

Kevin **KENWORTHY**
Agronomy, Turfgrass Breeding

Jason **KRUSE**
Environmental Horticulture, Sports Turf Management

Emma **MATCHAM**
Agronomy, Nutrient- Cycling Agroecologist

Tina **MCINTYRE**
Seminole County, Florida-Friendly Landscaping™

Vivek **SHARMA**
Agricultural and Biological Engineering, Precision Water Management

Bryan **UNRUH**
Environmental Horticulture, Urban Turfgrass Management

Sandy **WILSON**
Environmental Horticulture, Ornamental & Invasive Plants

CLUE Staff

Rebecca **CLAPP**
Communications Manager

Melissa **FRIEDMAN**
Research Coordinator

Natasha **ROBERTS**
Science Communicator

Jennifer **SYKES**
Communications Web Designer II

Florida-Friendly Landscaping™ Staff

CJ **BAIN**
FFL Website & Information Tech Coordinator

John **BOSSART**
FFL Extension Program Manager

Marc **CELESTIN**
GI-BMP Regional Coordinator

Angela **GREGORY**
Social Media Specialist

Carol **KAVALAN**
IT Architect

Claire **LEWIS**
Interim Director and Florida-Friendly Communities Statewide Coordinator

Jen **MARVIN**
FFL/FYN Statewide Coordinator

Cesar **PERALTA**
GI-BMP Regional Coordinator

Barry **SAWICKI**
FFL/GI-BMP Program Assistant

Lyn **WARD**
FFL/GI-BMP Program Assistant

Tom **WICHMAN**
FFL Assistant Director and GI-BMP Statewide Coordinator

Program for Resource Efficient Communities Staff

David **BEARL**
Chef, Local Food Systems and Culinary Educator

Lesly **JEROME**
Energy Programs Research Assistant

Kaitlin **ROBB PRICE**
H_2OSAV Project Manager

Bradley **SPATZ**
H_2OSAV Computer Scientist

Mary **SZOKA**
Data Management Analyst II

Graduate Students
Working on CLUE Research

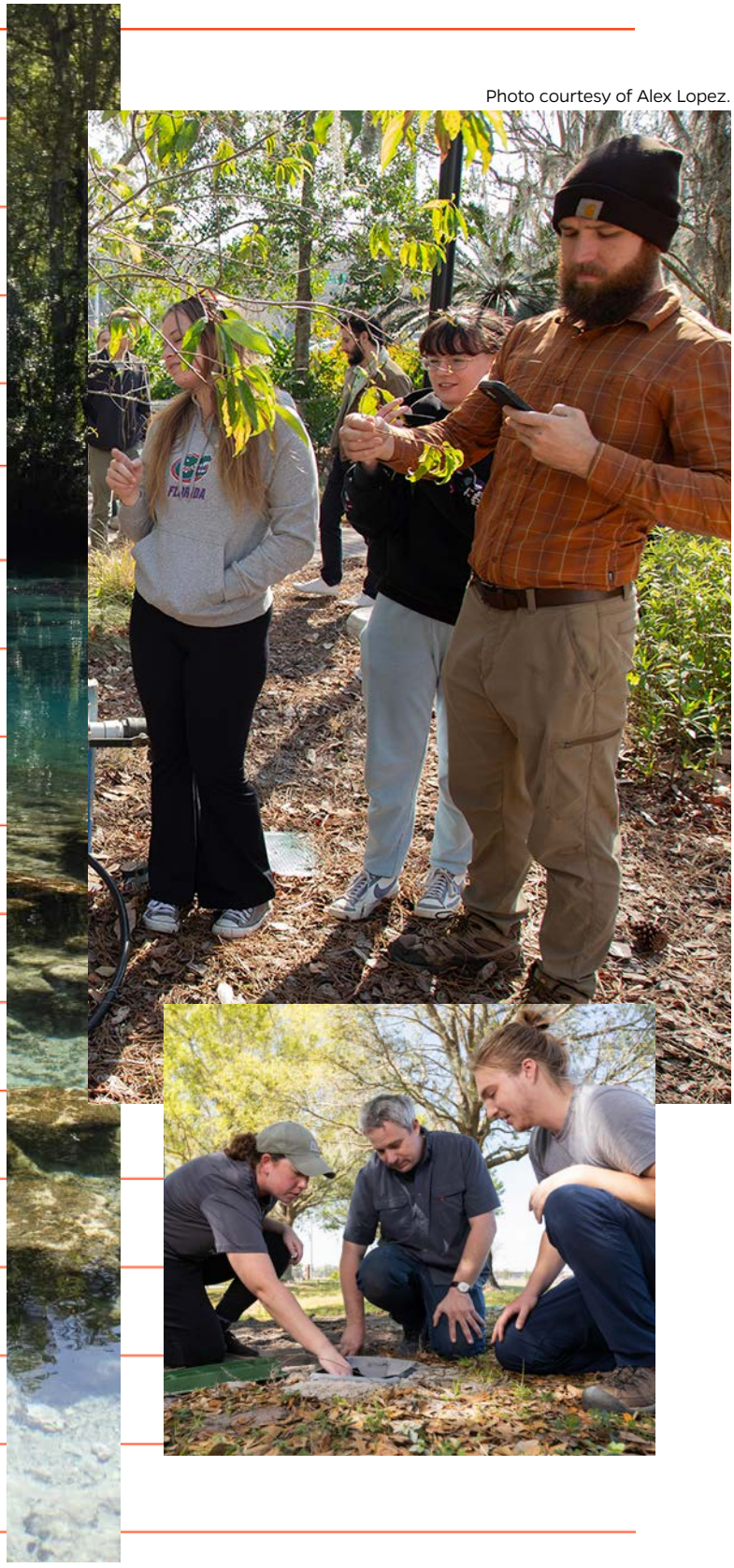


Photo courtesy of Alex Lopez.

