

Urban Dirt

Succulents!

Gardening Events and Information for Texans

Achieving Success with Succulents

by Terri Simon, Master Gardener

Photos by Terri Simon

It started when I began making the fairy gardens. The metal containers I used were not very deep. I needed something with shallow roots. In addition to this, I wanted plants that were easy to grow but didn't outgrow my containers quickly, had low water requirements and could handle stress. Something evergreen would have been nice as well. Succulents met all of the requirements. They were easy to propagate as well. It was a match made in heaven.



My wannabe fairy garden

The deal was sealed when I heard Brie Arthur's succulent lecture at the 2019 Texas Master Gardener State Conference in Victoria. Her love of succulents was contagious. She had several good tips. My favorite was using tweezers to pick weeds out of the plants.

I don't have a lot, but I never had any before. While I may not have any cactus, I do have other succulents. Succulents require good drainage so I amend my soil with a little sand and I also top them with gravel or landscaping rocks. Working with them is fun and easy. Super easy. I watched Chevy Tang throw together a



Brie Arthur

cont'd on pg. 7



Upcoming Events	2	Master Gardeners in the City	10
President's Perspective.....	3	Growing with Plants & Nature... ..	11
Herb of the Month	4	GMOs and Plant Variegation	12
Plant of the Month	5	Open Garden Days at Genoa	
Master Gardener Birthdays	8	Friendship Gardens.....	16
Ask a Master Gardener	9	Gardening Tools	17



Have Garden Questions? Email your questions and photos to: phonehcmga@gmail.com

UPCOMING EVENTS

Dear Master Gardeners and Community Members,

As we tread these pandemic waters together as a community, we hope to continue being a source for gardening and COVID-19 resources. The suspension of Harris County Master Gardener events will remain in effect through the month of May. Texas A&M AgriLife Extension - Harris County hopes to reopen to the public in June. In the meantime, if you have reached out while we are still partially working from home, we will respond as soon as possible. You can find us active on the social media links below. In addition, the Harris County Ag/Natural Resources Department is hosting a four-part webinar on each Thursday during the month of May. To register for these free events, please visit <https://bit.ly/2KlvEWw>.



HOME GROWN LECTURE SERIES

Hosted by Texas A&M AgriLife Extension—Harris County
10:00 am Thursdays in May 2020
Join us for 30 minutes from the comfort of your home!
All you need is a computer, laptop or mobile device with internet capabilities.

May 7th
10 Annuals For the Houston Heat
Paul Winski, Texas A&M AgriLife County Extension Agent-Horticulture

May 14th
Backyard Poultry
Shannon Dietz, Texas A&M AgriLife County Extension Agent-Agriculture & Natural Resources

May 21st
Gardening in Small Spaces
Kim Perry, Cooperative Extension Program-Agriculture & Natural Resources
Prairie View A&M

May 28th
Attracting the Right Wildlife to Your Garden
Brandi Keller, Harris County Master Gardener Program Coordinator

TEXAS A&M AGRILIFE EXTENSION

PRAIRIE VIEW A&M UNIVERSITY
COLLEGE OF AGRICULTURE AND HUMAN SCIENCES
Cooperative Extension Program

To register for this free event, please visit <https://bit.ly/2KlvEWw>

A link to the program will be emailed before the webinar.

The members of Texas A&M AgriLife will provide equal opportunities in programs and activities, education, and employment to all persons regardless of race, color, sex, religion, national origin, age, disability, genetic information, veteran status, sexual orientation or gender identity and will strive to achieve full and equal employment opportunity throughout Texas A&M AgriLife. Individuals with disabilities who require an auxiliary aid service or accommodation in order to participate in this meeting are encouraged to contact the County Extension Office prior to the meeting to determine how reasonable accommodations can be made.

If you have horticulture questions, email our Master Gardener Hotline at phonehcmga@gmail.com.

Please visit us at the social media pages below:

- [Harris County Extension Horticulture Facebook Page](#)
- [Harris County Master Gardeners Facebook Page](#)
- [Harris County Family and Community Health Facebook Page](#)

For more information on COVID-19, please visit the following websites:

COVID-19
AgriLife Extension
Web Hub

How to Wear and
Take Off a Face
Mask

Growing with Plants
and Nature Virtual
Facebook Group

Brandi Keller
Master Gardener Program Coordinator
Texas A&M AgriLife Extension – Harris County

TEXAS A&M AGRILIFE EXTENSION

Texas AgriLife Extension Service Horticulture Program in Harris County

13105 Northwest Freeway, Suite 1000
Houston, TX 77040
713.274.0950

Master Gardener Program Coordinator

Brandi Keller - 713-274-0956

CEA – Horticulture

Paul Winski - 713-274-0981

CEA – Horticulture

Vacant



2020 Board of Directors

President

Beth Braun
hcmgapresident@gmail.com

First Vice President

Alan Fisherman
hcmga1vp@gmail.com

Second Vice President

Jonathan Correia
hcmga2vp@gmail.com

Past President

Evan Hopkins
hcmgapastpres@gmail.com

Secretary

Aida Pita
hcmgasecretary@gmail.com

Treasurer

Dianne Lawrence
hcmgatreasurer@gmail.com

Directors

Douglas McLeod
Danny Dunn
Janice Muhm
Dana Goeggel
Linda Saxman
Alexa Haass
Marsha VanHorn

Genoa Friendship Gardens Steering Committee Coordinators

Advisors

Evan Hopkins
Georgia Lau

Urban Dirt Editor

Carolyn Boyd
UrbanDirt.harrishort@gmail.com

Assistant Urban Dirt Editor

Terri Simon



Urban Dirt writer and assistant editor Terri Simon received the Meritorious Service Award at the Annual Luncheon.

