

THE WATER ISSUE

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TEXAS

MASTER  GARDENER

TEXAS A&M AGRILIFE EXTENSION

Galveston County

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IN COOPERATION WITH THE GALVESTON COUNTY OFFICE  
OF TEXAS A&M AGRILIFE EXTENSION SERVICE



## Keeping Tomatoes Happy



MG Kathy Maines

According to the English poet Thomas Tusser, “Sweet April showers do spring May flowers.” But is this really true? There are a lot of flowers blooming in May. We all know how important water is in our lives. Water is just as important in the lives of our plants, gardens and yards. According to Texas A&M AgriLife Extension Horticulturists Larry Stein and Doug Welsh, “... if you keep your tomatoes happy, the rest of the vegetables will receive enough water.” <https://aggie-horticulture.tamu.edu/earthkind/drought/efficient-use-of-water-in-the-garden-and-landscape/>. I know for a fact that this is true; at least in my garden. In my tiny yard in Galveston, I grow tomatoes in pots. They do well, I have plenty of tomatoes to eat and share and to make pasta sauce and salsa. I hand water. I previously spent many hours hand watering. This year I decided to move up to drip irrigation. I used emitter tubing and a timer and my tomatoes are watered every morning. I have the best-looking tomatoes I have ever grown!

Welcome to our water issue. Enjoy!

*Kathy Maines*



Container Tomatoes



MG Karolyn Gephart

## Water: A Valuable Resource for Gardeners

From bog and rain gardens to xeriscape plants, this issue covers water topics. How to capture rain water, how to distribute water to gardens, and what Master Gardeners have learned from farming in water, it is here for readers to enjoy. I have always loved water lilies and was excited to learn there are Texas Superstar varieties. I think of Monet and his water lilies and I am ready to give watercolors a try at capturing their beauty.

Meet Chris Anastas and learn about her involvement with butterflies. MG Marilyn Haupt writes about how butterflies like to find water. Learn about MG Bill Spenny’s DIY watering system. Find out what MG Louis Wilson researched on composting disposable service ware. As temperatures rise, take a few moments of leisure in the shade, grab a bottle of water and read the Water Issue.

*Karolyn Gephart*



MG Michelle Thompson



Water lilies

**IN THIS ISSUE**

**LET'S TALK ABOUT WATER**

- 4 Water Habitats
- 5 Bog Garden Plants
- 6 Puddlers
- 7 Amazing Watering System
- 10 Rain Barrels
- 12 Xeriscape ideas
- 14 Aquaponics Lessons
- 16 Water Lilies
- 18 Rain Garden Plants

**REGULARS**

- 20 Plant of the Month: Plumeria
- 22 Travelog: Mercer BG
- 24 Discovery Garden Update
- 26 MG Research: Compost
- 28 Meet an MG: Chris Anastas
- 30 Seasonal Bites
- 31 Book Review
- 38 Last Word

**MG NEWS**

- 25 BHS visits garden
- 32 Houston BG
- 34 Paver Order Form
- 35 Upcoming Events
- 36 Recertification
- 37 Bulletin Board
- 40 Judy's Corner



Cover photo  
Houston Botanic Garden  
MG Karolyn Gephart

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## Nature's Habitat Ponds



Kaye Corey  
GCMG 2001

What is it? A habitat pond is a small, shallow, body of freshwater that provides habitat for a diverse biological community. Host to water-loving plants, and a lure to turtles, insects, frogs, birds and other wildlife, the pond serves as an adequate environment for shelter and provides animals with requirements for survival. A pond is a water feature that does not require maintenance. The pond and its inhabitants exist together in an ecosystem without the use of pumps, filters or treatment — nature in balance. You will find these types of ponds in the wild, but why not build one on your property for your enjoyment and to attract wildlife.

My experience with such a pond is at Heritage Gardeners Junior Master Gardeners' Butterfly Garden in Friendswood. The pond is a heavy plastic preformed mold sunken into the ground. We placed landscape rocks around the edge trying to make it look as natural as possible. We filled it with city water that we let sit for a few days to remove chlorine. We then installed water plants and goldfish. Our JMG Kids rain barrel provides supplemental water if rainfall eludes us.

The Kids spotted tadpoles after a few weeks. What a find! They each took tadpoles home. Having placed their tadpoles into aquariums with pond water, they watched their transformation into frogs. What excited phone calls! "Ms. Kaye, we have legs and a tail!" A frog release back into the pond was yet another event.

To build one, place your pond where it will receive sun. You can purchase a preformed pool to sink into the ground or form your own by digging to a depth of at least 18-inches or deeper. Remove all roots and rocks and place an even layer of sand over the entire area. Line your

pond with heavy 20-millimeter black PVC liner. The liner can be cut to any size and depth. Add pea gravel to the bottom of the pond. Edge the top with attractive stones, pavers or bricks. Fill with water and let sit to eliminate chlorine in the water.

Submerged pond plants provide important shelter for fish, allowing them to survive. Plants provide protection and food for fish and amphibian eggs. The plants are equipped to thrive while rooted to the pond floor or in pots in heavy soil topped with gravel. Visit your local water nursery to find suggested plants such as Water lily (*Nymphaea* sp.), Louisiana iris, Horsetail (*Equisetum arvense*), Taro (*Colocasia esculenta*) and Swamp lily (*Crinum* sp.).

Above ground mini-habitat ponds are popular and can be relocated in winter. They can be constructed in barrels, large pots and containers on patios where they have sun exposure. Expect amphibians, insects, and dragonflies. You can also add small goldfish.

A single drop of pond water can contain more than a million microscopic organisms. Invisible to the naked eye, these life forms include various bacteria, algae, parasites, fungi and tiny arthropods. A well-balanced population of microbes should ideally aid in rehabilitating water conditions upon which larger animals thrive.

### References:

National Wildlife Federation, Schoolyard Habitats® Pathway

<https://www.nwf.org/Eco-Schools-USA/Pathways/Schoolyard-Habitats>

Playground Professionals eMagazine, *Making a Mini Pond for Your Kids*

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JMG database



JMG database



MG Michelle Thompson



JMG database

# Bog Garden: A Wetland by Any Other Name



Becky Jaschek  
GCMG 2023 Intern

While a true bog is a specialized wetland, characterized by acidic, nutrient-poor soggy soil primarily comprised of peat, we are going to focus on the man-made wetland bog garden containing marginal wetland plants that have adapted to thrive in wet or moist conditions. Establishing a wetland bog garden is a great way to enhance your yard with a variety of colors and textures with an almost endless array of plants from which to choose. These beautiful gardens also offer a friendly environment for wildlife while improving rainwater runoff control by increasing the area with water-loving plants.

Unlike a rain garden, which is dry much of the time, a bog garden is moist to wet most of the time and contains marginal wetland plants adapted to survive the varying conditions found at the edge of a water body. You may already have a soggy area of your yard that can be used, or a pond with edges you could expand to create the wet boggy conditions needed for the garden. If you are starting from scratch, the Reference Section includes two of many “How To” guides. When planning your garden, be sure to keep it away from structural foundation and septic systems.

## Choosing Plants

Although most need full sun for at least six hours per day, there are some that are more shade tolerant. Some of the types of plants that can be used are ferns, rushes, iris, asters, coneflowers, lilies, swamp mallows and other hibiscus.

Bright irises such as the native Blue flag (*Iris virginica*) with its sword-like leaves, showy yellow blooms of Louisiana canna (*Canna glauca*), the tall Crimson-eyed rose-mallow (*Hibiscus moscheutos*) and the bright white splash of the Texas spider lily (*Hymenocallis liriosme*) are some of the beautiful flowering plants that can be used. Swamp milkweed (*Asclepias incarnata*) or Butterfly Weed (*Asclepias tuberosa*) also serves as attractors for pollinators. Smaller species, such as the Rain Lily (*Zephyranthes* spp.) will provide color closer to ground level.

Be cautious when choosing the plants that you will use as many of the plants, such as native Cattail (*Typha* sp.) and Pickerelweed (*Pontederia cordata*), may be aggressive. Wildlife and flooding may spread the seeds or vegetation to areas where they cannot be controlled. To minimize the potential for releasing invasive species, research your plant choices online by visiting Texas Parks and Wildlife list of Invasive, Prohibited and Exotic Species; website in References section.

Two excellent sources of information are:

Texas A&M AgriLife Extension Earth-Kind® website provides a list of plants for use in and around water gardens. The list includes native and adapted plants such as hybridized cannas, daylilies and lilies.

The TAMU Rain Garden Plant list contains many plants that are able to thrive in wet or moist soils found in a bog garden. Choose plants that tolerate wet conditions and sun or partial sun.

If you are interested in using only native species, an amazing resource is the Lady Bird Johnson Wildflower Center database. There is a Special Collections for Texas Native Pond Plants that has pictures and information on the plants’ characteristics and preferred conditions.

## References

Texas A&M AgriLife Extension:

- Earth-Kind® Landscaping

<https://aggie-horticulture.tamu.edu/earthkind/>

- Rainwater Harvesting, Texas Rain Garden Plant List (draft):

<https://rainwaterharvesting.tamu.edu/raingardens/>

- Water Gardening In Texas, Plant Life

<https://aggie-hort.tamu.edu/extension/homelandscape/watergarden/plant.html>

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Photo courtesy USDA Natural Resources Conservation Service



# Butterfly Puddlers: What Are They and Why Are They Needed?



Marilyn Haupt  
GCMG 2019

Butterflies are one of the most colorful and fragile insects found in the garden. Flitting about, butterflies visit a variety of flowers seeking nectar. Nectar provides the majority of essential nourishment for butterflies to survive. The other key nutritional requirements of butterflies include amino acids and minerals, specifically salt. Salt is particularly important to the males for reproduction. Amino acids are the building blocks of protein needed by butterflies and all living creatures.

What are these nutrients? Nectar is essentially sugar water with a ratio of 25 to 40-percent sugar to 60 to 75-percent water. The amount of nectar available varies from flower to flower and is dependent on a number of factors such as sunlight, temperature, and soil condition. The presence of direct sunlight and warm temperatures will increase the amount of nectar produced by flowers. On the other hand, amino acids and minerals are obtained from other sources such as soil, animal waste, and even decomposed animals. In nature, water pools from rain or dew in various places such as on or in the soil itself and on animal dung heaps. Minerals and amino acids will leach out of these sources into the accumulated pools of water that are then available to butterflies. They use their proboscis which is a hollow, straw-like mouth organ to take in the needed nectar, minerals, and amino acids.

When nutrient-rich pools of water are found, butterflies will congregate. This concept in nature can be simulated in the garden by creating a small pool or puddle of water to attract butterflies. These pools or puddles are typically referred to as butterfly puddlers.

Butterfly puddlers are simple and fun to make, and can be added to any garden. There is no limit to the design of the puddler, but there are a few key points to follow when putting one together. A shallow dish or terracotta flower pot base is ideal to use. It will allow butterflies to light along the edge and still access the water. Add sand or soil to the base of the dish to help hold moisture. The use of fresh rain water or tap water that has been allowed to sit 24 to 48 hours before using is best. There should be enough water added to keep the sand moist, but no more than a quarter inch. This will reduce the risk of the butterflies drowning. The addition of salt to the water will provide necessary minerals for the butterflies. However, it is important not to use too much salt. One-half cup of salt to one gallon of water is one suggested ratio for the mixture. Another option to add to the water is a tablespoon or two of composted manure. The manure will break down, allowing for amino acids to become available to the butterflies.

Once the puddler has been found by butterflies, they will return to it for nutrients; therefore, it is important to maintain it daily. Make sure it remains moist and in good condition. Change the sand and water as needed to keep it clean and free from mosquito larvae. The best placement for your puddler is in a garden with butterfly friendly flowers. Place it securely on the ground or near the ground in an open space that allows butterflies enough room to escape from potential predators. Finally and most importantly, take the time to enjoy the beautiful butterflies that your puddler will attract to your garden.

