2026
ISSUE NO. 2

IRRIGATION

and you

WATER AWARENESS

SPEAKER SERIES

Hosted by HCUD

Colby Pitts

FFL Program Coordinator

Your watering day is based on the LAST digit of your address

Monday **Tuesday** **Wednesday** **Thursday** **Friday**

You can water before 8:00 am **OR** after 6:00 pm on your designated day

Water Efficiently: Pasco County FFL's Irrigation Evaluation Program

Kate Kaste, Program Manager

Florida-Friendly Landscaping™ (FFL)

UF/IFAS Extension Pasco County

UF IFAS Extension UNIVERSITY of FLORIDA

Florida-Friendly Landscaping™ PROGRAM

PASCO COUNTY FLORIDA
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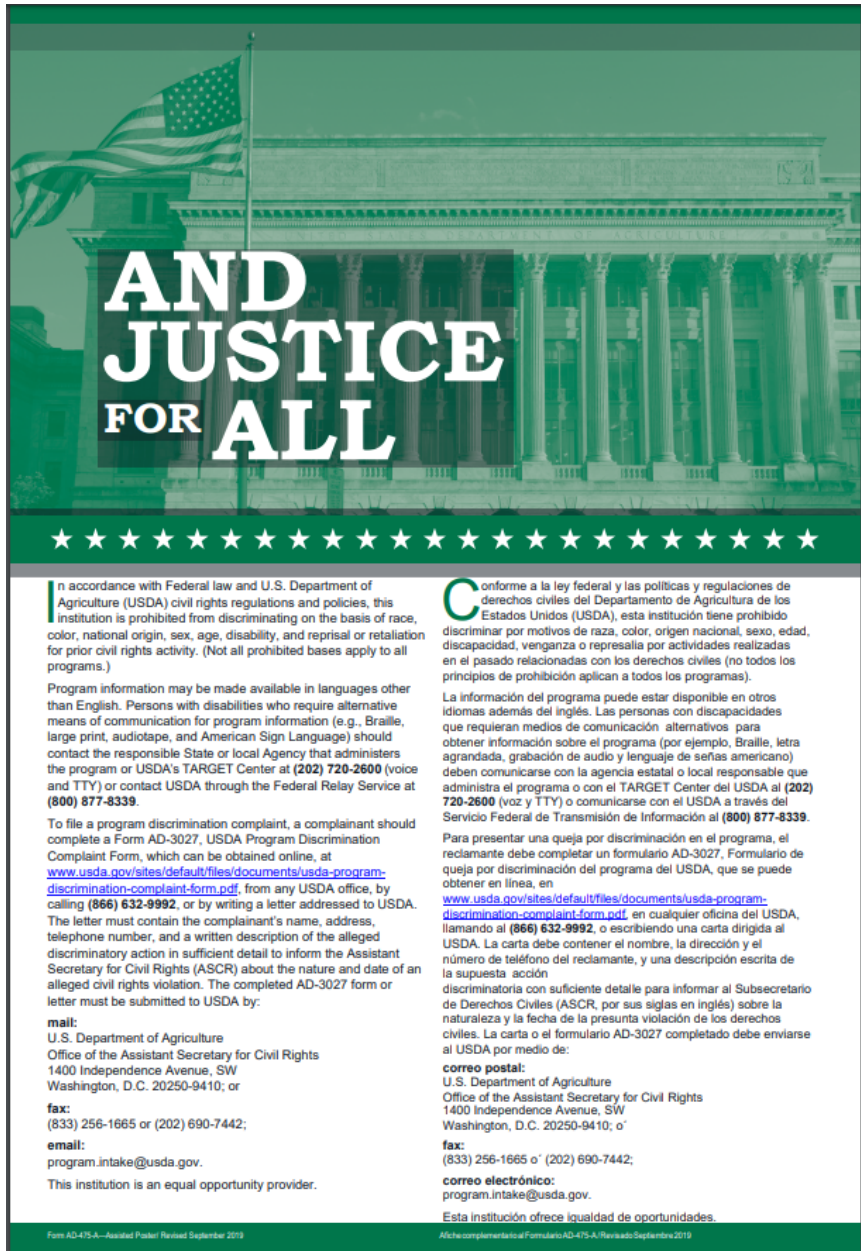

UF | IFAS Extension
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Welcome!

- Thank you for being here today!
- Topics Covered Today:
  - Water Conservation
  - Pasco FFL's Irrigation Evaluation Outreach
  - Efficient Irrigation (aka "How much water does my yard really need?"
  - Just a Little Turf-Talk
  - Common Things That Go Wrong

Today's Overall Objective

Know how Pasco County's FFL Irrigation Evaluation Program helps citizens:

- Conserve water and save money
- Provide landscapes the necessary water, but not overwater
- Perform basic maintenance on an irrigation system if you are a DIY-er, or know what should be done if you hire a contractor

Florida-Friendly Landscaping™

Nine Principles

1. Right plant, right place
2. **Water efficiently**
3. Fertilize appropriately
4. Mulch
5. Attract wildlife
6. Manage yard pests
7. Recycle
8. Reduce stormwater runoff
9. Protect the waterfront

What Irrigation–Related Landscape Issues Do You Notice?