PRESIDENT'S PERSPECTIVE

Photo by Christa Kaiser

A few weeks into the additional steps taken by Harris County to control the spread of the novel coronavirus, I realized my mindset had to change from a sprint to a marathon with no clear finish line.

We've all acquired an unsettling vocabulary: The novel coronavirus. COVID-19. PPE's. Social Distancing. N95 masks. Intubation and ventilators. Antibodies. Zoom and Zoom bombs.

The news surrounding the pandemic is both surreal and too real. The pandemic has upended our personal, work, family, and community lives. In a few short weeks it has changed how we shop, eat, worship and study. For some, sleep is disrupted by worries or long hours as essential workers. The loss of lives, livelihoods, and life savings is heartbreaking.

But close on the heels of this massive disruption in life as we knew it came courage, generosity, adaptation and innovation. Just a few examples: Quarantined Italians sing from balconies. Fund and Feed, a new local nonprofit, buys meals at restaurants and distributes them to the hungry, thus serving two communities. Local nonprofit TX/RX Labs started manufacturing desperately needed face shields using 3D printers to donate to area medical facilities. Their collaboration with Houston Community College, San Jacinto College, Houston ISD, Alief ISD and others with 3D printers, and sharing the pattern online for anyone to use, ramped up production. The Texans rolled out Huddle at Home, an assortment of resources for parents, teachers and elementary students including Texans Story Time. Museums and arts organizations offer virtual tours, plays, and activities. The River Oaks Chamber Orchestra posted this moving performance called Virtually Together: Anthem of Hope. <https://youtu.be/KZK7yPJPfVc>

As an organization built on connection with each other and with the public, Harris County Master Gardeners face a three-fold challenge: How do we stay connected with each other? How do we earn our volunteer and continuing education hours? And how do we carry on our mission of public outreach?

Our situation may be very different by the time you read this. Whether it is or not, I encourage each of you, and especially those in leadership positions, to stay connected by emails, online meetings, phone calls, old fashioned cards, or whatever means you're comfortable using. I also encourage you to read the Weekly Update from our program coordinator, Brandi Keller, for information on volunteer opportunities that don't involve face-to-face activities, as well as new ways of earning continuing education hours. Some are on Facebook, and other online classes can be accessed directly from the Weekly Update. As for public outreach, much depends on our hosts' and public policies for in-person gatherings. Some committees are exploring the brave new world of online outreach.

Until we can resume our activities in person, eat well, sleep well, take walks, get your hands in the soil, and love on your partners, families and pets. Be well, friends.

Beth Braun
HCMGA Board President, 2020



Photo by Beth Braun

HERB OF THE MONTH

Lobelia - (*Lobelia siphilitica*)

by Karen McGowan, Master Gardener

What an unusual time for our world this is; we Master Gardeners may be asking ourselves, what can we do to help? Gardens are certainly restorative and undoubtedly providing a uniquely special respite during these challenging times. Whether ornamental, practical, or a combination of the two, home gardens have long provided opportunity for both private retreat and hobby, serving as a contemplative enclave for spiritual, emotional, and physical healing. Herbs certainly have their rightful place within the garden, and are well known for healing properties. This month's featured herb, lobelia, has been used for many years by herbalists for treatment of respiratory issues such as bronchitis, asthma, pneumonia, and cough, although insufficient scientific evidence exists to fully support its use.

Lobelia, also known as "Indian tobacco", contains chemicals that are claimed by those who utilize it for respiratory issues to help the body expel mucus by thinning it. As lobelia's nickname "Indian tobacco" implies, lobelia contains another chemical, lobeline, possessing effects akin to nicotine, and is likewise used by some for smoking cessation support. According to Pennsylvania State University, "researchers now believe that lobeline may actually reduce the effects of nicotine in the body, particularly the release of dopamine. Dopamine is a brain chemical that plays a number of important roles in the brain. It is also involved in drug addiction, so researchers think that lobeline may have some potential in treating addiction. So far, however, there have been no studies to determine whether lobeline is effective."

An attractive annual or sometimes biennial herb reaching heights of one to three feet tall, lobelia is typically an early summer to fall bloomer, presenting conspicuous blue flowers that attract hummingbirds and are valuable to bumble bees. Native to eastern North America, lobelia thrives in full sun in cooler climates than south Texas; here, it appreciates part shade, medium to

wet conditions, has virtually no pest issues and few maintenance requirements. Propagation is accomplished by dividing clumps in the spring or by scratching stratified seed lightly onto the soil surface. For medicinal purposes, the seeds and leaves are utilized.



If used in large quantities, lobelia is considered a potentially toxic herb. At high dosages, it can cause serious side effects, such as profuse sweating, nausea, vomiting, diarrhea, tremors, rapid heartbeat, mental confusion, convulsions, hypothermia, coma, and possibly even death. Only a health care provider should determine the right dose for treatment of health issues, and those with high blood pressure,

heart disease, liver disease, kidney disease, tobacco sensitivity, paralysis, seizure disorder, and shortness of breath, and those recovering from shock should not take lobelia, nor should it be used by pregnant or nursing mothers. With appropriate precautions, however, lobelia is a highly-touted and excellent herb for a springtime respiratory remedy, and available in a wide variety of form options.