#### References:

Ajilvsgi, G. (1990). *Butterfly gardening for the south: Cultivating plants that attract butterflies*.

Cranshaw, W. & Shetlar, D. (2018). *Garden insects of North America: The ultimate guide to backyard bugs*. (2nd ed.)



Butterfly



Large puddler



Small puddler

## Watering the Bill Spenny Way



Lisa Belcher  
GCMG 2014

I recently spent the afternoon with fellow GCMG and friend Bill Spenny at his home. I've heard for quite some time of his phenomenal watering system and was curious to see his design. My conversation with Bill began with my asking if he was ever a gardener before taking the Texas Master Gardener class. He was no novice in his class in 2015, and he

shared fond memories of gardening with both his father and grandfather. It seemed as if gardening was in his blood and after speaking with Bill, gardening is not only something he truly loves, but a passion that he enjoys sharing.

Jump back 16 years when the Spenny family purchased a lot in Bayou Vista. Long before the foundation was poured Bill spent many hours designing what his future garden and water system would look like, and what specifications he needed to keep in mind while building his house. He shared what type of research material he used for his rain catchment system.

“The first and best place to start is YouTube. And that’s what I did.”

Watching one video after another helped him form his own plan for catching, holding and utilizing water. In his professional background he worked as an aeronautical engineer for NASA. When I first saw his system, I thought “Only an aeronautical engineer could design and set up a challenging, yet amazing, system like this.”

On his property Bill has two rainwater collecting systems, totaling to 4,000-gallon capacity. Gutters running along his house collect the water and deposit it in his barrels. When I heard of this large number I asked if his barrels ever run dry and he did tell me there have been times during our very dry summers that he has had to put city water into his barrels. He usually waits 48 hours after city water introduction so any possible chemicals are no longer active in the water, including chlorine.

Bill purchased an irrigation timer that controls multiple stations, one you can find at any big box store or at a discount online, and installed it on his house. From there, and this is where his engineering skills come in place, he ran a tube from his rainwater harvest barrels to what I can only describe as an outdoor circuit breaker-looking board. Bill explained he programs the valves to irrigate 12 different vegetable beds. He has a tube running underground to each bed, and each has a valve that can be manually turned off or on depending on growing cycles and inclement weather. At the beds, Bill installed drip irrigation hoses which deposit water to each plant individually. When getting a timer, choose one that fits directly to a faucet and has one, two and up to four hose connectors. Tip from Bill: Be sure to read the instructions before buying because some of these watering timers will only allow for one hose to be programmed at a time and not run simultaneously.

When I arrived for the watering system tour, Bill was in the



1 of 2 water tanks



Bed drip layout water system



## *“Gardening is a passion he enjoys sharing...”*

process of replacing his old pressure treated wood raised beds to metal sided beds, something he saw being done at the Discovery garden at Carbide Park..

“It’s hard work,” he remarked, “but replacing rotting boards will no longer be an issue for me.”

He further added that as he was replacing his beds, he was making his vegetable bed more ‘age friendly’ with wider walkways between beds, as well as raising the height of the beds. He shared that “just this once” he had to tweak his system but in reality, his watering lines only had to be altered slightly to accommodate the wider pathways.

He went on to share that he first put sand in the bottom of each bed, then covered the sand with compost and soil. The next step was to put down a weed barrier fabric, cut holes in the fabric spaced to plant vegetables and cover everything with wood shavings Bill purchased from his local feed store. Why not mulch? Bill explained in the past he did in fact use bark mulch but found that the following year conventional bark mulch was not the same consistency as he used the previous year. He was pleased that the wood shavings (meant to be used

for animal hutches) were more uniform and were of an organic substance. Wood shavings undergo a drying period in preparation and are sourced from planed wood such as pine, spruce or cedar. He added that the shavings offered a bonus: after the growing season, he takes off the weed barrier and mixes in the composting shavings.

We then looked at his drip irrigation lines. Bill showed me how he leaves space between the overlapping weed barrier when he plants his vegetables and places the line, with the drip hole directly over the plant, to make sure each plant is individually watered, something he learned from his Master Gardener intern class. This made me wonder how he knows how much water is getting to each plant and how long should I run my water system, should I be so bold to try to replicate Bill’s system.

“Simple,” he said. “Just place a small plastic container under your drip line and let it run for one hour then measure how much you have in your vessel. That way you can calculate running your system for 30, 45 or even 60 minutes each morning.”



Close up of drip irrigation



Out of this world circuit breaker



## *“...a challenging, yet amazing system”*

When it gets into the hottest months, Bill might have to run his system twice a day if he sees his plants need water or look stressed.

At my house, my not “out of this world” sprinkler system did not fare well with this year’s freezing temperatures. Some lines burst, some got clogged and one timer bit the dust. Bill’s system, however, fared much better as he turned his entire system off after bleeding the lines and turned his valves into the off position. With his main waterline running towards his beds deeply buried, there is less chance of bursting in freezing weather.

So how much does Bill estimate a drip irrigation system like his would cost? He believes for less than \$400 you can purchase a simple irrigation timer, drip lines, valves, PVC piping, etc. (That’s his estimation of what he spent on his system, minus the water tanks and timer system). The biggest expense would be the rain barrels, depending on what size is required for your gardening needs.

As we ended the tour and conversation, I told Bill I was

feeling much more confident about duplicating his watering system for myself. I think he could sense my semi-bravado and mentioned in the past he’s shared his story and system to many Master Gardeners and is happy to continue doing so. During my drive home, I was already designing how I would change my existing watering system. I don’t have the space for a 4,000-gallon water tank and would have to rely primarily on city water at this time, but oh, the ideas and designs racing through my mind! But first, taking Bill’s advice to heart, I’m going to sit down and watch some YouTube videos on DIY water irrigation systems.

Editor’s note: The article intent is to highlight Bill Spenny’s accomplishments and DIY approach, and the resource listed below provides a source of research-based information for rainwater harvesting.

For additional information about rainwater catchment in Texas, visit Texas A&M AgriLife Extension Rainwater Harvesting website <https://rainwaterharvesting.tamu.edu/rainwater-basics/>



Vegetable beds with watering system



Water drip test



# Rainwater Harvesting



Sandy McBride  
GCMG 2018

Water is our most precious resource. Virtually, every living thing on the planet depends on water to survive. Even though 70-percent of our planet is water, only 3-percent is fresh water and most of that is not readily available.

The state of Texas receives an average of 27 inches of precipitation each year. Even though the state's population has increased in the last 100 years from about 4.9 million to approximately 30 million today, our average rainfall has not increased. Obviously, we must try to conserve as much water as possible.

One step most of us can take is to consider rainwater harvesting. The Houston/Galveston area receives an average of 50-inches of rain each year. Just one inch of rain on a 1,000 square foot roof area with gutters can capture 600 gallons of water!

There is evidence of rainwater harvesting dating back to 4500 B.C. The practice has been essential to survival throughout history and continues to be an important source of water in many parts of the world.

## Why harvest rainwater:

Consider that during the spring and summer months the average home uses 40-percent of its water outside. Watering the lawn and gardens, cleaning up after landscaping projects, washing the vehicles and even your pets can use large quantities of water. The tap water you are using is treated, filtered, and perfectly good drinking water! Why would you pay steep

water and sewer bills when perfectly good rainwater falls from the sky and is free?

Rainwater is preferable for use in gardens because it contains both nitrogen and phosphorous, and it is free of salts and other minerals that harm root growth. While municipal water is treated with chlorine and chloramine, average amounts used for public safety is not harmful to plant life.

Efficient water use is increasingly important to Texans. The state's population growth and limited supply of both groundwater and surface water requires wise use of water. Rainwater harvesting is a practice everyone can accomplish capturing, diverting and storing rainwater for later use. A great way to use stored rainwater is for watering your outside and in-house plants, cleaning your gardening tools, and other tasks that do not require potable water. In many communities, 30 to 50-percent of the total water used is for landscape irrigation. If that demand for a limited natural resource can be reduced, everyone benefits. Harvesting rainwater for use in the home landscape will:

- Save you money by reducing your water bills.
- Reduce demand on the municipal water supply while saving on the electricity required to produce, transport, and treat the water.
- Make efficient use of a valuable resource.
- Reduce flooding, erosion, and the contamination of surface water with sediments, fertilizers, and pesticides in rainfall runoff.



Rain Barrel & foundation - MG Sandy McBride



## “Efficient water use is increasingly important to Texans...”

### How to harvest:

Harvesting rainwater begins with the collection process. With a house having no gutters, water can be collected by placing containers where the water runs off the roof. When gutters are available, barrels or containers can be placed under or connected to the downspouts. Containers can also be placed in open areas to collect the rain. Large water tanks can be used on farms and for large gardens. In all cases, some type of covering on the containers will help prevent mosquito and also to keep debris out.

For a simple home harvesting system you will either need to purchase a new barrel or find a food grade barrel. A rain barrel can be as simple as a modified plastic garbage can. The big box stores, area organizations and online sources have a large variety of barrels to fit both your budget and the esthetic you want in your yard.

Determine the area best suited for your barrel. It needs to be adjacent to the gutter you have chosen and preferably near your garden area. A full barrel can weigh between 400 to 500 pounds, so you need to create a solid, level flat base by removing the turf and leveling the area. Use concrete blocks or similar materials to create the base. It is best to elevate your barrel for easy access to the faucet and also to increase the water pressure. Use of a bubble level will help to make sure the base is level. If your gutters are open, installing a screen or filter prevents leaves and other debris from your roof traveling through the downspout and into your barrel.

Rain barrel kits which contain all the needed parts can be purchased. Fit the spigot to the barrel about 2-inches up from the bottom. Mark a diverter location on the downspout above the barrel. Depending on the type of diverter being used, the heights may be different. Some installations require cutting off the downspout and some require a hole in the side of the downspout. Attach the diverter into or on the downspout and attach the hose from the diverter to the rain barrel. If the barrel has openings in the top they should be covered with screen cloth or fabric like hosiery. This will prevent anything, including mosquitoes, from getting into the barrel.

Please consider joining the many people who harvest rainwater. It will save you money and you will have the satisfaction of doing your part to conserve water, our most precious natural resource.

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<https://agrilifelearn.tamu.edu>

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Rain Barrel & foundation - MG Sandy McBride



# Xeriscape Your Summer Garden



Jan Brick  
GCMG 2001

Drought...a long period with little or no rain. Recently there has been much discussion of this challenge with garden writers and horticulturists making suggestions of the best plants to use in our landscaping plans and home gardens. Most of us agree that native and adapted plants are best, as well as those we have observed that are surviving and will thrive in the summer heat. But what about the long term? We must have a plan to adapt to climatic variance...cold winters with freezing weather and hot, drought conditions in summer. With no apparent relief in sight, perhaps we should consider some innovative and progressive gardening practices.

Xeriscaping refers to the conservation of water through creative design. Originally developed for drought-afflicted areas, the principles of xeriscape today have a broadening appeal. With water considered an expensive and limited resource, landscaping projects can benefit from this alternative. Xeriscaping lowers consumption of imported and ground water; xeriscape plants along with soil grading and mulching take full advantage of rainfall retention. With xeriscaping, less time and work is required for maintenance, while making gardening simpler and less stressful.

A xeriscape demonstration garden created at the Denver Botanic Gardens was based on seven principles. These same seven principles are also incorporated into the Texas A&M AgriLife Extension Earth-Kind® program.

Design a plan that designates areas for turf, beds, screens, and slopes.

Soil amendment in a water-conserving landscape does two things: it improves drainage and stores water at the same time. This can be achieved by increasing the amount of organic material in your soil and keeping it well aerated...compost is the best additive.

Plant selection for best results includes native or adapted plants along with drought-resistant plants. Group plants with similar light and water requirements; place them in an area that matches these requirements. Grassy areas will require the most water while shrubs and perennial beds will require approximately half that amount. For south and west exposures, select plants that need a minimum of water; along the north and east zones select those that prefer more moisture. Planting trees helps to reduce evaporation by blocking wind and shading the soil.

