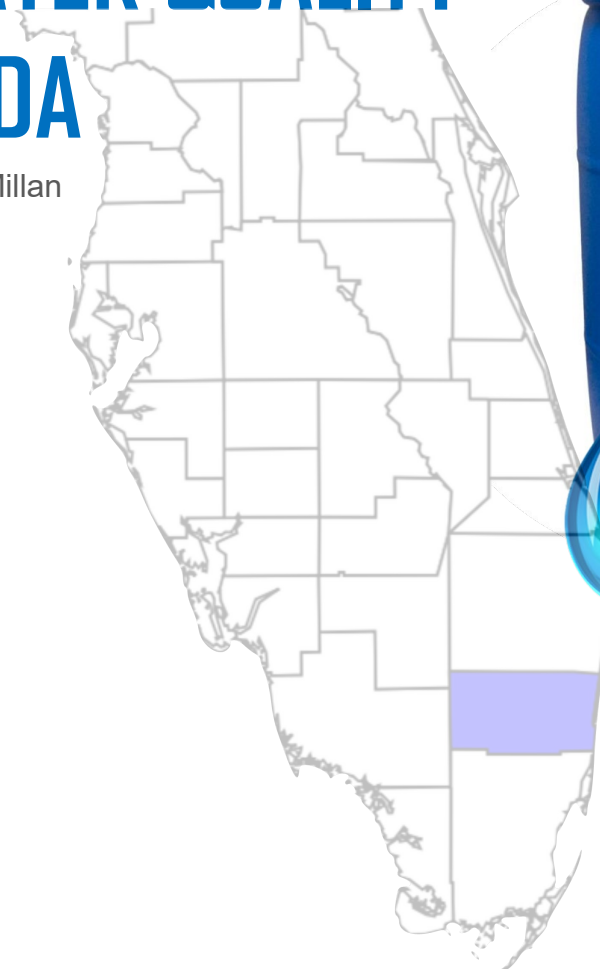
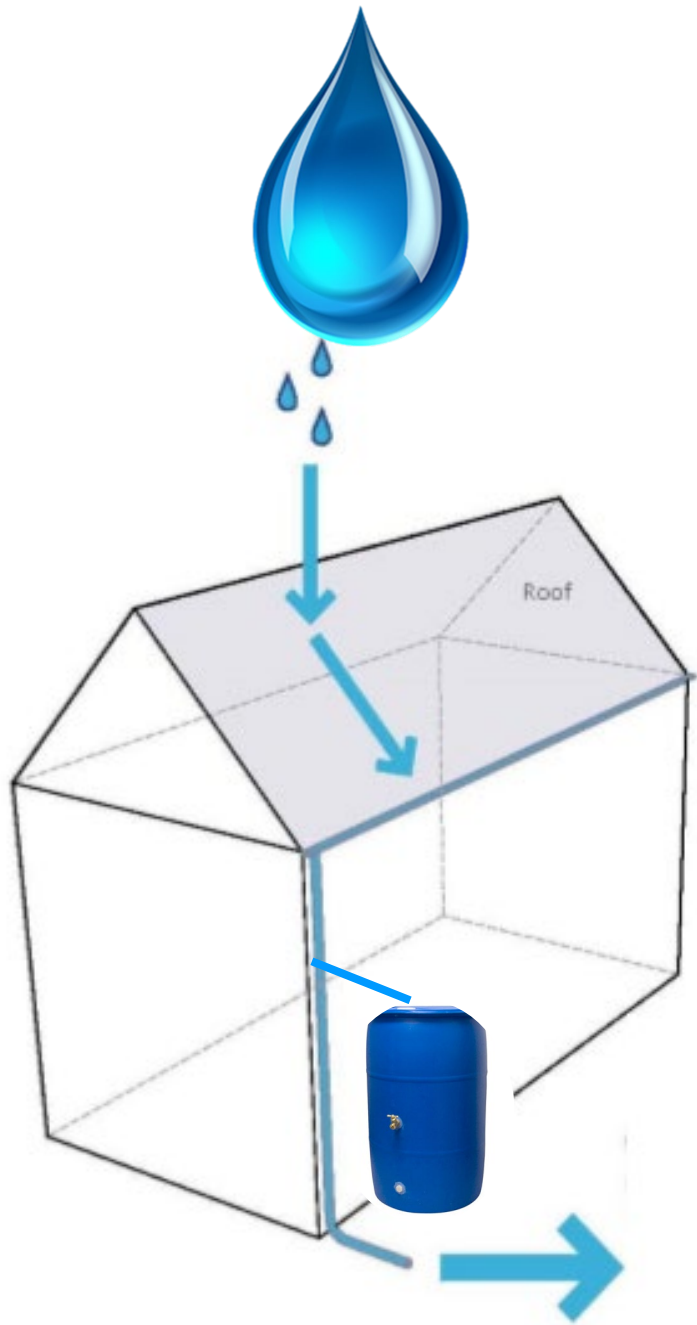