6 Ph.D.
Agricultural and Biological Engineering

3 M.S. **5** Ph.D.
Agricultural Education and Communication

4 M.S. **2** Ph.D.
Agronomy

1 M.S.
Design, Construction, and Planning

1 M.S. **1** Ph.D.
Entomology and Nematology

1 M.S.
Environmental Engineering,
University of South Florida

11 M.S. **13** Ph.D.
Environmental Horticulture

1 Ph.D.
Food and Resource Economics

6 M.S. **2** Ph.D.
Forest, Fisheries and Geomatics Sciences

2 M.S. **1** Ph.D.
Interdisciplinary Ecology

8 Ph.D.
Natural Resources and Environment

23 M.S. **13** Ph.D.
Soil, Water, and Ecosystem Sciences

1 M.S.
Wildlife, Ecology, and Conservation

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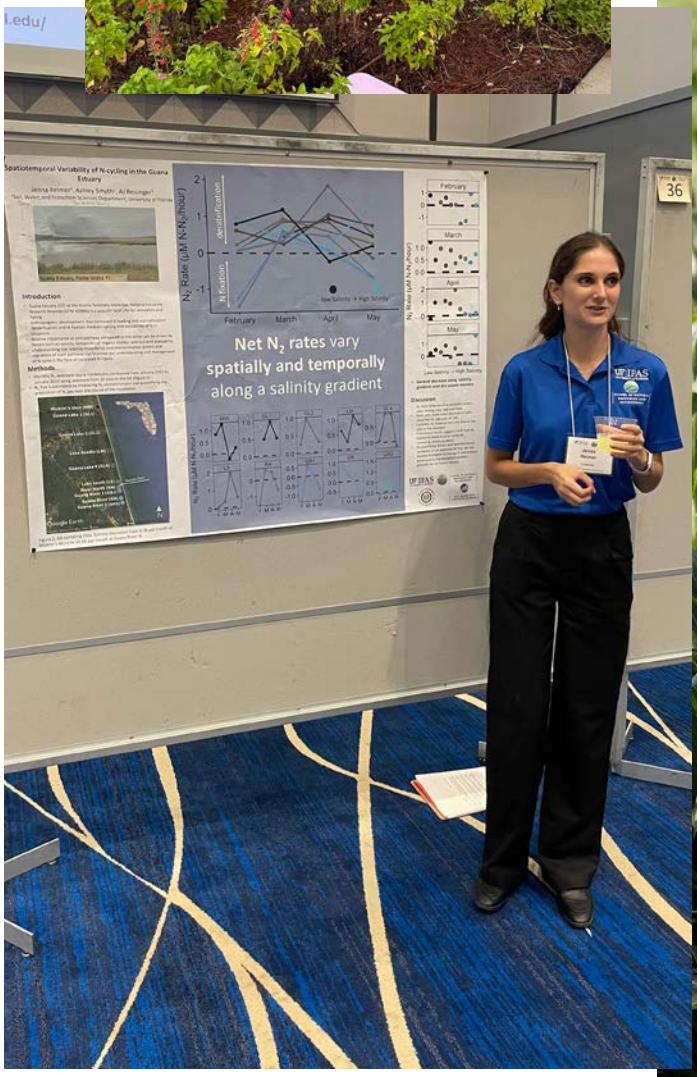
53 M.S. **52** Ph.D.
TOTAL Graduate Students



A Successful Partnership Saving Water in Florida

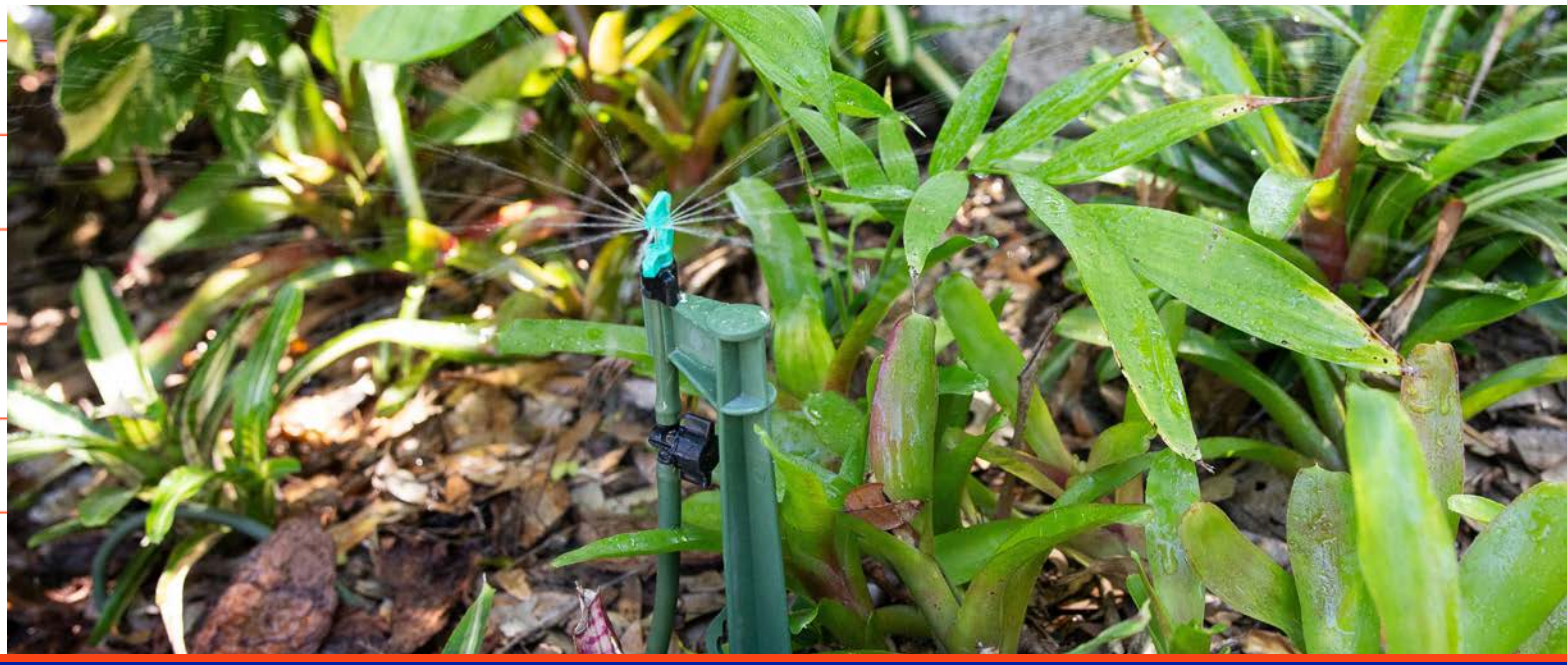
Tampa Bay Water and the H_2OSAV Program

In October, The U.S. Environmental Protection Agency (EPA) honored the Tampa Bay Water Wise Program with a 2023 WaterSense® Excellence Award. The Water Wise program is the Tampa Bay region's water conservation rebate program, and it partners with the UF/IFAS Center for Land Use Efficiency (CLUE) to help residents and businesses conserve water both indoors and outdoors by making changes in their landscape and irrigation. CLUE is home to the Florida-Friendly Landscaping™ Program and the H_2OSAV program, both of which use research to protect and conserve Florida's water resources.

Tampa Bay Water is the largest wholesale water supplier in Florida, providing high-quality drinking water to its members that, in turn, supply water to more than 2.5 million residents in Hillsborough, Pasco and Pinellas counties and the cities of New Port Richey, St. Petersburg and Tampa. For Tampa Bay Water, conserving water has always been a priority and for decades it has worked with and supported the UF/IFAS Florida-FriendlyLandscaping™ (FFL) Program, "because their services directly benefit residents, landscapes and the environment across Tampa Bay," said Amelia Brown, demand management program manager for Tampa Bay Water.

The Water Wise program provides incentives in the form of 20 rebates to homeowners and businesses that purchase or implement new water saving devices or measures, such as WaterSense® certified products. By working with CLUE researchers to focus on the highest water users, these water conservation efforts can have the greatest impact.

Tampa Bay Water has partnered with CLUE faculty Nick Taylor and the H_2OSAV program to identify the highest water users in the area. Taylor and his research team analyze metered water data in order to identify the residential and commercial users who can benefit the most from water conservation programs.



Brown said “UF/IFAS has contributed to the Tampa Bay Water Wise rebate program through water data analyses, which has been essential to the program’s design and water savings results.”

Since launching in March 2020 through September 2023, the program has provided nearly 5,000 rebates and saves more than 313,000 gallons per day.

CLUE Director Michael Dukes says partnerships between researchers and organizations like TBW are critical for making a difference in the fight to conserve Florida’s water.

“Tampa Bay Water is a data-driven organization,” said Dukes, “This has led to a close relationship between UF/IFAS and Tampa Bay Water helping with data analysis and implementing the FFL Program principles for tangible water savings.”

In recognition for the part that CLUE played in the success of the Water Wise program, Brown invited Taylor and Dukes to join the Tampa Bay Water team to receive 2023 WaterSense® Excellence Award when it was presented at the WaterSmart Innovations (WSI) Conference in Las Vegas, Nevada.

Dukes says now more than ever before water conservation is critical to the success of the state.

Since launching in March 2020 through September 2023, the program has provided nearly

5,000

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313,000

gallons per day.

UF | IFAS Extension
UNIVERSITY of FLORIDA

H_2OSAV

WATER SAVINGS, ANALYTICS & VERIFICATION

> Florida is a rapidly urbanizing state, **water availability** and good **water quality** are essential to **supporting our way of life** in Florida.
>
> *~ Michael Dukes*

Landscape Fertilizer and Florida

CLUE Studies This Complex Topic and Finds More Research Needed

A new publication by CLUE researchers finds that there is a relationship between local fertilizer ordinances and water quality, but the timing of ordinances can influence this relationship.