Efficient watering techniques for water conservation are the goal. Soaker hoses and drip-irrigation systems offer the easiest and most efficient watering for xeriscapes because they deliver water directly to the base of the plant, thus reducing moisture loss from evaporation while encouraging root absorption at a slow rate. Xeriscapes can be irrigated efficiently by hand or with an automatic sprinkler system. Water deeply and infrequently to develop deep roots. Do not water during the heat of the day. Avoid oscillating sprinklers and sprinklers that throw water high in the air.



Agave  
MG Herman Auer



Coneflowers  
GCMG database



Mercer Botanic Garden's Xeriscape  
Garden MG Barbara Lyons



Oleander  
MG Linda Steber



## “Viable xeriscape plant selections are numerous...”

Mulch keeps plant roots cool, minimizes loss of moisture and reduces weed growth. Cover the soil around the plants with commercially produced mulch, leaves, coarse compost, or bark. Organic mulch will eventually incorporate into the soil and will need to be reapplied. The mulch layer should be applied several inches thick with no spots of bare soil.

Turf may be a major modification for the home landscape. Removing and replanting already established lawns can be an expensive option, but may be a logical alternative for new homes and commercial development keeping in line with the popularity of the ‘going green’ trend. Current trends in research and development are working toward commercial blends of short, warm-season native grasses that may be adaptable to the high humidity and increased heat that we experience in the Upper Gulf Coast Bend of Texas.

Maintenance is critical in a xeriscape garden. Avoid over-fertilizing lawns. Turf areas should not be cut too short. . . taller grass (about three inches) provides a natural cover that shades the roots and helps retain moisture.

Designate an area for a rock garden featuring large and small specimen along with an array of cacti for some diversity. Think American agave (*Agave americana*), coastal Thorn-crested agave (*Agave univittata*), Prickly pear cactus (*Opuntia* sp.) and a mixture of additional succulents and cacti that will remain closer to the ground.

The suggestions and availability of viable xeriscape plant selections are numerous. A few varieties that are particu-

larly popular in our area include the following: Texas ebony (*Ebenopsis ebano*), Southern magnolia (*Magnolia grandiflora*), Oleander (*Nerium* sp.), Pentas (*Pentas* ), Periwinkle (*Vinca* sp.), Dwarf lily grass (*Ophiopogon japonicus*), Coneflower, Yucca (*Yucca* sp.) along with local perennials and adapted plants.

Recently, the plant selections of varieties called air-plants have become a must-have in many home landscapes. These epiphytes are most attractive when mounted and hung in displays along a fence line, trellis or screen.

The theories of a xeriscape garden may take some time and effort to actually incorporate as a course of reality in individual home gardens and landscapes, and taking one step at a time. . . converting one area at a time can eventually accomplish this worthwhile goal. Meanwhile, as we are facing the daily challenges of just trying to keep something alive, remember a little extra care will not only help your plants withstand the rigors of summer weather, it will reward you with a flush of color during the late summer and fall seasons.

### References:

- Maranhao, D. 2016. *Water-Smart Gardening: Save Water, Save Money, and Grow the Garden You Want*. Cool Springs Press: Beverly, MA.
- Rogers, T. 2007. *Lawn Geek: Tips and Tricks for the Ultimate Turf From the Guru of Grass*. NAL Trade: New York.
- Wasowski, S. and A. 2003. *Native Texas Gardens: Maximum Beauty, Minimum Upkeep*. Taylor Trade Publishing: Lanham, MD
- Weinstein, G. 1999. *Xeriscape Handbook: A How-to Guide to Natural Resource-Wise Gardening*. Chicago Review Press – Fulcrum: Chicago.



Pentas  
MG Linda Steber



Periwinkles  
MG Herman Auer



Prickly pear  
MG Wayne Elliott



Yucca  
MG Herman Auer



# What Have We Learned? Where Do We Go From Here?



Gene Speller  
GCMG 1997

## Introduction and Basic Concept

The GCMGA Aquaponics unit was installed by Galveston County MGs at the Discovery Garden in 2017 and has been operating continuously since then. Recently, these questions were posed: **“What have we learned? Where do we go from here?”** From my perspective as someone who had never even maintained a fishbowl prior to the Aquaponics unit, I am glad to share what I have learned.

The concept is rather simple. Fish waste in the form of Ammonia ( $\text{NH}_3$  and  $\text{NH}_4$ ) is converted to nitrites ( $\text{NO}_2$ ) by naturally occurring bacteria (*Nitrosomonas*). It is then converted to nitrates ( $\text{NO}_3$ ) by other bacteria (*Nitrobacter*). Nitrates (fertilizer) are extracted by plant roots from circulating water in the Aquaponics unit. Fish wastewater is thus continually “cleansed” for fish while plants are fed nitrates. See illustration – *The Aquaponics Cycle*.

The size of an Aquaponics unit can range from a few gallons on an individual level to several thousand gallons for a commercial grade unit. GCMGA chose an intermediate size of 600 gallons capacity (a 300-gallon fish tank and six 50-gallon plant grow-beds) for demonstration purposes.

The heart of the unit is a submersible pump that circulates water from a 50-gallon sump tank in two directions. Route 1 is to and from the six grow beds (three calcined clay pebble media beds and three raft beds). Route 2 is to and from the fish tank. Water aeration is required for both the fish and the plants.

Our 300-gallon fish tank has the capacity to support 100 pounds of fish. We currently have approximately 20 pounds – mostly tilapia. Tilapia is a tropical fish from Africa and cannot tolerate water temperatures below 50-degrees. The fish tank is heated for outside winter use.

System inputs include fish food and make up water due to loss from evaporation and plant transpiration. On average, we use five pounds per month of fish food and 125 gallons per month of chlorine-filtered tap water. We monitor key chemical and physical parameters on a weekly basis. Supplemental equipment includes a remote temperature sensor in the fish tank. Additionally, we have a power outage notification system and a backup battery-powered aerator for the event of a power outage.

## What have we learned?

### Positive Aspects:

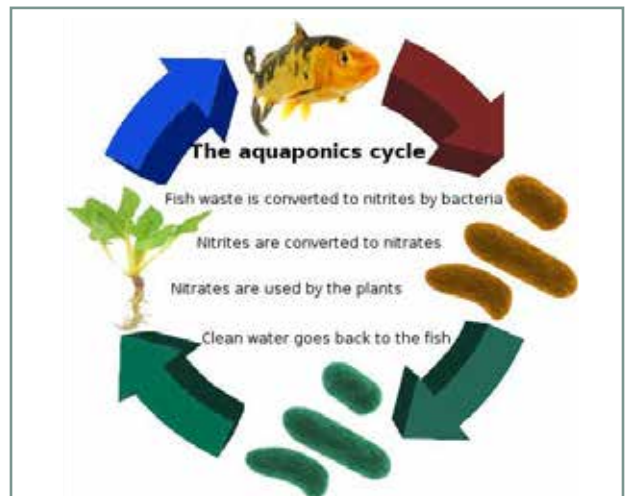
A more pertinent question may be, “What have visitors to the Aquaponics unit learned?” After all, the primary objective of installing the Aquaponics unit was to provide an educational opportunity for visitors to the Discovery Garden. The Aquaponics unit is an interesting



Bulbing carrots, kale, beets and Swiss chard. MG Gene Speller



Buttercrunch lettuce (front) and San Marzano tomatoes. MG Gene Speller



Aquaponics Concept

# “Aquaponics...is an interesting viable alternative gardening...”

viable alternative gardening method easily demonstrated for visitors.

We can verify that most soil-grown plants can also be grown in an Aquaponics system in relatively less space. We have grown over 25 different types and varieties of vegetables, herbs, and fruits in the Aquaponics unit. In addition to the plants, we have harvested a few fish as well. Based on refractometer testing of garden peas, snow peas, and tomatoes in 2020 through 2022, we can verify that the sugar content of Aquaponics-grown vegetables is the same or slightly higher than those grown in soil. Pesticides are not required for pest control, nor can they be tolerated by the fish. The only pesticide used on the Aquaponics plants is *Bacillus thuringiensis* (BT, an OMRI organic pesticide) for caterpillars. Except for a rogue weed or two in the media beds, there are no weeds in the Aquaponics grow-beds to contend with.

## **Trials and Tribulations:**

We had just brought the unit on line in mid-August 2017 when Hurricane Harvey paid a visit and dropped 33 inches of rain. Luckily, we only received minimal damage

In February 2021 and December 2022, we had outside low temperatures from 17 to 19-degrees in the Discovery Garden. Fortunately, the fish tank heaters kept the fish at a cozy 57 to 65-degrees. Only a few plants and drain valves froze.

There have been several power outages over the past five years lasting from less than an hour to several hours. The power outage notification system (iSocket Smart Plug) and backup battery aerator helped save the fish during extended outages.

There have been several minor plumbing leaks – mostly from the drain pipe connectors under the grow beds that were re-

paired when noticed. However, the last leak was a major blow-out from a drain-line disconnect occurring sometime during the weekend of February 18 and 19, 2023. It was not discovered and repaired until after the loss of approximately 2,000 gallons of water from the unit. The fish and equipment survived.

A raccoon showed up in 2018 when we used an automated fish feeder. We no longer use an automated feeder. A peacock from undetermined origin also showed up in 2018. A beautiful bird it was, adopted and named Mr. Peabody by the MGs, but a pest by eating plants in the grow-beds. Bird netting was installed to keep him out. The bird netting became a trap for a six-foot long coachwhip snake (non-venomous native). I freed it from the netting and it swiftly slithered over to the neighboring grapevines. The bird netting has since been removed.

## **Where do we go from here?**

As for the future of Aquaponics – who knows? As for justification of operations, the educational benefit alone should justify its existence. Aquaponics remains one of our most popular attractions in the Discovery Garden – especially for school age groups. As for potential improvements – perhaps another gizmo to alert the Aquaponics team members of a major water leak?

The Aquaponics Team members and contributors to this article:

MG Robin Collins – Principal Founder of the GCMGA Aquaponics unit

MG Briana Etie – Current Aquaponics Team Leader

MG Gene Speller – Aquaponics Team Member, primary author of this article.

MG Tom Fountain – Aquaponics Team Member

MG John Nisbet – Aquaponics Team Member



Patio baby eggplant. MG Gene Speller



Strawberry plants. MG Gene Speller



Water Lily. MG Gene Speller



## Beautiful Floating Flowers



Karyl Mehlman  
GCMG 2022

What is common to a serene lake in a Tokyo royal garden, a large waterfall leading to a pool on an estate, and a small water garden in someone's backyard? Peaceful quiet accompanied by the always calm, always beautiful Water lily (*Nymphaea* sp.) This unique flower is in the Plant family Nymphaeaceae and includes floating and rooted plants with about 70 known species.

Water lilies are of two types: tropical and hardy. Tropical water lilies (Zones 9 to 11) are divided into day and night bloomers. Hardy water lilies (Zones 3 to 11) are all day bloomers, and some have flowers that change color shades over the life of the bloom.

Water lilies can be 2 to 12-inches tall, express a rainbow of colors and usually a yellow center cluster of stamens. Leaves are 8 to 16-inches across, each with a single V-shaped notch. Nutrients are obtained solely from water by the underside of leaves and by rhizomes. They live in temperate and tropical climates around the world. Some are native, and many hybrids exist. Beyond beauty, their primary function is to cover (yes, cover) the water surface and produce a blanket that keeps algae in check and provide shelter and temperature control for fish. Overgrown water lilies can begin to cover too much of the water's surface area and reduce oxygen exchange.

Water lilies can grow from rhizomes and from seeds planted or falling into the muddy soil that forms the bottom of lakes, ponds, and slow-moving streams. Over time, the seeds put forth vegetative shoots that head for the top of the water, small umbrella-like structures that become the leaves on which the lilies float.

