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How Do Home Irrigation Users Perceive Their Impact on Water Quality and Quantity — *and Can Videos Appeal to These Perceptions?*

FOR THE #GATORGOOD

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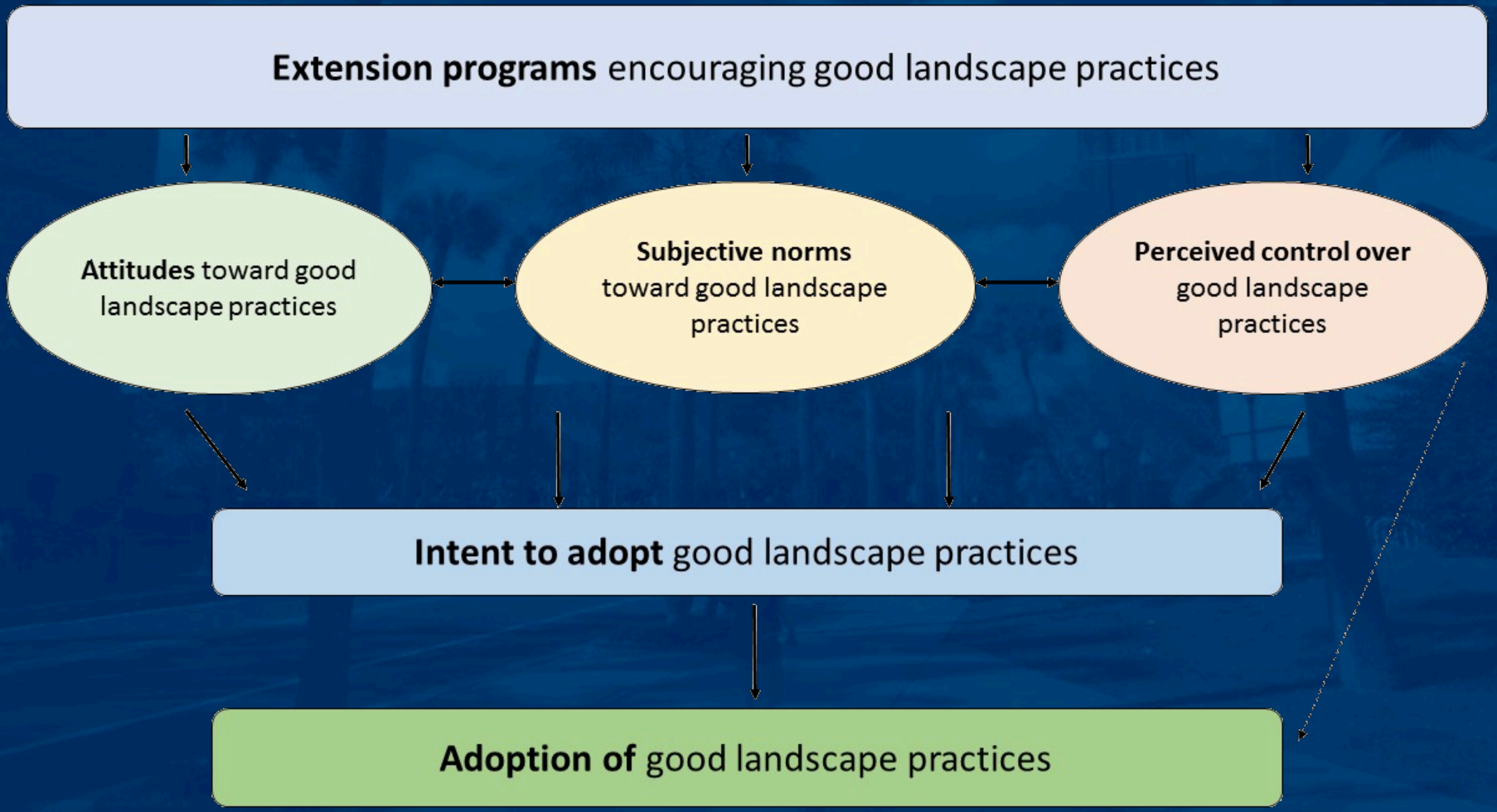
Home irrigation users

- Conservation: important source of additional water
- Home irrigation one of the largest fresh water uses
- UF/IFAS Extension promotes landscape water conservation practices/ technologies
- Floridians who use landscape irrigation an important target audience for water conservation programs

Getting people to take action!!

