

Water Conservation: Saving Rain & A/C Runoff Water

John J. Pipoly III

UF-IFAS/Broward County Extension Agent, Parks and Recreation Division

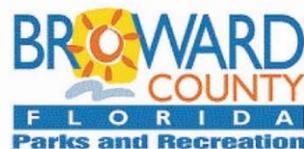
Julio Pérez, Horticultural Technician

with

Florida Master Gardeners & N.W.F Habitat Stewards

Ann Poe & Art Constantino, winners of the

2008 Special Achievement
Emerald Award Winner
(Poe & Constantino)



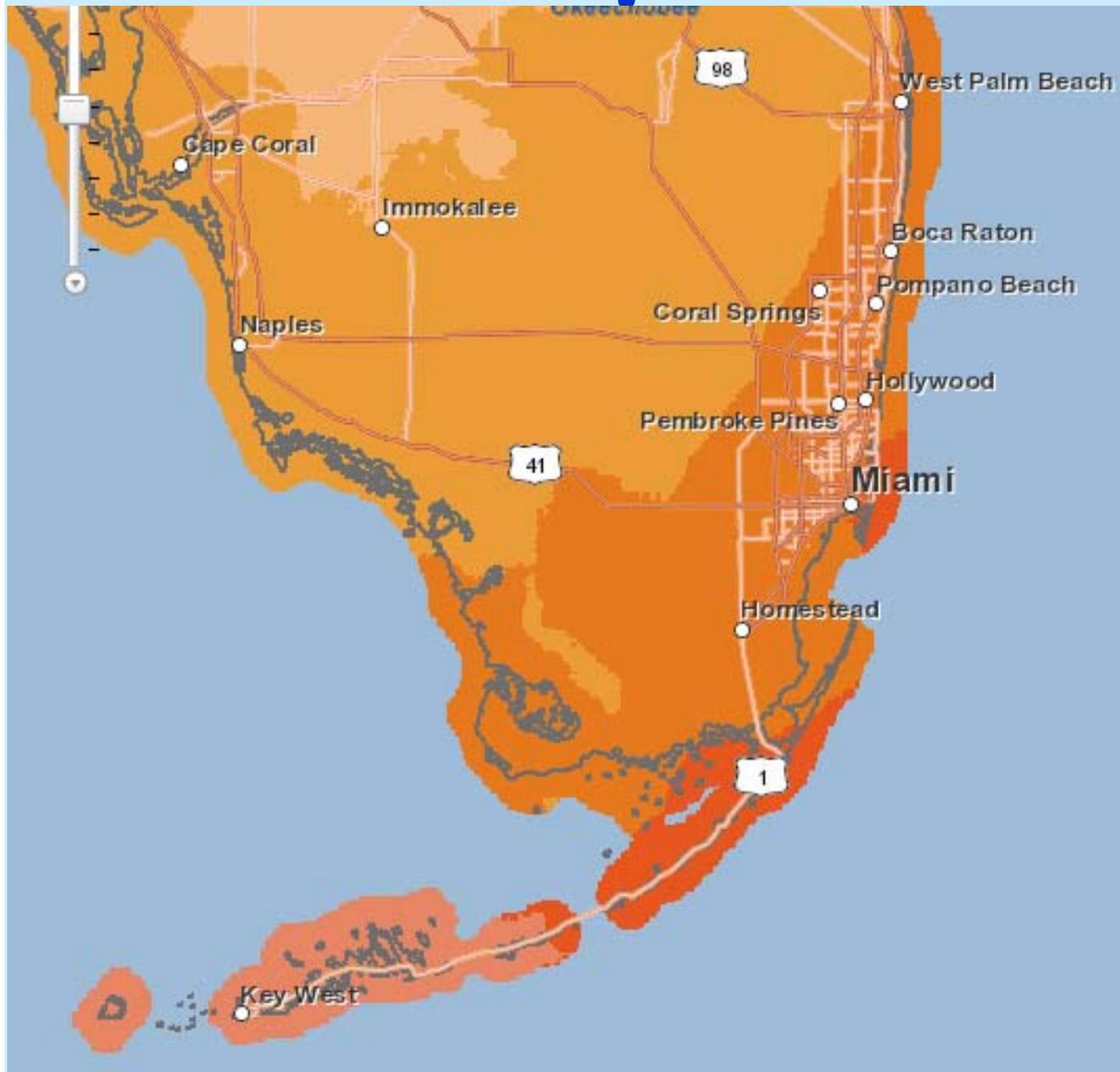
Subtropical Broward

- Broward County rainfall averages 55-60 in./yr.
- In 2015, Ft Lauderdale received only 47.54, 14.64 inches below normal.

