



Mohave County Master Gardener Program

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Featured Article

by

Cathy Bryan, Kingman Master Gardener

Hydroponic Gardening

Why Hydroponics? No soil, faster growing, better flavor and a miracle you can see as plants practically grow before your eyes. You can also grow more in a smaller space which makes it easier to monitor for diseases and pests.

Last year, I got a book called "The Hydroponic Garden Secret" by Susan Patterson, who is a Master Gardener in the White Mountains of Arizona. Her methods were very simple, so I went online and found everything I needed to begin my garden. Here are some tips and tricks I've learned since then.

Containers and Garden Set-up

I use 2 gallon and 5 gallon food grade buckets with net pots that fit the top. The 3 gallon shallow totes can be used for lettuce and all sorts of greens. You just cut circles in the top that are the size of the net pots. You can also use deeper 18 gallon totes for the deep water culture method (DWC).

Currently I am using the Kratky method, which does not require air pumps. I planted my first plants in September of 2019, and I still have those tomatoes growing, as well as broccoli and Brussels sprouts. I harvested tomatoes sporadically throughout the winter but never had a big crop. I was very pleased because the garden kept me busy,

and I was always planting seeds to see what would and wouldn't grow. We all know that gardens love humidity and that's an issue I have not figured out yet.

To house the garden, I built a 7 X 7 Square room on the east end of my back porch. Being on the east side, the room only receives direct sun in the mornings. I framed three sides with 2 X 4's (the south wall is the house). I covered the framing with clear polycarbonate panels, which bring in light, and are a good wind deterrent. The construction was the most expensive part of the project, but well worth it. There is a window in the east wall and a 24-inch door on the NW corner (I kept the door small to allow for more growing space). I put screen on the window and the door for ventilation and covered them with a panel during the winter. I also used a small electric heater and some heat lamps during the winter months to keep a nice temperature in the space.

The east wall is adequate space for six or seven 5-gallon buckets.



The house wall has heavy duty wire shelves for totes and jars/bottles. The north wall has a strong 4-ft long wood bench that will hold two 18 gallon totes.





I used scraps to build shelves between the wall studs. The west wall has wire equipment shelves, and a plastic 3 drawer shelving unit for storage.



You do need quite a bit of storage for supplies, pots and such. I bought several cans of bright colored spray paint and darkened the buckets. Otherwise, algae will grow quickly. The colors give a pretty accent to the garden and it is a good place to get inside and enjoy some music while you are watching your garden grow.

As time passes the tomato plants will grow and need trellising. I built a trellis of 1" x 2" furring strips that sets on top of the five gallon buckets for the tomatoes. I used mason cord and floral tape and did a lot of pruning. Things grow so fast that I recommend two or three pairs of rose pruners or bonsai snips. It's just easier to find if you have more than one pair. Pruning also helps the nutrients go to the fruit and not so much to the leaves and vine. The plants will grow strong in two to three months, and eventually end up with a jungle. I also use

6-foot green garden stakes thru the net pots and attach the plants with the green Velcro tape, which is easy to manipulate the stems and limbs.



Nutrients

Plants cannot survive on water alone, so I use a common 3-part hydroponic nutrient solution I buy online. They are simple and very easy to use. They come in 3-part packs, and my first pack lasted 6 months. I use as recommended unless something needs perking up. I mix my nutrients in 1 gallon milk/water jugs. I add one or two cups and its okay. Over time you just learn when they need a boost.

pH

The ideal pH range for growing hydroponically is slightly acidic, 5.5 - 6.5. I use a pH meter I ordered online, which I found easier than the other testing methods. My tap water is usually a pH of 7.0, so I just fill water jugs and by the time I need them they are at 6.5. You can also purchase pH control liquids to raise or lower the pH. It is important to remember to test the pH after adding the nutrients as the nutrients will decrease the pH.

Light

The amount of natural light available will determine any additional lighting you may need to provide. I just bought clip lights with regular sockets and you can use various bulbs according to your needs. You can buy most grow lights at big box stores, or online. Lighting is needed if plants are spindly, have pale leaves, or show other symptoms that we all learn as time passes.



Growing Medium and Misc.

Other items you will require are rockwool, clay pebbles, netpots, tweezers, pruners, a garden journal, and a good attitude. It is hard gardening in Arizona, but we all persevere because that's what gardeners do!

Seed Starting or Bedding Plants

I have been trying to start my own seeds, but that too is a garden art we all learn. I have used both plants started from seed and bedding plants from the store. The results are about the same. I have always have some seed starting or growing.



It is pretty simple this time of the year. I use the 6 pack containers you usually buy bedding plants in. I put them in a tray in a clear lettuce box or something I have recycled to get the moisture content started. I set them in direct sun or put them under one of the grow lights I use. I will try and start the seed in good seed starting soil and just water them as needed.

If you start from seed in soil, or purchase bedding plants for your hydroponic system, you will need to wash the roots with a spray nozzle to remove the soil from them. I just use a piece of scrap siding, hold the plant on the

siding and wash all the soil off until you see the white roots. This can be a delicate process but you will figure it out. I also use a cube of 1" x 1" rock wool, slice it open and place the plant in it where the root starts. I usually cut a bigger slit in the net cup and put the root through the bottom with tweezers. It is easier if the root is heading straight to the water when you put it in your container. I have watched many YouTube videos but you can decide what works best for you. I have not had good luck with lettuce because of bolting instead of heading. There is no right or wrong, it's like fishing except it's gardening instead.

