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Garden Views

Riverside County Master Gardener Newsletter

University of California
Agriculture and Natural Resources
UCCE Master Gardener Program

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Master Gardeners Are Composting!

Garden Views **is published bi-monthly by Riverside County Master Gardeners. In this issue:**

What's New at the West County Grow Lab? Part 1

Contributed by Pamela Elias, UCCE First Year Master Gardener and Dr. Clifford Morrison, UCCE First Year Master Gardener

Talk about an evolution! The UCCE Master Gardeners have taken the Grow Lab to the next level by initiating a new composting project called the Compost Lab. This new, timely experiment corresponds with California's recent legislative change with SB1383 for mandatory composting throughout the State of California.

Pictured left is the Compost Lab in Riverside, California.

At the end of 2021, Adrian Ceja, UCCE Master Gardener and Dr. Clifford Morrison, UCCE First Year Master Gardener, discussed the need to add composting to the list of projects undertaken at the Grow Lab. With Adrian's wealth of experience as the Grow Lab Project Coordinator and UCR postdoctoral scholar Dr. Morrison's experience in microbiology, they devised a plan. Fast forward to January 2022 when the plan was set firmly into motion. Master Gardeners and trainees were invited to be involved in the genesis of this exciting new adventure. For those of us who have little to no experience, or perhaps have had some failed home experiments, what better way to learn than to get hands-on learning alongside those who are more experienced?

The Compost Lab has since managed to expand the project greatly and inexpensively from a modest pile of scraps to a sizable operation of multiple bins processing simultaneously. Almost all the materials needed for the project were donated by those generous enough to see the operation for themselves and excited to have a hand in helping it grow. To date, the Compost Lab has been fortunate enough to receive material donations including GEOBIN composters, tarps, compost thermometers, moisture meters, soil sifters, and a carport (for shade). Week by week, the Compost Lab also receives donations of green and brown waste including grass clippings, garden waste, kitchen scraps, coffee grounds, dry leaves, shredded cardboard, newspaper, and horse manure.

Pictured above from top left to bottom right: dry leaves, coffee grounds, kitchen scraps and garden waste, and the ratio-adjusted mixture of materials just before added to the GEOBIN.

The composting method currently used by the Compost Lab was inspired by *The Rapid Composting Method* by Robert D. Raabe, Professor of Plant Pathology, UC Berkeley, in which a protocol is outlined to achieve finished compost in as few as 2-3 weeks. The keys to compost success are to monitor the ratio of carbon to nitrogen (C:N) and to maintain aerobic decomposition of the organic waste. By doing this, the piles at the Compost Lab consistently reach temperatures of 140°F and have no foul odors, and they even begin to look nearly broken down after just one week of processing.

By ensuring that the process is performed aerobically (occurring in the presence of oxygen) from start to finish with regular turning, the composter can avoid releasing methane gas into the atmosphere. Anaerobic (occurring in the absence of oxygen) microorganisms can dominate in a compost pile that is overloaded

with nitrogen or water, and by-products of that this decomposition include methane and ammonia. Methane is many-fold more potent than carbon dioxide as a greenhouse gas, so the composter may as well have sent their organic waste to a landfill where it would decompose anaerobically. Even if one's motivations for composting do not include sustainability and minimizing waste, maintaining an aerobic compost pile should be a priority to avoid foul odors and attracting pests.

Materials with a low C:N (nitrogen rich) include kitchen scraps, grass clippings, and coffee grounds. Materials with a high C:N (carbon rich) include dry leaves, wood chips, and cardboard. The overall C:N of the mixed compost pile is carefully calculated to reach a final ratio of approximately 30:1. Depending on the types of materials donated to the Compost Lab each week, the number of parts of various ingredients added to the pile are adjusted to meet the desired ratio of 30:1.

Pictured above from left to right: The pile is turned with a pitchfork on a tarp for mess control and compost is sifted through a screen.

After the ingredients are mixed together on a tarp, the batch is then added to the GEOBIN layer by layer, adding some water with each addition. Over time, the GEOBIN eventually fills to the top, and the clock starts with the final addition of materials. At that time, the date of the final assembly is recorded, the compost finishes processing within 5-6 weeks, and the batch is allowed to mature for a start-to-finish time of 8 weeks from the date the final addition was made to the pile. The Berkeley method suggests aerating the pile by turning every day to achieve finished compost in 2-3 weeks. Volunteering opportunities for the Compost Lab come only twice per week so turning does not occur every day. Regardless, by experience, it was found a finished and mature batch of compost can be achieved in as few as 6-8 weeks with only one major turn per week.

Pictured at left: Dr. Clifford Morrison displays the finished, sifted compost.

So, what happened throughout the eight weeks?
Read Part 2 of "What's New at the West County Grow Lab?" in the next issue!