<http://www.srh.noaa.gov/images/mfl/news/2015WeatherSummary.pdf>

- You can capture and use rain as well as runoff from your air conditioning system.
- Save rain water to supplement irrigation, wash cars and other non-potable uses.
- Acidic rainwater changes pH of alkaline soil more toward ideal so plants can use more nutrients from the soil.

Subtropical Broward



Average Annual Extreme Minimum Temperature 1976-2005

Temp (F)	Zone	Temp (F)	Zone
-60 to -55	1a	10 to 15	8a
-55 to -50	1b	15 to 20	8b
-50 to -45	2a	20 to 25	9a
-45 to -40	2b	25 to 30	9b
-40 to -35	3a	30 to 35	10a
-35 to -30	3b	35 to 40	10b
-30 to -25	4a	40 to 45	11a
-25 to -20	4b	45 to 50	11b
-20 to -15	5a	50 to 55	12a
-15 to -10	5b	55 to 60	12b
-10 to -5	6a	60 to 65	13a
-5 to 0	6b	65 to 70	13b
0 to 5	7a		
5 to 10	7b		

Click on the map to find your zone information

To ensure accurate interpretation of the Zone, set Zone Color Transparency to 0.

<http://planthardiness.ars.usda.gov/PHZMWeb/InteractiveMap.aspx>

Saving Rainwater

- CHECK with your HOA and city Code Inspection to be sure rain barrels are allowed.
- Rain pH has been measured at 5.18 in Ft Lauderdale, from 1983 to 1994; could not find more recent study.
- Acidic rainwater aids plants as it reduces the alkalinity of our soils (2/3 of the County, except far west).
- Direct storm water runoff toward rain gardens, other wet areas for hydrophytes, plants that thrive in wet conditions.

Rain Barrel Construction

Our first rain barrel at Broward County Extension (2007) looked like this and was constructed by MG Art Constantino



- Barrel was used; formerly had roof tile foam in it.
- Was washed out and holes were cut for the various spouts and spigot.
- Flexible hose was attached to a downspout.
- Line placed at top for overfilling; could have been attached to a second barrel.
- Pool filter used to filter water entering barrel.

Container Minimum Requirements

- Be sure to use rain chains and other tools to collect water, down to the barrel, to a pool screen set into the top hole, etc.
- Any container can be used; food grade is not necessary as water is NOT potable.
- **HOWEVER**, be sure the barrels have not previously stored chemicals harmful to plants, animals or humans.
- Be sure they are well-washed. Containers from roof tile foam are thrifty and store 55 gallons.

How much Water Can I Collect?

- 1 in of rain = 600 gal per 1,000 sq. ft. roof.
- Four 55 gallon drums = 220 gal storage.
- You will collect much more than you can store.
- Calculate sq. ft of roof that drains to each gutter, linked to rain barrel.

Rain Barrel Positioning

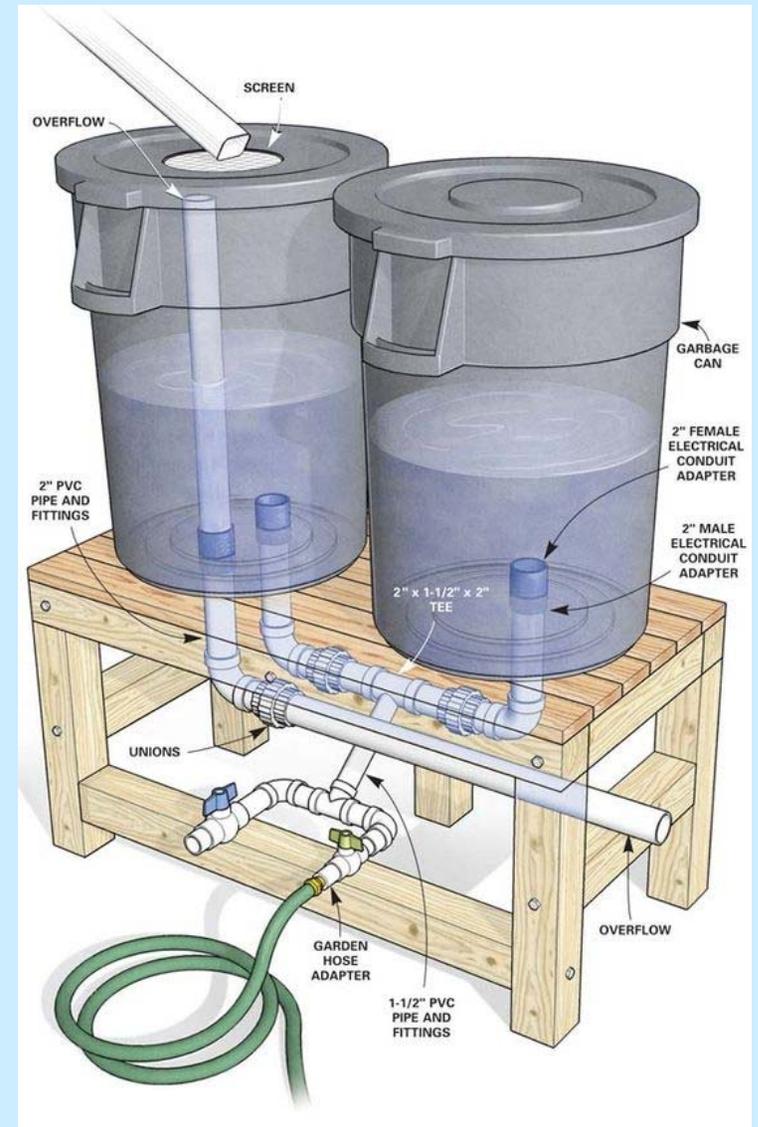
- Be sure they are opaque to retard algal growth
- If placed high enough off the ground (24-36"), force of gravity can assist in releasing water when spigot is opened.
- (Pictured) Some use 4 barrels, piled 2 stories high, which may generate enough force to run a soaker hose or drip irrigation system.