RAINBARREL WATER QUALITY IN SOUTH FLORIDA

Team: Dr. Kimberly Moore, Dr. Mica McMillan
Presenter: Lorna Bravo



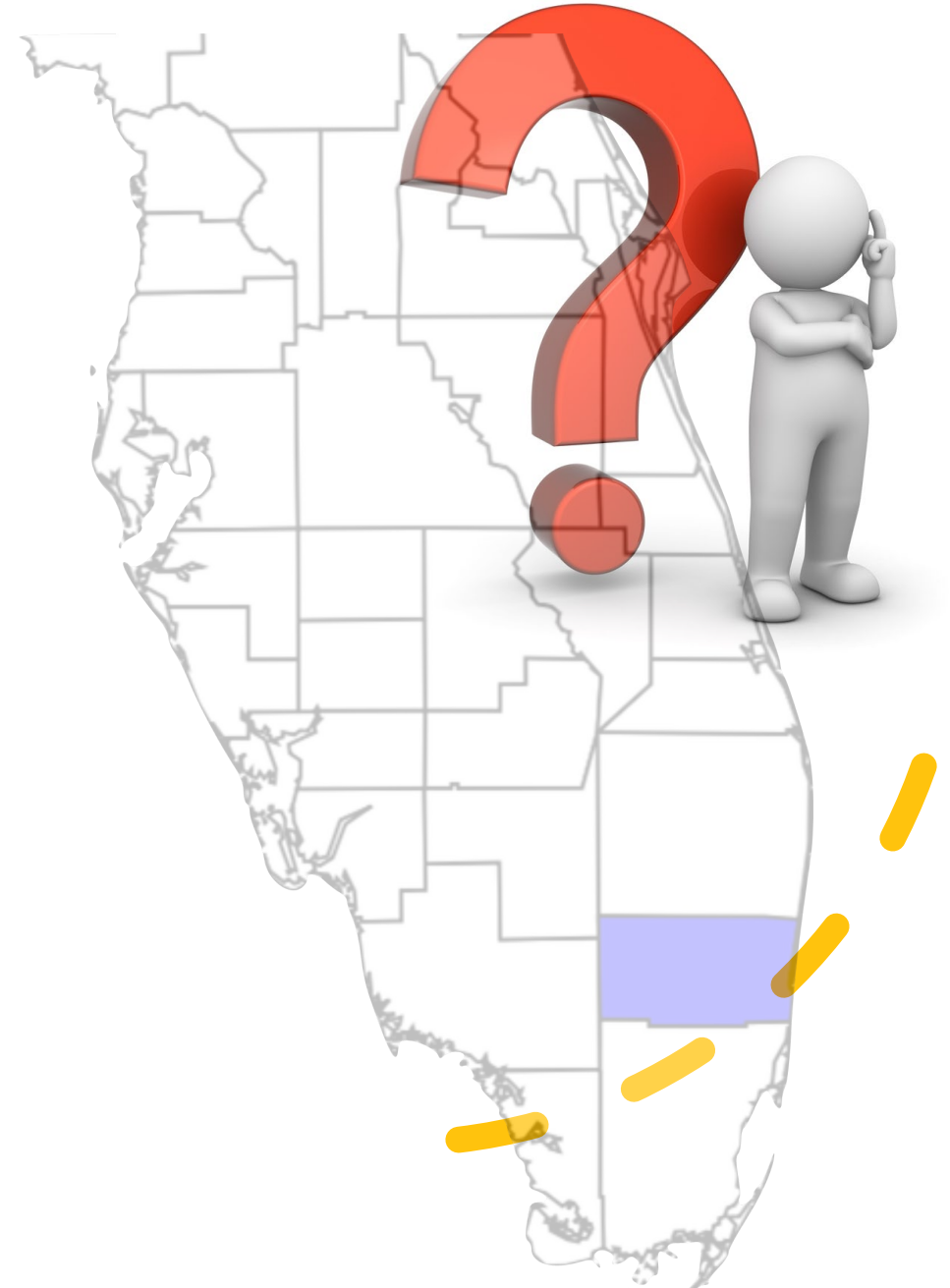
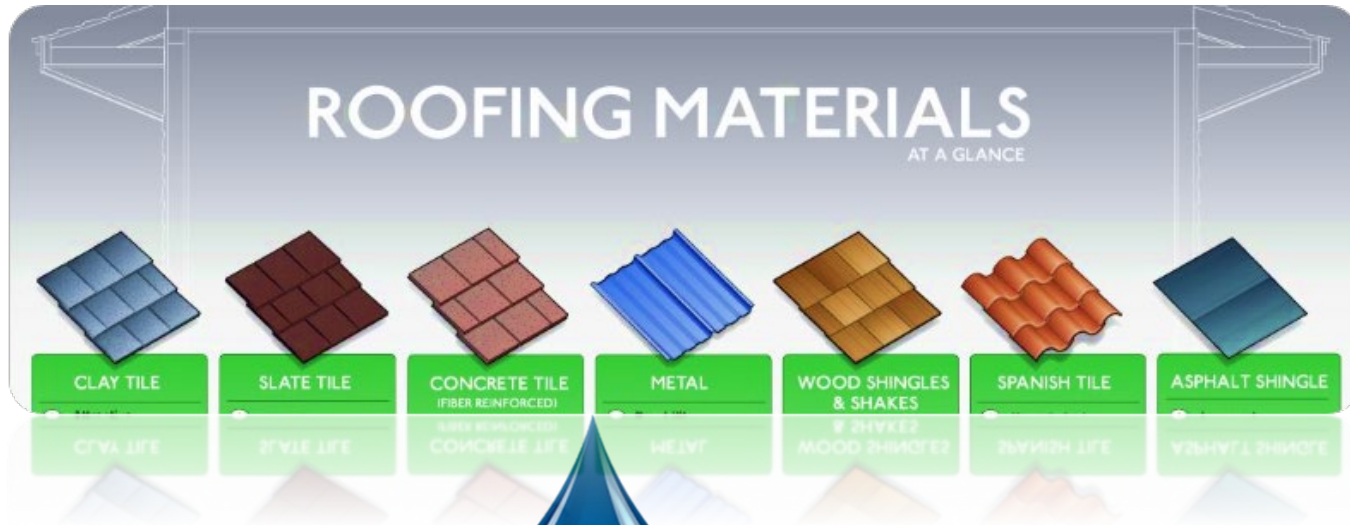
HOW CAN RAIN BARRELS HELP?



- Rain barrels help conserve water, save money, and promote a sustainable landscape.
- By collecting rainwater, we reduce runoff from our properties into the environment.

CHALLENGE

It can be challenging to get people to adopt rain barrels due to concerns of water quality from different roof types





OBJECTIVE

- ❑ This study evaluated water quality concerns from rain barrels in South Florida, aiming to help homeowners optimize the use of this water in urban landscapes.