"This ASK IFAS document is written to summarize the prior scientific publication for non-experts, including UF/IFAS Extension faculty, local regulatory officials, green industry professionals, and concerned citizens," said A.J. Reisinger , an assistant professor in the UF/IFAS department of soil, water and ecosystem sciences and one of the authors of the study. "We encourage the readers to use this information to highlight the effectiveness of fertilizer ordinances, but we also recognize the complex nature of water quality issues."

The results of the study across 160 lakes throughout Florida suggest that more research is needed into how and why different ordinances are more or less effective. They also suggest that future studies should consider other drivers impacting water quality trends such as toxins or waste from septic and sewers systems, and fossil fuel emissions.

Nitrogen and phosphorus are nutrients that are natural parts of aquatic ecosystems, but these nutrients can degrade water quality when present in excessive amounts in bodies of water. To improve water quality, counties and municipalities sought to curb fertilizers from entering waterbodies by adopting fertilizer bans.

There are more than 130 counties and municipalities with some form of a fertilizer ordinance on the books. Summer fertilizer bans are the most common type of fertilizer ordinance in Florida. They align with the state's rainy season with the intention to prevent fertilizer from washing away into waterbodies during rain showers.

A lack of research on the effects of fertilizer leaving landscapes during the rainy season provided an opportunity for scientists in the 2022 study to research a gap of knowledge by analyzing changes in water quality trends among four metrics and four parameters across 160 lakes. They compared water quality trends from 1987 to 2018 using data gathered by the UF/IFAS LAKEWATCH program, one of the country's largest ongoing community-led monitoring programs where water quality data is collected for various purposes.

Water quality trends were compared before and after implementing county-wide fertilizer ordinances and across distinct categories of bans and timeframes. Those categories included summer bans, where fertilization is prohibited from June through October during the rainy growing season, and winter bans from November through February, known as a dry dormant period for vegetation, as well as nonseasonal bans, where restrictions banned after seeding or sodding, and finally the category where no ban was in existence.

Scientists learned that lakes in areas with winter fertilizer bans had the most improvement over time in levels of nitrogen and phosphorus, the main nutrients found in fertilizers.

The reasoning behind applying fertilizer when plants are actively growing is in line with the third principle of Florida-Friendly Landscaping™: Fertilize Appropriately and

is supported by fertilizer best management practices. Ordinances that prohibit fertilizer application during periods of low plant activity in the winter exhibited the most consistent improvements across all water quality metrics.

“Although our 2022 study provided the first scientific data demonstrating the effectiveness of fertilizer ordinances, we also recognize that it has limitations,” said Reisinger. “In an ideal world, we would have long-term water quality monitoring data from lakes spanning a broader geographic range, and we would be able to include a wider range of management changes to identify specific mechanisms responsible for these improvements in long-term water quality trends.”

This publication was included in a recent literature review conducted by nine CLUE faculty and staff at the request of the Florida state legislature. In July, the legislature tasked CLUE with creating a report about the impacts of local fertilizer ordinances (also known as fertilizer blackout periods, bans, restrictions, etc.) on the quality of Florida’s water bodies. In response, a team of CLUE experts conducted a 6-month literature review to better understand this complex issue through analysis of science-based research information. The purpose of the report is to help educate decision makers about the complexities that surround the use of fertilizer in Florida and how water quality is impacted.

In December, the team delivered a comprehensive report to the state legislature and made it available to the public through the CLUE website. The report supports recommendations from the ASK IFAS publication and finds that more research is needed to better understand the impact of fertilizer on Florida water bodies. It identifies large information voids in specific areas surrounding this issue and suggests that new studies should consider the nutrient dynamics on a watershed scale to understand the impact of fertilizer as well as other sources. The report also suggests that future studies should be long-term and should consider other drivers impacting water quality trends such as toxins or waste from septic and sewers systems, and fossil fuel emissions.

To read the full report, please go to: **https://clue.ifas.ufl.edu/report-effectiveness-of-timing-of-seasonal-fertilizer-restrictions-on-urban-landscapes/**

*Portions of this story courtesy of Lourdes Mederos, UF/IFAS Communications.

Future Urban Landscapes of Florida

The Future is Now!

On January 10-11, 2023, CLUE hosted the Future Urban Landscapes (FUL) of Florida's 1st Annual Meeting, which took place at Austin Cary Forest's Roland T. Stern Learning Center in Gainesville, Florida. Twenty-five specialists and extension agents came together from around the state to participate in this day and a half event. Joy Hazell, UF/IFAS State Specialized Agent in Facilitation and Conflict Management, and Dr. Peyton Beattie, UF/IFAS Extension Agent in Community Resource Development co-facilitated the meeting, and Melissa H. Friedman, CLUE's Research Coordinator, organized the event.

This was a momentous occasion, since it was the first time the group met since June 2021, and it was the first in-person meeting since December 2019. This annual meeting also signified a shift from the previous four years of facilitated discussions, where the aim was to develop a shared vision for future urban landscapes and foster new interdisciplinary collaborations. While these goals are still important and ongoing, the intent of the annual meeting is to share what faculty have been working on, and continue to build community, and advance the thinking on research and extension education that leads to better outcomes for urban landscapes in Florida.

This retreat-style meeting kicked off with a welcome from CLUE's Director, Dr. Michael Dukes, who gave a brief history of events that led to this group initially forming, and then coming together to where they are today. The morning continued with participant introductions, followed by fourteen five-minute lightning round presentations that focused on how faculty programs align with future urban landscape efforts, the goals and results of this work, and plans for the future. Participants were then broken up into groups where they identified themes from what they'd just heard, new and exciting work being done, gaps, and future project needs.

The first day wrapped up with a field tour of the Depot Park stormwater treatment system, hosted by Alice Rankeillor, P.E., Gail Mowry, P.E., and John Veilleux, P.E. from the City of Gainesville's Public Works Department, and concluded with an evening social at Depot Park's Boxcar Wine and Beer Garden.

The second day picked up by focusing on future project ideas, six of which were categorized by the facilitators from group discussions the previous day, and an additional six were identified by participants on day two. With two votes each, participants selected the project ideas they'd like to focus on for the remainder of the meeting. The rest of the day was spent brainstorming objectives, action items, and communication methods for the following top five project ideas (the remaining seven would be discussed at a later date):

- Economic feasibility, e.g., life cycle costs (ROI)
- Communication/marketing of outcomes and impacts.
- Engagement pre and post developer.
- Vegetation – ornamentals to trees.
- Expanding audience to include low income, different cultures, marginalized groups, equity work.

When the FUL group began facilitated discussions in 2018, the top two urgent challenges faculty identified were *conflicting messages from UF/IFAS* and *not enough information on alternatives*.

As a result of this effort, conflicting messages from UF/IFAS have been minimized, if not eliminated, and there are now many collaborative and multi-disciplinary research projects and applications that focus on alternatives to traditional landscapes. Newer projects currently taking place include, but are not limited to:

- Working with developers to implement FFL principals in 30,000+ home master planned community.
- Quantifying ecosystem services and environmental impacts of turfgrass dominated and alternative landscape types.
- Exploring opportunities to improve consumer demand for wildlife friendly landscape maintenance.
- Quantifying ecological benefits to arthropod food webs of non-conventional native-dominated landscapes in new residential developments.
- The development of the Florida-Friendly Landscaping™ (FFL) Program's newest recognition program – FFL Natural, which focuses on reducing pollution from stormwater runoff through ultra-low inputs in irrigation, fertilization, and pest management practices, as well as a 75% native plant requirement.
- Understanding barriers to irrigation users' water restrictions compliance to improve conservation outcomes.
- Water quantity savings in residential common areas through irrigation evaluations.