Water Conservation

Water Conservation Factors to Consider

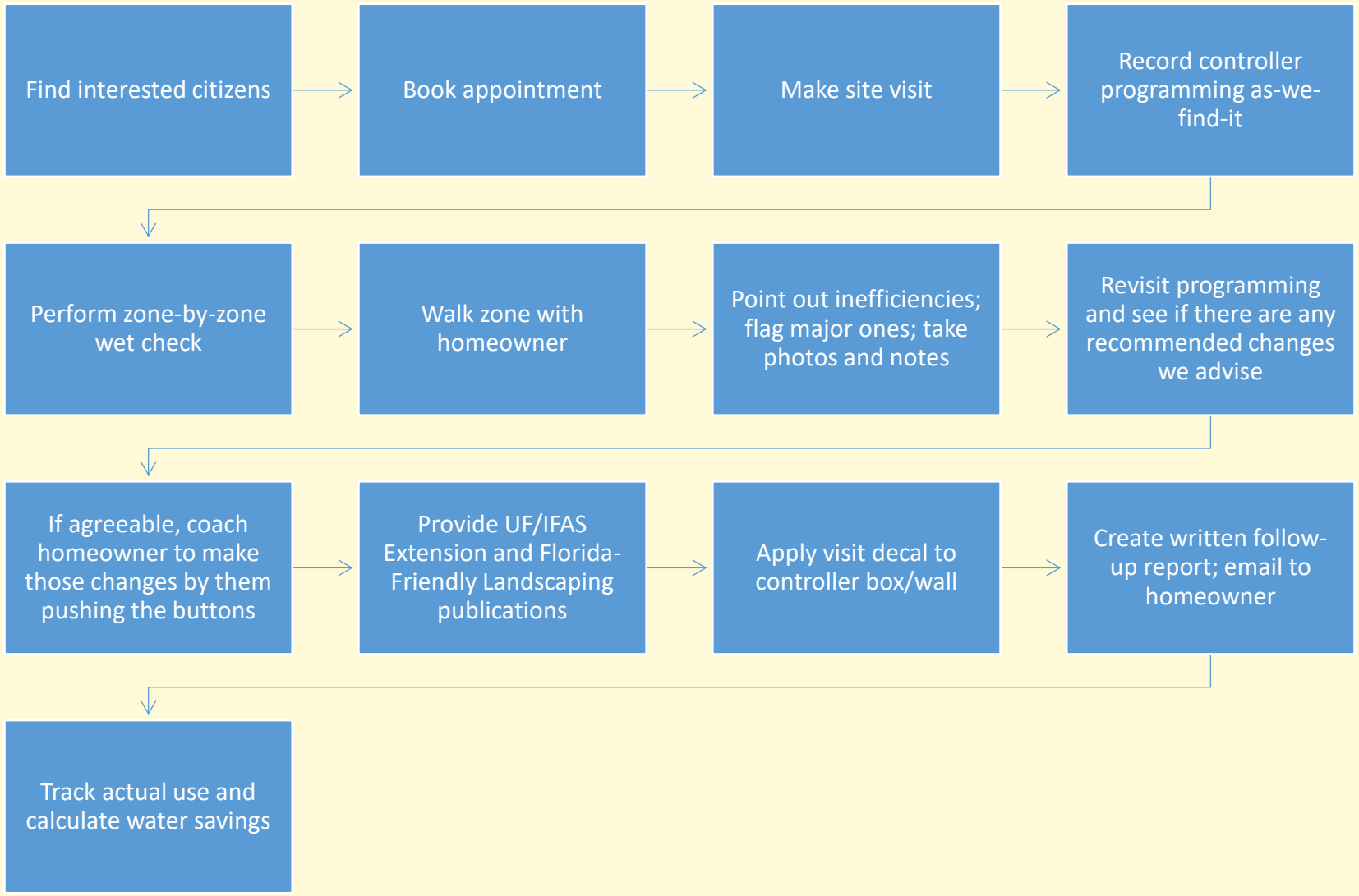
Controllable Factors

- Plant selection
- Plant placement
- Soil structure
- Mulching
- Irrigation
- Maintenance practices

Uncontrollable Factors

- Temperature
- Precipitation
- Sunlight
- Wind
- Soil texture
- Local water restrictions

Pasco FFL's Irrigation Evaluation Outreach


Find interested citizens
Book appointment
Make site visit
Record controller programming as-we-find-it
Perform zone-by-zone wet check
Walk zone with homeowner
Point out inefficiencies; flag major ones; take photos and notes
Revisit programming and see if there are any recommended changes we advise
If agreeable, coach homeowner to make those changes by them pushing the buttons
Provide UF/IFAS Extension and Florida-Friendly Landscaping publications
Apply visit decal to controller box/wall
Create written follow-up report; email to homeowner
Track actual use and calculate water savings

Client Phone:	Back Flow Preventer:	HOA President/Officer Name:
Client Email:	Found / Not Found	
	At least 6 inches? Yes / No	
Correct Watering Days:	Has pressure vent? Yes / No	

Time Clock Settings

BEFORE EVALUATION							AFTER EVALUATION						
% Seasonal Adjustment:							% Seasonal Adjustment:						
Program A Start Times							Program A Start Times						
1	2	3	4	5	6		1	2	3	4	5	6	
Program A Run Times:							Program A Run Times:						
1	2	3	4	5	6		1	2	3	4	5	6	
Program A Days of the Week: (circle all that apply)							Program A Days of the Week: (circle all that apply)						
Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Program B Start Times							Program B Start Times						
1	2	3	4	5	6		1	2	3	4	5	6	
Program B Run Times:							Program B Run Times:						
1	2	3	4	5	6		1	2	3	4	5	6	
Program B Days of the Week: (circle all that apply)							Program B Days of the Week: (circle all that apply)						
Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Mon	Tues	Wed	Thurs	Fri	Sat	Sun
Program C Start Times							Program C Start Times						
1	2	3	4	5	6		1	2	3	4	5	6	
Program C Run Times:							Program C Run Times:						
1	2	3	4	5	6		1	2	3	4	5	6	
Program C Days of the Week: (circle all that apply)							Program C Days of the Week: (circle all that apply)						
Mon	Tues	Wed	Thurs	Fri	Sat	Sun	Mon	Tues	Wed	Thurs	Fri	Sat	Sun

Additional Notes:

For additional assistance or questions, please call the UF/IFAS Extension Pasco County - Florida-Friendly Landscaping™ Program at 352-518-0156, Option 5

Zone	Head Type/#	Location	GPM	Notes
1				
2				
3				
4				
5				
6				
7				
8				
9				

Irrigation issues to note: Broken heads, clogged heads, missing heads, sunken heads, high vegetation, tilt, mixed heads, mixed nozzles, high pressure, low pressure, misdirected spray, overspray, variable spacing, broken pipes or fittings.

Seasonal Irrigation Run Times for Spray and Rotor Zones*

Head Type	% Seasonal Adjust	100% Summer	60% Fall	40% **Winter**	80% Spring
Spray	Ideal	25 min	15 min	0 min	20 min
Applies ~ 1.5"/hr	*Range*	*20-30 min*	*10-20 min*	*0-10 min*	*15-20 min*
Rotor	Ideal	45 min	30 min	10 min	40 min
Applies ~ 0.5"/hr	*Range*	*40-60 min*	*20-40 min*	*0-20 min*	*35-55 min*

**For Winter watering, keep at 40% but remove 1 day per week if on reclaimed water.

*From "Home Irrigation and Landscape Combinations for Water Conservation in Florida" ABE 355

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19	9	0	0	0	0	7	0	1	14	9	6	5.416666667	2	4	5	5	3	2	4	9					
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UF/IFAS Extension Pasco County Florida-Friendly Landscaping Program's Irrigation Evaluation Water Savings

FY25 5,820,610 gallons

FY 24 3,625,868 gallons

(Goal = 12,000,000 annually)

Efficient Irrigation

(aka “How much water does my yard really need?”)

Water Efficiently

- Efficient watering is key to a healthy Florida landscape and to reduce runoff
- Up to 60% of a residential water bill attributed to irrigation systems

Effects of Overwatering

- Encourages growth of fungi and bacteria
- Encourages weed growth
- Promotes a shallow root system
- Reduces oxygen to the roots
  - Causes stress

Dollar weed is an indication of an over-watered lawn

- Get the water where it is needed in the landscape, and not where it isn’t needed
- Establishment takes time and more water than normal maintenance irrigation
- Irrigation systems are often designed and operated for establishment, but then never change as the plant material does establish and matures
- Transition to maintenance irrigation
- After establishment, trees, palms and shrubs should be okay with only rainfall, except in extreme drought
- Turfgrass is what “needs” irrigation
- ½” to ¾” of water per week in the growing season
- Less than that when dormant in the winter season (skip a week)

Sprinkler System Calibration

- Place containers randomly within a sprinkler zone
- Run zone for 15 minutes
- Measure water collected in containers (inches)
- Calculate average amount
- Adjust watering time
  - Apply ½- ¾” inch of water per application

Sprinkler System Efficiency

Water as Needed

- Water as needed rather than routinely
  - Less frequently in fall and winter
- Water Management District may have restrictions during drought
- Florida's rainy season
  - June-September
  - Water less frequently when rainfall expected

Watching the Weather

- Rain is free irrigation
- Avoid watering landscape if:
  - Rained in past 24 hours
  - Rain is forecast in next 48 hours

Just a Little Turf-Talk

Info on St. Augustine and Bahia

- Proper turfgrass “cultural care” matters!
- Different water, fertilizer and weed control
- St. Augustine will need supplemental irrigation on sandy soils
- St. Augustine’s greatest irrigation need is in the months of March, April and May in Central Florida
- Bahia, once established, will do okay without irrigation, but will go brown in drought or cold conditions; recovers very quickly

Common Things That Go Wrong

(these are the things we will look for in irrigation evaluations)

- Pipe leaks, breaks, or clogs
- Broken/missing nozzles (heads)
- Leaking sprinklers and valves (o-ring/gasket)
- Obstructed sprinklers
- Landscape or system design problems
- Overspray onto sidewalks, streets, or buildings
- Drip irrigation cut/split/uncapped ends/clogged
- Filters clogged
- Rotors not rotating
- Pressure issues (too high or too low)
- Sunken-ness
- Pop-up sprays not tall enough in turf
- Tilt
- Coverage issues
- Bubblers open full or with missing end caps
- Wrong emitters installed when repairs are made

Irrigation System Maintenance

System Maintenance

- Conduct regular inspections when system operating
- Some problems easily fixed
  - Must first be identified to be repaired

System Maintenance

- Inspect and clean filters and emitters regularly
- Flush system quarterly to discharge debris
- Reset irrigation controller seasonally
  - Adjust to changes in plant water needs

Kate Kaste

- Florida-Friendly Landscaping™ Program Manager
- 352-518-0156
- kkaste@My Pasco.net

Intermission

Introduction to MicroIrrigation

A HOW-TO AND HANDS-ON GUIDE FOR THE HOMEOWNER

Kate Kaste, Program Manager
Florida-Friendly Landscaping™
UF/IFAS Extension Pasco County

(aka)
Legos for Gardeners!