METHODS

1

Rain barrel Water
Collection Data/IRB
approved Survey

Home age/type of roof/identify roof animals

2

Collected water
samples from 3
different roof types

Roof Temperatures tested @1pm

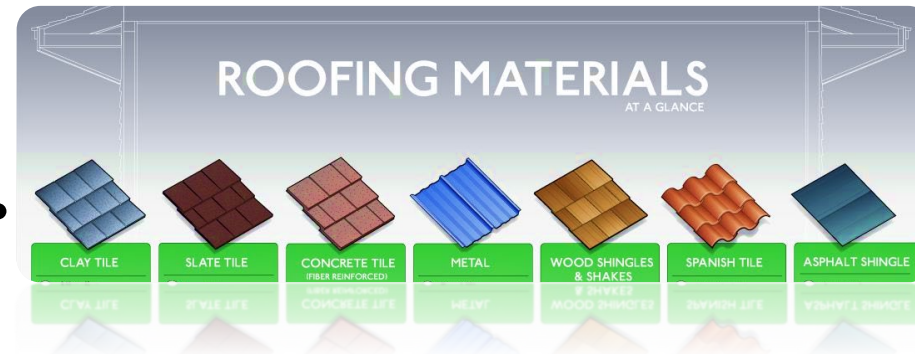
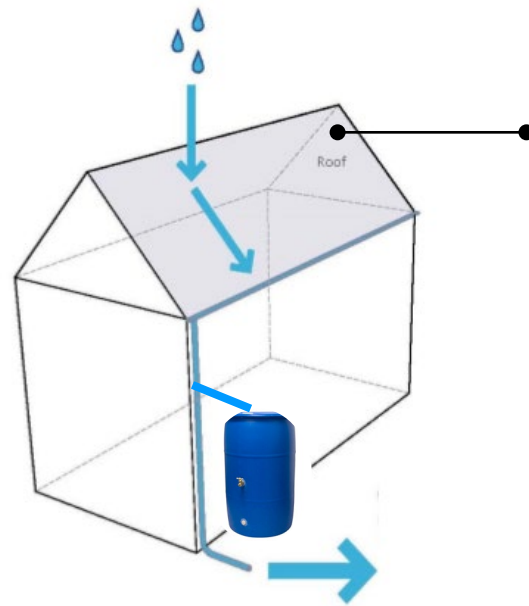
3

Analyzed pH, EC,
nutrient levels, *E.coli*
and coliform

Aqua Vial Well Water testing kit

METHODS-DATA COLLECTION

WE ARE ANALYZING WATER QUALITY FROM
YOUR RAIN BARREL



We sampled the water from 60 rain barrels in South Florida.



METHODS-DATA COLLECTION-MGVs

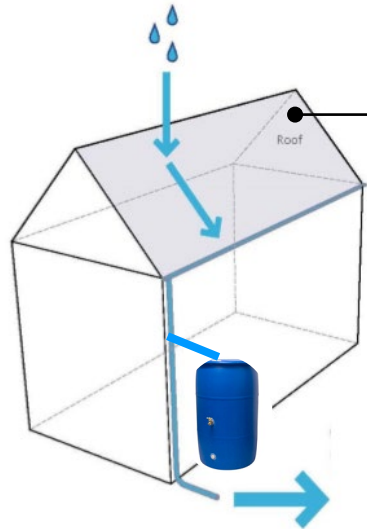
Reduce Stormwater Runoff

To protect waterways and replenish Florida's aquifer



- Connect a rain barrel to your downspouts to collect rainwater, and reduce runoff
- Use porous surfaces, such as pavers, and bricks for walkways, patios and driveways
- Aim downspouts toward porous surfaces so that water can soak into soil
- Rain gardens retain water and serve as an attractive feature within the landscape