- Social marketing an underused approach to behavior change
  - The application of **commercial marketing techniques** +
  - To influence a **key target audience** +
  - To voluntarily **change a behavior** =
  - For the good of society, the audience, and the environment

Changing water protection behaviors



Changing water protection behaviors past work

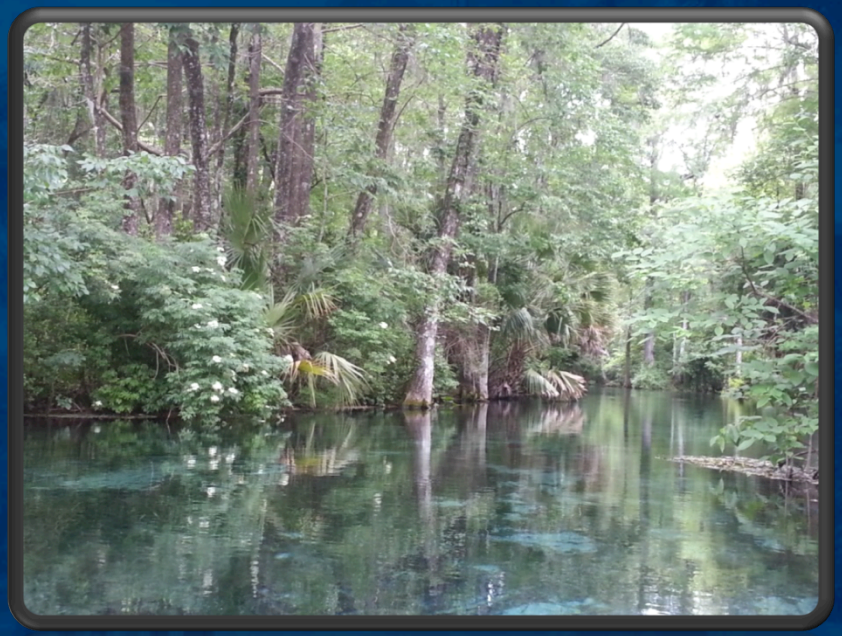
- Confirmed application of the TPB to water conservation among this audience
- Found strategic messages influence attitude and perceived behavioral control over irrigation water conservation (Gain Personal and Gain Social improved perceived control and attitude)

Changing water protection behaviors past work

- Water Considerate Majority (*n* = 479, 45%)
- Water Savvy Conservationists (*n* = 378, 36%),
- Unconcerned Water Users *Users* (*n* = 201, 19%)

Research questions

1. Do home irrigation users perceive their personal impact on water quality and quantity differently?
2. Can videos play a role in changing irrigation and fertilization behaviors?

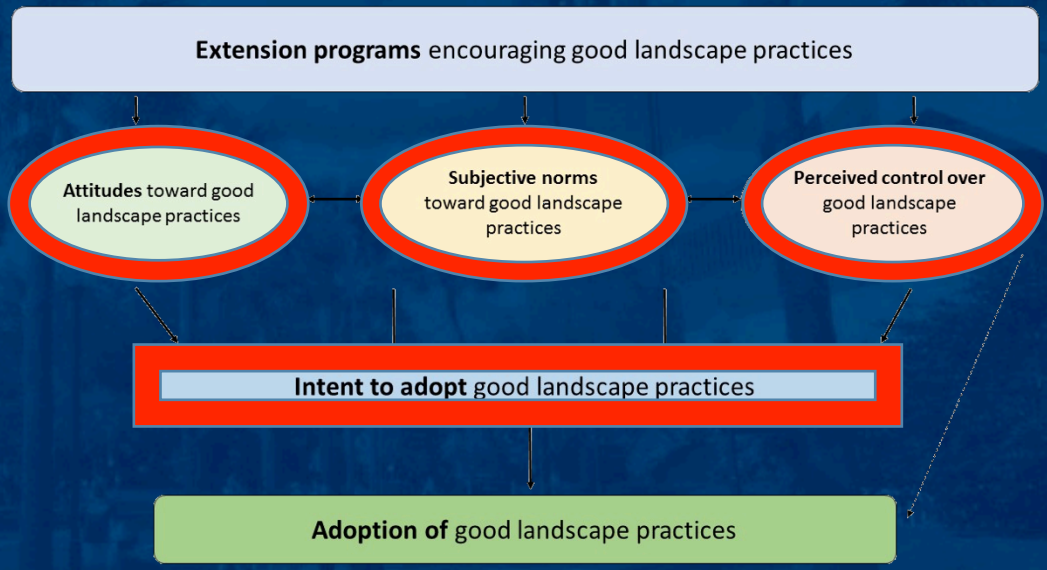


Methods

- Web survey: Floridians who use and have decision-making power over irrigation in home landscape (*N* = 2,100)

Do home irrigation users perceive their personal impact on water quality and quantity differently? - Methods

- Attitude, perceived control, norms (indexes on 5-point scales):
  - water conservation practices
  - water quality protection practices
- Behavioral intent for water conservation and quality (individual behaviors and indexes)



Do home irrigation users perceive their personal impact on water quality and quantity differently? - Findings

Paired sample t-test results of water quantity and water quality constructs (N = 2,100)