Water lilies are said to represent purity, majesty, and enlightenment. The flowers last only four to five days, then sink underwater to decompose. Species that bloom during the day close their blossoms at night, only to bloom again the next morning, suggesting optimism and rebirth in some cultures. The artist Claude Monet painted 250 pieces featuring the water lily.

All parts of the water lily are edible. In Europe and India, water lily seeds are fried until they pop and are mixed with melted sugar, formed into small balls and consumed as a snack. Seeds may also be boiled or ground into flour. Animals like deer, beaver, muskrat, nutria, and other rodents consume leaves and rhizomes of the White water-lily (*Nymphaea odorata*), while ducks eat the seeds.

### Three Types of North American Water Lilies

Yellow water lily, also called Mexican water lily (*Nymphaea mexicana*) plants grow in the southern states and are bright yellow in color. Flowers are about 2 to 4-inches wide and have about 25 petals. Leaves are up to 9-inches wide, bright green on top and purple or deep red on the bottom. Seeds measure 0.16 to 0.2-inches.

The American white water-lily (*Nymphaea odorata*) has a wide distribution in the United States and the southern half of Canada. They are notable for their odor, described as "very smelly." Flowers are 2 to 7-inches wide and have more than 25 pointed white petals. Leaves are up to 10-inches long and are green on top. Seeds are only about 0.08-inches long.

The Elegant water lily (*Nymphaea elegans*) is found primar-



Clyde Ikins



Panama Pacific



Parrot Feathers bog plant



## “All parts of the water lily are edible...”

ily in Texas, Louisiana, Mississippi and Florida. Flowers are about 2 to 5-inches across and have outer petals growing in whorls of four that are green in color. Flowers have 8 to 27 petals that are light purple to white in color. Tiny seeds are 0.04 to 0.06-inches in diameter.

### 2006 Texas SuperStar® Water Garden Plants

The Texas Superstar® program identifies trees and flowers that are deemed to be “the best of the best” in various areas of Texas. An executive board is charged with selecting plants to be included in its listing based on statewide advisory input and recommendations from horticulturists, nursery professionals, growers, arboretum and botanical garden professionals, and the like.

The following are the water lilies chosen by the leading growers and hybridizers in Texas: ‘Texas Dawn’ released by Ken Landon (1985), Category hardy yellow; ‘Colorado’ released by Kirk Strawn (1994), Category hardy salmon; ‘Laydekeri Fulgens’ released by Joseph Bory Latour–Marliac (1895), Category hardy red; ‘Perry’s Double White’ released by Perry Slocum (1990), Category hardy white; ‘Clyde Ikins’ released by Kirk Strawn (year unknown), Category hardy apricot; and ‘Panama Pacific’ released by William Tricker (1914), Category tropical purple. All are available at most water garden suppliers.

### The World’s Largest Water Lily

A new species of Giant water lily (*Victoria boliviana*) was just recently discovered. It was properly identified in July 2022 and

reported in *Frontiers in Plant Science*, a plant science journal. Accounts appeared in most major worldwide media venues. It had been mistaken for another species of giant lily (*Victoria amazonica*) with only three species, growing in London’s Kew Gardens for 177 years and in the National Herbarium of Bolivia for 34 years. *V. boliviana* is native to northeastern Bolivia and produces flowers throughout the year. Bloom colors turn from white to pink and are covered in sharp prickles. This water lily can grow almost 10-feet wide in the wild and can support at least 176 pounds. Leaf structure, seed appearance, and other features enabled *V. boliviana* to be identified as a separate species. This species is considered endangered due to its small geographic range and the deforestation in the Amazon. All three species of *Victoria* can be found side by side only at London’s Kew Gardens in the garden’s Princess of Wales Conservatory.

#### References:

Texas A&M AgriLife Extension – AquaPlant, online diagnostic tool

<https://aquaplant.tamu.edu/plant-identification/alphabetical-index/water-lily>

Texas Superstar program

<https://texassuperstar.com/plants/>

[https://texassuperstar.com/plants/waterlily/best\\_water\\_garden\\_plants.html](https://texassuperstar.com/plants/waterlily/best_water_garden_plants.html)

Smithsonian Magazine, *New Species of Giant Waterlily Is the Largest in the World*

<https://www.smithsonianmag.com/smart-news/new-species-of-giant-waterlily-in-the-world-180980364/>



Perry's Double White  
Photos courtesy of tamu.edu



Water lily's across a pond



Red Flare



Texas Dawn, a Texas Superstar plant



# Rain Gardens: Beautiful Solution to Drainage and Runoff



Briana Etie  
GCMG 2017

Much of the land areas in our suburban neighborhoods are paved or covered by other impervious structures. Rain runoff and pollution from our yards, roads, and parking lots are running directly into our watershed areas.

Rain gardens can change the flow of runoff in our yards and neighborhoods. Rain gardens are landscape depressions that allow water to collect in one area, and with the right plants water can be filtered and returned to our water table. We can use infiltration trenches or dry creek beds to direct runoff to a depression or rain garden.

Unlike raised beds that require plants that need well-draining soils, rain garden plants do not mind wet feet or drought spells. Look for plants that are native to the area and have long roots to filter water and allow it to return to a water table.

If you are new to gardening, knowing your soil type is important. Most soil types in the area are clay but not all. Knowing what nutrients to add for healthy plants is important as well. Soil tests are easy and relatively inexpensive. You can find information and downloadable sample submittal forms available through Texas A&M Soil Testing Lab, [www.soil-testing.tamu.edu](http://www.soil-testing.tamu.edu), starting at \$12 for a routine sample. Galveston County AgriLife Extension office can provide you with the soil sample bag and forms, but the sample is sent to the lab by the resident.

Deciding where you want the rain garden could be determined by an existing low spot in your yard. Water pooling in an area or the presence of moisture loving weeds can help you identify a spot that stays moist longer than other areas. Dollar weed, chickweed and bluegrass are a few found in poorly draining soils.

Anytime we decide to dig in our suburban or city yards, please know where underground utilities exist for your safety. Keep in mind your children will not be happy with you if you disconnect internet from their devices. Be prepared to wait on companies to come and mark the underground lines.

Start by removing three to six-inches of soil from the area you wish to designate as your rain garden. If the area you identified is already in a low spot, start with three-inches. As you continue to construct your garden area, give considerations to the lowest area in the center, or create a bowl shape. If the area is big enough, you can design planting zones where the taller plants are in the center and plants that are less tolerant to wet feet (marginal plants) can be planted near the edges. Soil amendments are sometimes necessary.

At the Discovery Garden we had a large low spot near our greenhouse and Aquaponics hoop house. We removed 3-inches of soil and amended the area with compost. We outlined our area with pavers, creating a garden border and holding soil amendments in place.

We planted the rain garden with plants that are tallest and most tolerant of water through the middle. Plants included Texas star hibiscus (*Hibiscus coccineus*), Hibiscus 'Luna Pink Swirl' (*Hibiscus moscheutos*), Giant coneflower (*Rudbeckia maxima*) and Virginia sweetspire (*Itea virginica*). Next we planted Louisiana iris, Fall obedient plant (*Physostegia intermedia*), Giant plume ginger (*Curcuma elata*), Toothache plant (*Spilanthes oleracea*), Daffodil 'Lemon Drops' (*Narcissus* sp.), Aquatic milkweed (*Asclepias perennis*) and Coralberry (*Symphoricarpos orbiculatus*).

The marginal plants, located on the outer edge, are less tolerant of long periods of moisture. We planted annuals and



American beauty berry. MG Pam Hunter



Black Eyed Susan. MG Pam Hunter



Crinum lily. Pixabay.com



## “Rain gardens ...a sensible and eye-catching creation”

perennials. Indian Blanket (*Gaillardia pulchella*), Coneflower (*Echinacea* sp.), and Butterflyweed (*Asclepias tuberosa*). Cardboard was placed around each plant, followed by 3 to 4-inches of mulch. Our rain garden blooms from spring till fall. Our irises begin blooming late March. The Giant plume ginger will send up tall plumes of flowers in early May, or sometimes around Mother’s Day. The hibiscus bloom all summer into fall when the Fall obedient plant starts to put on a show.

Rain gardens turn rain collection methods and drought preparation into a sensible and eye-catching creation. If you want to learn more about a residential rain garden, visit the Texas A&M AgriLife Extension Rainwater Harvesting website, <https://rainwaterharvesting.tamu.edu/raingardens/>.

If you want to encourage a company with a large-scale rain garden, Texas A&M AgriLife Learn (<https://agrilifelearn.tamu.edu>) offers *Stormwater Management: Rain Gardens*. This publication discusses the design, construction, and maintenance of rain gardens as a stormwater best management practice.

The following are some of the plants Texas A&M AgriLife Extension reports are most often used in rain gardens:

American beautyberry (*Callicarpa americana*)

Berkeley sedge (*Carex divulsa*)

Black-Eyed Susan (*Rudbeckia hirta*)

Cardinal flower (*Lobelia cardinalis*)

Crinum lily (*Crinum augustum*)

Daylily ‘Lemon’ (*Hemerocallis* sp.)

Giant turk’s cap ‘Big Mama’ (*Malvaviscus arboreus*)

Umbrella sedge ‘King Tut’ (*Cyperus articulatus*)

Louisiana iris ‘Sinfonietta’ (*Iris giganticaerulea*)

Purple coneflower (*Echinacea purpurea*)

Russelia (*Russelia equisetiformis*)

Seashore mallow (*Kosteletzkya virginica*)

Spider lily ‘Tropical Giant’ (*Hymenocallis liriosme*)

Spiderwort (*Tradescantia* sp.)

Switch Grass (*Panicum virgatum*)

### References:

Texas A&M AgriLife Extension –

Rain Gardens: A Beautiful Solution to Water Pollution

<http://agrilife.org/watersmart/files/2015/11/WaterSmart-Fact-Sheet-Rain-Gardens.pdf>

[Rainwater Harvesting, Texas Rain Garden Plant List \(draft\):](https://rainwaterharvesting.tamu.edu/raingardens/)

<https://rainwaterharvesting.tamu.edu/raingardens/>

WaterSmart Landscapes for the Upper Texas Gulf Coast website

<https://watersmart.tamu.edu/rain-garden/>

City of Austin: Watershed Protection, Rain Gardens: Plant Selection:

<https://www.austintexas.gov/sites/default/files/files/Watershed/rain-gardens/Rain-garden-plant-selection-09-08-2015.pdf>



Daylily. Photo Courtesy Pixabay.com



Purple coneflower. Photo courtesy tamu.edu



Pam's Pink' Turk's Cap Photo courtesy tamu.edu

## Plant of the Month: Plumeria



Sven Bors-Koefoed  
GCMG 2023 Intern

With the onset of summer, plumerias awaken from slumber. It is time to ensure their riot of color is brought forth. If your plants were bare-rooted during winter, or are oversized for the wind, they must be staked until well rooted. Next, they must have adequate moisture, be it from the owner or from rain.

If the soil is dry, water well. If it is hot, they may need watering every other day, but never make their soil soggy. Next, they must have correct nutrients for blossoms; a balanced, slow release fertilizer will suffice; liquid or water soluble fertilizer formulated to promote blooms every two weeks during the active growing season (April through August). With proper care, 2 to 6-inch blossoms will be the reward, along with wonderful fragrances. If potted or placed around a pool, or if included in the landscape, they provide tropical allure.

With all of this in mind, the most important thing for blooms is location, location, location. Plumerias need full sun. If they don't have sun two-thirds of the day (minimum 6 hours), you might lose some, if not all, of your blooms. I have seen 35-foot tall plumeria in full bloom in the glare of the sun, growing out of jagged limestone hills in Costa Rican jungles.