Next Steps

In April of 2024, CLUE will be hosting the Urban Landscape Summit, where faculty will have an opportunity to share what they've been working on with the broader UF/IFAS community, as well as stakeholders such as developers, the water management districts, and landscape designers. Panel discussions will also take place in an effort to continue to engage faculty and stakeholders on this topic, and facilitate a conversation about existing needs and how best to meet them.

New UF/IFAS Soilkit

Provides Easy to Read Results Through a Unique Partnership

Florida homeowners, landscapers and municipalities now have an easy-to-use, research-based tool to improve growing conditions for lawns and landscapes.

The new UF/IFAS-branded Soil Test Kit Powered by SoilKit®, is the result of a University of Florida partnership with AgriTech Corp., and puts UF/IFAS turfgrass science and tailored nutrient recommendations in the hands of users. Each kit includes a prepaid shipping label, soil bag, QR code to a collection instruction video and a customer care card.

Available for purchase in single or double packs for residential use or in multiple “pro-packs” for industry professionals, the kits offer results and recommendations via email within one to two business days.

“The results users receive are not just tailored to their exact landscape, but it also takes into account their broader location, so that information like local fertilizer ban periods are accounted for,” said Bryan Unruh, UF/IFAS turfgrass scientist and Extension specialist.

This kit is the result of many years of work between CLUE faculty member Unruh and AgriTech Corp. CEO Christina Woerner McInnis and represents a unique approach of bringing together academia and industry to benefit consumers.

“It is important that AgriTech partner with Florida scientists who specialize in the unique growing conditions of Florida,” said McInnis, “UF/IFAS Extension already reaches every corner of the state, and now we’re able to bring SoilKit and appropriate plant nutrition to the people who want to best care for their lawns and landscapes.”

Portions of the kit’s proceeds are allocated to the UF/IFAS Turfgrass Science Program and the Florida-Friendly Landscaping Program™ to support graduate student education and in-service training of county Extension agents and program assistants.

Yet, Unruh sees another advantage to widespread participation in the new partnership: research.

“As we collect results for individual yards across the state, we are building a dataset of the soil conditions,” he said, adding that user information will not be identifiable in the larger collection. “Users will receive UF/IFAS turfgrass science-backed information as we know it now, but as we go forward, artificial intelligence can help us target and improve recommendations based on factors like soil composition, age of landscape and climate.”

He plans to use the data collected though SoilKit to refine current recommendations beyond the general 3 regions in Florida and 5 types of turfgrass. The goal is to minimize the inputs needed to create the desired look for lawns and landscapes which will in turn, minimize the impacts on Florida’s natural resources.

Since launching in mid-February of 2023, SoilKit has already updated to SoilKit 360, which now incorporates climate conditions into recommendations and offers a more precise and seasonal approach to lawn care.

> We want Florida’s lawns and landscapes to **thrive** in a way that also **protects** our **waterways** and **environment.**
>
> *~ Bryan Unruh*

Sales of the UF/IFAS Soilkits have continued to increase quarter over quarter throughout the year and with the kits now available for sale through major online and in-person retailers across the state, there is reason to believe that sales will continue to grow in 2024.

To Purchase a Soil Kit: **https://soilkit.com/product-category/florida-soilkit/**

UF Trustee Turns to Florida-Friendly Natural for Landscaping Design

David Brandon knows construction. As a general contractor and the president of the Brandon Construction Company of Palm Harbor, he has built custom homes and commercial buildings across the state for more than 40-years. As a member of the University of Florida Board of Trustees, Brandon was shocked that he hadn't heard about the Florida-Friendly Landscaping™ Program (FFL) before a meeting in 2023. The more he learned about the FFL approach of using the right plant in the right place to reduce the need for inputs, irrigation, and maintenance, the more he was interested in using FFL for his new cabin. Brandon and his wife, Dana, purchased property near Chiefland in 2022 and planned to build a cabin there that would work in harmony with the Florida scrub ecosystem that surrounded it. He reached out to the FFL team and asked if they could help. After speaking with the Brandons, Claire Lewis thought their property would be perfect example for the brand-new level of FFL certification called Florida-Friendly Natural.

"FFL Natural is really developed out of a response for people desiring a less intensive landscape," said Lewis, the FFL Communities Statewide Coordinator. "So there's a reduction in inputs like fertilizer, water and pesticides in the Florida Natural landscape and there's also greater emphasis on native plants and attracting wildlife to your landscape."

The Brandons worked with the FFL team to create a landscape with plants that would naturally occur in this ecosystem and that once established, the landscape could thrive with little to no fertilizer, irrigation or pesticides.

"The Brandon landscape is really a great example of how to build with nature in mind," said Lewis. "And they also are really cultivating this love of the natural Florida environment for their children and grandchildren and future generations to come. Because everything they've done here is really to highlight what is naturally occurring in Florida and what we're losing in these ecosystems."

Brandon hopes his landscape can be an example for other Florida homeowners of how landscaping can work in harmony with nature and help reduce the use of water for landscape irrigation.

"My dream is that when people come over and sit on the porch and they look and they notice that something is different...," said Brandon. "... [that] gives me an opportunity to explain to them that this is Florida-Friendly Landscaping and explain to them all of the benefits because there really is no downside, there is only upsides to Florida-Friendly Landscaping™. And this, I think is a big component of the future of our state as we continue to grow."

To learn more about the Brandon's landscape and FFL natural, watch the following video: https://youtu.be/joyc6oPTwzE?si=fLRjEPL5jiWNELpb

Florida-Friendly Landscaping™ Program Wins Emmy

The Florida-Friendly Landscaping™ program is used to giving out the gold, but earlier this month it was the recipient.

The television series "Flip My Florida Yard" won an Emmy® for best magazine program at the 47th Annual Suncoast Regional Emmy® Awards, held Saturday, December 2 in Hollywood, Florida. The Florida-based gardening show travels to yards around the state and gives them the ultimate Florida-Friendly Landscaping™ makeover all in eight hours. Using the nine principles of Florida-Friendly Landscaping™ (FFL), this transformation creates yards that protect and conserve Florida's natural resources through science-based landscape practices. Each transformation is led by a University of Florida Institute of Food and Agricultural Sciences (UF/IFAS) Extension agent. Crawford Entertainment produced the series, with Chad Crawford as the show creator and host, with on-air help from UF/IFAS Extension faculty and staff. The FFL program and "Flip My Florida Yard" are funded by the Department of Environmental Protection in partnership with UF/IFAS Extension.

Both Tom Wichman and Jennifer Marvin were able to attend the ceremony, held at the Diplomat Beach Resort in Hollywood. Wichman is the FFL assistant program director and Marvin is statewide coordinator for the Florida-Friendly for Home Landscapes program, formerly known as the Florida Yard & Neighborhoods (FYN) program.

"Working on the 'Flip My Florida Yard' television show over the past three seasons has been a dream come true and winning an Emmy was just so exciting," said Wichman. "The show is bringing research-based landscape information to a huge audience and the result is that people will have a better idea of how to get started and where to go for more information."

The Florida-Friendly for Home Landscapes Program helps teach people how to design and maintain their landscapes sustainably. They also recognize yards and gardens that use these environmentally-friendly landscaping practices. Florida-Friendly landscapes minimize the use of potable water for irrigation, avoid the runoff of excess fertilizers and pesticides from the landscape, and provide habitats for wildlife. Qualifying home landscapes receive a yard sign to display and a certificate of recognition at either silver or gold level.

Season three of "Flip My Florida Yard" just wrapped shooting in the fall and Wichman says that viewers can expect more of the things they loved. "Season three brings 10 more homes from across Florida to the table to show viewers how attainable a Florida-Friendly Landscape can be," he said. "I hope people enjoy the show."

The Suncoast Chapter of the National Academy of Television Arts & Sciences is a nonprofit Florida corporation and hosts the annual Regional Emmy® Awards for television markets in the state of Florida, as well as select markets in Louisiana, Alabama, Georgia, and Puerto Rico.