Aside from the medicinal properties, provided your garden offers a wet and partially shaded area that would welcome lobelia's scale, this beautiful herb is an excellent choice for those appreciating violet-blue tones, that also offers great pop and texture.

Hopefully each of you are finding healing and hope in your treasured gardens, looking forward to days in which we can enjoy fellowship in joint gardens once again!



Citations:

<http://pennstatehershey.adam.com/content.aspx?productid=107&pid=33&gid=000264>

https://www.wildflower.org/plants/result.php?id_plant=losi

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=i460>

PLANT OF THE MONTH

Succulent

by Don Tyler, Master Gardener

Photos by Don Tyler

This month's Green Thumb lecture was going to be on succulents and so this plant of the month article is supposed to tie into that theme. There is one problem.....about all I know about succulents is I see them on the shelves in the garden section of the local big box stores. That is as close to a succulent as I have gotten, which put me in a bit of a quandary for this month's article.

The noun, succulent, is defined by those "cute" little cactus looking plants at the big box stores, but the adjective of the word is "full of juice" (WordBook). That idea seems to be something I could work with. I am reminded of an elderly couple that were longtime friends of my wife's family. many years ago we would go to their house and have a great evening of conversation coupled with a wonderful dinner. Addie could cook wonderful meals. After the meal, we would sit in the living room, visit and then somewhere during the conversation, Boice would nod to Addie. That nod meant one thing. Go pour everyone a small glass of home brewed elderberry blossom wine. To be honest, I think liquor would be a better description. Whether it was a wine or a liquor, one thing was unmistakable, it was succulent!

I am obviously not going to write an article on wine making but I wanted to share some interesting facts about the elderberry.

*"S. nigra ssp. Canadensis, American elderberry, grows 6 to 12 feet tall. Native throughout most of the United States and Canada, it produces similar clusters of flowers in late June and, later, purple-black berries."*¹



I must admit I am fascinated by plants that have medicinal/health uses. The website, healthline, states, "Elderberry is one of the most commonly used medicinal plants in the world. Traditionally, Native Americans used it to treat infections, while the ancient Egyptians used it to improve their complexions and heal burns. It's still gathered and used in folk medicine across many parts of Europe. Today, elderberry is most often taken as a supplement to treat cold and flu symptoms."² There is a wealth of information online touting the health benefits of elderberry.

There is also a downside to elderberry. Strangely enough, "The seeds, stems, leaves and roots of the Black Elder [i.e. American elderberry] are all poisonous to humans."³ Pets can be affected if they eat from the elderberry bush as well. Herbwisdom.com states, "Most species of Sambucus berries are edible when picked ripe and then cooked. Both the skin and pulp can be eaten. However, it is important to note that most uncooked berries and other parts of plants from this genus are poisonous. Sambucus nigra is the variety of Elderberry that is most often used for health benefits as it is the only variety considered to be non-toxic even when not cooked, but it is still recommended to cook the berries at least a little to enhance their taste and digestibility."⁴

So, packed with all that information, I had to give it a try. I purchased my elderberry plant from a local nursery. I planted the bush in an area of semi-shade as attested by the picture (taken in late March). It is kind of funny; when I took the picture at 1:30 p.m. (work from home coronavirus time) the plant seems to be right in the middle of a sunny spot with shade all around. Since planting in January, the plant has grown nicely and seems to be quite happy!

cont'd on pg. 6



Succulents (Elderberry), *cont'd from pg. 5*

As with so many plants, the elderberry grows best in well-draining soil. That is our challenge in the Houston area as so many of our yards are primarily a clay base. I am fortunate as I seem to have a large area that is primarily clay and another is significantly sandier. If you find yourself with primarily clay, takes steps to maybe dig a bigger hole than you normally would and amend the soil you backfill with.

As with most berry producing plants, they lean towards needing acidic soil with a pH of 5.0 to 6.0. This is very critical as I have learned in growing blueberries. Every year since I bought my three blueberry plants, I have seen them continue to dwindle. So much so that I recently bought a handheld pH meter. I checked and my soil was around 7.0. Blueberries grow best in soil with a pH of around 4.5. I have since been adding sulfur to the soil around the plants to acidify the soil and I have seen an immediate positive response in the plants.

I am looking forward to growing elderberry and who knows...just maybe, I might try my hand at some elderberry blossom wine!



¹ "Elderberry," *Rodale's Ultimate Encyclopedia of Organic Gardening: The Indispensable Green Resource for Every Gardener*, Edited by Bradley, Fern Marshall; Ellis, Barbara W; Phillips, Rodale, Location 5517 of 18280.

² Mandl, Elise (BSc, APD). "Elderberry: Benefits and Dangers." March 8, 2018. Accessed January 10, 2020. <https://www.healthline.com/nutrition/elderberry>.

³ "Are Elderberry Bushes Poisonous?" Accessed January 10, 2020. <https://normsfarms.com/blogs/growing-and-harvesting-elderberry/are-elderberry-bushes-poisonous>.

⁴ "Elderberry Benefits." Accessed January 10, 2020. <https://www.herbwisdom.com/herb-elderberry.html>

Achieving Success with Succulents, *cont'd from pg. 1*

succulent globe while we were volunteering at the rodeo. She used some succulents she bought on clearance, two half round wire baskets with coconut coir from a dollar store, some soil and an old rack for storing CDs. Voila! A beautiful planter with its own stand.