	Water quantity		Water quality		Mean difference		
	M	SD	M	SD	(WQN-WQL)	t	Cohen's d
Attitude	**4.72**	0.50	4.69	0.55	0.034	4.088**	0.065
Subjective norm	**4.09**	0.73	4.06	0.75	0.034	3.407**	0.046
Perceived behavioral control	**4.52**	0.62	4.49	0.71	0.034	2.961*	0.051

Do home irrigation users perceive their personal impact on water quality and quantity differently? - Findings

Descriptive results of water quantity behavioral intent (N = 2,100)

Behavior	Very unlikely or unlikely %	Undecided %	Likely or very likely %
Only water your lawn in the morning or evening	4.5	4.9	**91.7**
Follow watering restrictions	2.0	4.0	**87.8**
Seasonally adjust irrigation times	4.6	6.6	**84.3**
Calibrate my sprinklers	7.7	12.3	**76.0**
Use different irrigation zones/ run times based on plants' irrigation needs	8.4	12.0	**75.7**
Replace high-water plants with drought-tolerant plants	11.4	16.9	67.1
Turn off zone(s) or cap irrigation heads for established plants	14.1	14.1	65.7
Use a rain gauge to monitor rain for reducing/skipping irrigation	13.3	17.1	65.3
Replace high-volume irrigated areas with low-volume irrigation			
Convert turfgrass areas to landscaped beds	10.9	19.3	64.9
Install smart irrigation controls (such as soil moisture sensors	20.5	24.4	51.0
(SMS) or an evapotranspiration device (ET)) so irrigation will not turn on when it is not needed	20.0	24.1	49.2
Eliminate irrigated areas in my landscape	25.4	25.1	47.0
Use a rain barrel or cistern	31.0	18.4	45.9

Do home irrigation users perceive their personal impact on water quality and quantity differently? - Findings

Descriptive results of water quality behavioral intent (N = 2,100)

Behavior	Very unlikely or unlikely %	Undecided %	Likely or very likely %
Read label on the fertilizer bag to make sure I apply the right amount	4.0	4.9	**85.0**
Water-in fertilizer, just after its application to move the fertilizer off the leaves and into the soil for uptake by plant roots	4.1	9.0	**82.0**
Sweep any fertilizer spilled on paved surfaces (e.g. driveway or sidewalks), and put it back into a fertilizer bag or apply to lawn/ landscape	6.5	7.1	**79.3**
Select slow-releasing nitrogen products	6.0	17.6	68.3
Apply fertilizers based on soil test results	18.2	15.0	59.4
Test soil to determine what nutrients are needed before I fertilize	19.7	16.9	56.4
Apply fertilizer to lawn before a heavy rain*	23.9	14.6	55.0
Ask landscaping professional about their training in fertilizer application	16.7	11.6	52.3
Ask landscape professionals if they have Green Industries Best Management Practices (GIBMP) certification to apply fertilizer	14.1	15.5	49.6
Blow the grass clippings into street/storm drains*	53.9	10.7	28.1

Do home irrigation users perceive their personal impact on water quality and quantity differently? - Conclusions

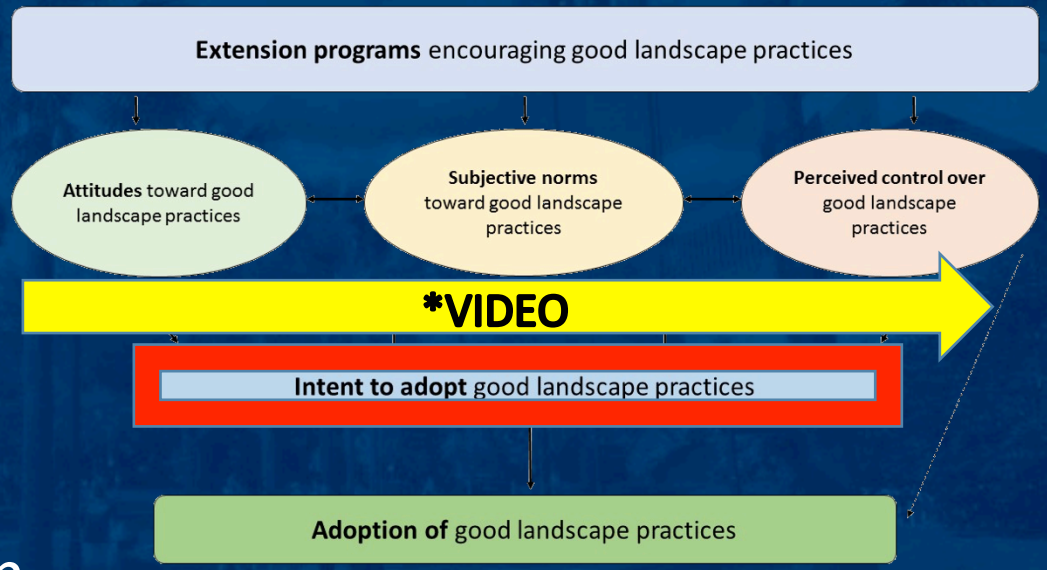
- Overall, high engagement in protecting water resources
- More positive attitudes toward, social support surrounding, and perceived ability to adopt practices that conserve water
- Unclear if this translates to more action
- Opportunity to correct the disconnect between personal impact on water quality and quantity