How Do I Compost on My Apartment Balcony?

From the West County Help Line Archive

Contributed by Susan Bookman, UCCE Master Gardener, West County Help Line Coordinator

Question from the Client:
Dear Master Gardener,

I am a student at UCR and live near campus in a second story apartment. I have been sprouting a small garden on the balcony since moving in. The space is about 6x15ft and faces east receiving about six hours of direct sun. I would like to start a compost bin here on the balcony, but I don't have any successful past experiences with starting to compost.

Thank you in advance. Best,
Gloria

Helpline Response to the Client:
Hello Gloria,

I can provide some basics for you to follow when composting in your second story location. I would suggest you use a small, closed container for composting. I generally use a 55 gallon trash can,

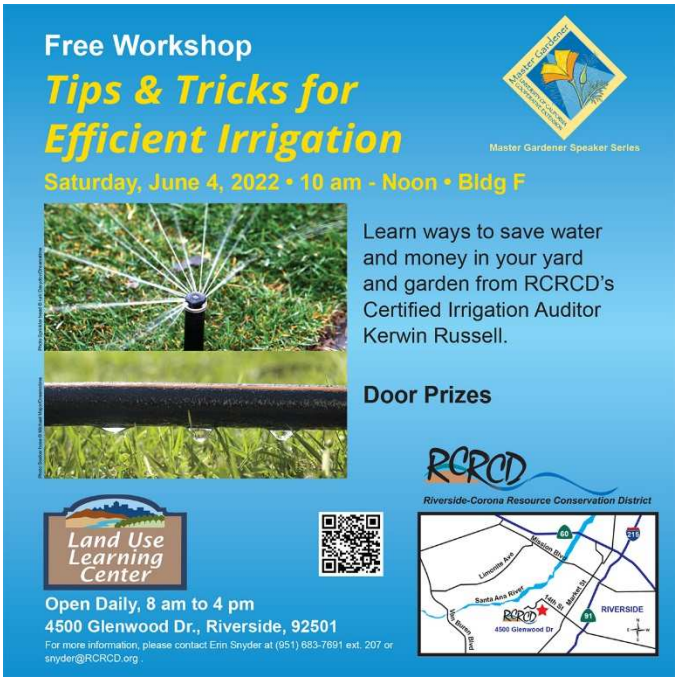
but I'd recommend you use something at least half that size or smaller. Make sure it has a tight-fitting lid and is reasonably attractive, so it is not an eyesore on your balcony.

You can use most vegetable material for composting, generally trimmings from meal preparation. Avoid citrus and any hard materials (nut shells, pits, etc.) that will prolong decomposition and never incorporate meat products, dairy products, or oils. Also, avoid anything with spines or thorns. Coffee grounds or tea are excellent as well as are trimmings from the plants you are growing. For "brown" material you might consider clean, used paper towels, paper towel/toilet tissue rolls, clean white paper (no color or coated paper), or lint from your clothes dryer.

Given the small size of your container, you'll need to make sure everything you put into your compost bin is cut into very small pieces. I've diced material with a knife, and paper can be run through a shredder several times. You'll want a 50/50 mix of wet, vegetable matter and dry material. You should mix it with a trowel or large spoon several times a week. You shouldn't have to incorporate any additional moisture with these proportions. The decomposition process will be faster if you're able to locate your bin where it will receive direct sunshine. If you find the mix too wet (or it smells), add more dry material. If it's too dry, add more soft vegetative material such as tomatoes, lettuce leaves, etc.

Use your common sense when determining what you'll use. If you don't think it will break down easily or that it contains materials you're concerned about, don't use it. Consider this a learning experience that you will become more proficient with the more batches you create. Have fun with it.

Jerry L'Hommedieu, UCCE Master Gardener



Desert Master Gardeners Learn to Compost

Contributed by Mary Ann Egan, UCCE Master Gardener

As gardeners, we know that successful gardening rests in large part on the soil beneath our feet. "There are more microbes in a handful of soil than there are people now on earth," said George Podolsky, Riverside County Department of Waste Resources, to students in a Master Composting Training Class that just finished in April 2022. Several UCCE Master Gardeners took advantage of the series of classes to learn how to put these soil microbes to work creating compost for the garden.

Instructor George Podolsky stands next to a "Geobin" which holds the compost pile.

The first of the four classes started with the students forming 2 piles of mixed "greens" and

"browns" which were brought to the class by the students. Before setting up the "Geobins" which would contain the material brought by the students, the class instructors disturbed just enough soil to "wake up the microbes," as George put it. Alternating layers of green and brown organic material were deposited in each bin and were moistened with water after each layer. This raw material would become food for those soil microbes for the next few weeks. After 2 weeks the piles had been reduced in size enough to consolidate them into one pile. The students turned the pile at the beginning of each class, measuring the height of the pile and noting the temperature of the pile in various locations before it was turned.