<https://www.pinterest.com/pin/54676582946685281/>

Rain Barrel Positioning

- Find directions for this type, made from trash cans, from the Florida-Friendly Landscaping Program at: <http://fyn.ifas.ufl.edu/materials/RainBarrels101.pdf> .



<https://www.pinterest.com/pin/334181234824003412/>

Rain Barrel Placement on Property

- Check HOA Deed Restrictions.
- Check City Building/Landscaping codes.
- Keep Rain barrels independent from sprinklers.
- Locate in shade, close to gutter and use area.
- Higher barrels will give you better water pressure.

Decorative Rain Barrels



Gardeners.com



Mona Johnston



M.E. DePalma



Plastic by Art C.



Mona Johnston



Christine Winter Juneau

Decorative Rain Barrels



Delaware
Stormwater
Management,
painted to mimic
wood



Laura Bledsoe



Tina Campbell from:
<https://www.pinterest.com/pin/334181234823724319/>

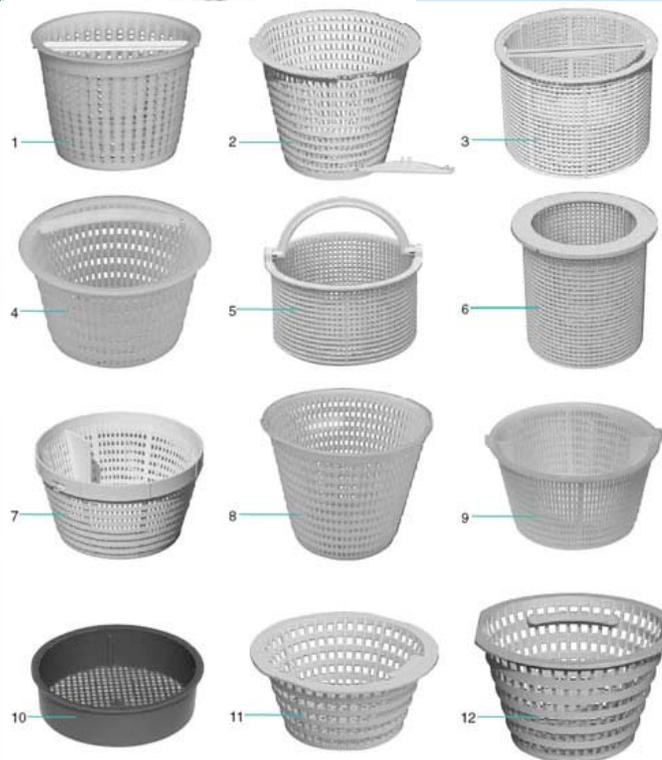
Do I really need FOOD SAFE or FOOD GRADE?

- NO... Harvested water is not for human consumption; think of all the contaminants on your roof!
- Wondering how safely your used barrels were cleaned?
- Ask your supplier for the chemical name of the product that was in the barrels and the Material Data Safety Sheet from the supplier of the barrel.
- Be sure you know if your water can be used for vegetable gardens.

Rain Barrel Filters



- Pool skimmer filters are economical.
- Be sure it is the proper diameter to match your flexible downspout.
- Keep light out.



Rain Barrel Overflow Feature



- 1.5 inch pipe large enough to move water.
- PVC pipe is best, use hole saw kit adapter to drill at 1.5 inch.
- Put pipe with fitting on both sides and glue with lots of pvc cement.
- Can also use top overflow to connect to second barrel, or with adapter, step down to $\frac{3}{4}$ " to connect to hose to drain below away from wall, perhaps to a RAIN GARDEN.



