

**CENTER FOR
LANDSCAPE
CONSERVATION
AND ECOLOGY**

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

OVER \$14 MILL
in total funding

\$275,480

INTERNAL FUNDING

ACTIVE EXTERNAL FUNDING

\$5.17
Million



AT A GLANCE

- **12** Interdisciplinary Faculty
- **13** Affiliate Faculty
- Chaired **20** M.S. candidates
- Chaired **16** Ph.D. candidates
- Produced **42** refereed publications
- Produced **20** non-refereed publications
- Produced **24** EDIS publications
- Contributed to **2** books
- Launched **1** mobile web tool
- Hosted **1** distinguished seminar
- Hosted **6** webinars with **192** participants
- Created **31** infographics
- **7,162** eNewsletter subscribers
- **563,722** website visitors

Director's Message

Enclosed is our 2014-15 annual report, our second since we've become an official UF center. We have formed an advisory board and are introducing them to our faculty and their programs. This year has been an exciting one with our popular program enhancement and graduate student support programs. Since the inception of these programs, \$971,003 has been allocated to faculty programs.

The Master Gardener statewide curriculum that I reported on last year is nearing final completion and distribution later this year. In addition, the Trees of North and Central Florida book is complete and for sale at the IFAS Extension Bookstore and complimentary iOS and Android apps are available. Finally, in the next year we are looking forward to the potential to hire several new faculty.

Goal

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.

Mission

To protect and conserve Florida's natural resources through research-based sustainable urban landscape practices.

Vision

To be the leading source of science-based information on horticulture and the urban environment in Florida.

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, and provides research findings, recommendations, and education.

CLCE FA

INTERDISCIPLINARY, COLLABORATIVE, AND INNOVATIVE. The Center for Landscape Conservation and Ecology brings together an interdisciplinary team of faculty and affiliate faculty to conduct cross-cutting 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 & Irrigation