MG Dee Kongslie puts a pitchfork to work turning the compost pile.

The soil microbes composed of bacteria, fungi, and a type of bacteria, actinomycetes, do most of the initial decomposition work. The microscopic creatures can be joined later by earthworms, millipedes, mites and the like to also help.

One type of worm gets special treatment during the class. Students learned how red wiggler worms do vermi-composting. A nest of wet newspaper in a set of two plastic storage bins, one with ventilation holes, became the home for a starter supply of red wiggler worms. The worms chomp their way through the newspaper and added fruit and vegetable matter efficiently turning organic matter into rich soil humus.

Instructor George watches while MG Haley Preston unstacks a new worm bin.

The compost from the worm bin is made up of worm castings or worm poop in more basic terms. If the idea of creating compost conjures up an image of smelly stuff, that image is not correct. Worm castings are not smelly, and the only smelly stuff involved in the entire composting class was the material brought by the students to the first meeting. Microbes naturally present in the soil do the work of turning discarded, sometimes smelly organic stuff into nutrients needed by plants. Composting speeds the process along, and we gardeners conveniently wind up with organic-based fertilizer to add to the soil beneath our feet.

The compost pile made during the class was a fairly large one in to generate heat needed to create compost quickly (6-8 weeks), but compost can be created in smaller quantities by applying the same basic principles over a longer period.

Instructor George congratulates MG Brad Hardison on the completion of the Master Composter training class.

For information about free composting classes offered by Riverside County, go to: rcwaste.org and click on "Community Programs."
For information about "Desert Compost," a Coachella Valley community-based composting organization, contact the class coordinator MG Haley Preston at: compostingthedesert@gmail.com.

Volunteering with Youth and School Gardens: So Many Options

Contributed by Brad Hardison, UCCE Master Gardener

I got involved with School and Youth Gardens because I enjoy the energy of working with young people. Not having children, myself, I feel like the uncle that gets to work with the kids and then send them back to their parents. In this instance, their teacher.

I know I feel energized after working in a school or youth garden. The questions and observations are so interesting, be it from an elementary school

student or middle school age. What they find in the garden such as an unusual weed or insect can lead to a great conversation.

However, I know not everyone enjoys or even looks forward to working with the "chitlens" as I affectionally call them. Did you know that the Riverside County Master Gardener Youth and School Garden Committee has five options of assisting our project that do not involve direct contact with youth?

If you are someone who likes to look at a website and learn information to give out at an event table, you could work with the coordinators of this project to learn about our offerings. Outreach about our activities and services is important, and we need your help doing that while representing the Master Gardener Program at an information table.

Maybe you are a person that enjoys doing research. We need you! Our lessons and fact sheets are developed with research-based information. We need more people helping us with the research so others can put together the finished project. We have a lot of resources to help you including recorded trainings. Please contact one of the project coordinators for more information.

Getting your hands dirty, does that sound like fun? We need volunteers to help grow our plant starts at the Grow Lab. We average 900 to 1,000 plant starts at a time and need people usually in the Fall and Spring to assist us. As we talk about expanding our propagation from vegetables, herbs and flowers to native plants, we will need even more help.

Like attending and contributing at a meeting? I know some of you do. We have monthly committee meetings, and we need your contributions and ideas. We meet virtually via Zoom.

Some of us have a technical background that we learned in our previous career or as an interest. We maintain an extensive website of resources, and we could use some additional hands to help us review lessons and fact sheets for formatting and adherence to accessibility standards. We will show you what to do. Just another way you can volunteer with our project.

Everything I have mentioned does not involve directly working with children or students. However, if you are someone that enjoys the excitement and fun of being around young people, we have that opportunity as well.

We have school sites throughout Riverside County. We expect more opportunities to open beginning in the Fall. The teachers and administrators at schools are so appreciative to have a Master Gardener volunteer come into the school and teach a lesson or show the students how to properly plant or prepare the soil. Remember, you get to come in and share your wisdom and expertise and then leave. The uncle or aunt, right?

All these opportunities count as volunteer hours for the Master Gardener Program.

We hope you will consider exploring how you can help our project. Please reach out to one of the two Coordinators with your interest. Email Brad

Hardison at hardisonbrad@gmail.com or Kim Coons-Leonard at kimda@earthlink.net. We look forward to hearing from you.

Memories of Martha

Contributed by Marcia Stone, UCCE Master Gardener

Martha Tureen, a Riverside Master Gardener, transferred her Master Gardener credentials from Ventura County in 2016. Little did we know what we were getting at the time. Martha certainly looked good on paper. But when you experienced Martha's dynamic personality, her gardening knowledge, her people skills, her fun-loving and caring sense, one knew we had acquired a very special individual.