Master Gardener Chevy Tang

Succulents don't care for organic mulch and they will thrive if you mix them in with other drought tolerant plants such as the Mediterranean herbs (thyme, rosemary, lavender). They prefer a temperature range of 40F-80F and most will not tolerate our Texas heat. Instead they will require protection from the blistering afternoon sun we get in our area. Many are not freeze tolerant, but it is possible some will survive if you have a micro climate area in your yard. They do attract some pests such as aphids, mealy bugs, slugs and snails. Their biggest threat can come from gardeners who are heavy handed with a watering can. While most succulents are smaller and grow slowly, be aware that a few are gargantuan. The Agave americana, or century plant, can reach six feet and live for 10-25 years. When it flowers, the flower can add up to 15 feet total. Another agave, Jaws, can grow four feet high and become four to eight feet wide. One of the most popular succulents found in many yards is the Aloe vera. It has fleshy leaves and small teeth around the leaf edge. It is a medicinal plant that has been used for thousands of years. The clear gel from its leaves is applied topically for a variety of reasons. The juice from the leaves can also be drunk.

What is the difference between a cactus and a succulent? All cacti are succulents, but not all succulents are cacti. Succulents can store water in their arms, roots, stems or their leaves. They are fleshy. Kind of like me. Many cacti have spines but a few succulents also have spines. How can you tell the difference? A cactus has small bumps on its surface called areoles. Spines, flowers and hairs can grow from these areoles and that means

the plant is a cactus. Did you know that unlike most annual plants which only photosynthesize during the day, many succulents can also photosynthesize at night when it's cooler? Toss that fact out the next time you gather with your gardening friends.

The earliest known documentation of succulents comes from Egyptian royal Thutmose III, who collected a large amount of spoils after invading Syria during the 15th century B.C. All were noted in wall drawings in a temple. A kalanchoe has been identified on one wall. Historians believe the succulents' popularity may have been due to the fact that they can travel long distances well because of their minimal water requirements. The plants have been found in many areas of the world. Agaves grow in America while Aloes originated in Africa. They are ideal for xeriscaping in today's water conscious society. Millenials have discovered succulents.

What was once a niche market has now gone mainstream. Large chain stores, big box stores, even Amazon—all carry succulents. One magazine survey noted that succulent sales increased 64% between 2012 and 2017. The hunt is on to introduce new, striking succulents to the market. A company called Waterwise Botanicals located in Bonsall, California, hosts a two-day succulent celebration every year. Altman Plants is known as the wholesale giant for succulents. The company has 500 acres of land in San Diego and routinely offers new varieties. Laura Eubanks, a former landscaper, is the new succulent guru. Her specialty is succulent sculptures. A YouTube star, she posts

cont'd on pg. 8



Design & Photo: Laura Eubanks

Succulent toupee

Photo courtesy of gardenrant.com

Achieving Success with Succulents, *cont'd from pg. 7*

videos for her succulent arrangements and gives presentations as well. Laura makes succulent jewelry. Her brother allowed her to photograph his bald head while wearing a succulent toupee. Now that's some brotherly love.

If you want to bump up your game with some succulent plants, I recommend watching the two videos listed below. Seriously, what else are you doing while we are all quarantined at home? The first video shows how to top off a pumpkin with a small succulent garden. For the second video, grab your drill so you can try your hand at succulent propagation by coring. Have fun.

Making a pumpkin with succulents

https://www.youtube.com/watch?v=W9cM_db9IDY

Succulent propagation by coring

<http://cactiguide.com/forum/viewtopic.php?t=8321&highlight=>

Master Gardeners in the City

If you are a subscriber to Texas Gardener magazine, there is an article for the May/June 2020 issue on the Harris County Master Gardeners. This article highlights one of our programs in Hermann Park Conservancy's McGovern Centennial Gardens. You can find out more about the Texas Gardener at <https://texasgardener.com/>



Master Gardeners and Interns who celebrate a birthday during May include the following. Wish them a **HAPPY BIRTHDAY** when you see them!

Bob Barry, Olivia Bedford, Mimi Chapman, Viola Charo, Alicia Collins, Jonathan Correia, Blanca Elder, Jean Fefer, Regina Gardner, Alicia Harris, Mary Heafner, Paul Hicks, Shirley Jackson, Sherrie Steiger, Jeanie Trippie, and Marilyn Ward

If your name is missing, please check that your online profile is complete.

Nominate a Master Gardener of the Month

Is there a fellow MG you think should be recognized for their hard work and commitment? If the answer is YES, you can submit their name for an MG of the Month nomination.

Submit your MG of the Month nominations to the Membership Committee by e-mailing the information to kmbrene@att.net (West) or gclau@comcast.net (Genoa Friendship Gardens).

Ask a Master Gardener

Ask a Master Gardener is a volunteer program offered by Texas A&M AgriLife Extension Service. Volunteers staff booths and tables to provide free, research-based horticulture education to the public throughout Harris County.

As a public health precaution to help prevent the spread of COVID-19, the Harris County Master Gardener Association is suspending events for the month of May.

Our top priority is the health and safety of our staff, guests and volunteers. We thank you for your understanding.

Look for an *Ask a Master Gardener* table at the following locations when events resume.

Urban Harvest - *1st Saturday*, 7:30 a.m. - 12:00 p.m.