A HOW-TO AND HANDS-ON GUIDE
FOR THE HOMEOWNER

Kate Kaste, Program Manager
Florida-Friendly Landscaping™
UF/IFAS Extension Pasco County

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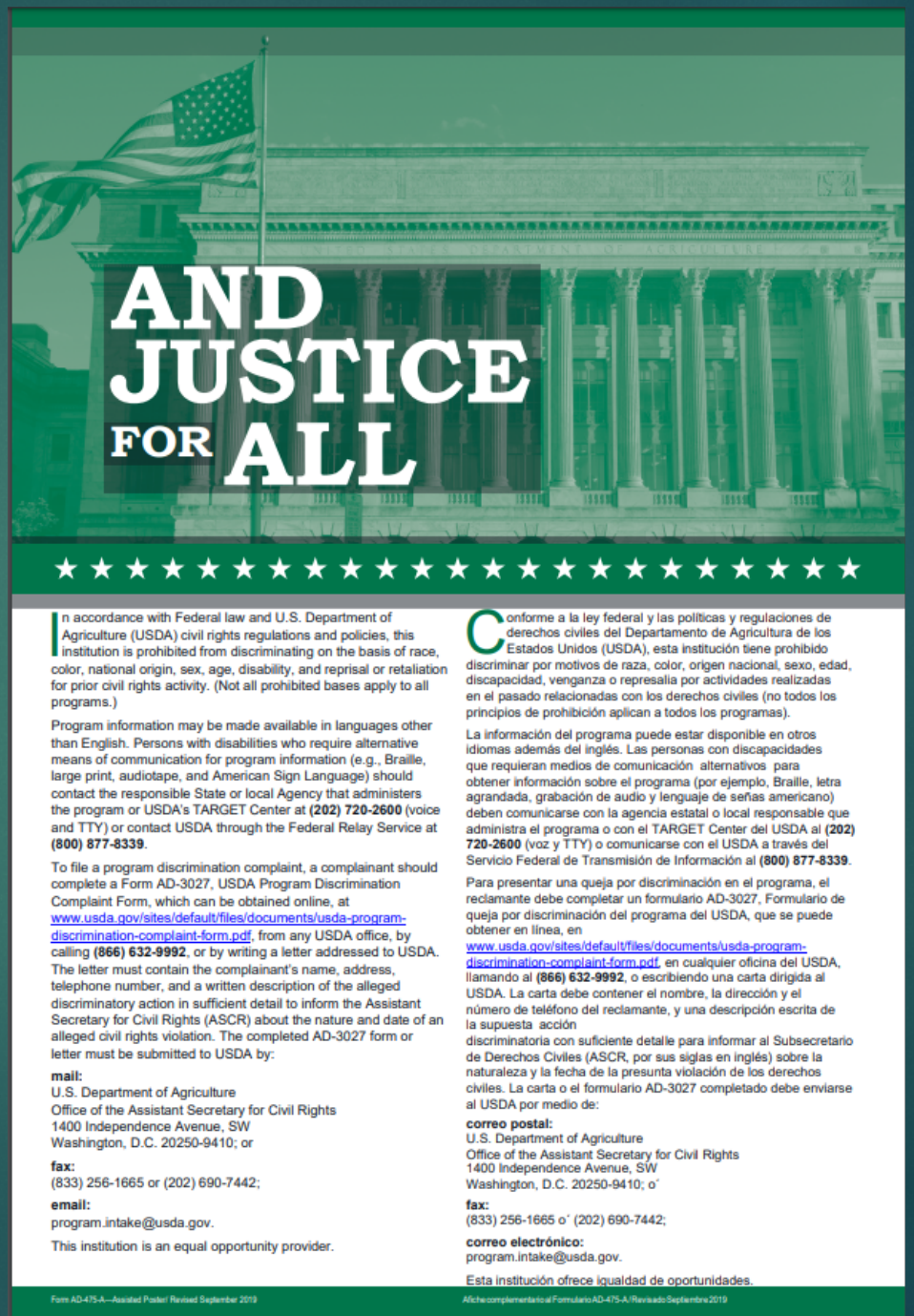

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mail:
U.S. Department of Agriculture
Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, SW
Washington, D.C. 20250-9410; or

fax:
(833) 256-1665 or (202) 690-7442;

email:
program.intake@usda.gov.

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Office of the Assistant Secretary for Civil Rights
1400 Independence Avenue, SW
Washington, D.C. 20250-9410; o´

fax:
(833) 256-1665 o´ (202) 690-7442;

correo electrónico:
program.intake@usda.gov.

Esta institución ofrece igualdad de oportunidades.

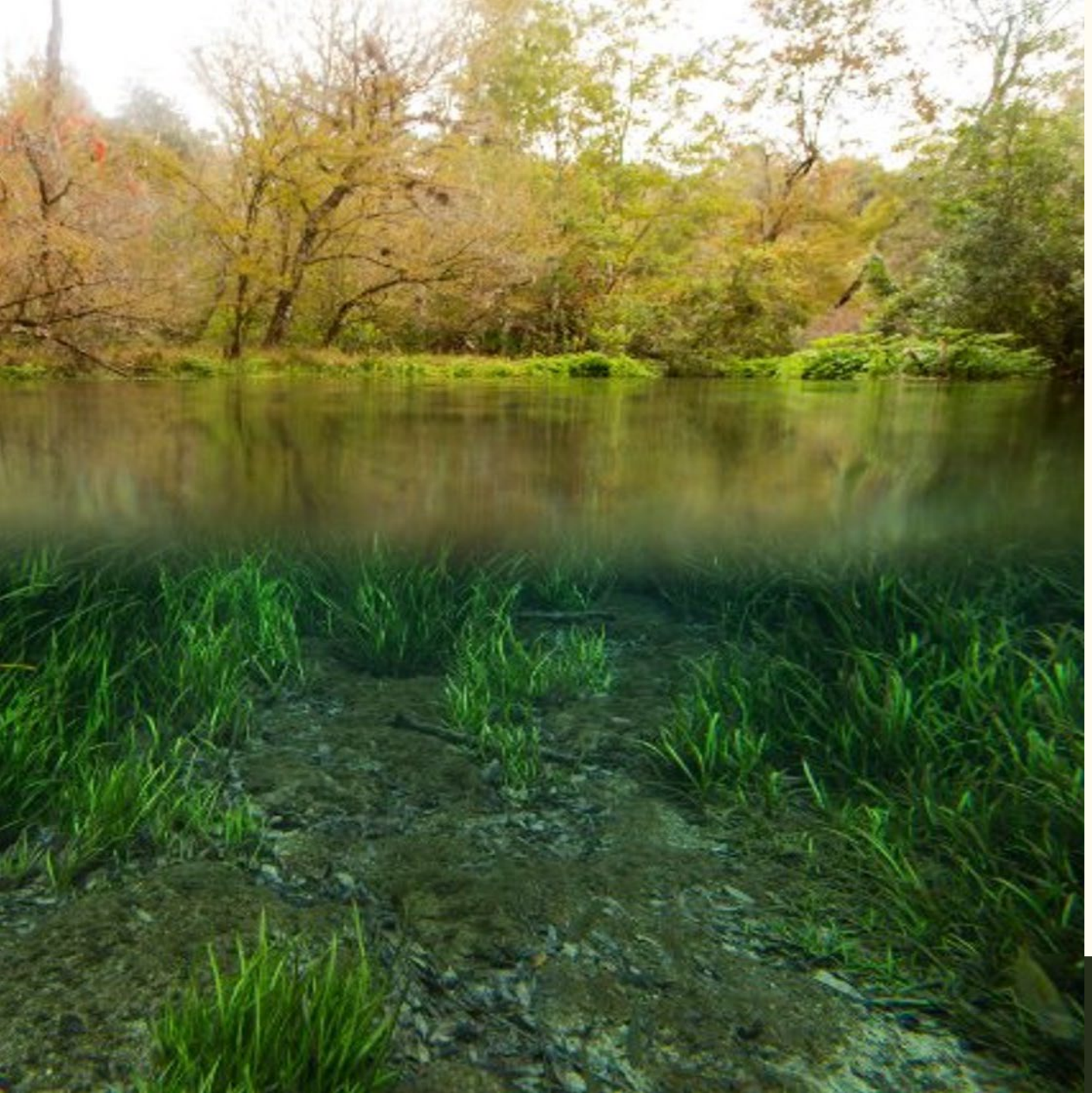
Form AD-475-A—Assisted Poster/ Revised September 2019