Planning the 2020-2021 Master Gardener class with Martha was a personal joy. Her excitement contagious and her willingness to try new approaches made it clear that she was the right person to conduct our 2020-2021 virtual Master Garden classes. Martha kept all of us organized and on task. She was not able to attend the graduation of her students due to her looming illness.

Martha was adventurous, without fear, intrepid! The trainees benefitted in having a class coordinator who exhibited the finest qualities of an educator. A MG Program candidate recently shared how nervous she felt entering the interview. It was Martha's natural, open smile that put this candidate at ease immediately. Martha had that talent.

Riverside Master Gardeners lost a knowledgeable gardener, an innovator, a teacher, and a lifelong friend. Those who knew Martha closely will forever cherish her generous nature, her sense of humor, her ability to identify strengths in all and her friendship. In her last days she exhibited hope and courage

Master Gardeners Celebrate These Recognition Awards!

Desert

250 Hours Trowel Pin
Jax Patterson
Vivian Yturralde

West County

1000 Hour Gold Badge
Georgia Renne
Yvonne Wilczynski
100 Hours Bee Pin
Pam Elias (Trainee)
Clifford Morrison (Trainee)
Betty Ingalls
Sharon Sharpe
250 Hours Trowel Pin
Deborah Anderson
Kay Force
Debbie Leuer
Linda Mullins
Daniel Weatherford
750 Hours Pruners Pin
Janice Rosner
Melody Knox

Get Rooted! Support for New Master Gardeners

Contributed by Emma Rosenthal, UCCE Master Gardener

The Rooted Program, founded by Patti Bonawitz and Rosa Olaiz, supports new Master Gardeners and Master Gardener trainees in fulfilling their required volunteer hours by providing direction, mentorship and support. "As West County Training Coordinator for 2018-19 and 2019-20 Classes, I noticed that not all the trainees had completed their program requirements (for one

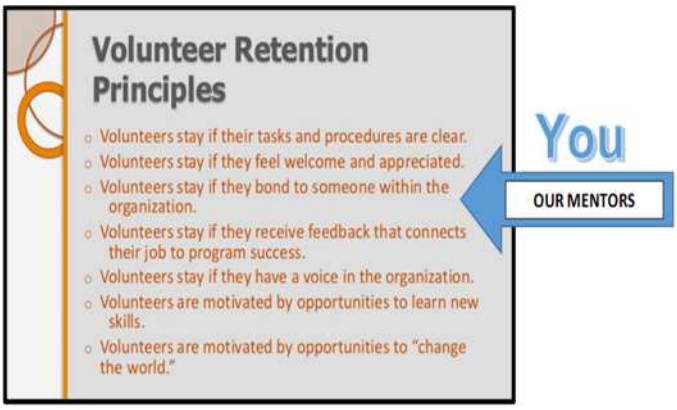
reason or another), and I didn't want them to slip by the wayside. It seemed that we needed a way to continue that connection and follow-up with these folks to keep them engaged in the program," said Bonawitz.

Bonawitz presented her proposal to Rosa Olaiz, the Volunteer Coordinator for the Riverside County Master Gardener program and to the Advisory Boards which approved the program that now meets once a month. Participants gain two hours of volunteer time for attending each meeting plus additional hours for completing the MindGrow activity assigned at the end of each meeting. The meetings are virtual, via zoom making them easy to attend.

"We had an 86% success rate for MG volunteer retention with the first Rooted Program class. I am so proud of our first and second Year Master Gardeners who participated in that very first Rooted Program," said Bonawitz.

Each new trainee has a mentor assigned to them, but participants in the Rooted Program gain a second mentor to provide direction and support. Georgia Renne, who has been a Master Gardener for four years, is one of this years' Rooted Program mentors. "I like to remember when I was a trainee and then think about how my mentors, Debbra Corbin-Euston and Joyce Allen, helped me so much. That's what I want to do," said Renne.

New Master Gardeners can volunteer to join the next Rooted Program by contacting Bonawitz and by signing up on the Master Gardener calendar.



What's Blooming in the Desert?

Contributed by Marcia Stone, UCCE Master Gardener

We wanted to check in again with Marcia Stone to find out what's blooming in the desert. She responded, "Lots of things are blooming but thought Yucca could be an interesting focus."

The Joshua tree, an iconic and beautiful inhabitant of Yucca Valley, depends on the Yucca Moth for pollination.

Yucca aloifolia: Spanish Bayonet Stiff, smooth edged leaves, closely set with sharp spikes at their tips. This white and sometimes purple flower is most fragrant at night. Photo taken in Yucca Valley

Yucca aloifolia in its beautiful glory as seen this May in Yucca Valley.