3401 Westheimer Rd. (corner of Buffalo Spdwy. & Westheimer), Houston

Garden Oaks/Heights - *1st Saturday*, 8:30 a.m. - 11 a.m. at The Farmstand,
938 Wakefield, Houston

Tomball - *2nd Saturday*, 8:30 a.m. - 1 p.m. at 205 W. Main Street, Tomball

Westchase - *3rd Thursday*, 3 - 7 p.m. at 10503 Westheimer Rd., Houston

Memorial Villages - *4th Saturday*, 8:30 a.m. - 1 p.m. at 10840 Beinhorn Rd.,
Houston

Towne Lake - *4th Saturday*, 2:30 - 7 p.m. at 9955 Barker Cypress Rd., Cypress

*Visit the Harris County Master Gardeners
Facebook page for event details!*

www.facebook.com/HarrisCountyMasterGardeners



Texas A&M AgriLife Extension

in partnership with

Hermann Park Conservancy

are pleased to present

Master Gardeners in the City at McGovern Centennial Gardens

**As a public health precaution to help prevent the spread of COVID-19,
the Harris County Master Gardener Association is suspending events
for the month of May.**

**Our top priority is the health and safety of our staff, guests and volunteers.
We thank you for your understanding.**

McGovern Centennial Gardens at Hermann Park

**1500 Hermann Drive
Houston, Texas 77004**

When events resume: free tours and children's activity. Adult workshop at 10:30 a.m.

No registration required.

These educational programs are FREE and OPEN TO THE PUBLIC.

Extension programs serve people of all ages regardless of socioeconomic level, race, color, sex, religion, disability or national origin.
The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas cooperating.

Growing with Plants & Nature

Texas A&M AgriLife Extension Service and Harris County Master Gardeners invite you to join us one day each month, January through November, 10:00 –11:15 a.m. Free for children ages three to twelve. REGISTRATION IS REQUIRED. To register or for more information: ogd.harrishort@gmail.com

Growing with Plants & Nature has moved all in-person events online until further notice. Please visit us on our Growing with Plants and Nature Virtual Group found at the following link: <https://www.facebook.com/groups/GPNVG/>.

We hope this helps educate more families and children on gardening during this stressful time.

(The Open Garden Day children's activities program name has changed to be more reflective of its mission.)

Children and their parents looking for hands-on ways to learn, create, and have fun inspire our Growing with Plants & Nature volunteers to offer programs that do just that.

This FREE monthly children's event includes a variety of activities:

- Planting seeds, veggies or ornamentals into pots so children can continue to grow them at home.
- Creating a "nature theme" craft project with materials that are provided.
- 30-40 minute hands-on lesson that focuses on a single topic each month.

Previous lessons have included making a worm farm, putting together a compost bin, learning about the importance of butterflies, and making a feeder to attract pollinators.

Past projects



Seed Pod mobile



Fantasy Garden



Recycled soda bottle

For information about upcoming topics, dates and registration, please email us at ogd.harrishort@gmail.com. Registration is required before each program.

GMOs and Plant Variegation

by Terri Simon, Master Gardener

Photos by Terri Simon

Have you noticed them lately at the garden centers? Variegated plants are popping up more frequently. I love variegated plants. Right now they are gaining popularity. Garden centers like them because they're more expensive and consumers like them because they're different and they stand out. One problem I have noticed with the ones I purchase is that they do seem more finicky sometimes.

While researching the succulent article in this month's issue, I ran across some comments I wasn't expecting and that led me to more research about the variegated plants I enjoy. It seems that some of the variegated plants coming out on the market have been modified using chemical and radiation methods.

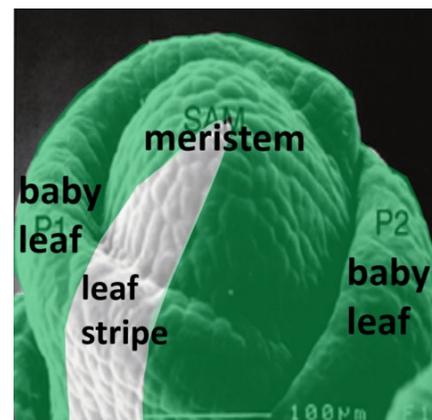
Starting in 1986, the FDA, the EPA and the USDA began working in tandem to regulate the safety of GMOs. In 1994 the first genetically modified tomato was introduced to the market. Many other foods are available now and many are patented. In 2015 the FDA approved a genetically engineered salmon as food. Researchers and growers are constantly working to increase the number of GMOs available.

In addition to consumable plants, genetically modified (GM) applications are being used on non-food plants. Timber, pharmaceuticals, and even molecular farming are being researched. The impact on the environment as well as human health is being considered and monitored. I have not noticed any labeling on ornamental plants I have purchased that indicated it was genetically modified, have any of you? I have ordered seeds from Pinetree Garden Seeds and they state they will never and have never sold



GMO seeds. Artisan-plants.com specializes in high dollar, unique succulents and they claim that they only use stable variegated plants to produce novel and unconventional hybrid seedlings. I'm sure there are others suppliers and nurseries that carry natural variegated succulents as well as succulent cultivars. While

I'm not totally against the "Quasimodo" plants that are the product of forced variegation, I believe these plants should be labeled as GMOs just as the GMO food is required to be. Environmental impact and the effect on humans should be considered. A company named Prodigen



Variegated meristem Photo courtesy artisanplants.com

did not follow safety regulations in 2002 and was fined when GMO maize with a PDP was found in the midst of a soybean crop intended for humans.

With any variegated plant, if you see a green shoot or leaves that are not variegated like the rest of the plant, it must be removed or the green will overtake the variegated part of the plant. If you see solid white leaves, those leaves will not take in chlorophyll and they must be removed. Look at new stems to see if they match the other stems of your variegated plant. If they look different, remove them.

There are several ways that variegation can manifest in a plant. Some of those ways are listed below.