Watch full episodes of "Flip My Florida Yard" on the FFL YouTube channel.
http://tinyurl.com/53uynr9m

2023 CLUE Funded Grant Projects

Flip My Florida Yards as Laboratories for Assessing the Ecosystem Services of Florida-Friendly Landscaping™ (FFL}

Principle Investigator: *Eban Bean*
Collaborators: *Yi Luo & Jules Bruck*

- Identify one or more ecosystem services attributable to FFL landscapes
- Compare performance of pre- & post-flipped yards to quantify impact
- Collaborate with Dept. of Landscape Architecture & FFL team
- Utilize results in landscape applications & discussions

Preferences & Perceptions for Resilient, Ecology-Based Florida-Friendly Residential Landscapes

Principle Investigator: *Gail Hansen*
Collaborators: *Michael Volk & Belinda Nettles*

- Refine technique for designing ecology-based planting plans
- Implement designs in four test plots
- Invite the public to a field day & record their perceptions
- Use survey results to determine likelihood of homeowner acceptance

Restoring Food Web Resources in Residential Landscapes: Are Native Landscaping Plants Helping?

Principle Investigator: *Basil Iannone*
Collaborators: *Patrick Bohlen, Adam Dale, Mark Hostetler, Pierce Jones & Jennison Kipp*

- Observe plants in native-dominated yards, traditional yards & natural areas for indicators of resource/food availability known to support higher trophic levels
- Analyze data to detect differences among the locations in overall resources
- Use findings to guide entrepreneurial leaders in pursuing sustainable landscaping

Developing Frogfruit for Widespread Use in Florida Landscapes

Principle Investigator: *Kevin Kenworthy*
Collaborators: *Adam Dale, Basil Iannone, A.J. Lindsey & J. Bryan Unruh*

- Grow frogfruit test plots & document growth cycle
- Determine best seed planting dates & rates
- Evaluate different lines of frogfruit for sod suitability
- Assess collection for genetic diversity to identify species

Evaluating the Impacts of Climate Change on Urban Tree Performance & Survival

Principle Investigator: *Ryan Klein*
Collaborators: *Gail Hansen, Sandra Wilson & Laura Warner*

- Identify underutilized tree species that might perform well in future climates
- Analyze effect of common irrigation technologies on tree establishment
- Determine effects of increased temperatures on tree species
- Assess parking lot plantings & evaluate impact of municipal codes on trees

The Impact of Lawn Age on Soil Carbon Sequestration, Respiration & Nitrogen Mineralization

Principle Investigator: *A.J. Lindsey*
Collaborators: *J. Brian Unruh & Marco Schiavon*

- Select lawns of various ages throughout Florida to collect soil samples
- Collect multiple soil samples from representative locations
- Analyze organic matter, water holding capacity, microbial activity, nitrogen mineralization & descriptive variables for correlations

Expanding Our Water Supply Portfolio: Research on the Effects of Reclaimed Water Irrigation on Soil Health & Potential Nutrient Leaching in an Agricultural System

Principle Investigator: *Mary Lusk*
Collaborators: *Davie Kadyampakeni, Doug Phillips & Justina Odogwu*

- Irrigate blueberry plants with varying sources & rates of reclaimed water (RW)
- Compare growth, physiological response, water & nutrient source efficiency
- Evaluate soil & environmental health & how these may change with useof RW
- Develop recommendations & Extension curriculum for RW use

Determining the Causal Agent of Galling Damage on Florida Ornamentals: Year 2

Principle Investigator: *Chris Marble*
Collaborators: *Adam Dale & Erin Harlow*

- Transplant asymptomatic plant material into landscapes experiencing galling damage to see if symptoms develop
- Continue tissue analysis to hopefully identify the causal agent of galling damage
- Develop guide for conducting herbicide bioassays on landscape plants where herbicide injury is suspected

Investigating Urban Residents' Willingness to Navigate Barriers Preventing Landscape Maintenance Activities That Support Wildlife

Principle Investigator: *Laura Warner*
Collaborators: *Jaret Daniels, Adam Dale, John Diaz, Emily Marois & Dharmendra Kalauni*

- Conduct quantitative statewide survey followed by listening sessions
- Assess factors that predict consumer willingness to engage in wildlife-friendly landscape maintenance (WFLM)
- Identify strategies for increasing engagement in WFLM in HOAs

Reclaimed Water Wasted

New Study Shows This Alternative Water Source is Running Down the Drain

New research sponsored by the Center for Land Use Efficiency (CLUE) and the South Florida Water Management District that an alternative water source meant to help conserve drinking water in communities across the state could be creating problems because of improper use.

Reclaimed water is former domestic wastewater that has been cleaned in a water treatment plant and recycled for irrigation use. It's a common alternative water source for many urban communities including Apopka, Orlando, St. Petersburg, Martin, Charlotte and Lee counties. The goal of using this clean, safe and cheaper water source is to help homeowners and Homeowners Associations (HOA's) conserve potable water, but a new study shows that more than one third of reclaimed water used for irrigation is being wasted because of overspray.

Mary Lusk, assistant professor in the UF/IFAS Soil, Water, and Ecosystem Sciences Department, and master's student Dyan Barr studied two Homeowner Associations (HOAs) in Martin County with several hundred homes using reclaimed water. They set up irrigation catch cans both inside and outside the target vegetation area. They then ran the irrigation system for a set amount of time before comparing the amount of water in the cans. Lusk estimated that 34% of reclaimed water was being wasted due to overspray, meaning irrigation systems sprayed water onto impervious surfaces like sidewalks or pavement instead of the intended area. This amount of overspray translates into potentially millions of gallons of water running down the drain, but more than being just wasteful, this water could have an impact on nearby bodies of water.

"Reclaimed water can be beneficially reused in Florida," said Lusk, "it can be one great way of reducing our dependence on limited groundwater resources, but it does contain elevated levels of nutrients like nitrogen and phosphorus and that can be contributors to algal blooms in our state's surface waters. Therefore, it's really important that we use reclaimed water wisely when we irrigate with it."

Although the study was conducted in Martin County, Lusk says these issues exist in other urban areas across the state and could add up to thousands of pounds nutrients being added to Florida waters.

"I think it's easy to see your own sprinkler system and that little bit of overspray from your own lawn and think it's not that much, but once you add up that little bit from each lawn in a community or a watershed, it can be millions of gallons of water," said Lusk. "And reducing your irrigation overspray is a win-win on two fronts: it helps save water for other uses and if you irrigate with reclaimed water, it helps reduce nutrient transport to our surface water resources."

Lusk says the next steps for this research are to replicate this study in other parts of the state and to work with UF/IFAS Extension to help share this information. She has a workshop scheduled with HOAs and landscapers in 2024 to educate them about the need to eliminate overspray. Simple changes like adjusting sprinkler heads to target only vegetated areas, changing large sprinkler heads for micro-drip irrigations and doing a seasonal irrigation check can help reduce overspray.

Lusk said she hopes people will realize that "streets don't grow and water in Florida is increasingly scarce, so this is really low hanging fruit in terms of water conservation for us."

Urban Florida residents want to protect their cities' tree canopy – even if it limits development

Floridians want to keep the shade in their cities, so they favor tree protection measures, a new University of Florida study shows. But researchers were surprised to find that about half the urban residents surveyed support ordinances that protect trees on private property, which could mean limiting development.

Andrew Koeser, a UF/IFAS associate professor of environmental horticulture, left, demonstrates tree root defect. Courtesy, Deb Hilbert.

That's often seen as a controversial issue because it is a balance between tree conservation and property owner rights, said Andrew Koeser, a UF/IFAS associate professor of environmental horticulture and leader of the study.

Florida leads the nation in urban tree loss. Recognizing this trend, many local governments in Florida have adopted tree protection and mitigation ordinances such as removal permits and planting requirements to limit tree loss in the face of development pressure.