1 1/2" x 3/4" Reducing Male Adapter Mipt x Slip PVC Fitting Schedule 40

Florida-Friendly Landscaping™ Principles

Rain gardens are a great for low spots.
For more information, visit

http://fyn.ifas.ufl.edu/professionals/LA_CEU/LA_CEU_Module_3_Rain_Gardens_April_13_2010.ppt



Rain Barrels Connected by High Joints



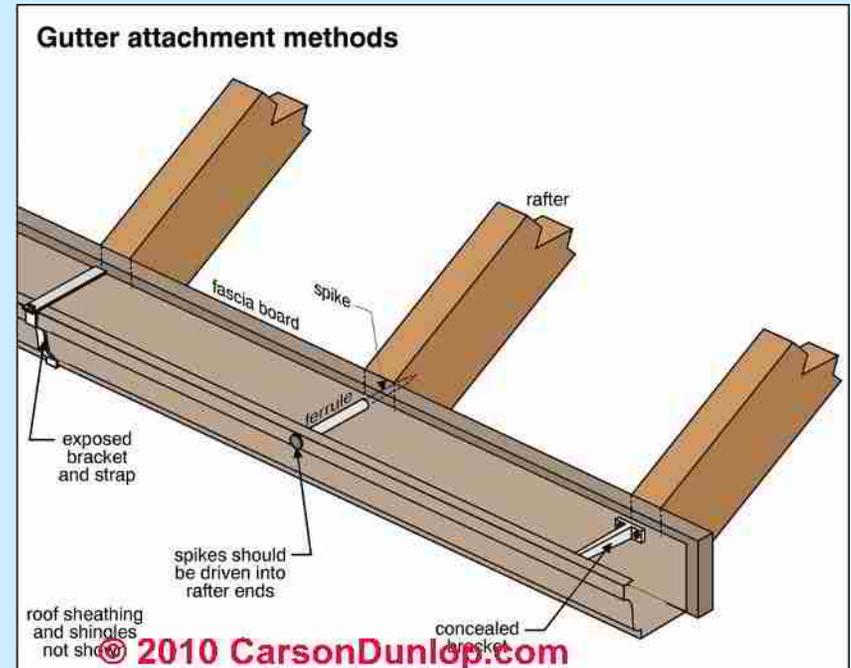
- Connect rain barrels by high joints.
- One barrel fills at a time.
- Empties barrel one at a time.
- Requires that each have a spigot.
- Overflow goes in last barrel.
- Be sure to cut holes with hole saw kit attached to drill, insert sleeve and washers and use extra pvc cement to ensure a good seal.

Rain Barrels Connected by Low Joints



- Connect rain barrels by low joints.
- Can use 2" standard thread PVC parts.
- Both barrels will fill and empty together and store the same amount of water.
- Only one spigot used, in center.
- The overflow will be handled by the barrel not attached to the downspout.

Adding a Gutter to your roof



- A 10 foot gutter section can be added easily.
- Very light in weight; be sure to strap down securely.
- Use flexible plastic downspout elbows and downspouts.
- 5 inch are better than 4 inch gutters.

Using Rain Chains

Downspout on gutter not convenient for rain barrel?
Difficult to install gutter and downspout?

USE A RAIN CHAIN TO MOVE WATER



- A 10 foot gutter section can be added easily.
- Very light in weight; be sure to strap down securely.
- Use flexible plastic downspout elbows and downspouts.
- 5 inch are better than 4 inch gutters.



Using Rain Chains- Water to smaller Units



- Can be made inexpensively in many shapes, colors and materials.
- Can be purchased very economically from sources online.

Using A/C Discharge Water

- IF you're A/C water discharge system is above the ground, you can connect a hose (opaque) to the drain and have it go to a container by gravity (left) or a pump (right) *via* clear tubes.



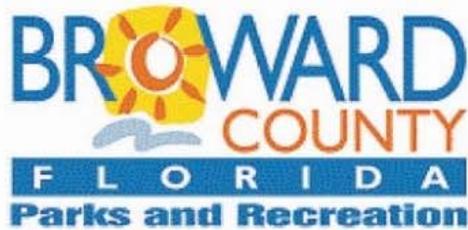
Courtesy Mona Johnston

Credits and Comments

- Ideas for lecture worked out with Florida Master Gardeners Art Constantino, Ann Poe, Mona Johnston and others.
- Art has a Google web site <https://sites.google.com/site/eartcons/> where he discusses water conservation and use.

Sources for Materials

- We have found all of the materials mentioned in this work at the large garden "box" stores, True Value, Ace and other Hardware Stores, and independent nurseries and garden centers.



UF-IFAS/ Broward County Extension Education Section Parks and Recreation Division

<http://www.broward.org/Parks/Extension/UrbanHorticulture/Pages/FloridaFriendlyLandscapingPresentations.aspx>

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