Although the original plumeria came from the tropical Americas and the Caribbean, they have been crossbred with various species of plumeria resulting in a rainbow of many colors from reds, whites, fuchsias and purples, to various petal shapes and sizes from 45-foot trees in Hawaii to 4-foot dwarf trees. Plumerias are easy to root from a 12-inch cutting. Flowers can be made into leis, as popular in Hawaii or in hair decorations, or used in weddings as in my wife's bridal bouquet. They make beautiful displays in antique pansy rings, which are tubular bowls used to display flowers with short stems.

Plumeria plants have been hybridized all over the world. I have seen them in Bali, Singapore, Thailand, Hawaii, Mexico, Venezuela, Costa Rica and Panama. And of course in Houston, home of The Plumeria Society of America started by Elizabeth Thornton. She was one of the first people to bring Mexican plumeria to Houston, write a book about them and hybridize them. Long-term research on plumeria cultivation and hybridization is attributed to Dr. Richard Criley, Emeritus at the University of Hawaii.



Aztec Gold



Bo Thi Red



Bridal Bouquet



Dragons Breath



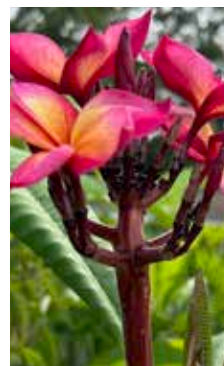
Elsie



Gullot Sunset



Heidi



Jeannie Moragne



Kimi Moragne



Lemon Drop



Maverick



Mermaid's Gem



# “...for blooms....location, location, location”

Common Names: Plumeria, Frangipani, Cemetery Flower (Hawaii)

Plant Characteristics: Perennial

Leaf Retention: Deciduous (some species evergreen)

Habit: Tree to small shrub

Family: Apocynaceae; Dogbane Plant Family

Height: Up to 45-feet; dwarf from 3 to 4-feet

Spread: 20 to 25-feet; dwarf to 4-feet

Bloom Color: Range of hues – white, pink, yellow, salmon, red, lavender

Bloom Size: 2 to 6-inches

Bloom Time: April to October

Fruit: Seed pods, bean shape from 2 to 5-inches, usually double pods

Toxicology: Poisonous. Plant family Apocynaceae includes poinsettia and oleander – all expressing a white, poisonous latex

Light exposure: Full sun produces darker colors; minimum 6 hours

Cold tolerance: Tropical; minimum 50-degrees

Pests: Longhorn Beetle

Soil Moisture: Allow to dry between watering

Soil Description: Coarse, well-drained soil

Propagation: Seeds, cuttings, air layering or grafting

Benefits: Ornamental uses

References:

Criley, R.A. January 2005. Plumeria in Hawai'i, College of Tropical Agriculture and Human Resources: University of Hawai'i at Manoa. <https://www.ctahr.hawaii.edu/oc/freepubs/pdf/of-31.pdf>

Eggenberger, R, and M.E. January 2000; 4th ed. *The Handbook on Plumeria Culture, Tropical Plant Specialists.*

The Plumeria Society of America <https://theplumeriasociety.org>

All photos from Sven Bors-Koefoed's plumeria collection



Palermos Round



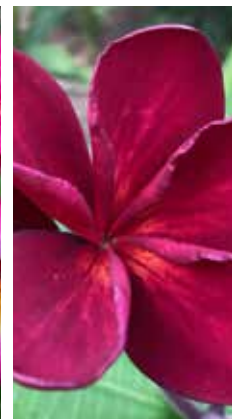
Patang Peach



Purple Jack



Raspberry Sundae



Rojo Robias



Rubras



Sally Moragne (Thai)



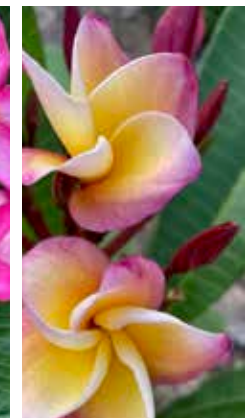
Siam Red



Slaughter Pink



Thai Lavender Lady Boy



Veracruz

## Enjoy the Benefits of RAP at Mercer Botanic Garden



Barbara Lyons  
GCMG 2014

Since beginning Galveston County Master Gardener classes in 2014, my husband and I have been making visiting gardens an important part of our retirement travels. As a way to reduce the expense of this endeavor, we have joined the American Horticultural Society (AHS, [www.ahs.com](http://www.ahs.com)) which sponsors the Reciprocal Admission Program (RAP) with over 345 gardens, mostly throughout the United States with a few in Canada and the Caribbean. Since 1990, AHS has sponsored the RAP to broaden interest in horticulture and increase attendance at the gardens. In the years we have been AHS members, we have visited over 20 gardens from Utah in the north to Corpus Christi, Texas in the south, Massachusetts in the east to Sonoma County, California in the west.

The RAP program has a few rules which the member gardens must follow. Admission to the garden must be free to members or at a reduced price. Special gift shop or other discounts must apply. The garden may invoke a 90-mile exclusion rule which allows them to deny free admission to people who reside within 90 miles of the garden, encouraging membership from local residents. In fact, membership at a local botanical garden may be the method that allows for entrance to other gardens through the RAP program. It is my observation that many member gardens do not enforce the 90-mile limitation. Since the gardens are not reimbursed in any monetary way for

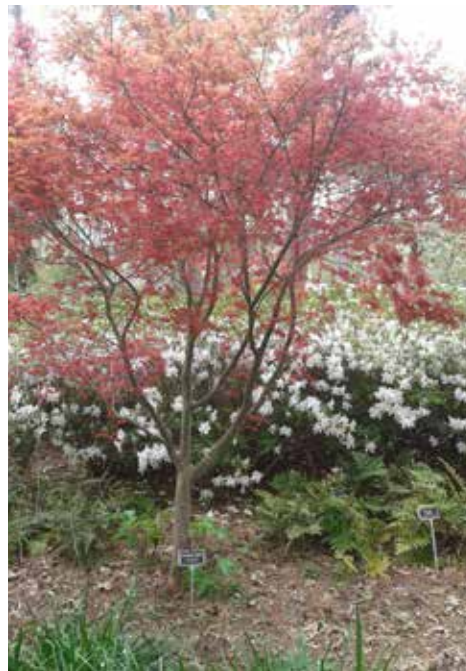
the RAP program, AHS suggests that a donation or a purchase from their gift shop be made to express appreciation for the visit. The RAP program applies only to regular admission to the garden and not to special events. Gardens with free public admission are required to offer other amenities like gift shop discounts, free or discounted educational programs, free or reduced price parking, or other benefits.

Many gardens are a pleasure to explore on a year-round basis, while some are better at specific months. Several gardens have holiday-themed decorations and displays that may make gardens a bit more interesting after frost makes flowering plants and tender vegetation wither and turn brown. A well-designed garden will include evergreen plants that can provide color and texture to the area year-round, and sculptures or garden structures add visual interest even when plants may not be the major focus in a particular season. Many gardens offer large greenhouses with special collections of succulents, cacti, or orchids, or feature other indoor displays which would be of interest even during the post-frost fall and winter or during inclement weather. Visiting gardens offers something different every season.

The subject of my article is Mercer Botanic Garden, at 22306 Aldine Westfield Road, Humble, Texas. Mercer is local and a must-see garden for the horticultural enthusiast of Gulf Coast plants. It is managed by Harris County, Precinct 3 and 4 as part of the Harris County Parks system. The original garden



Mercer Botanic Gardens Formal Gardens



Fall Colors



Mercer Botanic Gardens Bluebonnets



## “Visiting gardens offers something different every season...”

was developed beginning in 1949 by Thelma and Charles Mercer as their homestead of 14.5 acres. Thelma had a passion for plants and gardening. The Mercers eventually sold the property to Harris County as part of their legacy with the understanding that it would remain a public display of horticulture and a place for education. The garden has since expanded to over 450 acres of hike and bike trails, and 60 acres of cultivated gardens and greenhouses including herbs, tropicals, and native plants, with children’s areas and formal gardens. Ponds, stands of various trees, and creek banks comprise the less formal parts of the property on the eastern side, while across Aldine-Westfield on the west side playgrounds, picnic areas, and miles of trails are found. Mercer is home to a wide variety of animals as well as plants.

Our Texas Master Gardener intern class had a guided tour in March, and it included many spring flowers, shrubs and trees in peak bloom. Since our visit in 2014, the garden has experienced damage from several storms, including 10-foot of water in areas due to Hurricane Harvey. With its location on Cypress Creek, it will continue to be vulnerable to weather extremes. Each time damage has occurred, Mercer has been restored due to the diligent efforts of the dedicated staff of plant professionals, gardeners, volunteers, and donors. Both admission and parking are free. In lieu of free admission, benefits of the RAP program for Mercer include free or discounted educational programs, free or discounted admission to se-

lect special events, and library privileges. A monthly calendar of educational programs for every age, interest and ability can be found at the website and sign-up online is easy. Visit on a weekday and find few visitors and experience peaceful enjoyment while the weekends are a bit more bustling. The park is open seven days a week during daylight hours and is closed on Thanksgiving, Christmas Eve/Day, and New Year’s Day.

Visit Mercer Botanical Garden, just about an hour or two away depending on where you live in Galveston County, and enjoy the beauty of the Mercer’s legacy.

### References:

Find the list of member gardens in the AHA RAP program Directory [ahsgardening.org/gardening-programs/rap/](http://ahsgardening.org/gardening-programs/rap/)

Mercer Botanical Gardens website: [www.pct3.com/MBG](http://www.pct3.com/MBG); includes link to garden map

Houston Chronicle article: *Mercer Botanic Gardens offers outdoor escape after reviving gardens from Hurricane Harvey destruction*; March 17, 2020, Savannah Mehrtens. Accessed March 26, 2023.

American Horticultural Society *American Gardener* magazine article: *RAP Gardens in Focus: Explore sites that participate in the AHS Reciprocal Admissions Program*; Mary Yee. [https://lscpagepro.mydigital-publication.com/publication/?i=683131&article\\_id=3813717&view=articleBrowser](https://lscpagepro.mydigital-publication.com/publication/?i=683131&article_id=3813717&view=articleBrowser)

Note: Author Barbara Lyons will provide periodic future articles showing the high points of gardens she has explored. Future jaunts include a garden featuring a home tour and wine tasting, another with beautiful fall colors and pumpkins, and one with a large orchid collection.



Mercer Botanic Gardens Koi Pond



Mercer Botanic Gardens Pond



Mercer Botanic Gardens Red Azalea



## Discovery Garden Update



Tom Fountain  
GCMG 2008

A warm spring in Galveston County brought average temperatures of three to four degrees above normal across our area. Rainfall, on the other hand, was two to three inches below normal, so our area has been considered abnormally dry. NOAA's extended forecast indicates temperatures are expected to continue to be above normal through summer with rainfall

becoming near normal. By the way, hurricane season is upon us and it is expected to be an average hurricane season, so just be prepared.

Despite the dry weather we had most of this spring, there was just enough moisture along with cloud cover to produce an abundance of flowers. Perfect timing of rainfall was apparent in the Earth-Kind® Garden where Judy Anderson and 2022 intern Inge Duran are seen (Fig 1) doing a great job of cleaning and weeding. Mild weather also provided the garden with a lot of good produce like the spinach that was being harvested in (Fig.2) by Alysha Davila, Larry Brizendine, and Kenneth Deslattes.

The Discovery Garden has been a busy place this season. We had a very successful online spring plant sale. We also had a smaller sale in the garden, which was lots of fun thanks to the efforts of the master gardeners who pitched in to help out. Additionally, the second Texas Master Gardener class since

the COVID-19 era has been completed. In April, we hosted a garden tour for an environmental science class from Ball High School. The group was attentive, well mannered, and most seemed to enjoy being in the garden. Many MGs participated to help make it a success. Pictured in (Fig 3) is a group of the students coming out of the hoop house where Briana Etie and 2022 Intern John Mitchner had briefed them on that part of the operation.