- **Chimeral variegation** - Humans and plants both contain stem cells. In humans, the stem cell is able to divide into the many types of cells we need. In plants, this stem cell is called a meristem. In variegated plants the meristem has a combination of albino and green cells that can manifest as white and green stripes. The albino cells do not make chlorophyll. A plant with too much white in the leaves will not perform well. Sometimes a layer of cells in the meristem will be variegated. This makes the plant look pale on top with some green beneath it. If the meristem is variegated, the plant is genetically normal. This is called a chimeral variegation and it is the most common type. In some cases the variegation is spread in yellow or white blotches or spots on the leaves. Plants with this type of variegation are the only ones which can be propagated with stem cuttings. You may propagate the plant using seeds, leaf or root cuttings, but they will not be true to type.

cont'd on pg. 13

GMOs and Plant Variegation, *cont'd from pg. 12*

- **Pattern gene variegation**--also called natural or pigmented variegation. Some variegated plants are just naturally patterned. This type of variation can be passed to future generations. One example of this is seen in *Calathea lancifolia*.
- **Blister variegation**- also called reflective variegation. Air pockets are tucked into the unpigmented upper layers and the pigmented lower layers. *Scindapsus pictus* has blister variegation.
- **Mutations in the plant or chloroplast genome**--plant genome mutations can interrupt chlorophyll or chloroplast growth. In mutations of the chloroplast genome, the variegation occurs because the variegated plant was the mother, not the pollen donor.
- **Viral variegation**--mosaic virus, or other viruses, can cause this variegation. It can be seen in some *Hosta* cultivars. It is not as common as the other types of variegations.

Finally, the last type of variegation is forced or induced variegation. Chemicals or X-rays, poisons or bacteria killing antibiotics can be used to force mutations that result in variegated plants. This mutation is not inherited and in some cases it is unstable. Some of these plants can be weak and harder to maintain. Toxic chemicals such as EMS (ethyl methanesulfonate) can affect chimera meristems. Antibiotics like streptomycin and spectinomycin are defined as being used in a patent application. Another patent uses a GMO approach. While I do love variegated plants, I suspect some of the plants I have seen recently are the product of

forced variegation. These plants are expensive and I prefer not to waste my money on a plant that may not survive. Before, if I did have a succulent that wasn't doing well, I could at least try and propagate it with a stem cutting before it died. The problem is these plants are not labeled. I can think of one solution--if someone at the next plant swap I attend has a variegated plant that they propagated, then I can be fairly sure it is not a forced variegated plant. Or I can order from a source that states they do not carry GMO plants or seeds.



For more info on variegated plants click on the links below.
<https://pistilnursery.com/blogs/journal/variegated-indoor-plants-the-science-behind-the-latest-houseplant-trend>
 This following link has several good lectures on tissue culture and variegation.
<https://artisanplants.com/blogs/news/secret-life-of-plants-2-variegation>

cont'd on pg. 14

GLOSSARY

Bioengineered foods (BE foods): bioengineered foods are those that contain detectable genetic material that has been modified through certain lab techniques and cannot be created through conventional breeding or found in nature.

Genetically engineered organism (GEO): an organism produced through genetic engineering.

Genetic modification: the production of heritable improvements in plants or animals for specific uses, via either genetic engineering or other more traditional methods.

Genetically modified organism (GMO): an organism produced through genetic modification.

Other terms

Cultivar: a plant developed by selective breeding. It may have been developed for specific characteristics and propagated by different methods.

EPA: Environmental Protection Agency

FDA: Food and Drug Administration

PDP: plant derived pharmaceutical proteins which are introduced into a plant and intended for medical use.

Sport: a plant part that differs from the rest of the plant (also called a lusus or bud sport). It could be the flower, part of the branch structure, a fruit or the shape or color of the plant's foliage. For some reason that part of the plant has mutated. Pink lemons were derived as an offshoot or sport of a regular lemon tree.

Tissue culture: when cells or tissue from a plant are cultured in an artificial medium. The growth medium may be liquid like broth or solid like agar.

USDA: United States Department of Agriculture

Variegation: technically any plant which has multiple colors. When using the Latin plant name, if the italicized word *variegata* is the second Latin name, the variegated plant was found in nature. If the second word of the plant's name is capitalized and has single quotations ('*Variegata*'), then it is a cultivar.

Variety: a type of a plant that occurs naturally.