Thank You, Marcia, for Bringing Us These Desert Beauties!

University of California Cooperative Extension
Drought and Landscape Tree Care Resources

Keeping Plants Alive Under Drought and Water Restrictions (English)
https://anrcatalog.ucanr.edu/pdf/8553.pdf

Keeping Plants Alive Under Drought and Water Restrictions (Spanish)
https://anrcatalog.ucanr.edu/pdf/8628.pdf

Prioritizing Trees During Drought and Water Restrictions (5 minute YouTube)
https://www.youtube.com/watch?v=CTKLlJgdLVk

Tips to Keep Your Landscape Trees Alive Under Drought
https://ucanr.edu/b/~IjC

Landscape Tree Irrigation to Maximize Tree Health, Benefits, and Beauty
https://ucanr.edu/b/~YjA

Landscape Tree Irrigation 101
https://ucanr.edu/b/~UjA

Top 10 Ways to Conserve Water in Your Landscape and Garden
https://ucanr.edu/b/~tTD

Asphalt and Synthetic Turf are Superheating our Cities (in *Desert Sun* newspaper)
https://www.desertsun.com/story/opinion/contributors/valley-voice/2022/04/09/coachella-valleys-asphalt-synthetic-lawn-heat-islands-reach-170/9515857002/

Master Gardeners Behind the Scenes ... Meet Bruce Radler

Contributed by Marcia Stone, UCCE Master Gardener, and Stewart Fleishman

Although Bruce was born on the Upper West Side of Manhattan, his family moved to Valley Stream, a burgeoning post-war suburb, when he was barely a toddler. Their house, a builder's model set on a double-sized lot, presented much opportunity for gardening and cultivation, giving Bruce his green thumb before he could even write. His love of gardening has continued to this day. Whether hereditary, environmental, or both, his parents were extremely dexterous. Gardening, rather than being a solitary pleasure, presented the opportunity to share seeds, ideas, successes, and even failures. Bruce brought these habits with him to the Coachella Valley.

Upon arrival here, Bruce quickly noted that his homeowners' association carted away tons of fruit each spring. He mobilized a neighborly group to pick oranges, grapefruit and lemons, making weekly donations to the local food banks, senior centers, Desert AIDS Project pantry, and the Boys and Girls Clubs in Palm Springs and Cathedral City. Reclaiming and recycling what would otherwise be destined for landfill went instead to feed those in need, a logical outgrowth of the habits cultivated while young.

Joining the Desert Horticultural Society, he attended garden tours and swapped plants and seeds with other Valley residents. In 2018, he eyed the UCR Master Gardener's booth near the DHS' Garden Tour registration area. He was familiar with the Cornell Cooperative Extension Master Gardener Program near his former weekend home in New York's Dutchess County, where he was an active member and Co-Chair of the Pawling Garden Club's Annual Plant sale.

These interests and activities motivated Bruce to become a Master Gardener. He completed the course in March 2020, with the presentation of his class project, on citrus, of course, scheduled on the day of California's COVID lockdown. He

remained undeterred, shifting his focus to create a magnificent flowerpot succulent and cactus garden on his patio with a drip-watering system to keep it hydrated.

Bruce Radler, left, with his citrus

With pent-up COVID time and energy, he noticed that neighbors were placing soda & juice bottles in the recycling bins. Seeing a parallel opportunity as with the citrus bounty, he asked neighbors to bring their bottles and cans to his house. He then began making regular visits to the local redemption center with the specific purpose to use the refunds to contribute to Master Gardener projects.

Opportunities to help the community arose through the Master Gardener emails. A project initiated at the Palm Springs Animal Shelter required materials for planting to be contributed. The bottle redemption fund found its purpose, supplying enough cactus and succulent medium to enrich the re-plantings at the building's front entrance.

The benefits of Bruce's skills and values are obvious both to the community and in Bruce's satisfaction in helping others!

The UCR Botanic Gardens – Master Gardener Connection

Contributed by Janine Almanzor, UCCE Master Gardener

The connection between the Master Gardeners and the UC Riverside Botanic Gardens goes way back. The first Master Gardeners class was held in 1980 in both Sacramento and Riverside. One of the Master Gardeners from that original class in 1980 still volunteers at the Botanic Gardens. Looking back through the Botanic Gardens' newsletters I found that the Master Gardener class of 1983 worked on a Native Plant Garden at the Botanic Gardens and a lecture on California native plants was taught by the Manager of the Gardens, Dennis Kucera and Curator, Rich Adams. I don't know the exact dates, but the training classes were also held in the Gardens' conference room. Back when I was a trainee in 2010, volunteering at the Gardens was a requirement for the trainees. Currently, the trainees come to the Gardens for a California native plant identification scavenger hunt coordinated by Master Gardeners, Karen Fleisher and George Spiliotis.