STEVEN ARTHURS

Entomology & Nematology, Landscape Biological Control

GAIL HANSEN

Environmental Horticulture, Sustainable Landscape Design

HAYK KHACHATRYAN

Food & Resource Economics, Horticultural Economics

ANDREW KOESER

Environmental Horticulture, Landscape Maintenance

CHRIS MARBLE

Environmental Horticulture, Landscape Weed Management

CHRIS MARTINEZ

Agricultural & Biological Engineering, Water Resource Management

ESEN MOMOL

Florida-Friendly Landscaping™ Program

PAUL MONAGHAN

Agricultural Education & Communication, Community-Based Social Marketing

GURPAL TOOR

Soil & Water Science, Urban Water Quality

LAURA WARNER

Agricultural Education & Communication, Social Marketing & Program Evaluation

WENDY WILBER

Florida Master Gardener Program

CLCE COMMUNICATIONS OFFICE STAFF

EMILY EUBANKS

Education & Media & Communications Coordinator

CARALINE STEPHENS

Horticulture Writer

JENNIFER SYKES

Web Coordinator

MELISSA FRIEDMAN

Research Coordinator

CULTY and Affiliates

AFFILIATES

LYNN BARBER

Hillsborough County,
Urban Horticulture

TATIANA BORISOVA

Food & Resource Economics,
Horticulture Economics

EILEEN BUSS

Entomology & Nematology,
Turf & Ornamental IPM

ZHANA DENG

Environmental Horticulture,
Plant Breeding

ED GILMAN

Environmental Horticulture,
Urban Tree Management

KEVIN KENWORTHY

Agronomy, Turfgrass Breeding

JASON KRUSE

Environmental Horticulture,
Sports Turf Management

RAMON LEON

Agronomy, Turfgrass
Weed Science

MATT ORWAT

Washington County,
Urban Horticulture

SYDNEY PARK BROWN

Environmental Horticulture,
Consumer Horticulture

BRIAN PEARSON

Environmental Horticulture

JOE SEWARDS

Volusia County, Urban Horticulture

LAURIE TRENHOLM

Environmental Horticulture,
Urban Turfgrass Management

BRYAN UNRUH

Environmental Horticulture, Urban
Turfgrass Management

FLORIDA-FRIENDLY LANDSCAPING™ STAFF

CJ BAIN

FFL Website and Information
Technology Coordinator

JOHN BOSSART

FFL Information Specialist

CLAIRE LEWIS

FFL/FYN Statewide Coordinator

JEN MARVIN

FFL/GI-BMP Education Coordinator

DON RAINEY

FFL/GI-BMP Statewide Coordinator

CLCE ST

PH.D. STUDENTS

CHANDRA BOWDEN

Agricultural Education and
Communication
CLCE faculty: Paul Monaghan

ELIZABETH FELTER

Agricultural Education and
Communication
CLCE faculty: Michael Dukes

KUMUDU PERERA

Agricultural Education and
Communication
CLCE faculty: Laura Warner

MACKENZIE BOYER

Agricultural and Biological
Engineering
CLCE faculty: Michael Dukes

KEEGAN GAY

Agricultural Education and
Communication
CLCE faculty: Laura Warner

JOHN ROBERTS

Horticultural Sciences
CLCE faculty: Gail Hansen,
Andrew Koeser

ANIL KUMAR CHAUDHARY

Agricultural Education and
Communication
CLCE faculty: Laura Warner

JARIANI MOHD JANI

Soil and Water Science
CLCE faculty: Gurpal Toor

ERIC STUBBS

Agricultural Education and
Communication
CLCE faculty: Laura Warner

MUN WYE CHNG

Horticultural Sciences
CLCE faculty: Gail Hansen

YOGESH KHARE

Agricultural and Biological
Engineering
CLCE faculty: Chris Martinez

NASTARAN TOFANGSAZI

Entomology and Nematology
CLCE faculty: Steven Arthurs

TAYLOR CLEM

Horticultural Sciences
CLCE faculty: Gail Hansen, Esen
Momol

SCOTT KNIGHT

Environmental Engineering
Sciences
CLCE faculty: Michael Dukes

ONDINE WELLS

School of Natural Resources and
the Environment
CLCE faculty: Paul Monaghan

STACIA DAVIS

Agricultural and Biological
Engineering
CLCE faculty: Michael Dukes

MARY LUSK

Soil and Water Science
CLCE faculty: Gurpal Toor

WAN XU

Food and Resource Economics
CLCE faculty: Michael Dukes,
Hayk Khachatryan

COURTNEY OWENS

Agricultural Education and
Communication
CLCE faculty: Laura Warner

STUDENTS

M.S. STUDENTS

LUIS ARISTIZÁBAL

Entomology and Nematology
CLCE faculty: Steven Arthurs

LESLIE BIBIACK

Landscape Architecture
CLCE faculty: Gail Hansen

ELIZA BREDER

Agricultural and Biological
Engineering
CLCE faculty: Michael Dukes

LYNDALL BREZINA

Agricultural Education and
Communication
CLCE faculty: Paul Monaghan

JORDAN CUOCO

Soil and Water Science
CLCE faculty: Gurpal Toor

SHEILA DUNNING

Agricultural Education and
Communication
CLCE faculty: Paul Monaghan

CHAD HENRY

Development Practice
CLCE faculty: Laura Warner

LISA HICKEY

Horticultural Sciences
CLCE faculty: Gail Hansen

MATTHEW JABLONSKI

Soil and Water Science
CLCE faculty: Gurpal Toor

STEFAN KALEV

Soil and Water Science
CLCE faculty: Gurpal Toor

RYAN KLEIN

Horticultural Sciences
CLCE faculty: Gail Hansen,
Andrew Koeser

SARA KOVACHICH

Landscape Architecture
CLCE faculty: Gail Hansen

SHANNON MCGEE

Agricultural Education and
Communication
CLCE faculty: Paul Monaghan

GABRIELLE MILCH

Agricultural Education and
Communication
CLCE faculty: Paul Monaghan

NIKKI SWART

Entomology and Nematology
CLCE faculty: Steven Arthurs

The background image is a photograph of a pond with lily pads in the foreground and a dense forest of tall trees in the background. The text is overlaid on the image in white, bold, sans-serif font, with each word or phrase in its own orange-bordered box.

ASSESSING ORGANIC

NITROGEN LOSS

FROM URBAN

RESIDENTIAL AREAS:

IMPLICATIONS FOR

URBAN STORMWATER

MANAGEMENT



Nutrients like nitrogen and phosphorus are essential for plant survival. Excess nitrogen not used by plants can quickly enter water bodies such as rivers, estuaries, and bays, where it can become a pollutant that causes algal blooms and fish kills.

Much of the nutrients that enter Florida water bodies come from non-point source pollutants, and originate in materials like lawn clippings, leaves from street trees and shrubs, fertilizers, or pet waste left on the ground. These materials are carried by rainfall to stormwater ponds where they break down and eventually enter rivers and estuaries in the form of nutrients.