Afiche complementario al Formulario AD-475-A/Revisado Septiembre 2019

Florida-Friendly Landscaping™

Florida Statute 373.185

- Started in 1993 to address the problem of water quality degradation
- Program written into legislation
- "Quality landscapes that conserve water, protect the environment, are adaptable to local conditions, and are drought tolerant"



Why is the FFL Program Important?

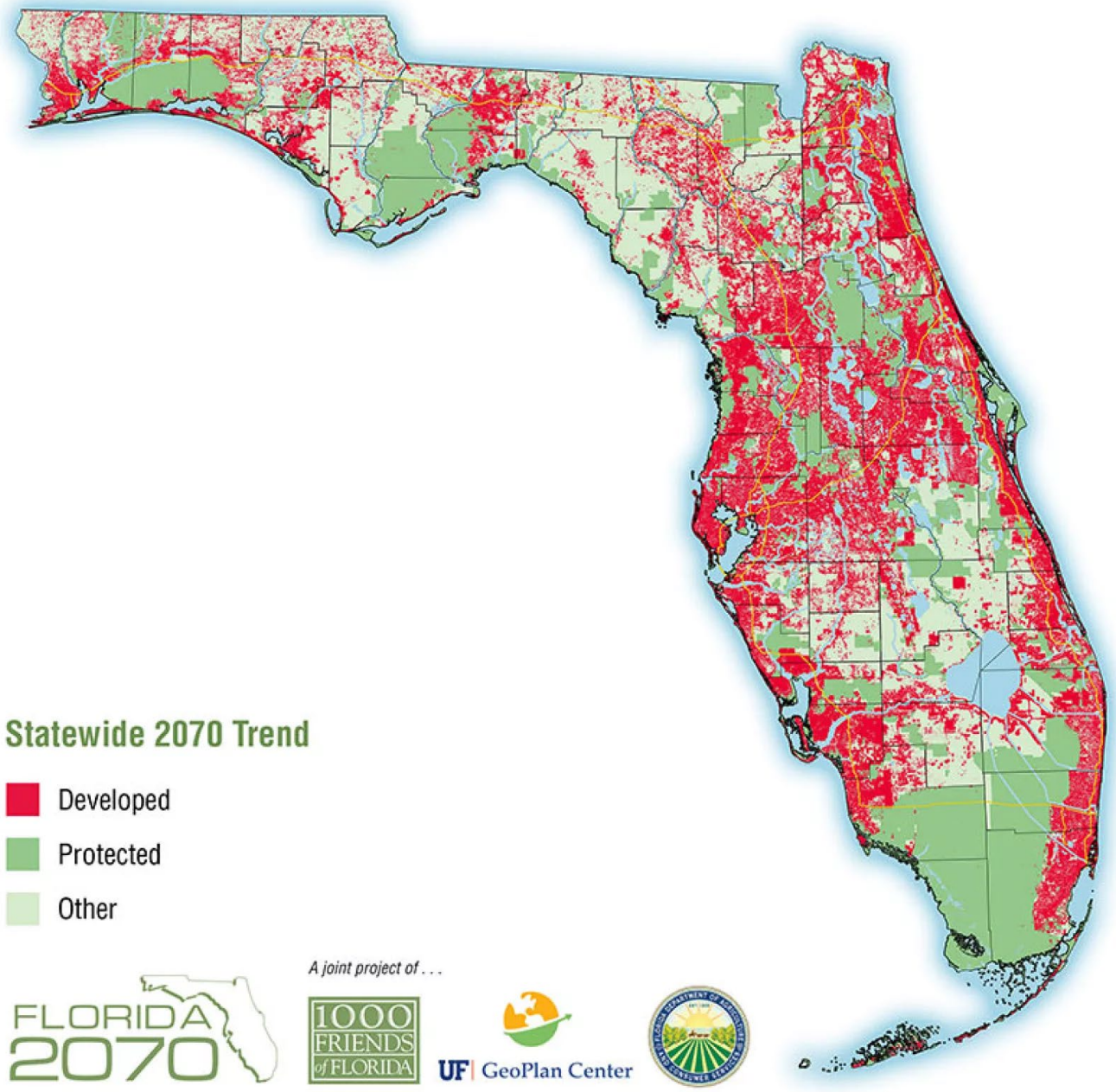
FFL was created to protect our state's greatest resource: Water