For the study, researchers conducted an online survey of 1,716 urban Florida residents to see how they value regulation and management of city forests. Specifically, scientists asked about tree protection ordinances, incentive programs to manage or plant trees, justification for tree removal and development.

About two-thirds of the respondents support urban tree protections in general, even if those rules limit development. Additionally, 54% say would support tree protections, even if they are applied to their property. Koeser cited a study in urban areas of Alabama that showed far less support for tree removal on private property.

Furthermore, 82% would consider planting a tree on their property if they were offered a tax incentive as compensation for the benefits their tree provides the community.

"We did not expect to find such high levels of support for tree protections on private property," said Koeser, a faculty member at the UF/IFAS Gulf Coast Research and Education Center in Hillsborough County. "Our study showed that removing a tree to make way for a home or addition was among the least popular justifications for tree removal."

What's the takeaway for city and county governments?

"Cities and counties might consider creating incentives that reward people for planting and retaining trees as their benefits carry out into the surrounding community," Koeser said. "They might also consider creating incentives for developers to preserve trees when they redevelop city lots or clear previously undeveloped properties."

*Courtesy of Brad Buck, UF/IFAS Communications

H_2OSAV Water Conservation Mini Award
Launched in 2023

In 2023, H_2OSAV launched a mini award program focused on supporting UF/IFAS Extension agents with creating programs that can measurably reduce water use in Florida. Beyond just project funding, award recipients receive resources, training, and support. H_2OSAV is helping by identifying properties with significant water conservation potential, connecting grantees with local utilities and their water management district, and analyzing the impact of the projects using metered water data. If desired, funding is also provided for the selected agents to present their completed projects at conferences.

For this first year, four county agents received the mini award and are working with H_2OSAV on water conservation projects. The selected agents are Cynthia Nazario-Leary (Alachua County), Taylor Clem (Nassau County), Tonya Ashworth (Duval County), and Michael D'Imperio (Sarasota County). The 2023 project focus area was residential common areas. The four awardees are working with at least two Homeowner's Associations to find opportunities for water savings in residential common areas. This will include an irrigation evaluation by the Extension agent at each site.

To support award recipients and other agents, H_2OSAV hosted in-service training #32240: "How to Conduct Irrigation Evaluations" on September 11, 2023. This training brought together key speakers from across the Center for Land Use Efficiency and UF/IFAS, including Dr. Michael Dukes, Claire Lewis, Bernard Cardenas, Michelle Atkinson, Dr. Taylor Clem, and Dr. Nick Taylor. Attendees, including the four mini award recipients, showed knowledge gain and confidence building for conducting irrigation evaluations.

Applications for the 2024 H_2OSAV Water Conservation Mini Award will be accepted beginning early April and due in June 2024. Applicants for the 2024 award will be able to submit applications for support of projects that focus on water conservation in either HOA residential common areas or commercial properties (hotels, restaurants, etc.)

Florida Master Gardener Volunteers

Back in Action, Making an Impact

The UF/IFAS Extension Florida Master Gardener Volunteer program continues to rebound following 2020-2022. In 2023, the 3,323 active volunteers gave 330,000 hours of service and contacted over 163,000 Florida residents across the state. The independent sector reports that the value of a volunteer hour in Florida is $29.41, putting the value of the Florida Master Gardener Volunteer contributed hours for 2023 at $9.7 million. In 2023 the program added 521 new volunteers.

In 2023...

3,323
Master Gardener Volunteers

521
New Volunteers Trained

330,000
Volunteer Hours Contributed
at a Value of almost
$9.7 million

Master Gardener Volunteers adopt best management practices

A 2023 survey of Florida Master Gardener Volunteers (n=1200) showed that this Extension volunteer program has a large impact on how they create and maintain their landscapes. Eighty- nine percent of volunteers responding to the survey stated that their training and association with the program had them make successful plant selections for their landscape. Seventy- four percent reported that they changed their fertilizer practices to comply with environmentally sound fertilizer recommendations. And 71% of those surveyed reported that they have removed and replaced invasive plant species. For the 36% of Master Gardener Volunteers who have not yet made changes in their landscapes, they responded that the barrier to making changes were the limitations of their homeowners associations (HOAs). When asked about how the MGV program impacted their community connections, 92% responded that the Florida Master Gardener Volunteer program made them feel a greater connection to their community. This is important because a sense of community is one of the many benefits that comes from gardening according to Gardening is Beneficial for Health, A Meta-Analysis. (Saga, et. al., 2016).

Master Gardener Volunteer Legacy Award

The Florida Master Gardener Volunteer legacy award is a grant program that supports special projects at the county level. This year's MGV legacy award was given to Sumter and Walton County for very impactful programs. For 20 years, UF/IFAS Extension Florida Master Gardener Volunteers in Sumter County have been teaching children gardening skills at the Sumter County Youth Center. Beyond gardening skills, they also teach community service and the extra produce from the garden is donated to a local food bank. Typically, 25 to 30 children ages 8-12 years old participate in the twice-weekly after-school program. The funds from the MGV Legacy award will support signage and the reconstruction of their shade pergola. In Walton County the MGV legacy award dollars will be used to support the volunteer's vision of turning the Coastal Branch of Walton County Extension office's landscape into a Florida- Friendly demonstration garden. The funds awarded will go to support signage, plantings, mulch, compost, and fertilizer.

Master Gardener Volunteer Advanced Trainings

Five Extension District advanced trainings were held from the Florida MGVs in fall of 2023. Over 500 volunteers attended these trainings to meet their continuing educational credit commitments. Volunteers were instructed on soil testing, therapeutic horticulture, hydroponics, lethal bronzing in palms and citrus updates. The southern district training event was held at Palm Beach County's Mounts botanical garden, and there they received instruction on invasive plants, tropical fruits, and new pests.

Florida-Friendly Landscaping™ Program

New Changes Help Program Adapt to Meet Needs

The Florida-Friendly Landscaping™ (FFL) program is set for a significant leap forward with the upcoming appointment of an innovative new director early in 2024. In a strategic move to broaden its impact, the program has introduced Angela Gregory as the inaugural FFL Digital and Multi-Media Manager. Angela's role signifies a deliberate shift toward engaging a wider audience through social media communication channels. She will collaborate closely with the CLUE communications team to ensure cohesive messaging to target audiences and act as a vital resource for extension professionals statewide.

Securing an impressive nearly 60% increase in funding from the Florida Department of Environmental Protection for FY 2024-2025 is a major win for the program. This boost will enable the creation of three pivotal positions, bolstering training initiatives, youth education, and green stormwater infrastructure advancement. Green stormwater infrastructure is an important new initiative to reduce stormwater runoff in new construction and municipal landscapes. In addition, the program is launching FFL Natural, with an increased emphasis on minimizing inputs and enhancing biodiversity within urban landscapes.

This expansion will substantially fortify the FFL program's ability to offer expert guidance and resources across Florida. This marks a pivotal moment, promising enhanced educational outreach, cutting-edge digital engagement, and a more influential role in advocating for environmentally conscious landscaping practices throughout the state.

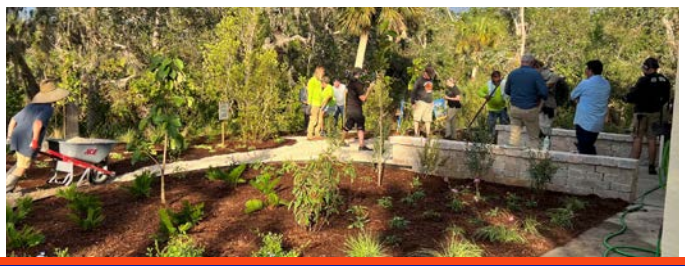
Use of Media to Increase Reach

The UF/IFAS Extension Florida-Friendly Landscaping™ Program has had another year of continued growth and increased exposure. The program has continued its effort to increase awareness of the program and its sustainable messaging through the use of mass media tools such as radio, television and social media.