This research is investigating the science of nutrient behavior in stormwater runoff that then flows to stormwater ponds located within an urban residential neighborhood in the Tampa Bay area. Stormwater samples were collected using advanced instruments and samples were analyzed for their nutrient content and sources.

The first year of data showed that total nitrogen concentrations were high in the runoff as wet season (June) rainfall washed away organic materials such

as leaves, leftover grass clippings, and acorns that accumulated during the dry season (October to May). However, the second year of data did not show the same trend in total nitrogen concentrations. These results make it difficult to uniformly apply them across different neighborhoods. Therefore, data collection efforts will be expanded to multiple sites over the next several years before any conclusions can be made, as nitrogen transport from urban systems is complex.

Information gained from this research will be crucial in making science-based decisions about how to reduce nitrogen transport from urban stormwater runoff to stormwater ponds, and therefore avoid problems like algal blooms, and reduce costs associated with treating stormwater ponds with chemicals.

CLCE Faculty and Grad Students: Gurpal Toor, Mary Lusk, Stefan Kalev



HORTICULTURAL

ECONOMICS

Homeowners Respond to Consumer Water & Irrigation Usage Survey

Through an online survey, homeowners in California, Texas, and Florida reported their household water usage, current irrigation practices, smart irrigation perceptions, and likelihood of purchasing smart irrigation technologies.

Top Ten Key Insights

1. Lawn/yard **appearance** is the primary factor influencing homeowners' irrigation practices.
2. Product **water efficiency** influences homeowners' purchasing decisions.
3. Irrigation frequency is seasonal and primarily occurs during the summer, followed by spring, fall, and winter.
4. **Cost is the primary purchasing barrier** for smart irrigation technology.
5. **Water-bill savings** is the main attribute that improves homeowners' likelihood of conserving water and/or purchasing smart irrigation technologies.
6. Most participants adjust their irrigation system settings **only when there is an issue** and **adjust their system themselves**.
7. Automatic failure detection/alert/turn-off and mobile apps are the most important "high-tech" irrigation features.
8. Conventional irrigation systems are perceived as being better priced than smart irrigation technologies. However, smart irrigation technologies are perceived as being more **reliable** and **easy to use** than conventional systems.
9. Eighty-two percent of participants were interested in evapotranspiration-based or soil moisture sensing-based smart irrigation systems.
10. Most participants are **undecided** on whether they will purchase a smart irrigation system in the next five years. There is an **opportunity to educate** the homeowners so they actively seek out the smart irrigation systems when they update existing or install new irrigation systems.

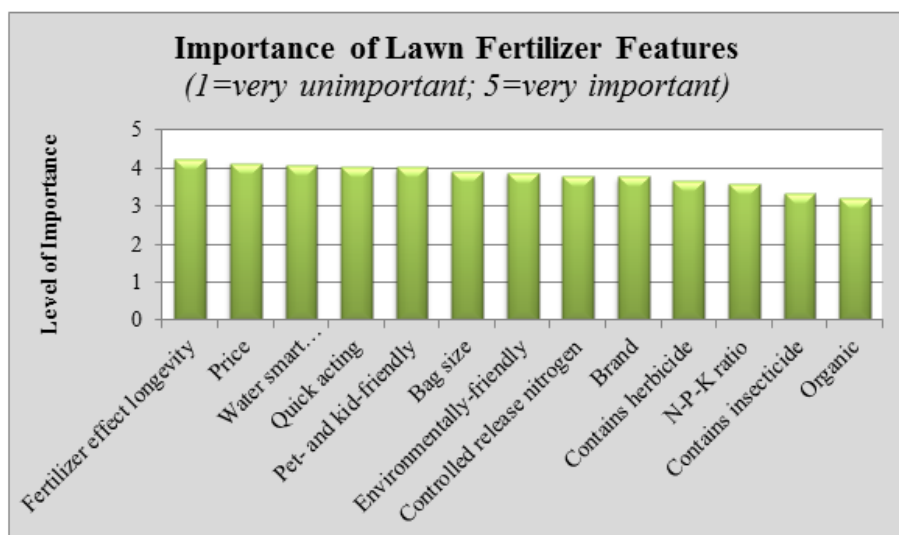
Doing More for Do-It-Yourselfers

Many homeowners are do-it-yourselfers (DIYers). Homeowners' primary reason for choosing DIY lawn care was reduced cost when compared to hiring a professional. They also perceived DIY lawn care as more productive and efficient than professional services. DIY lawn care provided homeowners the opportunity for outdoor involvement and was also popular due to peer pressure since the neighbors don't participate in DIY. Researchers and extension specialists can work to develop tools to assist homeowners in maintaining their landscapes. One recommendation is to develop an app, electronic calendar, text, or email system to remind them about irrigation system maintenance. It's also recommended to develop a cheat sheet for DIY on what to look for, how to adjust and test irrigation system settings, and provide printed and laminated copies. Also, designing irrigation systems that are easy to adjust and maintain, as well as making the parts available and easy to replace will help the DIYer.