Master Gardens have made an enormous contribution to the continued success of the Gardens. It is the perfect place for Master Gardeners to see their learning in action and to continue to learn. There are numerous ways to volunteer at the Gardens where one can share their UC based knowledge with the public and help support and maintain the Gardens. Here are some ways Master Gardeners are contributing to the Gardens:

Garden Steward: They greet visitors at the entrance and answer questions. I think this would be a great place for an Ask the Master Gardener table, especially on the weekends. We get hundreds of visitors who are all interested in plants.

Docent: Most of our docents are Master Gardeners. They go through a six-week course to learn finer details about the Gardens and plants, so they are well equipped to lead school and adult tours. The classes are held as needed and have been about every three years. We just held a class this winter. **Docent Class pictured below.**

Plant Sales: When in-person Plant Sales took place there were many opportunities to volunteer, such as grooming the plants ahead of time, moving plants to the sale area and back again afterwards, making the signs for the plants, answering questions customers may have…. The list goes on and on. The Grow Lab sold their veggies and flowers, and a Master Gardener table was always present. Someday, we will have in-person Plant Sales again, and we are currently working on having a nursery set up so we don't have to move thousands of plants down the hill and damage the lawn.

Other events: Master Gardeners are the majority of the demonstrators at the Rose Pruning Demonstrations we hold every January. We have also had Master Gardeners host tours at their own gardens as educational opportunities. Master Gardener/UCRBG Docents hold a bimonthly Ask the Master Gardener event in the Butterfly Garden where they interact with dozens of people, giving them information about butterfly gardening and native plants.

Horticulture: There are a variety of horticulture volunteer opportunities. We have many wonderful volunteers who come regularly to maintain areas of the Gardens. The Rose Gardens, Herb Garden, Butterfly Garden, and Baja California are all maintained by volunteers. I would love to have Master Gardeners help in the greenhouse as well. Volunteers also propagate plants for the Plant Sales, weed and groom potted plants, and maintain other planted areas.

Rose Pruning Demo

Newsletter articles: One of our long-time Master Gardeners, Ann Platzer, has been writing butterfly articles for years for our quarterly newsletter. Articles by other Master Gardeners on plant related topics would be welcomed.

The training I gained as a Master Gardener has been very helpful to me in my position as Curator. I remember sitting in a MG class as a trainee hearing Ottillia "Toots" Bier speaking on soils and fertilizers. I remember she said the Master Gardener program motivated her to further her education and pursue her career with plants. That was a great motivator for me. Toots was in the first MG class of 1980.

If you would like to volunteer at the Gardens you can contact me at janine.almanzor@ucr.edu. There is also curatorial work if you don't mind not actually touching the plants but would be happy researching information about plants, inventorying, mapping, and doing computer work.

Butterfly Corner: Gulf Fritillary

Article and Photos contributed by Ann Platzer, UCCE Master Gardener, Platinum Badge Holder

(Editor's Note: I recently had the pleasure of meeting one of my MG heroes, Ann Platzer, when I was volunteering as Garden Steward at UCR Botanic Gardens. I had long enjoyed her expert articles on those butterflies found right in my home town. She sent us this article on the first butterfly I learned to recognize at UCRBG. GR)

Gulf Fritillaries (*Agraulis vanillae*) are large, 2 ½ inch butterflies as shown in photo below with a pair mating.

The left specimen in ventral view shows large silver spots on pale brown background. The right view specimen exhibits bright orange dorsal wings. From a distance the Gulf Fritillary may be mistaken for a Monarch, but unlike the leisurely, gliding flight of the larger Monarch, its flight is fast. It is a common sight throughout the year in Southern California except during cold snaps in the winter.

The female lays 1 mm, pale-yellow, ribbed eggs singly on leaves, stems, buds, and even tendrils of its host plant, the passion vine, *Passiflora* species. In about 5-7 days the larva hatches by chewing a hole in its egg case with its huge mandibles and then voraciously starts munching on its host plant.

It has four longitudinal bright orange stripes and many long, black branching spines (Photo left).

Note that there are many legs for locomotion and holdfast: three pairs of true legs in the thoracic region and five pairs of fleshy prolegs legs on its abdomen. The latter are absent in the adult. The larva undergoes about five molts and just before pupation, it assumes a "J" position which signals the beginning of the transformation process. Now it hangs on to a stem by a silk holdfast at its tail end and becomes more muted in color thus the quiescent pupa evades predators by resembling a piece of stick or dead leaf (Photo below).

The host plant, the passion vine, contains poisonous alkaloids that when ingested by the larvae makes them distasteful to predatory birds. In fact, the bright orange adults and larvae signal possible predators "Hey don't eat me. I am unpalatable." If a bird or other predator swallows a Gulf Fritillary, the predator throws up a short time later. This experience is evidently memorable since the predator won't return for seconds.