Water Matters

Environment

Economy

Health

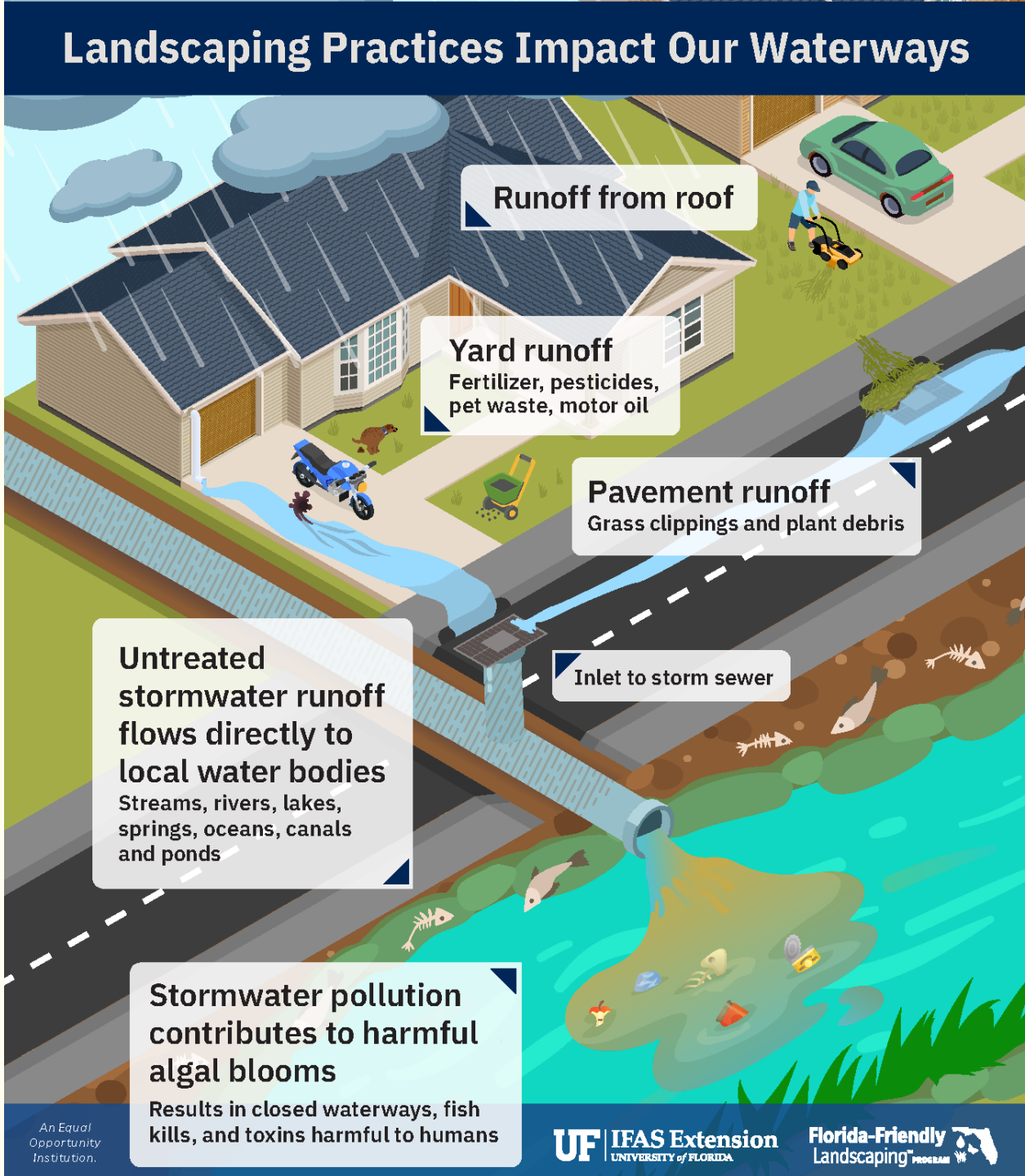


Water Matters for the Environment

- Projected 33 million people in Florida by 2070
- Puts pressure on our water resources

Landscaping Affects Water Quality and Quantity

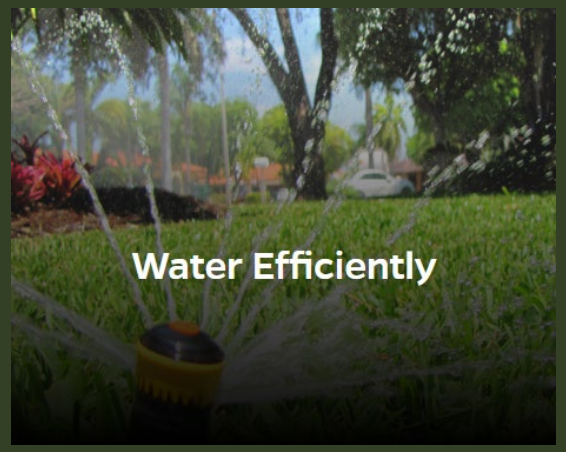
- Runoff from yards can carry fertilizer and pesticides into our waterways
- 60% of homeowner water use is for lawn and landscape irrigation

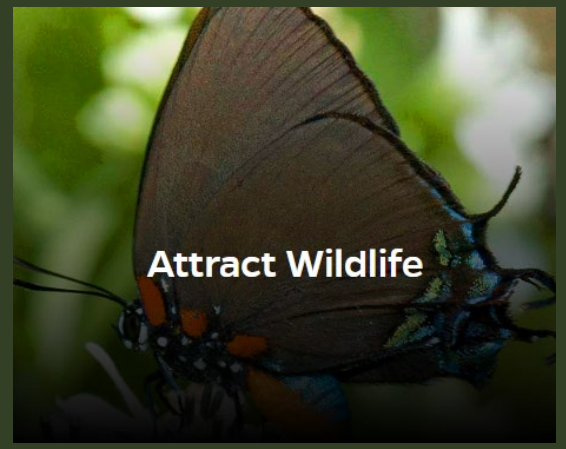


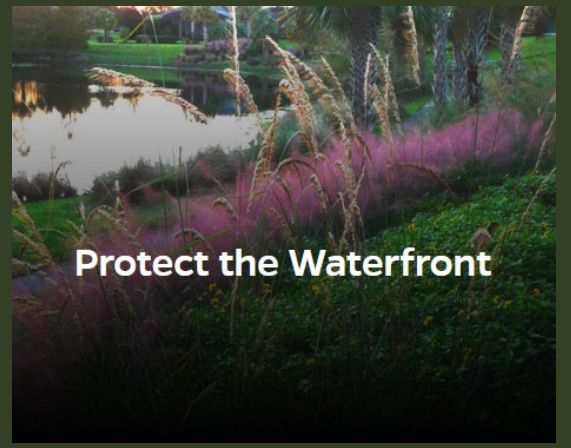
Your Yard Can Make a Difference!

9

Principles of Florida-Friendly Landscaping™



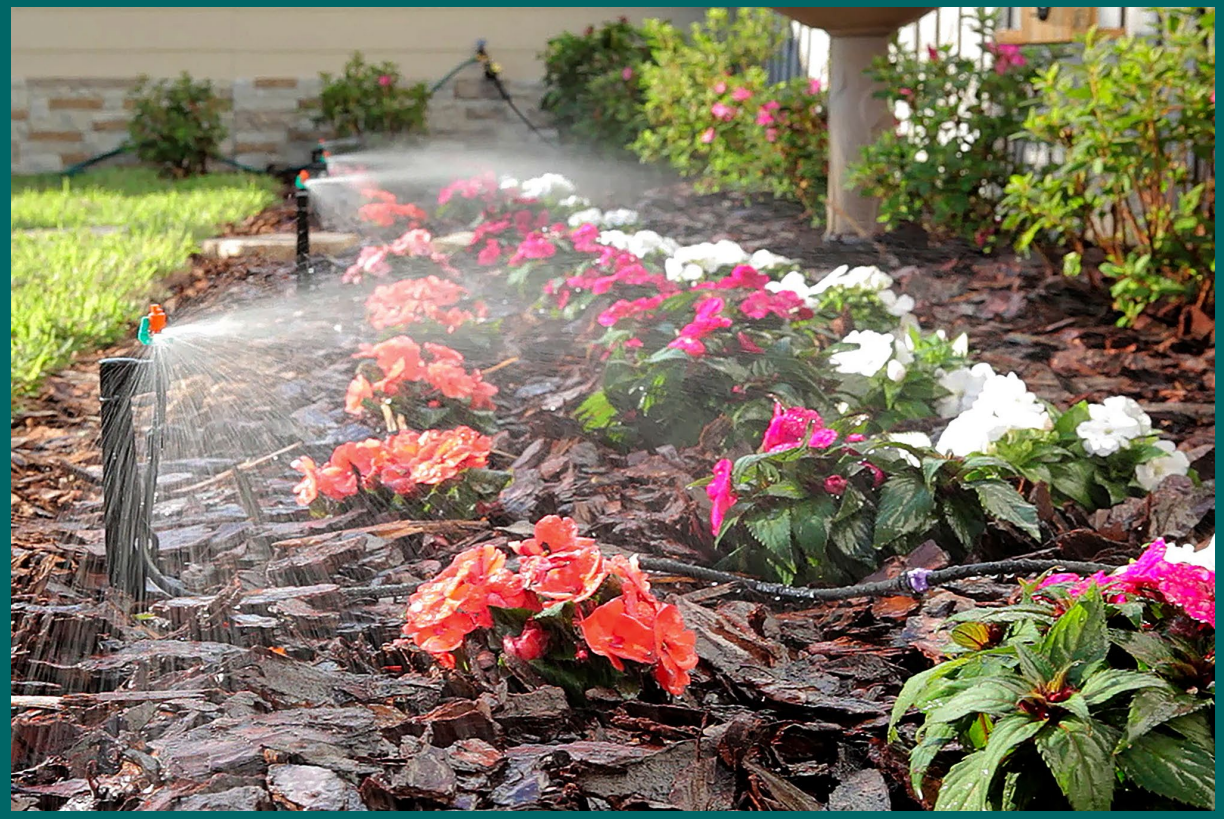




What is Micro Irrigation?