Rebuilding of the orchard will likely continue through the summer and into the fall. This hasn't stopped Herman Auer from turning it into a classroom on teaching others how to prune and graft the fruit trees. In (Fig, 4) Herman is demonstrating how to T-bud a peach tree to some of the 2022 interns including: Shiny Anand, Carey Little, and Nemo Jackson.

It's fun to take pictures of interesting things and people. In (Fig. 5) Horticulture Agent Stephen Brueggerhoff was talking to Monica Martens, our Louisiana Iris specialist. The way he is using his hands, I can just imagine his conversation about writing an article or doing a program on the Louisiana Iris. In (Fig. 6) our gentle giant, David Cooper, was trimming a blueberry bush.

With the weather being so great, we also participate in porch sitting so come out, join us, visit, and get a little exercise before it gets too hot. We are looking forward to seeing you there.



All photos by MG Tom Fountain



# Ball High Students Visit the Discovery Garden



MG Nancy Greenfield

Students in Environmental Science class at BHS arrived at the Discovery Garden in March and visited stations around the garden. They also helped get plants ready for a plant sale happening the next day. GCMGs provided tours and stations of information.



MG Jan Fountain



Briana with Stephen Bruegerhoff behind



MG Judy Anderson tours the Earth-Kind® beds



Group

Photos by MG intern Linda Crowston



## Reducing Plastic Waste in Food Service



Louis Wilson  
GCMG 2017



Laura Smith  
HCPL librarian

Have you attended events that served refreshments and noticed all the plastic waste generated that ends up in the landfill? Have you ever wondered if something can be done about this? Our church, Clear Lake Presbyterian (CLPC), recently held an Environmental

Justice Event. We wanted to serve snacks and drinks as a hospitality step for our guests, but do this in a way that was consistent with this being an environmental education experience. This article describes our approach toward devising a more sustainable plan for food service and the research we conducted to see if this was in fact feasible.

CLPC is a congregation in the Clear Lake / Bay Area. Our vision is to be an outwardly focused missional community serving our neighbors. Our mission statement is to *Embrace Every Person / Empower every Life / Engage every Neighborhood*. We have applied to become an Earth Care Congregation whereby we commit to an Earth Care Pledge and accomplish specific environmental actions in the areas of worship, education, facilities and outreach.

Our Environmental Justice Event was held in November 2022. The objective of this event was to answer God's call for us to be good stewards of his creation and to work toward the fair treatment and involvement of all people and the environment. It included two keynote speakers and 11 local non-profit exhibitors who are active in environmental preservation and restoration in the Bay Area. Approximately 125 people were in attendance.

In researching alternatives to plastic food service ware, we found a company which offers a variety of eco-friendly products. We purchased three types of plant-based products: plates, hot cups with lids and party cups. The plates and hot cups were heavy duty "paper-like" and the party cups were clear "plastic-like." All three were functionally equivalent to typical foam or plastic food service items. The company indicated that the plates and hot cups are "home compostable", while the party cups required "commercial composting." We focused this investigation on the ability to compost the plates and hot cups at home.

For refreshments, we served hot coffee and ice water accompanied by finger food snacks (cookies, donuts, kolaches, etc.). After the event, the plates and hot cups were cleaned of food scraps and transported to the home garden for composting.

The home garden compost system consists of three bins which are filled and cycled through in a series fashion. Kitchen waste, yard waste and garden clippings are routinely composted and are supplemented with bagged leaves collected from local neighborhoods prior to municipal trash pickups. As the material is moved from bin to bin it gets naturally mixed and aerated. By the time it is harvested from the third bin, the resulting compost is fully broken down and ready to use in garden beds for mixing in when reworking beds or as a top dressing around growing plants. This system produces dark rich compost without requiring excessive manual mixing or turning of the pile. It is a valuable supplement to the garden beds providing organic material and nutrients.



Products Ready for Composting



Squash planted in the compost



## “The composting project was a technical success...”

For purposes of this investigation, a single bin was dedicated to the composting of the food service ware. The food service ware was mixed with partially composted grass clippings and composted in the single bin. While not exactly the same as a traditional composting system, this approach closely simulated the typical process and allowed us to isolate and focus on the efficacy of composting the food service ware.

The composting began on November 12, 2022. A layer of partially composted grass clippings was placed in the bin followed by a layer of food service ware. This was repeated yielding three layers. The resulting mixture was watered and left alone for nature to work. After 3 weeks, the food service ware was beginning to break down but was still distinguishable. After 3 months, the service ware was fully broken down and indistinguishable from the grass clippings. The only exception was the hot cups which had a very thin plastic like film remaining. It appears that this film is embedded in the walls and bottom of the cups to improve liquid impermeability. This small amount was removed and discarded. It is worth noting that the rate of composting proceeds proportionally to temperature, so decomposition would be even faster during warmer months. On February 22, 2023 (a total of about 3 months), the resulting compost was harvested. It was mixed into the soil of one of the raised beds to prepare it for planting summer squashes.

The composting project was a technical success. With the exception of the thin film, the service ware was fully broken down. We would recommend these products to anyone desiring to reduce their environmental impact from food service.

One key challenge is cost. The compostable food service ware is two to three times more expensive than comparable non-compostable items. For many, this cost is justified in reducing our environmental impact. For others, it may not be. Over time, the cost may come down and compostable materials may become more accessible. Another critical step for someone attempting to replicate this is finding a place to do the composting.

There were several ideas generated for further study. One is to try home composting of the plastic like “party cups.” Another idea is to see if heavy duty paper-based service ware from a local store can be composted in a similar manner. As we proceed with a possible second Environmental Justice event, we hope to be able to test these ideas.

The authors would like to thank Clear Lake Presbyterian Church for their support. In particular, the planning and sup-

port of the Environmental Justice Event and the commitment to become an Earth Care congregation were key to our success.

*Laura Smith is a librarian with Harris County Public Library and an environmental activist. She leads the Earth Care accreditation team at CLPC.*



Home Composting System



Compost After 3 Weeks



Compost After 3 Months. All photos by MG Louis Wilson

## Meet a Master Gardener: Chris Anastas



Trish McDaniel  
GCMG 2001

Christine “Chris” Anastas joined the Galveston County Master Gardener chapter in 2012, Galveston Bay Area - Texas Master Naturalists chapter in 2015, and subsequently was one of the six founding members of the Clear Lake chapter of the Native Plant Society of Texas (NPSOT).

Her tenure in each organization has been and is full of activity. She conducted a presentation to NPSOT in 2022 on *Monarch, Migration & Milkweed* as well as on multiple occasions to other organizations on the same subject. More recently, she has presented programs for our Texas Master Gardener training classes of 2022 and 2023 on *Pollinator Gardening and Ecology*.

She is a patient, highly informed, and dedicated educator. Transforming her passion into action, Chris fully delivers the late Galveston County Extension Horticulture Agent Dr. William Johnson’s credo: Knowledge not shared, is knowledge lost.

She, along with MGs Robert Marshall, Judy Anderson, and Penny Bessire, were in charge of our chapter’s public education programs for three years, as well as producing the Upper Gulf Coast Citrus Show events sponsored by Galveston County AgriLife Extension. Chris is currently one of the GCMG program-appointed photographers. She was coordinator for the former MG Digital Photography Team. In 2014, her nomination for Outstanding Individual Master Gardener of the Year at the state Texas Master Gardener Conference honored her with being awarded third in that category.

Chris and her partner, John, live in Santa Fe, TX on five acres

of wild and wooded terrain. She enjoys early morning walks with coffee in hand observing her native landscape and particularly looking for newly chewed leaves; eaten leaves mean the plant is likely food for some beneficial insect. Resulting from the Winter Storm Uri in 2021, her collection of 30 citrus trees dwindled to only four survivors. Being a participant in the 2012 Upper Gulf Coast Citrus Show, her Rio Red won Best Grapefruit and Best of Show awards.

In a modest greenhouse on her property, Chris germinates a variety of native plants. In May, she begins an annual collection of fresh native seeds by visiting wild outposts she has identified throughout the county. Her interest in gardening started early. She reports she was always “that kid” who planted all sorts of seeds, including those from her lunch apple. One such seed became a tree which successfully fruited after ten years in her care.

With travel Chris enjoys awesome adventures and expanding new heights of knowledge. After her retirement from the US Postal Service, she and John took their RV on short cross-country road trips. Over the years, she has ventured through the South American Amazon on three separate educational tours, moving around different areas during the daylight hours by canoe and spending nights on a riverboat. Twice she has traveled to various overwintering sites of Monarch butterflies in the mountains of Mexico. In 2013, she attended the *Flower, Fjords & Friends* International Master Gardener Conference aboard an Alaskan cruise ship. Without fail she makes her yearly jaunt in September to Rockport, Texas for the annual Rockport-Fulton HummerBird Celebration. Add to these extraordinary exploits a bit of luck, too. Just last year she won



Chris teaching Spring 2023 Interns. Photo Jill Jesson.



Chris Anastas



Monarch Chris



*“She is a patient, highly informed, and dedicated educator...”*

travel and tickets to Super Bowl LVII at SoFi Stadium in Inglewood, California from a sweepstake drawing.

Chris is recognized as a citizen scientist, collecting information for Monarch researchers. Citizen science programs are a way for researchers to broaden their reach and capacity for data collection and observation. In practice, the power of this collaboration extends beyond simply crowd-sourcing information to input into databases. The observations of trained volunteers have aggressively expanded the ecological knowledge and reach of education and conservation efforts worldwide.

Her succinct, “just-the-facts-ma’am,” teaching style helps promote a deeper understanding of the complexities affecting the decline of the Monarch butterfly population. Chris recommends the following native milkweed for our area to aid in home conservation efforts: Green milkweed (*Asclepias viridis*); Whorled milkweed (*Asclepias verticillata*); Slim milkweed (*Asclepias linearis*); Aquatic milkweed (*Asclepias perennis*); and Zizotes milkweed (*Asclepias oenotheroides*). Keeping current on scientific studies related to Monarch conservation is a priority for Chris. It is her mission to share the knowledge she has gained through affiliations with six nationally based programs.

In a nutshell, Chris wants us to understand that native milkweed goes dormant in winter, and supports migrating butterflies with lower rates of an infection called *Ophryocystis elektroscirrha* (OE); non-native, or tropical milkweed survives our mild winters and non-migrating Monarch butterflies have the potential to be infected with higher OE rates - effectively producing wasting butterflies. Chris reports that most Monarch scientists advocate the use of native milkweed only; an article *Milkweed FAQs* from the Xerxes Society recommends using locally sourced native milkweed species (<https://www.xerxes.org/milkweed-faq>).

From personal experience, she also advises that native milkweed does not transplant well; greater success comes with home seed propagation.

Chris Anastas presents such a rich resource to her gardening community, the luck now is ours. For access to native plant seeds and plants, including instructions, or to request her Monarch program, she invites those interested to contact her at [txcatbird@yahoo.com](mailto:txcatbird@yahoo.com).

Monarch Conservation Programs of interest:

Texas Parks and Wildlife – *The Monarch Butterfly and*

*Other Insect Pollinators.*

[https://tpwd.texas.gov/huntwild/wild/wildlife\\_diversity/texas\\_nature\\_trackers/monarch/](https://tpwd.texas.gov/huntwild/wild/wildlife_diversity/texas_nature_trackers/monarch/)

Monarch Joint Venture – *Planting and Growing Milkweed*, <https://monarchjointventure.org/mjvprograms/habitat/planting-and-growing-milkweed>

Monarch Watch - <https://monarchwatch.org/>

NPSOT – Bring Back the Monarchs to Texas program, <https://npsot.org/our-work/bring-back-the-monarchs-to-texas/>

Xerxes Society - <https://www.xerxes.org/>



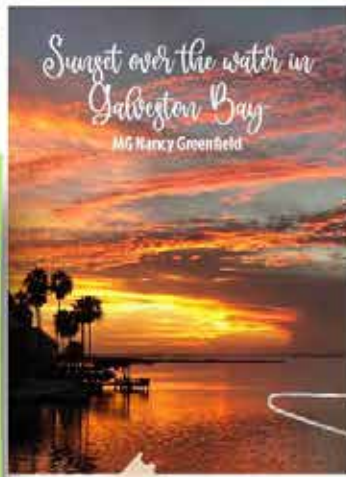
Texas Upper Coast Citrus Show - Won best grapefruit and best of show! 2012.