Returning to the passion vines: in our garden we have a number of passion vines including *Passiflora citrina*, *Passiflora* 'Witchcraft' (photo below) and *Passiflora* 'Blue Horizon' which are planted in various sunny locations.

Now the spectacular Gulf Fritillary is present all year. So if you have an ugly fence, why not cover it with passion vines? The Gulf Fritillaries will love you.

Incidentally, this Lepidopteran is native to South Eastern United States, where its host plant, the passion vine is native. With the introduction of many hybrid passion vines into Southern California, the Gulf Fritillary followed where winters are mild. Caution: Don't buy *Passiflora edulis* (as name indicates an edible species for humans). We did years ago and found that fritillaries were not interested.

Please plant California native and butterfly friendly plants in your garden to help restore our native habitat.

Thanks to Edward Platzer for proofing this article.

HAPPY BUTTERFLY GARDENING! AP

Janet's Jottings

"Meet" the Five Plant Hormones

Janet Hartin

Plant hormones are messengers that are responsible for cell division resulting in shoot and root growth. I've been fascinated with how vital they are since working in a plant growth laboratory in graduate school and thought you might be, too!

As you likely recall from Don Merhaut's, "Introduction to Horticulture" class, plant hormones are produced by plants and occur in very low concentrations. The five major hormones are auxin, gibberellin, cytokinin, ethylene, and abscisic acid. In some cases they work independently, and in others they work together to accomplish their important tasks!

Following is a brief overview of each one:

Auxin plays a large role in plant growth and development. The word auxin was derived from a Greek word meaning 'to grow.' Auxins are responsible for phototropism (growing tips bending toward light) resulting in elongated cells in the stretched portion of the plant seeking light. Auxin is unique because it is the sole hormone that moves downward from the meristem (growing tip) rather than upward. The impact of auxin is also visible after the growing tip of a plant is pinched back or pruned, resulting in many new stems sprouting and "apical dominance" of the former central leader ending. This can be beneficial to maintaining fuller houseplants and garden plants, including hedges. Another common horticulture use of auxin is to enhance the rooting of cuttings during vegetative reproduction.

Gibberellin was discovered in Japan when a fungus (*Gibberella fujikuroi*) caused rice plants to grow so tall that they fell over. Hence, the isolated chemical was named after the fungus. Several researchers soon noted that plants produce gibberellins naturally. In essence, gibberellins elongate the stem between nodes, resulting in long internodes. How have botanists taken advantage of these findings? One side of the coin is to inhibit the production of gibberellins to induce shorter plants favored by consumers, such as poinsettias and other floral plants. The other is to elongate internodes in crops such as sugar cane for increased production.

Cytokinin is important for cell division, as well. To cut to the chase, DNA from aging herring sperm results in cell division, due to a molecule called kinetin. This is a substance (eventually named cytokinin) that, in the presence of auxin, produces the same results in plants. Cytokinin is also involved in the formation of new roots and shoots. Cytokinins work in another way with auxins, as well. Together they repair damaged plant tissues. When the concentrations of both hormones are the same, normal cell division occurs, but if the auxin concentration is greater than the cytokinin concentration, roots form. You guessed it! If there is more cytokinin, shoots form. The result of cytokinin activity is akin to the fountain of youth, delaying senescence (aging) in leaves! How? Scientists hypothesize it is by

increasing carbohydrate (sugar) concentrations in older leaves, allowing them to stay metabolically active. Over 200 types of cytokinins have been identified and many also enhance mineral absorption.

Ethylene. We've all experienced the 'ripened banana effect' that occurs when ripe bananas cause green bananas next to them to ripen quickly. Similar results are found when ethylene producers are in fruit baskets with tomatoes, peaches, apples, and avocados and certain other climacteric fruit which will all fully ripen after harvest. Alternatively, non-climacteric fruits (such as strawberries, cherries, blueberries and grapes) do not further ripen and must be harvested when ripe. Non-climacteric fruits will not further ripen when coming into contact with bananas and other climacteric fruits. Since ethylene formation requires oxygen, the process of fruit ripening can be controlled during transit and is especially useful when transporting produce grown in one region of the world to another region where the weather is not conducive to producing that fruit. Another popular commercial application of ethylene is inducing the opening of carnation buds or inhibiting rose bud opening (interestingly at the same concentration!).

Abscisic acid. Drum roll! As you all help the public keep their high-priority plants alive during drought, many species of drought-resistant plants are doing the same! Abscisic acid is the chemical messenger in a plant that lets it know it is dehydrated and needs water. Normally, when plants have all the water they need, they recycle water back into the environment via transpiration through open stomata on the undersides of leaves. However, many species of drought-stressed plants actually stay alive by closing their stomata when signaled by abscisic acid to do so. (Other plants – referred to as "drought avoiders" – root deeply and mine water otherwise unavailable.)