- Micro irrigation is a low-pressure system
- Cost-effective irrigation alternative
- Reduces hand watering
- Saves time and money (can be automated)
- Puts water exactly where the plant needs it
- Reduces the occurrence and severity of pests and disease

Perfect for Planting Beds




A Guide to
Microirrigation for
West-Central Florida
Landscapes
How to save water through proper planning,
operation and maintenance.

UF IFAS Extension
UNIVERSITY of FLORIDA

AE524
https://doi.org/10.32473/edis-ae524-2017

Microirrigation or Drip Irrigation for Home Landscapes[1]

Anne Yasalonis, Michael Dukes, and Bernard L. Cardenas-Laihacar[2]

Microirrigation, also known as drip irrigation or low-volume irrigation, is an efficient and effective irrigation method that delivers water directly to the root zone of plants. Microirrigation systems can be customized to accommodate different plant types, soil conditions, and landscape layouts, making them ideal for home gardens, flower beds, shrubs, and vegetable plots. This Ask IFAS publication is intended for homeowners, Extension agents, master gardeners, and the general public. The objective is to provide basic information about microirrigation systems when used in home landscapes.

What is microirrigation?

Microirrigation is a way to apply water precisely to the base of plants through a network of tubing, emitters, and other components, using low pressure and low flowrates (usually 15 psi or less and 60 gph or less). Unlike traditional sprinkler systems that spray water over a large area, microirrigation targets the root zone, ensuring that plants receive the right amount of water. Microirrigation systems can be easy to install above, on, or below the soil or mulch in landscape beds and are relatively inexpensive to purchase.

Types of Microirrigation System Emitters

Microirrigation systems use different types of emitters to deliver water. The most common types include the following:

Drip Emitters

Drip emitters are used for plants that are spaced far apart, such as containerized plants or hanging baskets. Emitters can be installed directly into the main tubing line or attached to the "spaghetti" tubing and can be placed directly at the base of the plants (Figure 1). If plant spacing is not uniform, the latter method may work the best. Typical flow rates range from 0.5 to 2 gallons per hour.

Figure 1. Drip emitter.
Credit: Anne Yasalonis, UF/IFAS

Bubblers

Bubblers are often used to establish and maintain large plants such as trees, but they can also be used in containers or on large shrubs (Figure 2). Bubblers can be installed directly into the main tubing line or on short stakes. Bubblers are available in adjustable or fixed flow rates and typically have the highest flow rate of all the microirrigation emitters.

Figure 2. Microbubbler.
Credit: Anne Yasalonis, UF/IFAS

Examples:

- Drip line/tape
- Button drippers
- Micro sprinklers

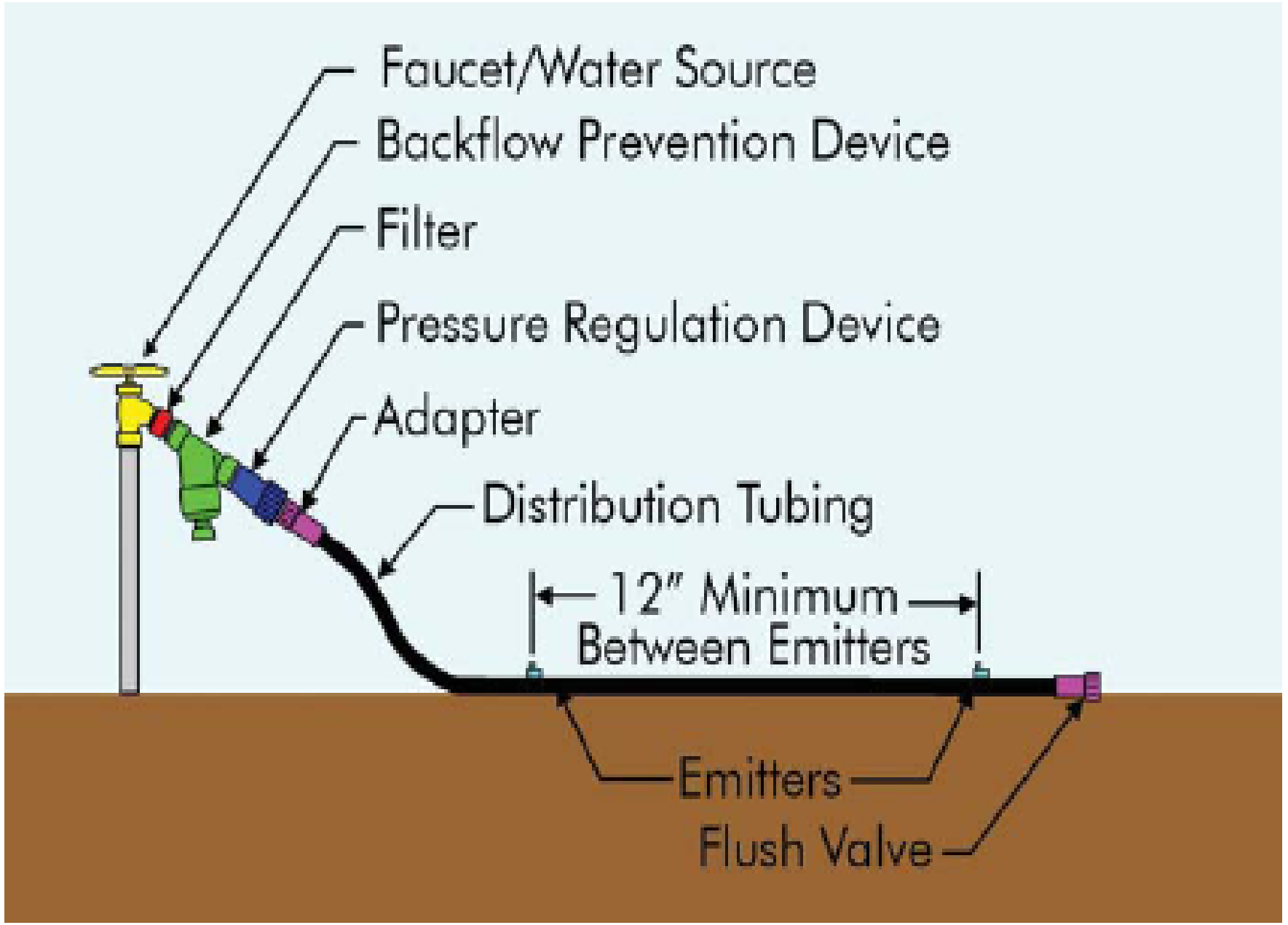
Micro vs. Traditional

- More precise-potted plants, hanging baskets
- Applies water next to plant, reducing chance of fungal leaf spots
- Max. flow of 30 gallons/ hour or 0.5 gallons/minute
- Easy to install and change if necessary

- Covers a large area
- Applies water to foliage
- Sprays and rotors apply around 3 gallons/minute

Water Sources and Pressure

- Well
- Reclaimed
- Municipal (Potable)
- Stormwater
- 15-30 psi for micro



A. Gray, Tampa Bay Water

Hose-End System Components

Irrigation Controllers

Single-Valve Controller

Spigot-Mounted Controller

Multiple-Valve Controller

Timer Parts and Pieces

- 4 Zone timer
- Pressure regulator
- Inline filter
- ½” mainline to filter/spigot connector


WATER DAY
START WATER
SET CLOCK
HOW LONG
OFF
AUTO
OK
Filter
Pressure regulator
½” Fitting from filter assembly to ½” mainline

Micro Components

- **Backflow Preventer**
- Must need component
- Prevents contamination
- Installed after the point of connection
- Required on all systems attached to a public drinking water system