Definitions from usda.gov website and ams.usda.gov

GMOs and Plant Variegation, *cont'd from pg. 13*

How to Build a Better Plant

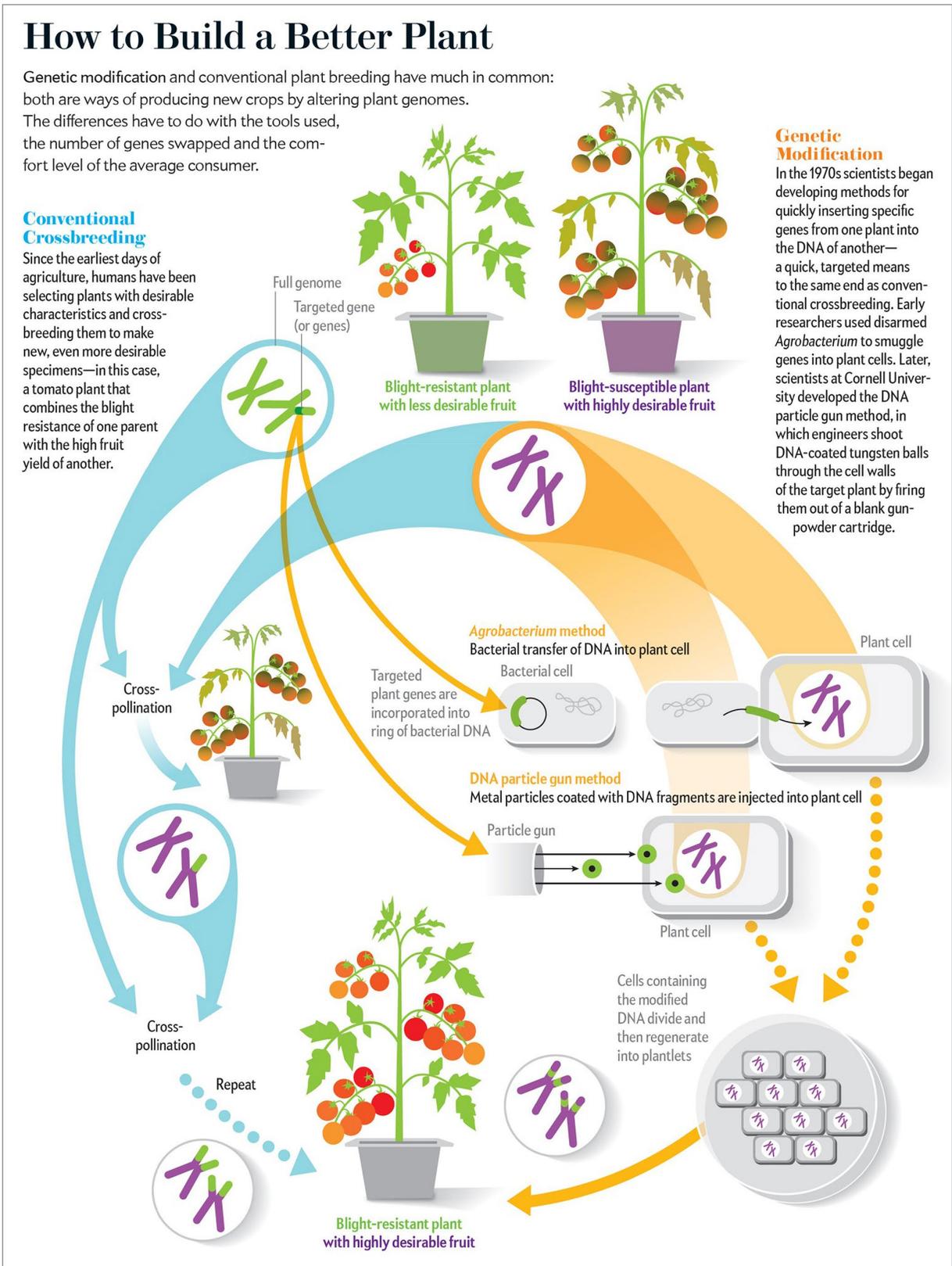
Genetic modification and conventional plant breeding have much in common: both are ways of producing new crops by altering plant genomes. The differences have to do with the tools used, the number of genes swapped and the comfort level of the average consumer.

Conventional Crossbreeding

Since the earliest days of agriculture, humans have been selecting plants with desirable characteristics and crossbreeding them to make new, even more desirable specimens—in this case, a tomato plant that combines the blight resistance of one parent with the high fruit yield of another.

Genetic Modification

In the 1970s scientists began developing methods for quickly inserting specific genes from one plant into the DNA of another—a quick, targeted means to the same end as conventional crossbreeding. Early researchers used disarmed *Agrobacterium* to smuggle genes into plant cells. Later, scientists at Cornell University developed the DNA particle gun method, in which engineers shoot DNA-coated tungsten balls through the cell walls of the target plant by firing them out of a blank gunpowder cartridge.



Graphic courtesy of Scientific American, 9/2013, Illustration by Jen Christiansen

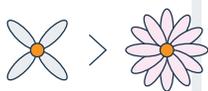
cont'd on pg. 15

GMOs and Plant Variegation, *cont'd from pg. 14*

FEED YOUR MIND

A TIMELINE OF GENETIC MODIFICATION IN MODERN AGRICULTURE

For thousands of years, people have worked to improve crops, livestock, and the foods we eat. In the 20th century, scientists found a way to modify food faster and more precisely by changing an organism's DNA. This process, called genetic engineering, produces genetically modified organisms (GMOs). This timeline highlights key dates in the development of GMO foods.



1940

Plant breeders learn to use radiation or chemicals to randomly change an organism's DNA.

1953

Building on the discoveries of chemist Rosalind Franklin, scientists James Watson and Francis Crick identify the structure of DNA.



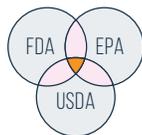
1973

Biochemists Herbert Boyer and Stanley Cohen develop genetic engineering by inserting DNA from one bacteria into another.



1982

FDA approves the first consumer GMO product developed through genetic engineering: human insulin to treat diabetes.

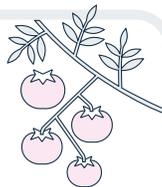


1986

The federal government establishes the Coordinated Framework for the Regulation of Biotechnology. This policy describes how FDA, USDA, and EPA work together to regulate the safety of GMOs.

1992

FDA policy states that foods from GMO plants must meet the same requirements, including the same safety standards, as foods derived from traditionally bred plants.



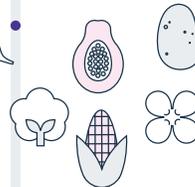
1994

The first GMO produce created through genetic engineering—a tomato—becomes available for sale after studies evaluated by federal agencies proved it to be as safe as traditionally bred tomatoes.