The radio show Florida-Friendly Landscaping™ in a Minute wrapped-up a successful three year run in which it aired in 19 NE Florida counties. The one-minute-long show was reaching a documented audience of over 40,000 listeners each week, and its content was used in many ways by the FFL program and agents throughout the state.

The Flip My Florida Yard television show completed season two releases and began the release of season three shows during 2023. During the year, the show was watched almost ten million times on PBS stations throughout Florida. This large reach greatly increases the programs awareness and helps Florida residents know where to go for gardening and landscape information.

The FFL program has continued its effort to grow its social media presence. This year saw a steady growth in Facebook and Instagram followers and a newly relaunched YouTube page containing a vast library of video material that should attract a wide range of people to the site.



Alternative Audience

The Green Industry-Best Management Practices (GI-BMP) serve as a crucial training program for individuals seeking certification, imparting environmentally responsible landscaping practices to conserve and protect Florida's ground and surface waters, as well as natural resources. This 5.5-hour science-based educational initiative, led by the UF/IFAS Florida-Friendly Landscaping™ (FFL) program and the Florida Department of Environmental Protection (FDEP), traditionally caters to Green Industry professionals, including UF/IFAS Extension Agents, Master Gardener Volunteers, and Industry Workers.

While historically focused on industry professionals, there is a growing recognition of the potential impact on a broader audience, particularly high school students. In 2020, with nearly 190,000 Florida high school graduates, the opportunity arose to introduce GI-BMP certification to this demographic. Despite their interest in environmentally friendly practices, high school students, especially those in horticulture programs, may not be aware of training opportunities like the GI-BMP.

Regional Coordinator Marc Celestin initiated discussions with FFL/GI-BMP state-wide coordinator Tom Wichman. This led to the pilot program's launch in November 2021 at Santa Fe High School, where Miss Bailey's Horticulture class became the first-ever group of high school students to receive FFL GI-BMP training. A remarkable 24 out of 27 students satisfactorily earned their GI-BMP certificates, marking a successful beginning.

This initial success has spurred others in the state to take-up this effort. Nassau County's Taylor Clem and Duval's George Richardson are exploring the implementation of workforce readiness programs. Their aim is to provide GI-BMP training to high school seniors in Nassau and Duval County, collaborating with the Florida State College of Jacksonville.

Furthermore, the FFL GI-BMP program is extending its reach to accommodate 18 to 22-year-old students with diverse physical and mental challenges at botanical gardens. Under the guidance of Mr. Russell Neaman (Pinellas County Schools), this program combines classroom learning of Florida- Friendly LandscapingTM Principles with hands-on landscape -maintenance volunteering, preparing students for real-world jobs, including those in the Green Industries.

As the GI-BMP program continues to expand, its reach extends far beyond the present, working diligently to educate Florida residents one person at a time. With persistent effort, this program is poised to have an everlasting impact, contributing to a legacy of informed and environmentally conscious individuals across the state. The commitment to education and sustainability embedded in the GI-BMP program reflects a dedication to shaping a brighter, ecologically mindful future for Florida's residents.

Agriculture Best Management Program
Research Producing Results for Farmers

The Suwannee Valley in North Florida is responsible for 12% of the vegetable crop production in the state. It's also in the heart of one of the most important watersheds in the state and surrounded by the largest concentration of springs per square mile in the state, meaning this land is both valuable and sensitive. By 2050 the Florida Department of Environmental Protection will require the removal of 5.8 million pounds of nitrogen from this BMAP area to help protect the water quality in the springs. Farmers are working to do their part by following the Agriculture Best Management Practices developed by CLUE and UF/IFAS researchers.

Since 2015, the Agriculture Best Management Program has worked with farmers and FDEP to help find a solution that reduces nutrient runoff from agricultural lands. The goal is to help protect Florida water quality by developing science-based recommendations for nutrient rates and applications timing for Florida farmers that reduce nutrient inputs without impacting crop yields.

Lakesh Sharma is leading a team of UF/IFAS researchers and Extension agents in Live Oak, Quincy, Marianna and Jay who are working to verify or update nitrogen, phosphorus, and sulfur recommendations for corn and cotton growers. This team works with several big corn producers in Suwannee Valley. The goal of this research is to help growers to increase nitrogen and other nutrient use efficiency and to improve their yield and quality while helping save on input costs. Researchers are also working to increase the knowledge of producers and Extension agents of BMP practices like soil mapping, crop specific nutrient rates, increase of soil organic matter by using of cover crops, and the benefits of using precision agriculture tools.

Extension faculty have already reported behavioral changes in corn producers that include decreasing nitrogen application by 25 pounds per acre to produce the same yield. The potential economic impact of reducing nitrogen by 30 pounds per acre on 1632 acres would be a reduction in more than 48,000 pounds of nitrogen and a cost savings of more $68,000 dollars. Researchers also

started a new project to incorporate cover crops during corn harvesting to scavenge nutrients and help to avoid any potential nutrient leaching.

In the next five to 10 years, researchers hope that all corn growers across the state will adopt the FDACS regulated nitrogen rates and researchers want to develop these BMP techniques to help reduce nitrogen and phosphorus rates for farmers growing potatoes, hemp, cotton, and several vegetable crops.

Watermelon Research

In the spring, IFAS researchers began a new watermelon project with seven on-farm trials using controlled release fertilizer and BMP techniques. These large-scale trials were conducted on 10 to 30-acres segments of active watermelon farms to show farmers a direct comparison between the yield produced using traditional growing techniques and newer technology. This project is the culmination of more than five years of research, and it provided the incentive and opportunity to show producers that using BMP techniques can reduce their nitrogen inputs without reducing their yields. Previous studies showed that using controlled release fertilizer can protect from nitrogen leeching during early season rain events or over-irrigation. This result translates into fertilizer savings for farmers who can use less fertilizer because the controlled release fertilizer is more efficient. It also means that more nitrogen is staying in the crop's root zone and less is lost to leaching into water sources. Researchers also discovered that irrigation management is critical to the success in reducing the need for additional nitrogen. The use of automated drip irrigation is being added to the recommended BMPs to keep irrigation on set times and prevent overwatering (prevent irrigation mistakes). At the end of the study, researchers showed similar yields using lower nitrogen inputs. When surveyed after the study, most farmers said they saw various benefits from using controlled release fertilizer, including a reduction in labor, and 71% said they would use controlled released fertilizer again. It's a level of success that NFREC Assistant Center Director and Regional Specialized Agent Bob Hochmuth was happy to see as a result of this multi-year effort.

"This project is a good example of how IFAS researchers and extension agents work together to use new technologies to meet the needs as identified by farmers," said Hochmuth. "In this case, we were able to use new fertilizer technology that releases nitrogen to become available to a crop at the rate that a specific crop needs for optimum growth, leaving much less that is vulnerable to being lost into the environment and water resources."

Based on the success of the watermelon program, IFAS researchers are working on similar studies with corn, carrots, snapbeans, potatoes and other commodities grown in North Florida. The goal is to evaluate if control-release fertilizer can help with nitrogen management for these crops.

Every year more than

8,000 acres

of watermelon,

4,000 acres

of carrots and about

2,000 acres

of potatoes are grown in North Florida.

Funding Best Management Projects to Help Florida Farmers

AGRICULTURAL BEST MANAGEMENT PRACTICES

Partnering with the Florida Department of Agriculture and Consumer Services, UF/IFAS provided mini-grants to faculty working on projects related to agricultural Best Management Practices (BMPs). These mini-grants support efforts throughout the state and provide essential information to specific crop industries.