CLCE Faculty: Hayk Khachatryan, Michael Dukes

Importance of Lawn Fertilizer Features

Homeowners were asked the importance of different lawn fertilizer features. Although all features were considered at least marginally important, the length of effectiveness was rated as most important. This feature was followed by price, water smart (assists in water/nutrient uptake), quick acting, and pet/kid friendly. Bag size, environmentally-friendly, controlled-release nitrogen, brand, herbicide, and N-P-K ratio were also important considerations in homeowners' purchase decisions. Contains an insecticide or being organic were marginally important. Participants indicated that while shopping for fertilizers, they noticed the price tag first, followed by the N-P-K ratio, brand name, bag size, additional functions (insecticide, herbicide, fungicide), specialty features (natural, organic, environmentally friendly), with spreader calibration instructions were noticed last.



Property appearance is the most important attribute provided by the lawn. *"Developing and promoting irrigation and fertilization methods and products that enhance yard aesthetics while minimizing water waste will assist homeowners with water savings."* – Dr. Hayk Khachatryan

Interesting Points from the Survey

- 20% don't know the species of turfgrass in their yard
- 91% plan to continue do-it-yourself lawn care – mostly because of reduced cost
- 83% are willing-to-pay \$25-\$150 per month for lawn care services
- 64% purchase lawn care products from home improvement or hardware stores
- 71% calculate how much fertilizer their lawn needs
- 61% read the fertilizer label before purchase
- 26% conducted soil tests in the current year
- 24% purchase phosphorus-free fertilizer

CLCE Faculty: Hayk Khachatryan, Michael Dukes



HOW SAFE

ARE OUR TREES?



An Assessment of Internal Decay in Urban and Residential Street Trees

CLCE Faculty Andrew Koeser and his research associates Gitta Hasing and Drew McLean recently surveyed mature live oak (*Quercus virginiana*) and laurel oak (*Quercus laurifolia*) along main hurricane evacuation routes in Tampa, Florida. These two species, while both among the most common shade trees in the Tampa Bay area, are dramatically different in how long they live and how they react to wounding and fungi that can cause decay. After randomly sampling 239 large-diameter (over 12") oaks and inspecting them with a specialized drill that records drilling resistance, the research team found that 67% of laurel oak had drops in drilling resistance consistent with internal decay. In comparison, less than 30% of live oak were compromised. While decay was more common in the laurel oak, so were the external clues arborists rely on to help determine if decay is present. Ninety percent of trees that were a 1/3 or more hollow had an external sign (e.g., cavity, fungal fruiting body, etc.) or symptom (e.g., swelling, oozing, etc.) of decay that offered some insight into the tree's internal condition. This is good news for tree care professionals who have to gauge tree risk on a daily basis – typically without the specialized equipment used in this study.

CLCE Faculty: Andrew Koeser

Trees: North & Central Florida

This sturdy, pocket-sized field guide—the only one of its kind for north and central Florida—is composed of large, clear, colorful pictures that can be used for quick identification. Written by Andrew Koeser, Gitta Hasing, Melissa Friedman, and Robert Irving. Available for purchase through the IFAS Bookstore.

Field Guide Features

- 140 Florida native, introduced, and invasive species
- Beautiful color photographs for each species
- Arranged by leaf type for easy identification
- Florida Hardiness Zones
- Special notes about natural history, as well as commercial and cultural uses

The Trees: North & Central Florida mobile application is a readily accessible field guide for professionals, Master Gardeners, educators, and those interested in identifying the trees of north and central Florida. Available for purchase through the Apple App Store and Google Play Store.