# Galveston County Master Gardener Bulletin Board

## Galveston County Master Gardeners 2023 Monthly Meeting Schedule

- June**  
Graduation and Recognition  
Mikey and Allen Isbell
- July**  
Fish Fry  
Briana Etie and Family  
Potluck  
Composting Chat with Jim Waligora
- August - TBA**
- September**  
Backyard Meeting, hosted by Tom and Jan Fountain  
Santa Fe
- October**  
Backyard Meeting, hosted by Pam and Darrell Hunter  
Santa Fe
- November**  
Annual Meeting  
Extension Office
- December**  
Holiday Party  
Mikey and Allen Isbell  
The Grinch Christmas  
Toy Donation



## Congratulations

Master Gardeners & Master Gardener Interns!

2022 TMGA Award results:

**First Place:** Youth-Other: DIG Days – Discovery Garden Explorers (Moody Methodist Day Care at the DG)

**First Place:** Written-Recorded Educational Content: Gulf Coast Gardening Newsletter – The Vegetable Issues

**Second Place:** Teaching Site: From Butterfly Garden to Pollinator Habitat

**Second Place:** Research: Soil Solarization Optimization for Root-Knot Nematodes

**Third Place:** Outstanding Master Gardener Association: Galveston County Master Gardener Association

**Third Place:** Youth-JMG: Heritage Junior Master Gardeners Keeping Friendswood Beautiful

**Third Place:** Workshop-Presentation: GCMGA Fall Festival Award presentations will be at the monthly meeting June 13.



MG Karolyn Gephart



Stephen Brueggerhoff

Farewell former GCMG President & Friend Sharon Zaal who is moving to Fulshear We'll miss you!

ASK A MASTER GARDENER HAVE A QUESTION OR CONCERN. LET GCMG'S HELP YOU. GO TO [HTTPS://TX-MG.ORG/GALVESTON/GCMGA\\_HOTLINE/](https://tx-mg.org/galveston/gcmga_hotline/). THIS FORM IS FOR PUBLIC INQUIRY TO GET ASSISTANCE WITH HORTICULTURAL TOPICS.

Galveston County Master Gardeners have a NEW WEBSITE

[txmg.org/galveston](https://txmg.org/galveston)

See all Gulf Coast Gardening back issues available in large or small format at the site. Thanks Stephanie Hendrickson, GCMG 2017 for your continuing work with Stephen Brueggerhoff on the new website.

GCMGS: Don't forget to log in volunteer hours through your VMS account.



MG Karolyn Gephart





## Seasonal Bites: Fit for a King!



Sandra Gervais  
GCMG 2011

“When that April with her showers sweet, The drought of March has pierced to the root.....”

Chaucer really knew his spring English weather. King Charles III had a better day for his coronation this May than his mother, Queen Elizabeth II, did for hers in 1953. Despite terrible weather that day, happy celebrations were held in homes and public places throughout the country. This recipe was widely served and so came to be called “Coronation Chicken.” There are many variations, but this is a typical recipe.



### Coronation Chicken

1 1/2 pounds of cooked chicken, chopped.  
9 ounces of mayonnaise.  
5 ounces of plain yogurt.  
1/2 lemon, juice and grated rind.  
1 teaspoon of curry powder.  
14 1/2 ounce can of apricots or mandarins, drained and chopped.  
4 ounces of sliced almonds (if desired, toast in skillet first)

Mix all together, leaving the chicken and almonds for last.  
Salt and pepper to taste  
Cover and chill for 2-3 hours or overnight.  
It can be served on a green salad or with simple crackers.

Note: you may want to try 1 teaspoon of curry powder and add more if desired. There are different types of curry powder, and some are spicier than others.



### Simple Corn Casserole

Oven 375 degrees  
1ea 15 1/2 ounce can of cream-style corn, undrained.  
1ea 15 1/2 ounce can whole kernel corn, undrained.  
12 ounces of cream cheese, softened.  
1 small box of corn-bread mix  
1 cup grated Cheddar cheese.  
butter to dot the top.

Mix together the cream style corn and its liquid, whole kernel corn and its liquid, and softened cream cheese.  
Stir in cornbread mix.  
Pour into a greased 9 x 13 baking dish.  
Dot top lightly with butter.  
Bake for about 40-45 minutes.  
Remove from oven and sprinkle cheese on top.  
Return to oven until cheese melts.

Note: good add-ins are cooked bits of bacon or herbs such as rosemary.

### Honey Dijon Salad Dressing

4 tablespoons olive oil.  
1 tablespoon honey.  
1 tablespoon red onion, grated.  
1 tablespoon Dijon mustard.  
1 clove garlic, grated.  
Juice of 1 large or 2 small lemons.  
salt and pepper to taste.

Blend well or mix thoroughly.  
Serve over greens or mixed salad.

## Book Review: *A Southern Garden* by Elizabeth Lawrence



Lisa Belcher  
GCMG 2014

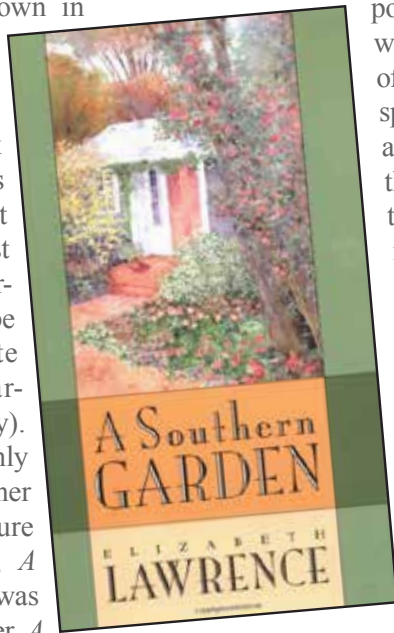
Our first book of 2023 was first published in 1942, which detailed the seasons and plantings one might choose for their own Southern garden. It has since been reprinted four more times, the most recent in 2001.

Elizabeth Lawrence, born in 1904, is an internationally known garden writer. Although this book primarily discusses plants which can be grown in North Carolina, readers and gardeners from across the globe have used Lawrence's book for reference. She was the first female student to graduate from the first class of Landscape Architecture program to be taught in the South at State College (now North Carolina State University). At the age of 28, not only did she graduate with her Landscape Architecture degree, her first article, *A Good Flowering Show*, was published. Ten years later *A Southern Garden* was published. Critics and historians have credited Lawrence as one of three prominent Southern garden writers. The other two? Thomas Jefferson and J.C. Raulston.

Written for gardeners in Zone 8, the author divides her book into the seasons of the year. With her gardening experience from her own gardens, as well as neighbors and friends from around the world, Lawrence states in the foreword: "I mean to state at the outset of the sort of gardener I am. I am interested in gathering from all parts of the world plants that find to their liking the conditions

in the part of the country where I live and garden. I am not interested in acquiring rare and difficult specimens merely because they are rare and difficult. I do not believe in pampering plants. If they are miffy, let them go. There are plenty of others just as lovely and far amenable." From the moment I read those last two sentences I knew, had we met, Lawrence and I would have been friends. She catalogues hundreds of tips including the types and varieties of plants for the seasons, along with where to put them and how deep to plant a certain bulb.

Sitting on my back patio, gazing at my tortured and possibly "not a chance in heck it will come back" plants, I dreamed of Lawrence's garden. The author sparsely uses common names, and the botanical names listed in this 1942 book have changed over time. As I write this review, I can imagine many will want to pass on this book as it is written for a different clime, but give it a second thought. This book details the meticulous way the writer organized her garden. She records "the earliest date that I have recorded for the milk-and-wine lily is the third of August; the latest is the ninth of November."



She provides tables giving blooming dates of over 800 varieties of plants, neatly organized by annuals, bulbs, vines, perennial/biennials and shrubs, detailing when sown, earliest date of first bloom, latest date of first bloom and length of bloom. Although disappointed that I cannot grow all the wonderful plants Lawrence describes, it gives me hope of being a better record keeper of my garden. Perhaps I'll try a few of those plants that grow in Zone 8, but at an earlier or later date. And if they are miffy, I'll let them go, just like she did. I leave you with one last quote from the author: "Dirty fingernails are not the only requirement for growing plants. One must be as willing to study as to dig, for a knowledge of plants is acquired as much from books as from experience."

The Green Thumb Book Club is happy to share the books selected for next year's reading! We will be reading seven books, the most our group has read in a single year. When you read and attend a book club meeting, the time spent counts towards Continuing Education hours. As of October, Green Thumb Book Club readers have logged 23 continuous education hours all the while enjoying interesting and lively discussions.

This year's books include a variety of gardening/nature topics as well as two garden-themed fiction books.

**June/July**  
*Bees in the America; How the Honeybee Shaped a Nation* by Tammy Horn

**August/September**  
*Down to Earth Gardening Wisdom* by Monty Don

**October/November**  
*This is Your Mind on Plants* by Michael Pollan

**December**  
*The Forgotten Garden* by Kate Morton

The Green Thumb Book Club meets the fourth Wednesday of the month in the conference room at the Extension office. If you have any questions regarding the books, club, time, etc., please contact Lisa Belcher at: [hydrangeababe@gmail.com](mailto:hydrangeababe@gmail.com)



# Houston Botanic Garden Visit



Photo MG Linda Steber



Photo MG Linda Steber



Photo Stephen Brueggerhoff



Photo Stephen Brueggerhoff



GCMG 2023 Interns and Master Gardeners visit the Houston Botanic Garden on a field trip.



# Photo Gallery: Sculpture



Photographs of sculpture from the day the MG Interns visited the Houston Botanic Garden.

Linda Steber  
GCMG 1991

The next issue's Photo Gallery will feature

### Bugs in the Garden.

Anyone can contribute to this page by sending in a photo with water or water related topic along with the name and scientific name of plants. Any other information about it can be included and will be used space permitting.

Please send photo in a large size, any information you want to give and your name and general location of art.

Deadline is July 1, 2023.  
Send to [kbgephart@comcast.net](mailto:kbgephart@comcast.net).





# A Walkway of Honor and Memories



*Visitors today are welcomed with a long brick walkway honoring volunteers and their families and friends at the GCMG Demonstration Gardens*

In the Fall of 2006, a decision was made to create a brick walkway from the visitor's entrance of the GCMGA Demo Garden, around the pergola structure, and then extended to the east. The reasons were to improve the entrance appearance; to comply with public accessibility standards set forth in the American Disabilities Act; and, to help generate funds for other garden projects.

The first bricks were installed in 2008. Since then, many MGs have provided bricks in memory of family and friends or in honor of others. Some provided bricks for pets or slogans. As we replaced blank bricks, the replaced ones are saved to extend the walkway of honor and memories in north and south directions from the pergola.

Beginning in 2012, Master Gardener class member bricks have been installed together on the east side of the pergola. Also, some garden clubs, businesses and friends of MGs have participated in the project. The newly certified 2022 Intern Class is now eligible to purchase bricks and become a part of this honored path.

This fundraiser is an ongoing project. We also invite our existing MGs and friends and family to participate.