2023 FDACS Best Management Practices Mini-Grants

Title	PI	Co-Investigators
Measuring Brix for Fruit Production Decision Making	Beach, Emily	
Nutrition Optimization in Specialty Crops with Farm Irrigation Zones and Fertigation Calibration	Elwakil, Wael	Bob Hockmuth, Mark Warren, Shinsuke Agehara
Multi County on-farm controlled release N trial on hay in parallel to ongoing conventional N treatment by farmers to ensure N availability throughout the growing season for better crop growth and yield	Kumar, Shivendra	Sudeep S. Sidhu, Erin Jones, Keith W. Wynn, Anna P. Tomlinson
Developing on farm Sap testing method to estimate in-season nitrogen content for fertilizer rate determination in corn	Kumar Shivendra	Sudeep. S. Sidhu, Jay Capasso, Amanda Phillips, Tyler Pitman, Dan Fenneman, Emily Beach, Mark Warren, Keith Wynn, Kevin Korus

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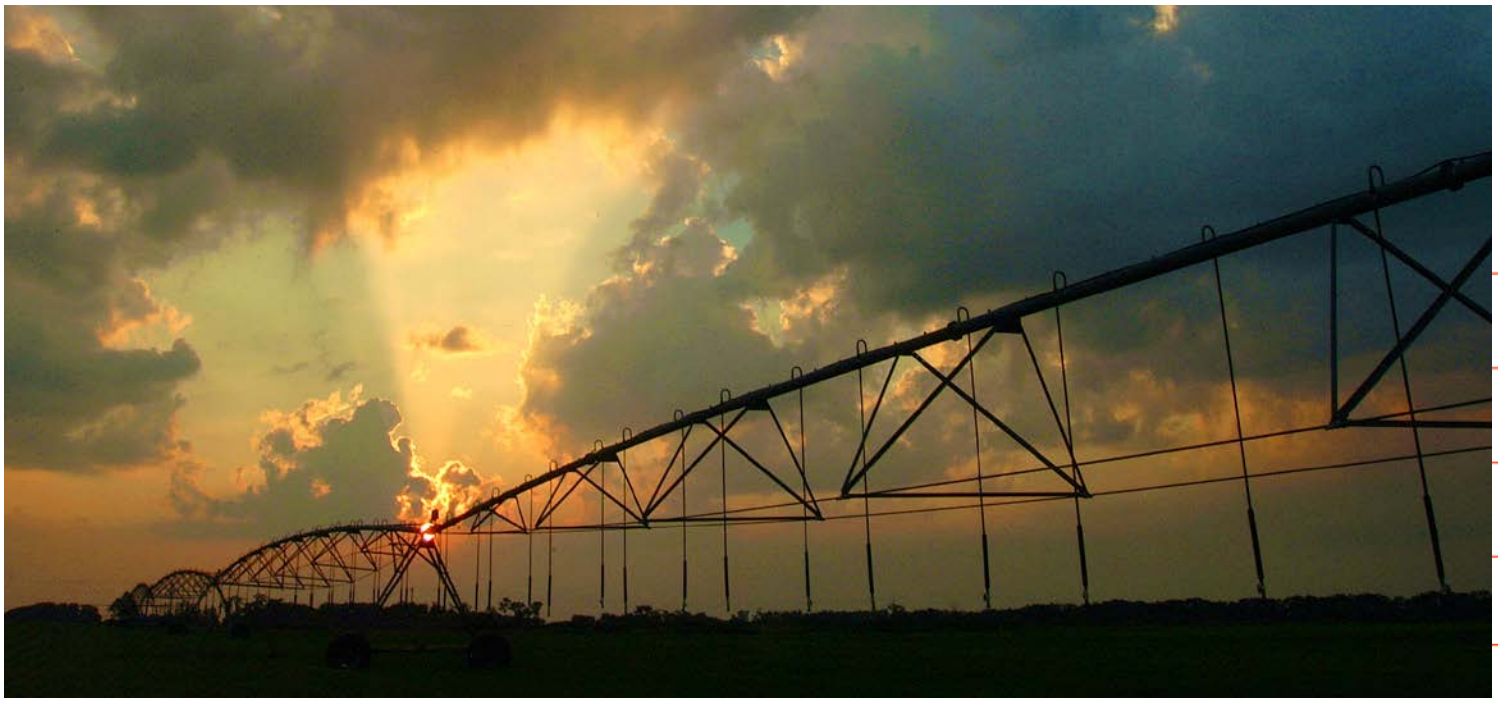

Title	PI	Co-Investigators
Demonstration of Smart Irrigation Timers to Promote Vegetable BMPs in West Florida	Lollar, Matt	
Continuation of Precision Irrigation through Automation for Watermelon and Vegetable Crops in the Suwannee Valley Region of Florida	Pittman, Tyler	Bob Hochmuth
Emerging Crop Productions Systems Forum	Price, De'Anthony	Khadejah Scott, Donna Arnold, Molly Jameson, Danielle Williams, Andrea Albertin, Emma Matcham
Superabsorbent Polymers as a Soil Amendment for Increasing water retention	Rezazadeh, Amir	
Multi-county on-farm corn nitrogen rate demonstrations in parallel to ongoing corn rate trial research at NFREC-SV	Sidhu, Sudeep	Lakesh Sharma, Shivendra Kumar
Assessing Phosphorus Use-Efficiency in Rice Cultivars Grown by Florida Rice Producers	VanWeelden, Matthew	Jehangir Bhadha, Noel Manirakiza, Suraj Melkani

CLUE Lunch and Learn Series Brings Faculty Together

The Center for Land Use Efficiency (CLUE) is a unique combination of researchers and Extension faculty from a variety of different disciplines, and it's the connection between these experts that plays a critical role in the success of the work being done through the center. However, the factorsfactors such as different locations, departments and the time constraints of travel, make it difficult for faculty to stay connected and up to date on the latest research coming out of CLUE. To combat this disconnection, CLUE administration decided to create a series of presentations that could bring faculty together physically and virtually.

The CLUE Lunch and Learn Series started in the fall of 2023 as a hybrid of in-person and online meetings aimed to bring together faculty on a monthly basis. These informal gatherings offered a chance for faculty to first talk to each other and share updates from their own programs. Each month, one CLUE faculty shared a short but in-depth presentation about their program. Featured presenters gave insight into how their program worked or explained the challenges about a current problem they were investigating or shared the latest information from their research. More than half of CLUE faculty were unable to attend these Lunch and Learns and those unable to attend could catch up by watching the recordings of the presentations, provided through links on the CLUE YouTube channel. More than half of the CLUE staff and faculty attended at least one of these meetings and because of the success of the CLUE Lunch and Learn Series, it will be extended through the Spring of 2024.

To watch the featured presentations from the Fall Series of CLUE Lunch and Learns, visit https://bit.ly/CLUELearnWatch

Communicating through Digital Platforms

In 2023, the Gardening Solutions website and associated social media channels grew in popularity and in engagement with Florida residents and beyond.

There were 2.1 million users of the Gardening Solutions website with

2.9 million

sessions.

The Neighborhood Gardener newsletter has 9,363 subscribers and an open rate of

58%.

That's 17% better than the industry average according to Constant Contact. The newsletter "click" rate is 14% which is 12% better than the email newsletter industry average.

The Master Gardener Facebook page has 39,224 followers with a reach of

1,156,979

in 2023. That is a 114% increase over 2022.

The Master Gardener Instagram reached 68,176 accounts and had

12,770

followers.

Popular articles for 2023 included

Top Ten Landscaping Mistakes

Invasive Animals in Florida Landscapes

Groundcovers for Shade

About the Center

The Center for Land Use Efficiency promotes the adoption of science-based policies and practices that measurably create an environmentally and socially vibrant life for Florida's citizens. Research and Extension programs largely relate to water quality and quantity and various best management practices (BMPs) in the following areas:

- Agriculture
- Urban and suburban landscapes
- Large-scale development

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