App Features

- Search and filter for specific tree characteristics
- Tag and save your favorite trees
- Share trees via email, text, and social media
- App comes with 20 trees for free, but the remaining 120 can be unlocked for \$3.99



Behavior

Audience Segmentation of Floridians Who Use Irrigation in the Landscape

Floridians who use irrigation in the home landscape are an important target audience for UF/IFAS Extension's high-priority initiative #2: "Enhancing and Protecting Water Quality, Quantity, and Supply," due to their potential to conserve substantial amounts of water. An online survey polled over 1,000 Floridians on their attitudes, perceptions, and behaviors in relation to water issues and irrigation in the home landscape. Audience segmentation, an innovative way to design and deliver Extension programs, was then used to divide individuals into subgroups based on meaningful characteristics that made them different from other subgroups.

As a whole, this audience rated water as a very important public issue, was

most interested in landscaping ideas and irrigation practices that save water, and currently follows water restrictions. Though very few use smart irrigation controls to conserve water, they plan to save water in the future by seasonally adjusting their irrigation times, calibrating their sprinklers, and continuing to follow water restrictions.

Audience segmentation further distinguished three main subgroups: ~30% = **Water-Savvy Conservationists** - very concerned with water and environmental issues, most likely to engage in landscape irrigation conservation practices, and have the most positive attitude toward good irrigation practices.

~50% = **Water-Considerate Majority** - moderately concerned with water and environmental issues, and are somewhat likely to engage in landscape irrigation

conservation practices now and in the future.

~20% = **Unconcerned Water Users** - least concerned with water and environmental issues, least likely to engage in landscape irrigation conservation practices both now and in the future, and have the least positive overall attitude toward good irrigation practices.

Of all subgroups, water-savvy conservationists are the most likely to have previously engaged with Extension, whereas the water considerate majority and unconcerned water users are moderately and least likely, respectively.

By taking differences such as these into consideration, along with each subgroup's unique needs, targeted and impactful Extension programming can be developed.

CLCE Faculty: Laura Warner

Original Image



Heat Map



Change

Investigation of Environmental and Economic Incentives for Sustainable Residential Landscaping Practices in Florida – Tracking the Eyes

“Investigating the link between consumers’ visual behavior and their preferences can significantly improve our understanding of the effects of marketing practices that use visual cues to attract more consumers.”

Eye-tracking technology explores the relationship between visual attention and consumer behavior, and can be used by marketing specialists or retailers to better understand consumer purchasing decisions. A national study investigated consumer choices based on several plant attributes. Photos of retail plant displays were shown to 330 participants and an eye-tracking device recorded their eye movement.

Eye-tracking software identified areas of interest based on eye *fixations* – when the eye stops and focuses, and *saccades* – when the eye moves between fixation points.

Participants also rated the likelihood that they would purchase each plant on a scale of 1 to 10. Participant responses were paired with eye movements in order to accurately interpret eye-tracking data.

Results showed that consumers spent more time gazing at plant attributes they considered most important.

73% Plant-Oriented – most concerned about the type and quality of the plant

16% Price-Oriented – most concerned about plant price

11% Production-Oriented – most concerned about production labeling and display

CLCE Faculty, Postdoc: Hayk Khachatryan and Alicia L. Rihn

“Eye-tracking technology works by measuring the reflection angle of infrared light bouncing back from the inner eye, allowing researchers to record the location of a participant’s gaze.”

- Hayk Khachatryan

Gaze Plot



Eye-tracking software can generate graphic representations of participant eye movements. Heat maps show participants’ gaze duration in red, yellow, and green, with red indicating the highest and green indicating the lowest. Gaze plots show the fixations (circles), saccades (visual movements between fixations), and fixation duration (size of circles). Image credit: Hayk Khachatryan