I hope this "Plant Hormones 101" overview was of interest!

News from Rosa!

Rosa Olaiz

I hope everyone is enjoying the warm spring!

Big congratulations to the Master Gardener Class of 2022! I am excited to have a new group of Master Gardeners in our program. Thank you for your effort to complete the training class while working on your volunteer hours.

Thank you to all Master Gardeners for your support of the UC Master Gardener Program of Riverside County. Your many hours dedicated to educating the community is appreciated and valued!

It is time again to decide if you will continue in the Master Gardener Program in 2022-2023. Reappointment is now open, and you can complete the forms online. According to the UC Master Gardener Program Administrative Handbook, Master Gardeners must complete the reappointment forms annually. Beginning June 1 through July 15, all Master Gardeners must complete the three Reappointment Forms. Reappointment is for the fiscal year starting July 1, 2022 through June 30, 2023.

To complete these forms go to VMS, click on the first form, *Annual Reappointment Agreement and Request for Reappointment* and complete all three forms. Remember to enter all your volunteer and Continuing Education (CE) hours before June 30.

If you need volunteer or continuing education hours, opportunities are still available throughout the county. Look for opportunities at "Ask the Master Gardener" information tables at Farmers' Markets, Lowe's, and Lavender Festival. The Helpline and Gardening Blind have volunteer spots available. If you need CE hours, there is a list of recordings for MG presentations on the VMS Home Page you can watch. If you are short on hours, contact me, we can discuss your options.

Riverside County UC Master Gardeners			
UCCE Riverside County Director		Rita Clemons	
UCCE Riverside MG Program Director		Janet Hartin	
Volunteer Services Coordinator		Rosa Olaiz	
West County Advisory Board		**Desert Advisory Board**	
Chair	Darrilyn Erickson	Chair	Jim Thompson
Chair Elect		Chair Elect	
Past Chair	Georgia Renne	Past Chair	Marcia Stone
Secretary	Judi Newby	Secretary	Cesar Lopez Barreras
Treasurer	Jonathan Crook	Treasurer	Jim Huberty
Fiscal Officer	Jim Huberty	Fiscal Officer	Jim Huberty
Community Gardens	Thurman Howard	Class Coordinator (County)	Melody Knox
Diverse Community Projects	Thurman Howard	Coachella Valley Preserve Docents	Marcia Stone
Equipment & Inventory	Debbie Leuer	Continuing Education	Carolyn Daniels
Gold Miners	Thurman Howard	CREATE	Barbara Kay Levin
Grow Lab	Adrian Ceja	CREATE	Vivian Iyturralde
Help Line	Susan Bookman	Event Tables	Rita Kraus
Home Gardening Class	Linda Powell	Farmers Markets	Gail Nottberg
IT/Website (Countywide)	Ralph Thompson	Helpline	Ralph Thompson
Mentoring Program	Alba Good	Home Gardening Class	Linda Borlaug
Membership	Karen Fleisher	Information Tech/Website	Ralph Thompson
MG Logo Merchandise	Jennifer Hopper	Job Descriptions	Patty Reed
Newsletter	Georgia Renne	Job Descriptions	Marcia Stone
Parliamentarian	Dave Brandtman	Member Engagement	Marsha McNamara
Parliamentarian	Cindy Peterson	Membership	Cynthia Morris-Sotelo
Public Relations eBlast	Susan Cline	Moorten's Gardens Docents	Marcia Stone
Public Relations Social Media	Pam Clarke	Moorten's Gardens Propagation	Barbara Kay-Levin
RCRCD Liaison	Steve Orr	New Projects	Carolyn Daniels
RCRCD Monarch Habitat	Linda Powell	Newsletter	Georgia Renne
Rooted	Patti Bonawitz	Publicity eBlast	Barbara Kay-Levin
School Gardens	Kim Coons-Leonard	Publicity Social Media	Pat Malone
School Gardens	Brad Hardison	Raices Cultura's Terra de Raices	Cesar Lopez Barreras
Social Recognition	Yvonne Wilczynski	School Gardens	Brad Hardison
Speaker's Bureau	Lynn Coffman	Social Events/Recognition	Kathy Miller
Tours	Linda Carpenter	Speaker's Bureau	Pat Clayes
Training Class (County)	Melody Knox	WIC (Women Infants Children)	Vilma Raettig
UCR Botanic Gardens Liaison	Yvonne Wilczynski		
WMWD Liaison	Janice Rosner		

What's a gardener's favorite Beatles song?

Lettuce bee.