Micro-Irrigation Filters

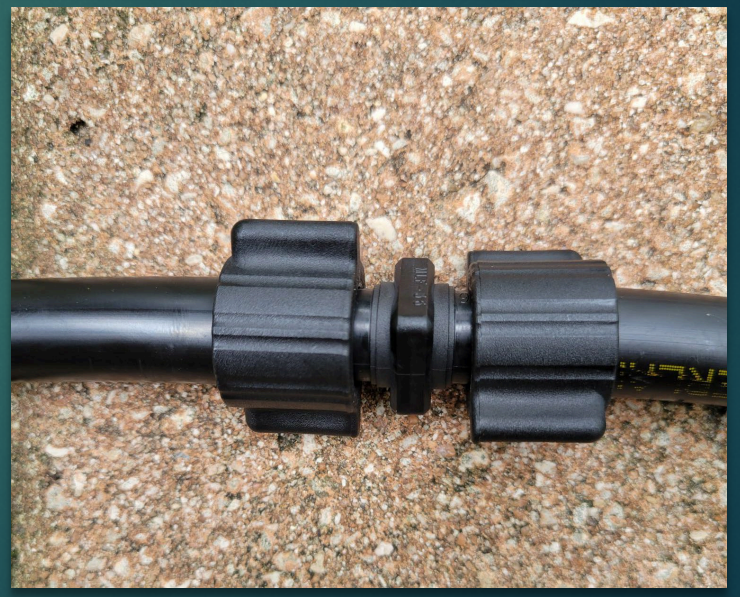
- Removes particles
- Prevents clogging
- Should be selected based on flow
- Higher mesh number=smaller particles captured

Pressure Regulation Device

- Reduces water pressure from standard system retro-fits
- Prevents pipe and emitter rupture
- Located after the filter

½” Poly Fittings

- Used for
  - Mainline connections
  - Mainline repairs
  - Connect to spigots & timers



½” Mainline

- This is ½ inch poly mainline
- All ¼ inch accessories connect to this line
- Main line starts at the spigot & terminates using a tubing end clamp

Flush Valves

- Flushed the system of algae and debris and mineral deposits

In-Line Tubing Placement

¼” Fittings

- Punch tool
- Mainline
- Quick disconnect fitting in purple
- “Goof Plugs” available

Connection of ¼ inch Quick Disconnect Fitting to Mainline


MISTER LANDSCAPER

Drip line

- ½ “ & ¼” In-Line Drip tubing
  - Low pressure 15 psi
  - Comes in rolls
  - Emitters come in different spacings and GPH (gallons per hour)
  - Customizable and adjustable

Drip Emitters

- Button drippers ¼” couplings
- Good for potted plants and raised bed gardens

Drip Emitters

- Water is directly applied to the ground
- Uniform flow rate
- Can attached directly to the hose
- Pots and hanging baskets

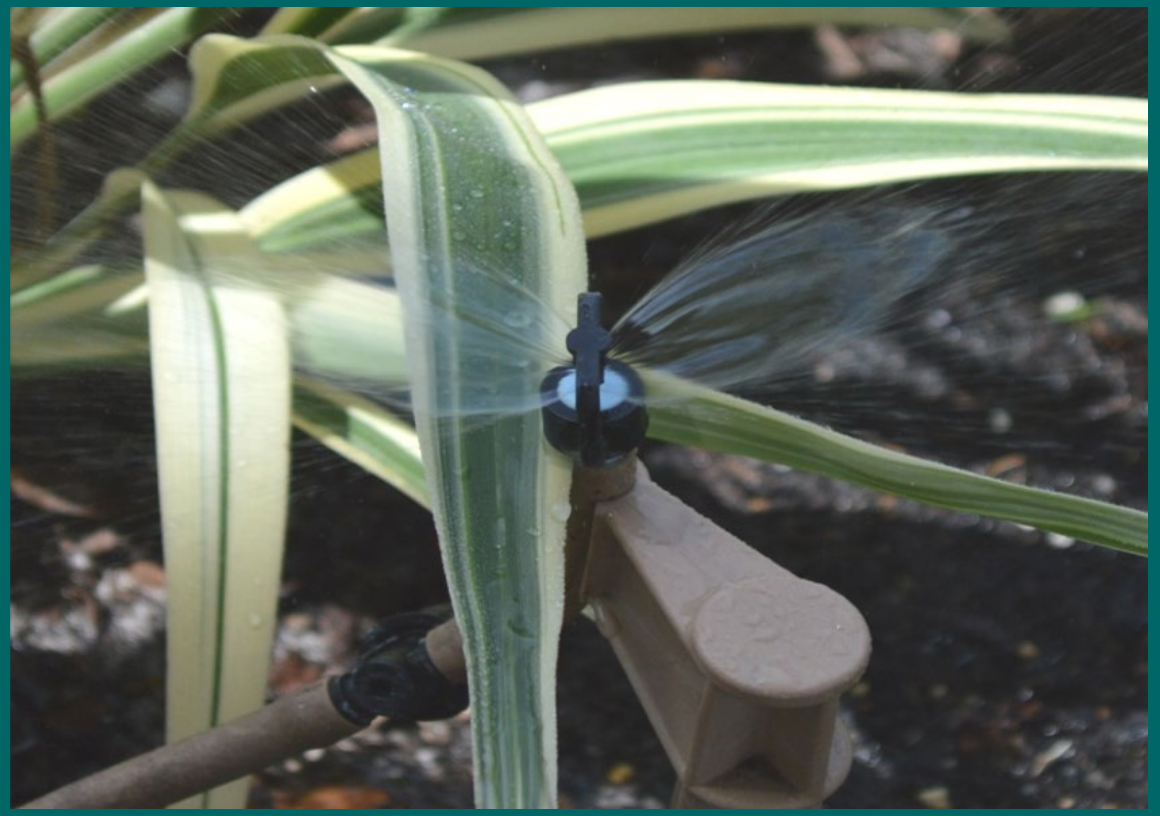
Landscape Stake Assembly

- Swap-top spray head
- Covers different angles/throw patterns
- Different coverage radius
- Most used for small to medium sized landscape plants & flower beds

Micro-spray heads

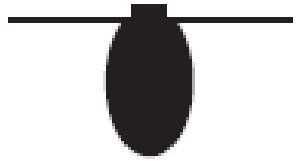
- Use when a larger volume of water is needed.
  - Trees, planted landscapes, and greenhouses ¼” couplings
  - Can be screwed directly into ½” poly

- Large grouping of plants with same watering needs
- Groundcovers
- Many spray patterns
- 90°, 180°, 360°
- Easily moved



Hose & Micro-Tubing Placement

Soil Type and Emitter Considerations

Soil Type and Texture	Wetting Pattern	Drip Emitter Spacing
Sand/Coarse		12" x 12"
Loam/Medium		18" x 18"
Clay/Fine		24" x 24"


Camelot

How long should I run my micro irrigation system?

- How long the system should be run is dependent on a few things:
  - Emitter GPH
  - Soil type
  - Crop type requirements
    - Sometimes landscape plants take more or less water than vegetable crops.
  - Local weather

Bubblers

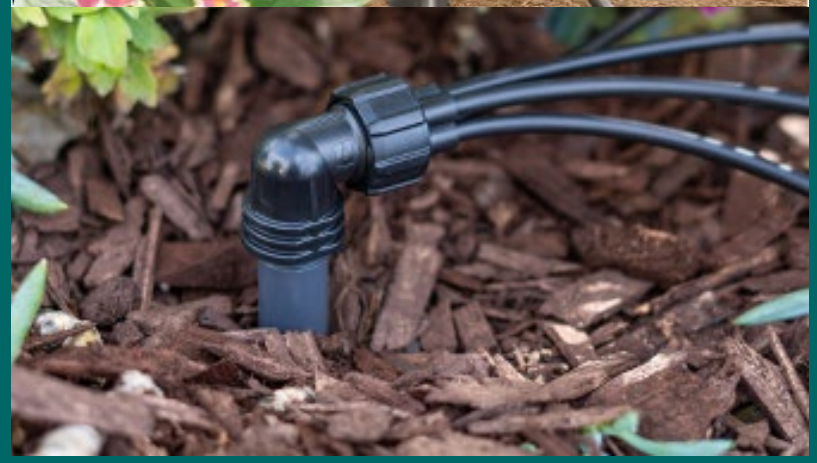
- Used for establishment of trees, palms and other plants
- On/off when needed
- Greater than 30 gph=***NOT*** micro-irrigation