LANDSCAPE

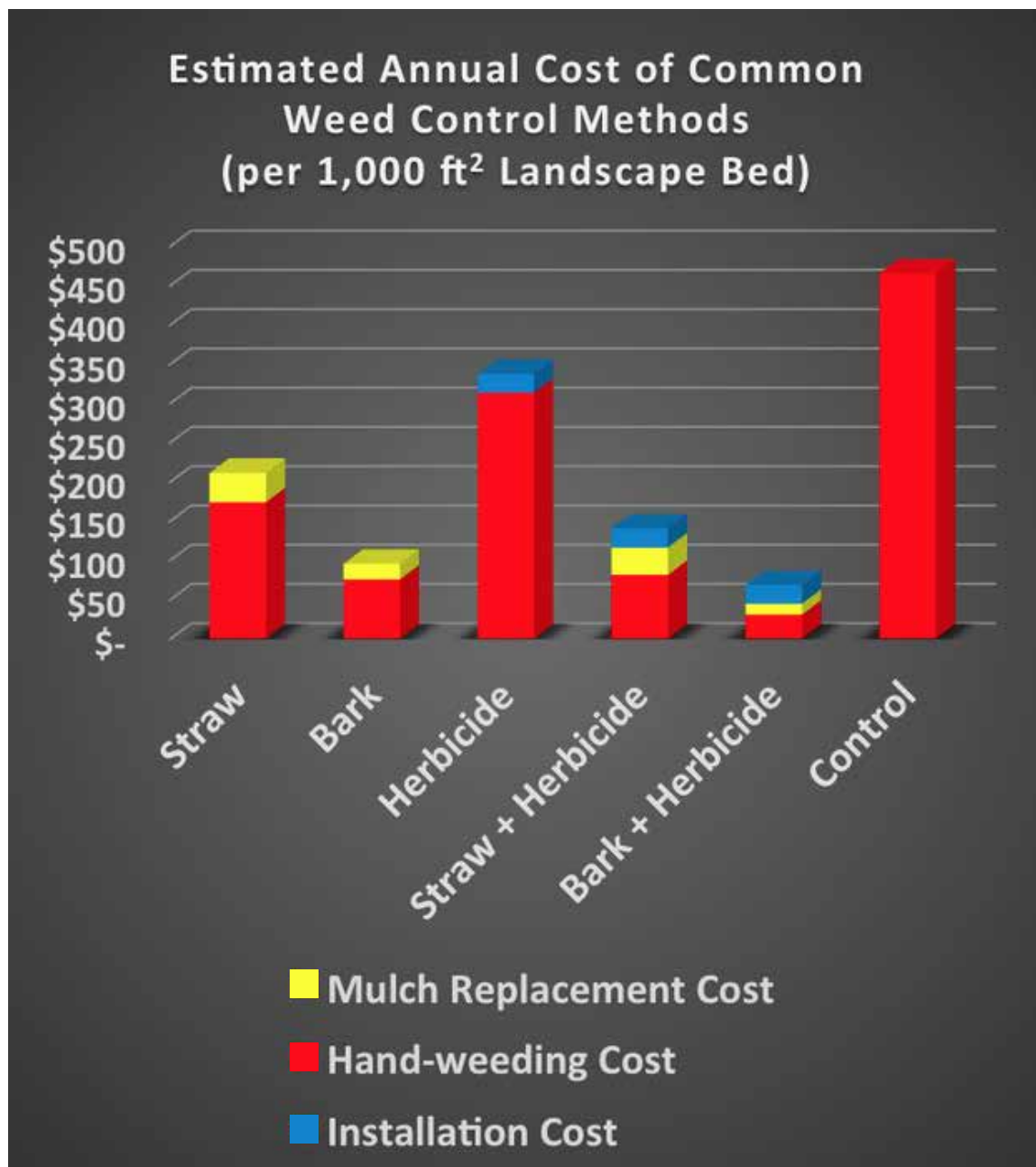
WEED

MANAGEMENT

Annual Cost of Weed Management in Landscape Beds

Over the past year, CLCE faculty have been monitoring the cost and effectiveness of common weed control practices in landscape planting beds. This project gives homeowners and landscapers the ability to estimate yearly maintenance costs from a weed control perspective and helps determine which methods provide the best weed control for certain weed species. Pine straw, pine bark nuggets, preemergence herbicides, and herbicides in combination with the two mulch types are being evaluated for weed control, predominate weed species, and hours needed to hand weed. Additional mulch that is added over the course of the year to keep mulch at recommended levels is also being recorded to determine how the longevity of each mulch type affects maintenance costs. Preliminary data shows that pine straw and pine bark provided better weed control than preemergence herbicides when both products were applied alone. The most effective and economical approach has been when herbicides were used in combination with both mulch types, and more specifically the pine bark mulch, which has reduced total maintenance costs by over 80% when compared to plots in which only herbicides were used. Future studies will focus on evaluating multiple herbicide and mulch combinations in order to determine the most cost effective and environmentally friendly approaches to landscape weed management.

THE MOST EFFECTIVE AND ECONOMICAL APPROACH TO WEED MANAGEMENT HAS BEEN WHEN HERBICIDES ARE USED IN COMBINATION WITH BOTH PINE STRAW AND PINE BARK.






FLORIDA MASTER GARDENER PROGRAM

EPCOT INTERNATIONAL FLOWER AND GARDEN FESTIVAL

Every spring, for 75 days, the Florida Master Gardeners staff a booth at the EPCOT International Flower and Garden Festival at Walt Disney World. In their festival booth, they meet thousands of gardening enthusiasts and share with them Florida gardening information. Many people who visit the Master Gardener booth learn about the extension service for the first time.