UF IFAS Extension  Florida-Friendly Landscaping 



OUR ROLE IN PROTECTING OUR ENVIRONMENT



MGV CLASS 2020 RAINBARREL PROJECT

Florida-Friendly Landscaping  PROGRAM

A RAINBARREL WILL SAVE HOMEOWNERS ABOUT 1,300 GALLONS OF WATER DURING PEAK SUMMER MONTHS

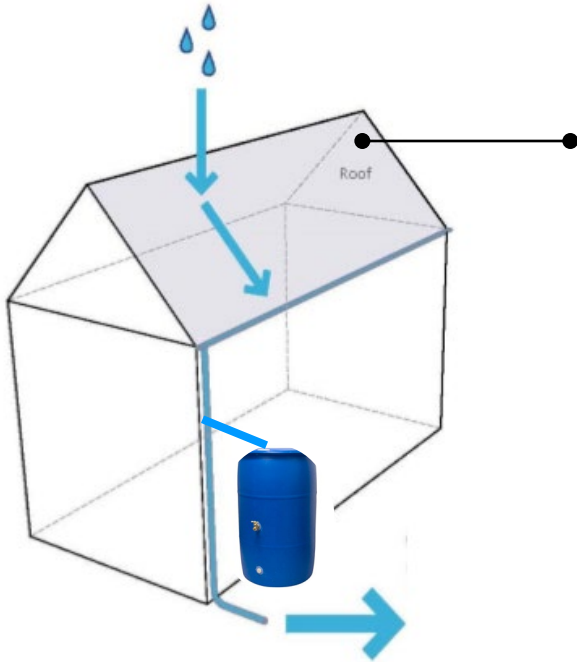


Photos by: UF/IFAS Extension Broward County Urban Horticulture Agent Lorna Bravo

METHODS-COLLECTING SAMPLES FROM DIFFERENT ROOF TYPES



METHODS-ANALYZED



SAMPLES WERE FILTERED & ANALYZED

- ✓ pH
- ✓ EC
- ✓ Nutrient Levels from all roof types
- ✓ E. coli & coliform

- ✓ Roof Temperatures (Tile, metal, shingles)
@1pm

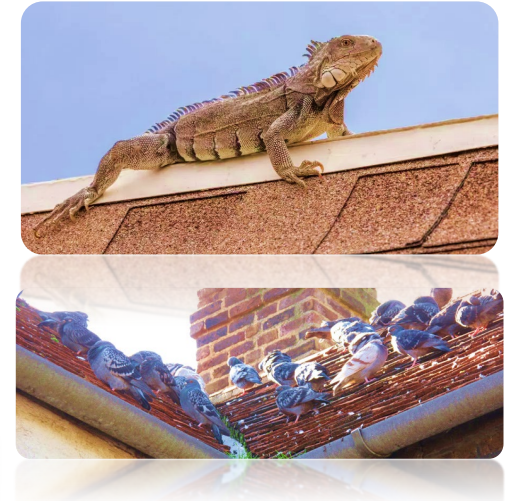




Table 1. Water Quality Analysis from rain barrel samples collected on 2022

Roof Type	Shingle	Tile	Metal	Standard ¹
pH	6.71a ²	6.82a	7.12a	5.4-7.0
EC (dS/m)	0.03a	0.04a	0.03a	0.2-0.5
Nitrate (mg/L)	7.22a	7.90a	6.02a	<5-10
Phosphate (mg/L)	0.19a	0.14a	0.16a	<1-5
Potassium (mg/L)	11.87a	12.03a	12.08a	<10-20
Calcium (mg/L)	4.44a	4.86a	3.49a	<60-120
Magnesium (mg/L)	0.06a	0.07a	0.05a	<5-24
Sulfur (mg/L)	2.59a	2.15a	2.39a	<30-45
Iron (mg/L)	0.002a	0.002a	0.005a	<1-5
Manganese (mg/L)	0.02a	0.01a	0.01a	<1-2
Copper (mg/L)	0a	0a	0a	<0.1-0.2
Zinc (mg/L)	0.04a	0.01a	0.05a	<2-5
Boron (mg/L)	0a	0a	0a	<0.3-0.5
Sodium (mg/L)	1.34a	1.48a	1.87a	<50-69
Aluminum (mg/L)	0.01a	0.02a	0.02a	<2-5
E. coli	negative	negative	negative	

Table 1.. Samples were sorted by roof type - shingle, tile, or metal.