- This is not micro-irrigation

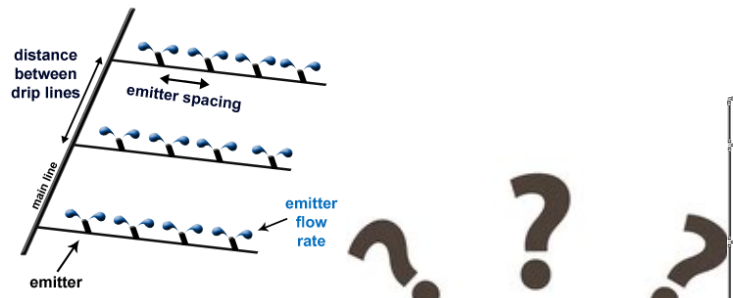
Maintenance

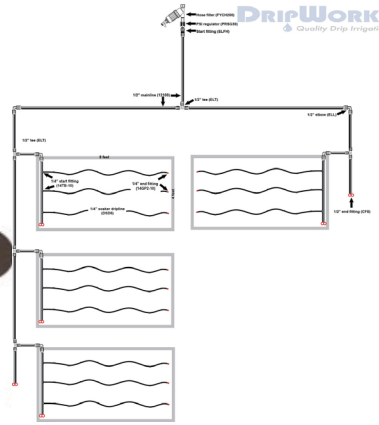
- Clogged heads
- Broken or split pipe
- Rabbits/Rats/Squirrels
- Check for leaks
- Flush system every two months
- Use same replacement parts

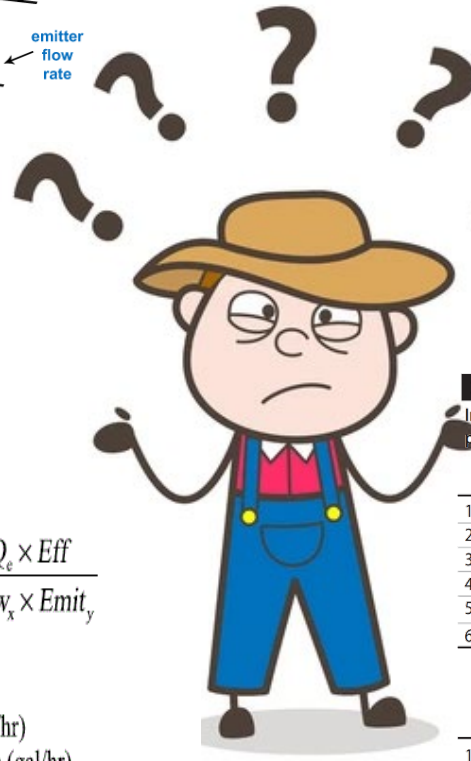
Retrofitting



Helpful Design/Layout Tips







$$PR = 231\frac{Q_e \times Eff}{Row_x \times Emit_y}$$

where:
PR = Precipitation rate (in/hr)
Q_e = Drip emitter flow rate (gal/hr)
Eff = Irrigation efficiency (decimal) (use 0.95 for drip)
Row_x = Distance between drip rows (lines) (in)

XFD Dripline Maximum Lateral Length (Feet)

Inlet Pressure psi	Maximum Lateral Length (feet) 12" Spacing Nominal Flow (GPH): 0.4	0.6	0.9
15	352	273	155
20	399	318	169
30	447	360	230
40	488	395	255
50	505	417	285
60	573	460	290

	18" Spacing Nominal Flow (GPH): 0.4	0.6	0.9
15	374	314	250
20	417	353	294
30	481	413	350
40	530	465	402
50	610	528	420
60	734	596	455

- ½” pipe max 250 ft.
- No more than 5 ft. ¼” micro-tubing
- Keep emitters at least 12” away from house
- Move emitters away as plant matures

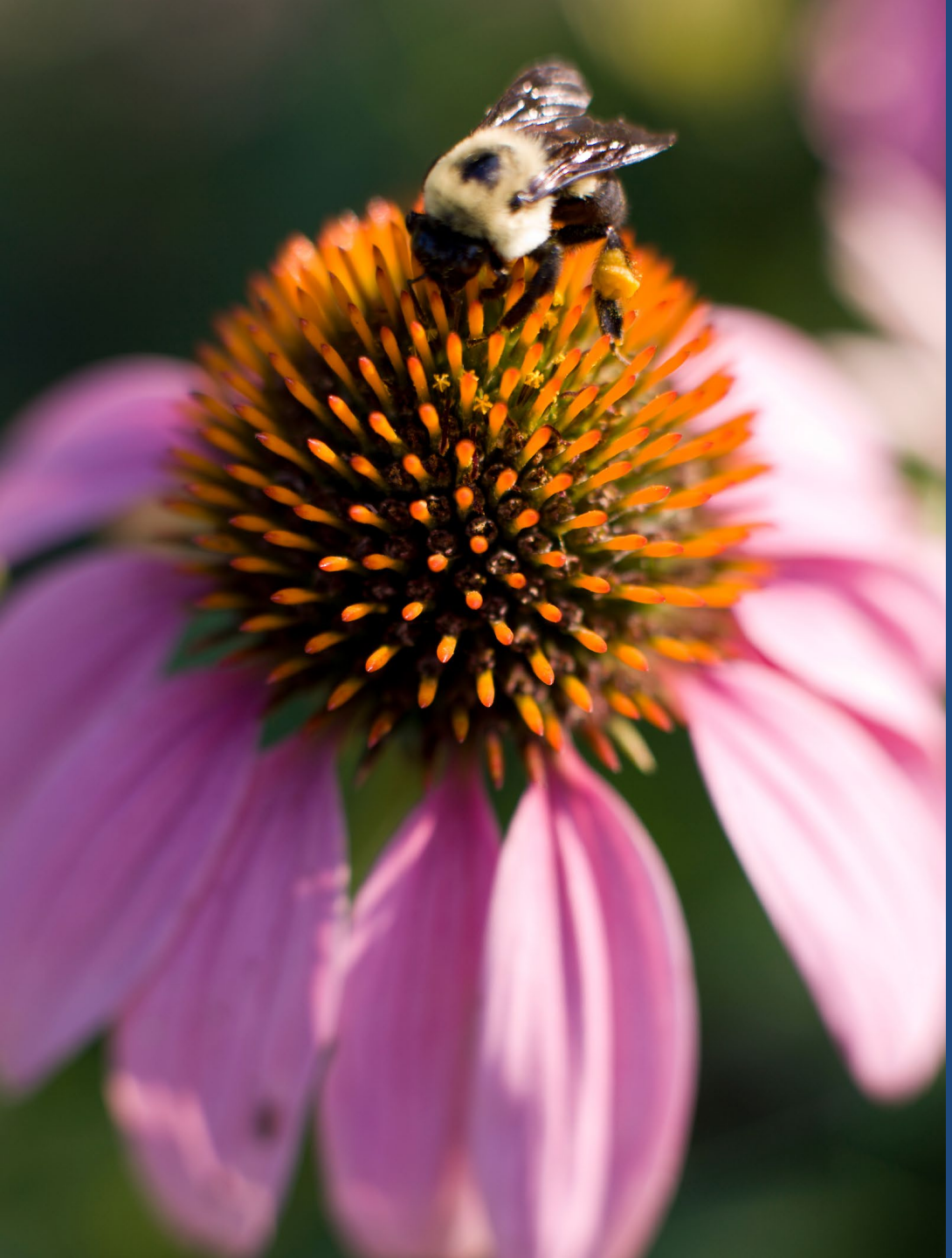
FFL Resources

https://ffl.ifas.ufl.edu/resources/

FFL Website

https://ffl.ifas.ufl.edu


Questions?



Contact Info

Kate Kaste

352-518-0156

kkaste@pascocountyfl.net

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