Master Gardeners and horticulture agents from around the state take turns hosting the booth and presenting to the public during the festivals. Agents present on a range of topics from vegetable gardening to water-conserving landscapes, to growing fruit trees and plant propagation.

Master Gardeners are in a prime location at the festival and are sought out for their unbiased research-based information. The partnership between IFAS and Disney Horticulture has worked for 18 years, and knowledgeable, enthusiastic volunteers are the main reason why.





In 2014, Florida Master Gardeners provided \$9.78 million (or 203 FTEs) in volunteer time to Florida's economy.

TOTAL STATEWIDE VOLUNTEER HOURS

423,968

TOTAL STATEWIDE CLIENTELE CONTACTS

657,339

TOTAL STATEWIDE MASTER GARDENER VOLUNTEERS

4,583



FLORIDA-FRIENDLY LANDSCAPING™ PROGRAM

The Florida-Friendly Landscaping™ Program (FFL), a partnership between UF/IFAS Extension and the Florida Department of Environmental Protection, teaches science-based management practices directly to homeowners and landscaping professionals. These science-based practices save water, reduce fertilizer and pesticide use, and save money by preventing surface and ground water contamination.

FFL teaches participants about environmentally friendly – yet aesthetically pleasing – landscape design, efficient irrigation, proper fertilizer application, pest management and proper pesticide use, attracting desirable wildlife, and protecting shorelines.

Through its network of UF/IFAS Extension agents and in collaboration with the citizen volunteer Master Gardener Program, FFL is active in 60 of Florida's 67 counties. During 2014, Agents and Master Gardeners delivered some **9,364 workshops** or other events that promoted some aspect of Florida-Friendly Landscaping™.





FFL coordinates over 400 instructors who have trained and certified over 30,000 landscaping professionals in the Green Industries Best Management Practices (GI-BMP) curriculum.

Economic and Environmental Impacts –Selected Case Studies

An individual homeowner in Lake County documented that his FFL yard saved 574,000-gallons of water over the past 3 years (2012–15). **Water conservation that saved \$1,383 on his water bill!**

Lakewood Ranch in Manatee County projects that its FFL irrigation and landscaping improvements will save **28%, or \$388,000, in irrigation costs during 2015 alone.**

UF/IFAS Extension agents with the multicounty Northeast Florida Green Team facilitated FFL irrigation improvements that provided **14.2 million gallons in water savings** – with a corresponding estimated cost savings of up to \$122,400.



Extension

24 EDIS DOCUMENTS

EDIS Highlights from CLCE Faculty

- *Contaminants in the Urban Environment Series - Toor, Yang, Rodriguez-Jorquera*
- *Eye-tracking Methodology and Applications in Consumer Research - Khatchatryan, Rihn*
- *Is My Tree Safe? Recognizing Conditions that Increase the Likelihood of Tree Failure - Koeser, McLean, Northrop, Hasing*
- *Postemergent Herbicides for Use in Ornamentals - Marble, Norcini*
- *Improving Extension Program Development Using Audience Segmentation - Monaghan, Warner, Telg, Irani*
- *Using Social Norms to Increase Behavior Change in Sustainable Landscaping - Warner, Monaghan*

6 WEBINARS WITH 192 PARTICIPANTS

- *Rose Series*
 - Care
 - Cultivars
 - Integrated Pest Management
 - Chilli Thrips
- *Willingness to Pay for Fertilizer*
- *Smart Irrigation Behaviors*

2015 DISTINGUISHED SEMINAR

Dr. Cecil Konijnendijk van den Bosch, head of the department of Landscape Architecture, Planning and Management at the Swedish University of Agricultural Sciences presented "Between Working Trees and Trees of Mind: the role of urban forests in green infrastructure and place making."

The role of urban trees in making our cities more liveable, healthy, and resilient has become widely recognized. Trees are an important component, for example, of green infrastructure. However, an "engineering perspective" of urban trees as cleaners, coolers, and providers of shelter runs the risk of excluding the many cultural services provided by urban trees. Trees help create place and identity, and their very presence can make us feel happier and healthier.

Based on research from across the world, this presentation assesses the changing role of urban trees over time and identifies current "urban tree discourses." Based on this analysis, a more comprehensive approach to urban forestry and its contributions to green infrastructure planning is suggested.