1990s

The first wave of GMO produce created through genetic engineering becomes available to consumers: summer squash, soybeans, cotton, corn, papayas, tomatoes, potatoes, and canola. Not all are still available for sale.



2003

The World Health Organization (WHO) and the Food and Agriculture Organization (FAO) of the United Nations develop international guidelines and standards to determine the safety of GMO foods.



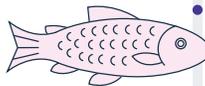
2005

GMO alfalfa and sugar beets are available for sale in the U.S.



2015

FDA approves an application for the first genetic modification in an animal for use as food, a genetically engineered salmon.



2016

Congress passes a law requiring labeling for some foods produced through genetic engineering and uses the term "bioengineered," which will start to appear on some foods.



2017

GMO apples are available for sale in the U.S.



2019

FDA completes consultation on first food from a genome edited plant.



March 2020

Get more information about GMOs at www.fda.gov/feedyourmind.



Graphic courtesy of fda.gov

Open Garden Days at Genoa Friendship Gardens



The Perennial Trial Garden



The Water Garden



The Greenhouse

The Texas A&M AgriLife Extension Service and Harris County Master Gardeners invite you to join us for

Open Garden Days

on the 3rd Monday of the month, March through October, 8:30 a.m. – 11:00 a.m.
Admission to the Exhibit Gardens is free. Register at the Welcome Table to receive additional monthly notices for children and family events.

The Genoa Friendship Gardens

is located at
1202 Genoa Red Bluff Road
Houston, Texas 77034

To schedule a special event for your garden club, school or professional organization please email brandi.keller@ag.tamu.edu to make your arrangements.

- Tour the variety of exhibits to inspire you with vegetable, perennial, rose, tropical and native gardens.
- Meet and talk with a Master Gardener about planting citrus, fruit or berries for your home orchard.
- Contemplate the joy in the Serenity Garden and catch a view of the Water Garden.
- Don't leave the GFG until you have shopped the Greenhouse where seasonal herbs, vegetables and perennials are available for sale until September.

2020 Monthly Open Garden Days & Special Events

As a public health precaution to help prevent the spread of COVID-19, the Harris County Master Gardener Association is suspending events for the month of May.

Our top priority is the health and safety of our staff, guests and volunteers. We thank you for your understanding.

Gardening Tools

This chart is a handy guide for knowing the best times to plant in Harris County.

 Vegetable Garden Planting Dates for Harris County	Texas AgriLIFE Extension Service Harris County Office 713-274-0950 https://harris.agrilife.org/hort/											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Planting times are for seeds unless otherwise noted												
Artichoke	Dormant Crowns								Transplants			
Asparagus (dormant crowns)												
Beans - Snap & Lima (Butterbean)			Snap&Lima					Snap				
Beets												
Broccoli (transplants)												
Brussels Sprouts (transplants)												
Cabbage (transplants)												
Cabbage - Chinese (transplants)												
Carrots												
Cauliflower (transplants)												
Chard, Swiss												
Collards (transplants)												
Corn												
Cucumbers												
Eggplant (transplants)												
Garlic												
Kale (transplants)												
Kohlrabi (transplants)												
Leeks	Transplants								Seeds			
Lettuce - also Arugula, Mache, Sorrel												
Melon - Cantaloupe, Honeydew												
Mustard												
Okra												
Onion - bulbing	Transplants									Seeds		
Onion - multiplying/bunching												
Peas - English & Snap												
Peas - Southern												
Pepper (transplants)												
Potato - Irish (cut pieces)												
Potato - Sweet (slips)												
Pumpkin												
Radish												
Spinach												
Squash - Summer												
Squash - Winter												
Tomato												
Turnips												
Summer Greens - Malabar, Amaranth												
Watermelon												

Average Last Freeze Dates (Hobby 2/8, Bush 3/1) ↑ ↑ Average First Freeze Dates (Bush 11/30, Hobby 12/20) ↑ ↑
 Plants grown over winter may require protection during freezing weather. Seeds and transplants started in the heat of summer will benefit from shading during establishment.

Download the
 Vegetable Garden
 Planting Guide here!

TEXAS A&M AGRI LIFE EXTENSION

TEXAS A&M AGRI LIFE

EXTENSION SERVICE

HOUSTON, TX

713-274-0950

harris.agrilife.org/program-areas/hort/

hcmga.tamu.edu

Follow Us On Facebook, Twitter & Instagram

The Harris County Master Gardeners as well as Texas A&M AgriLife Extension - Harris County Horticulture are actively participating on Facebook, Twitter and Instagram offering tips, lists, news and plant advice almost daily. The best part, instead of locating planting guides or insect documents, and sale dates for individuals, you can add the HCMG site to your account and easily share information with others. This is a definitely a timesaver for these busy garden days and helps promote our organization.



www.facebook.com/HarrisCountyMasterGardeners

www.facebook.com/HarrisCountyHorticulture



<https://twitter.com/pharrishort>



<https://www.instagram.com/harriscountymastergardeners>



Green Thumb Gardening Series

As a public health precaution to help prevent the spread of COVID-19, the Harris County Master Gardener Association is suspending events for the month of May.

Our top priority is the health and safety of our staff, guests and volunteers. We thank you for your understanding.

Would you like to contribute to the Urban Dirt?

Send all questions and/or submissions to: UrbanDirt.harrishort@gmail.com