Do home irrigation users perceive their personal impact on water quality and quantity differently? – How to use this information

- When providing education use material that explains the negative effect non-point-source pollution on the environment
- Create accountability groups among clientele / workshop attendees to help them reduce water use as a community
- Contact clientele personally as a follow up to encourage adoption of water resource protection practices
  - Might use Master Gardeners to assist with this process

Can videos play a role in changing irrigation and fertilization behaviors? - Methods

- Random assignment to control or one of four treatment groups (Fertilizer / water quality; Irrigation / water quantity) (Gain and loss frames)
- Compared intent to engage (good irrigation practices; good fertilizer practices) after viewing the video



Fertilizer Video 1

https://www.youtube.com/watch?v=XixIYkj9ct0

Fertilizer Video 2

https://www.youtube.com/watch?v=JHH_rgyvV4o

2. Can videos play a role in changing irrigation and fertilization behaviors? - findings

Overall, intent is high, regardless of video treatment.

Intent to adopt good irrigation practices: 4.62

Intent to adopt good fertilization practices: 4.54

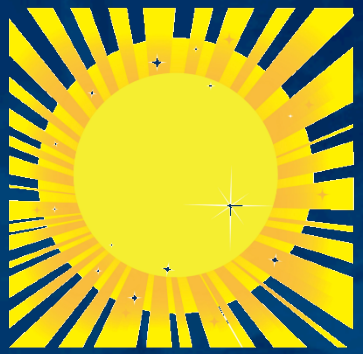
Can videos play a role in changing irrigation and fertilization behaviors? - Findings

	Irrigation use gain frame (n = 420) f	Irrigation use loss frame (n = 420) f	Control (n = 420) f	Chi Square χ^2
Use irrigation only when needed				
Very unlikely	3	0	1	19.24
Unlikely	1	3	1	
Undecided	10	5	23	
Likely	93	94	92	
Very likely	306	312	295	
Prevent irrigation when it is raining				
Very unlikely	3	2	3	8.62
Unlikely	6	4	2	
Undecided	22	17	27	
Likely	64	87	81	
Very likely	320	309	304	
Conserve water by reducing irrigation				
Very unlikely	3	1	2	7.90
Unlikely	4	5	6	
Undecided	25	29	30	
Likely	161	128	141	
Very likely	223	255	239	
Follow good irrigation practices				
Very unlikely	2	0	1	5.60
Unlikely	1	1	1	
Undecided	11	12	17	
Likely	112	120	128	
Very likely	290	287	268	

2. Can videos play a role in changing irrigation and fertilization behaviors? - findings

	Fertilizer use gain frame (n = 420) f	Fertilizer use loss frame (n = 420) f	Control (n = 420) f	Chi Square χ^2	Cramer's V
Reduce the application of fertilizers to lawn/landscape*					
Very unlikely	4	5	2	17.29	0.08
Unlikely	15	2	7		
Undecided	43	36	54		
Likely	134	138	127		
Very likely	201	223	211		
Engage in good lawn/landscape fertilization practices					
Very unlikely	1	0	2	13.74	
Unlikely	5	1	4		
Undecided	14	14	18		
Likely	136	108	136		
Very likely	240	283	243		
Apply fertilizers carefully to reduce their runoff into the ground					
Very unlikely	6	1	1	12.22	
Unlikely	2	2	1		
Undecided	16	18	27		
Likely	108	100	116		
Very likely	264	280	257		
Prevent spilling fertilizers on paved surfaces					
Very unlikely	3	3	0	9.36	
Unlikely	3	2	3		
Undecided	14	15	21		
Likely	87	81	102		
Very likely	281	301	267		

Can videos play a role in changing irrigation and fertilization behaviors? - Conclusions



- Issues fatigue!
- Environmental messages don't really resonate
- There may be a change when the message is extreme
- Need to talk about water protection differently
  - If appealing to environmental values, the message needs to be carefully designed to grab attention
  - We may work on water for environmental reasons, but this audience responds to social/personal appeals

Can videos play a role in changing irrigation and fertilization behaviors? – How to use this information

- “One-size fits-all” video approaches don’t translate in to action
- Videos should relate to clientele on a personal level
- When constructing videos relate them to local issues so they resonate with clientele
- Extension Agents and Specialists should work together to develop a video script / template that can be adapted to fit local water protection needs

thank you!

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