Efforts

42 EXTENSION PRESENTATIONS

Presentation Highlights

- *Return on investment with smart irrigation technology -Michael Dukes*
- *Extension Behavior Change: Measuring Outcomes of Landscape Site Visits and Individual Teachings -Laura Warner*
- *The 3 P's of Landscape Design: People, Plants, and Plans -Gail Hansen*

WATER WORKSHOP IN TURKEY

In October 2014, four members of the newly formed UF/IFAS Global Water Team traveled to Manisa, Turkey to participate in their first international workshop. Along with their partner, Ege University in Izmir, the team presented "Nutrient and Stormwater Runoff Management for Water Quality, Quantity, and Sustainability – Applicability and Impacts of Sustainable Landscape Design Practices."

The UF/IFAS Global Water Team was represented by Dr. Mark Clark, Dr. Gurpal Toor, Dr. Gail Hansen, and Dr. Esen Momol. Ege University was represented by Dr. Necip Tosun and Mitat Hantal (an Ege University partner with Dow Agrichemical), in association with Dr. Hayriye Ibrikci from Cukurava University and Halis Uysal from the Turkey Water Cooperative (TUSKOOP).

The workshop drew 117 registered participants, including those from municipal and federal water authorities, faculty as well as students from Ege University, Cukurova University, and Celal Bayar University. The workshop also drew a number of students from Celal Bayar University, which is located in Manisa.

The workshop included a field day to tour the ancient Roman-era ruins at Ephesus. This tour focused on the ancient water management systems, which incorporated both piped water and stormwater conduits.

Both UF and Turkey benefitted tremendously from this initial collaborative workshop. For UF, the workshop provided the opportunity both to integrate the most current sustainable landscape design principles into IFAS Global programs, as well as for IFAS Global to expand into Turkey. Turkey, in turn, benefitted through the identification of strengths and training needs, a discussion of US and Florida water rules and regulations, including the total maximum daily load (TMDL) program, integrating regional university and industry systems, and aiding in developing targeted training.

DIGITAL PLATFORM OUTREACH EFFORTS

GARDENING SOLUTIONS

Gardening Solutions brings Florida homeowners and gardeners the best information about Florida-Friendly plants, sustainable landscape practices, and ways to beautify the landscape and garden. From blooming natives to heat-friendly vegetables, we share what works where in Florida's unique environment.

As part of UF/IFAS Extension, Gardening Solutions brings the vast resources of the University of Florida directly to every community across the state. With the help of county Extension agents and Master Gardener volunteers, we extend the reach of the university's research-based information.

Gardening Solutions had 1,001,879 million pageviews in 2014-2015!

THE NEIGHBORHOOD GARDENER

Since 2008, the Neighborhood Gardener has published more than 60 issues. The monthly emailed newsletter currently has 6,343 subscribers. For the last 12 issues sent, the average "open and click rate" was 49% – compare this to the industry average open rate and click rate of 9%.

Sent by email and published online, the newsletter features several stories each month, including "Plant of the Month," "Friend or Foe," and "This Month in Your Garden." The plant of the month feature is the most popular and brings many visitors to the Gardening Solutions website.



INFOGRAPHICS

The center is a leader in social media infographics with 31 produced. Infographics include Edibles to Plant and What's Flowering monthly, a seasonal Herbs to Grow, as well as stand-alone graphics such as Water Conservation in the Landscape and Air Potato Control. The infographics had a combined exposure of more than 180,000 and an engagement (comments, shares, and likes) of 44,737.

SOCIAL MEDIA

The center is active in many social media platforms, using the Florida Master Gardener program as the "face" of our profile. The following platforms allow the center to communicate science-based information directly to gardeners.

FACEBOOK FANS

FACEBOOK.COM/FLORIDA.MASTERGARDENERS

6,039

TWITTER FOLLOWERS

TWITTER.COM/FLORIDAMGS

741

PINTEREST FOLLOWERS

PINTEREST.COM/FLOIRDAMGS

197

YOUTUBE VIDEOS

YOUTUBE.COM/UFGARDENING

26

ADVISORY

BOARD

BEN BOLUSKY - CHAIR

Florida Nursery, Growers,
Landscape Association

TOM ALLEN

Florida Irrigation Society

DALE DUBBERLY

Florida Department of
Agriculture, Consumer Services

TOM FRICK

Florida Department of
Environmental Protection

WENDY GRAHAM

UF Water Institute

CHARLIE GUY

UF/IFAS Environmental
Horticulture

DEIRDRE IRWIN

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