See attached Brick Order form for pricing. Please print the form and fill in the blanks (please note only one letter in each designated space). You can bring the form with your payment to the Demo Garden on Thursdays, or you can mail it to the Galveston County AgriLife Extension Office, c/o Linda Barnett, 4102-B Main Street, La Marque, TX 77568

For further information please contact Linda Barnett at [lindabarnett@aol.com](mailto:lindabarnett@aol.com)

**Deadline for order placement is July 31, 2023**

Team Leaders

Linda Barnett - Brick Orders

Linda Steber - Brick Order Checker

Rachel Montemayor - Team Lead on Placement

Santos Montemayor - Labor & Placement

Larry Brizendine - Labor & Placement

Extra Volunteers Needed





<https://txmg.org/>

# Horticulture

## June Events

### Urban Orchard Series: Blackberries

**6/10/23 9:00am - 11:00am**

#### Gulf Coast Gardening Seminar

Explore cultivation of blackberry varieties, growth habit and seasonal pruning, trellising systems and fertilization.

To register, visit: <https://galveston.agrilife.org/horticulture/>



### Open Public Garden Days

**Every Thursday, 9:00am - 11:00am**

#### Gardening with Master Gardeners

The Discovery Garden will be open to the public for visitors and gardening questions.

**Location: in Carbide Park, 4102 Main St, La Marque, TX 77568**

### Plumeria Propagation

**6/17/23 1:00pm - 3:00pm**

#### Gulf Coast Gardening Seminar

Hands-on workshop demonstrating propagation methods from cuttings and seeds. Class is limited to 12 participants.

To register, visit: <https://galveston.agrilife.org/horticulture/>



**TEXAS A&M  
AGRILIFE  
EXTENSION**

Galveston County Texas A&M AgriLife Extension  
4102-B Main Street (FM 519) La Marque, TX 77568  
<https://galveston.agrilife.org/horticulture/> 281-309-5065



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## 2023 Master Gardener Recertification Hours

Date	Name of Program	Speaker	MG CEUs
1/5/2023	Lunch & Learn - Tree Update to Garden North End	Ira Gervais	0.25
1/7/2023	Wedge Grafting	Herman Auer, Hazel Lampton, Debbie Espinosa	2.50
1/7/2023	Growing Pecans at Home	Stephen Brueggerhoff	2.00
1/10/2023	MGA Jan. Meeting - Looking Ahead in 2023	Kathy Maines, Stephen B.	1.00
1/11/2023	League City Garden Club Speaker	Rosarian Baxter Williams	1.00
1/12/2023	Lunch & Learn - Plant Freeze Damage	Ira Gervais	0.25
1/21/2023	Growing Great Tomatoes, Pt. 2	Ira Gervais	3.00
1/21/2023	Propagating Fig Trees	Barbara Canetti	1.50
1/26/2023	Lunch & Learn - Cantaloupe Trials	David Eskins	0.25
2/7/2023	Seed Potato Cutting Workshop	Kevin Lancon	1.00
2/11/2023	Growing Peaches in Galveston County	Herman Auer	2.50
2/14/2023	MGA Feb. Meeting - Aliens vs Invasives (TEAMS)	Laurie Lomas Gonzales, USFWS	1.50
2/18/2023	Growing Avocados	Hazel Lampton	1.00
2/23/2023	Pruning Pear Trees	Robert Marshall, Herman Auer	1.75
3/11/2023	Tomato Stress Mgmt., Pt. 3	Ira Gervais	2.50
3/14/2023	MGA Mar. Meeting - Tool Time	Tim Jahnke, GCMG 2011	1.00
3/18/2023	Earth-Kind Landscaping for Garden Success	Stephen Brueggerhoff	2.00
3/18/2023	Cucumbers, Squash and Melons	Kevin Lancon	2.00
3/30/2023	Texas Superstars (Rosenberg Library)	Stephen Brueggerhoff	1.00
4/1/2023	Louisiana Iris for the Gulf Coast Garden	Monica Martens	2.00
4/6/2023	Lunch & Learn - March Madness Sale wrap-up presentation	Kathy Maines	0.25
4/11/2023	MGA Apr. Meeting - Seeding Galveston	Cheryl Watson, GCMG 2018	1.00
4/15/2023	Peppers	Gene Speller	2.00
4/15/2023	Grafting Pecans	Stephen B, Herman Auer	2.00

### 2023 Recertification Hours for MGs

**Total CEUs (Hours)**

**35.25**

Last Updated: April 12, 2023

**Reminder: In order to maintain your status as a certified Texas Master Gardener, each year you must complete a minimum of 6 hours continuing education, as well as 12 service hours. Additionally, those hours must be reported through the online Volunteer Management System or other means.**



# Water Conservation Starts in the Landscape



Stephen Brueggerhoff  
Extension Agent - Horticulture  
Texas A&M Agrilife Extension  
Service - Galveston County

Fresh water is a precious and limited resource, and my belief is each one of us takes personal responsibility through conservation. According to EPA's WaterSense® program, the average American family uses 320 gallons of water daily, with 30-percent applied as landscape irrigation. This percentage can vary depending on location; households in drier climates may contribute up to 60-percent landscape irrigation. Experts estimate over half the water used in landscapes is lost to evaporation or runoff from irrigation inefficient practices and systems. To better inform and guide the public to include personal conservation practices, Texas A&M AgriLife offers Earth-Kind® landscape principles, easy-to-use techniques we can adopt to help conserve water. First is soil analysis to determine existing soil nutrient availability that will act as a guide to reduce fertilizer use. Next includes landscape planting design, providing an opportunity to personalize our outdoor living space, while also reducing landscape maintenance to a practical level. Maintenance also includes an opportunity to assess landscape irrigation practices. Whether you are manually operating an oscillating sprinkler or automated lawn sprinkler system, conducting an

irrigation audit provides evidence of how efficiently you are covering your landscape, how fast your system is applying water and how much water is applied in duration.

First steps of an audit are visually inspecting your system for problems; replace broken sprinkler heads, unclog nozzles, mend hose leaks, etc. The next step is using a catch can system to measure precipitation. Catch cans are receptacles that capture applied water, and up to 24 cans are placed in a grid pattern in the irrigated area for measurement. Uniform, calibrated containers can be purchased from retail outlets, such as Aggie Catch Can Set from AgriLife Learn - <https://agrilife-learn.tamu.edu>. For the DIY approach, you can use 12-ounce tuna cans or used cat food containers for measuring precipitation rates. However, these containers are hard to level and may need a small rock placed inside to keep them in place. After you run your system, measure the depth of collected water after removing the leveling rocks. Common runtimes: spray heads up to 10 minutes; rotor heads up to 15 minutes; and hose-end sprinklers from 10 to 30 minutes. To calculate your precipitation rate, add up measured volumes and divide by the total number of catch cans to record the average volume. Next, divide the average by the test runtime and multiply by 60; this will equal the precipitation rate in inches per hour.



## *“Texas A&M AgriLife offers Earth-Kind® landscape principles...”*

Keep in mind that irrigation schedules should also calculate evapotranspiration rates (ET), defined as water transpired from a plant and the amount of evaporation from soil surface. Including ET into the equation may seem a bit complex; there are online calculators that will help estimate ET rates into irrigation application.

Good news for us all: AgriLife Extension offers a free program called Water My Yard (<https://watermyyard.org>), a science-based tool that helps take the guesswork out of when and how much to water. Advice offered is calculated from data collected from a network of local weather stations, rain gauges and plant biology. You can also download an app to your mobile device for ease of use. Once at the website, you create a personalized account and setup your irrigation profile that includes the type of irrigation used (oscillating, in-ground spray, drip). Then based on your location, experts send customized weekly water application advice to your email. My most recent experience using the app: my area is known to receive a precipitation rate of 0.3-inches/hour. Watering recommendation for April 22 to April 28, 2023 (Saturday through Friday) is 0.27-inches of water needed, estimated at one watering for 53 minutes.

Now that I have a recommended application and runtime, I want to water deep and infrequent, achieved by using the cycle and soak method. Cycle and soak is a method of applying water in multiple cycles to reduce runoff and allow water to soak in. The minimum time between cycles varies from 30 to 60 minutes, and schedules will vary at each site based on soil type, slope, and sprinkler precipitation rates. You may have

already captured precip rates from an irrigation audit. Manufactured products will display this information on labels, and rates vary from .5 to 1.5-inches/hour.

A simple way to determine soil type is the ‘feel method’, taking a small soil sample in hand, wetting it to damp and rolling ribbons with the material. Generally, fine textured soils (clays) have low infiltration rates, while coarse-textured soils (sands) have high infiltration rates. I have used the hands-on methods described in the following table to get a general idea of soil texture; while not scientifically accurate, it will give you a good estimate of soil type.

Example: my report recommends irrigation for 53 minutes. I estimated the soil type in my yard as Clay Loam. I can schedule my irrigation to run 2 times for approximately 25 minutes each. I know from observation that water will puddle in a portion of my yard; I will schedule to run 3 cycles at 17 minutes each. A slope or observed instances of runoff may require 4 cycles of 13 minutes each.

Consider using best landscape practices and tools to do your part conserving water, our most precious resource.

### Resources

Texas A&M AgriLife Extension

Preventing Runoff with Cycle and Soak Irrigation, AGEN-PU-218; AgriLife Learn - <https://agrilifelearn.tamu.edu/>

Texas A&M University, School of Irrigation, Aggie Catch Cans - <https://irrigation.tamu.edu/aggie-catch-cans/>

Water My Yard - <https://watermyyard.org/>

US Environmental Protection Agency WaterSense® - <https://www.epa.gov/watersense>

Soil Type	Description
Clay	Fine textured soil that feels sticky; forms a long ribbon when rolled.
Clay Loam	Breaks into hard clods; can be rolled into a compact mass.
Silty Loam	Feels smooth, moderate amount of fine sand, small amount of clay; will not form a ribbon.
Loam	Mixture of sand, silt and clay; can be handled without breaking.
Sandy Loam	Fair amount of sand; silt allows it to stay formed with careful handling.
Sand	Feels very gritty; forms a cast when squeezed, crumbles when touched.



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# Judy's Corner: Galveston County Monthly Meetings



Judy Anderson  
GCMG 2012

## Summer Kicks off with GCMG Monthly Meetings

**June 13, 2023**

**Graduation and Recognition**

**Home of Mikey & Allen Isbell**

The June GCMG meeting is for celebrating as the 2022 Galveston County Master Gardeners are recognized for their accomplishments. The 2023 class will be introduced, and the accomplishments of other Master Gardeners announced. The evening is always a fun party with appetizers and beverages under the gazebo. This will be an outdoor event with a late start to allow the cool evening breezes to develop. The potluck will be set up in the Garden House and will begin after the program.

Mikey Isbell has been hosting the GCMG Graduation since she became a Master Gardener in 1992. Mikey is an accomplished hostess and has created a festive event where everyone feels welcome. Please take some time to stroll around the garden to visit the fish pond and also to enjoy the plumeria.

With the late start, it would be a good time to invite Master Gardeners who don't drive at night to carpool with you. Some of our members don't get to attend the meetings because of road construction that makes driving difficult.

The evening will be full of surprises!



Judy and new friend at Seeding Galveston. MG Vickie Blythe

**Tuesday July 11, 2023**

**Fish Fry**

**at the Discovery Garden**

After the success of last year's Fish Fry, we had to do it again. Briana Etie, MG 2017, will once again lead the cooking team. She will be joined by John Mitchner, MG 2022, who brings 35 years of frying fish experience for the Knights of Columbus in Dickinson. Briana will be stirring up her family's secret cocktail sauce to go with the fish.

While the fish is cooking, Jim Waligora, MG 1998, will present a composting program. The composting station was recently updated with a memorial donation from the Ken Steblin family.

Adventure out to the Earth-Kind® Garden for the debut of the Fairy Garden designed and created by MG Pat Saenz. Pat has done Fairy Garden presentations and creates many of the accessories she uses in her designs. Visit the home she has created for the fairies, elves and trolls that live in the Discovery Garden.



Kitchen crew at GCMG Monthly meeting hosted by Ira and Sandra Gervais



At the Blessing at Moody Gardens Herb Fair

Photos by MG Karolyn Gephart

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