Standards are based on the chart for plant growth in the chapter "Water Quality" of Ball Redbook (Whipker et al. 2003)-Guide only for plant growth not drinking water standards.

RESULTS

- Based on the water analysis, rain barrel was safe and suitable for non-potable uses. The water had no *E. coli* or harmful nutrients. There was no difference based on roof type.

RESULTS

- ❑ Roof temperatures ranged from 124 to 150 °F.
- ❑ Temperatures greater than 149 °F will kill bacteria in water.
- ❑ Soil temperatures between 130°F and 145°F effectively eliminate plant pathogenic bacteria and fungi.
- ❑ We suspect that the high solar radiation and temperatures in South Florida killed potential pathogens.



CONCLUSION

Our findings agree with the Southwest Florida Water Management district's guide: Rain Barrels water is safe for non-potable uses and occasional contact.

Standards are based on the chart for plant growth in the chapter "Water Quality" of Ball Redbook (Whipker et al. 2003)-Guide only for plant growth not drinking water standards.

Source: Watson, G., C. Claus, L. Barber, G. Beck, J. W. Marvin, and E. Momol. 2022. *Rain Barrels – A Homeowner's Guide*. Southwest Florida Water Management.

EDIS PUBLICATION



What can we help you with?

GO

RAIN BARREL WATER QUALITY IN SOUTH FLORIDA

Kimberly Moore, Mica McMillan, and Lorna Bravo

Rain barrels are a great way to conserve water, save money, and contribute to a sustainable landscape. By collecting rainwater, we also reduce the amount of water flowing off our properties into the surrounding environment. Because the average rainfall in Florida, based on weather data collected from 1991 to 2020 from the US National Centers for Environmental Information, ranges from 40 to 73 inches in a year, rain barrels are an excellent resource of water to use in our gardens and landscape.



Figure 1. Rain barrel installation collecting from gutters.
Credit: Kimberly Moore, UF/IFAS

Installing rain barrels is a relatively easy and affordable way to make your home more sustainable. (For more information, see EDIS publications EP424, EP374, and AE029.) It's a small step you can take towards reducing your environmental footprint and promoting a healthier planet. With so many benefits, installing a rain barrel system in your home is worth consideration. This publication is therefore intended for homeowners interested in rain barrel systems.



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PUBLICATION #ENH1376

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Rain Barrel Collection Data

All proceeds from UF/IFAS Extension, Broward County, Rain Barrel Program will support the UF/IFAS Extension, Broward County, Master Gardener Volunteer Scholarship Program

ROOFING MATERIALS

TESTING & APPLYING HARVESTED WATER TO IRRIGATE A VEGETABLE GARDEN

VEGETABLE GARDEN

Data

- > Home address? _____
- > Time and date when sample is taken? _____
- > What style of roof does the house have? (i.e. metal, shingles, wood, vinyl, concrete tile...) _____
- > Age of the roof? _____
- > What is being used to transfer the rain from your roof to your rain barrel?
(ex. gutter, rain chain, hose, free-fall) _____
- > Solar panels present on your roof? Yes / No
- > Any trees hang-over your roof? Yes / No
- > Does the yard irrigation system overspray onto your roof or rain barrel? Yes / No
- > Do any animals congregate on your roof? Yes / No
- > How often are samples collected? (weekly, biweekly, monthly, quarterly...) _____
- > Size of sampling container? (in oz's) _____ oz
- > Is the collected rainwater used for irrigation purposes? Yes / No
- > How often is collected rainwater used for irrigation purposes?
(daily, weekly, monthly...) _____

Procedure for Collecting Water Sample

1. Remove cap from sampling bottle.
2. Using spicket on the rain barrel, fill sampling bottle all the way up (trying to leave no room for air)
3. Return cap to sampling bottle and securely close.
4. Keep water sample in refrigerator until transport to testing facility.

For more information, please contact:
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HOW SAFE IS RAINBARREL WATER QUALITY IN SOUTH FLORIDA?



Dr. Kimberly Moore



Dr. Mica Mc Millan



Lorna Bravo