I also use recycled 1/2 gallon fruit juice bottles as well as 1 quart iced tea bottles for containers to hold starts. They work with 2 inch, 3 inch, or 5 inch net cups. These bottles can be cut easily with a utility knife, pruners or scissors. I spray the outside of them leaving a vertical view window by using tape to make an unpainted line. Remember that all containers need to be painted opaque because algae can and will grow in the nutrient solution and the roots. When transplanting to netpots, make sure to fill the pebbles to the top of the pots to avoid algae growth at the top of the clay pebbles.

Attached are some pictures from my garden. There is nothing absolute in Arizona gardening. Wind and water are our biggest issues in all my garden experience. I did have aphids moving through the garden in winter but kept an eye on them and finally eradicated them with soapy water, leaf pruning, and finger mashing. I currently have three tomatoes, squash, peppers growing outside of the garden in buckets, but the evaporation rate is amazing. Just keep water levels monitored, and add water and nutrients as needed.

So these are some ideas and information I have learned in the 10 months I have had the garden. Like all gardens, it is a lot of fun and you can almost see some of the plants growing.

Please feel free to call Cathy Bryan or Mohave County Master Gardeners at the Mohave County Cooperative Extension Office with any of your questions, (928) 753-3788.



Amy's Corner

I was a little concerned about our ability to fill a newsletter given the fact that our program has been on a mandatory hiatus since mid-March, but I must say I am extremely impressed with the quality of content so many of you were able to produce. It is clear that many of you have been utilizing the extra “free time” afforded by the shut-down to work in your own gardens, and take advantage of the many virtual training opportunities that have presented themselves as the whole world shifts to accommodate the need for social distancing to mitigate the spread of COVID-19.

Our own program was faced with a similar challenge, when the University of Arizona implemented a mandatory suspension of all face to face events in the midst of our annual Master Gardener Training in Lake Havasu City. Fortunately, we were able to continue delivering much of the content online via Zoom. As a result, the majority of our 36 original students were able to complete the class, and I am excited to say that we have 12 individuals who intend to become Master Gardener Associates. Like you, they are anxious to begin volunteering by putting their knowledge to work educating the community in science based gardening principles. Which brings up the obvious question, “When can we resume our regular Master Gardener activities?”

We are currently operating under the original UA mandate that all face to face programming be cancelled or postponed through July. At this point, we are moving forward with planning and hosting

August events, however that is subject to change. *We do know that the University will be requiring that masks be worn at any UA/Cooperative Extension sanctioned event where physical distancing of 6' or more cannot be maintained (indoors and outdoors).* We will also need to take into consideration and follow any state, county, and local mandates. For example, while the Mohave County Libraries are open with modified services, they are not allowing gatherings in their meeting rooms. This automatically limits many events in Bullhead City and Lake Havasu City unless alternate locations can be found.

With all this in mind, I encourage you to think outside the box. Zoom meetings are certainly an option for business meetings and workshops. Just contact Andrew or myself if you would like more information about utilizing that platform, or if you have any other ideas for creative programming that meets our physical distancing guidelines. In the meantime, rest assured that we are taking all of this disruption into consideration with regards to required volunteer hours for our Certified Master Gardeners and Associates. We will get through this together, and look forward to a time when we can continue our mission in person.

Amy Nickel, Instructional Specialist Sr.

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Bullhead City Master Gardeners

Debbi Miller, Coordinator
Dennis Lesowsky, Co-coordinator
Bonnie Muir, Secretary
Bill Stillman, Scribe

Our Master Gardener year ended on a high note in March with a successful Home Garden Day followed by our participation in the Mohave Contractors Association Home Show the weekend of March 14-15. And then it all came to a screeching halt. Though rumblings of closures had started by the Home Show, the attendance was good and we were able to talk to a lot of local gardeners. Additionally, we manned the children's seed-planting booth, with planting materials supplied by ACE Hardware.

Our monthly Library programs for April and May were cancelled, not only because of the mandate from University of Arizona to suspend activities, but also because the Libraries in Mohave County were shuttered tighter than a Gulf Coast cottage in a hurricane. Previously, Bob Morris had been scheduled to be our Guest Speaker for the April Library Presentation. However, due to the halting of all activities, the April presentation was cancelled. We are hoping to have Bob as our speaker at our November presentation (presuming we will be back in operation by then).

After last years' wonderful spring, the weather this year has caused us to be glad we've all had extra time to concentrate on our own gardens! The weather went from hot, to cool, to sizzling; sometimes all in the same week, leaving our vegetables stressed, and in dire straights. Anyone who missed the short planting window(s) is out of luck until September (and already we seem to be in the summer doldrums, crop-wise). Melons and other hot summer crops are holding their own, if you happened to

plant them. With the tomatoes, it's "what you see is what you get," unless we happen to have enough days under 85 to start fruit production again, and the winds cooperate and do not blow off all the blossoms.

Hotline calls have been minimal, and we've been able to handle most of those over the phone or by email. We continue to route things through our hotline coordinator, Mary Johnson.

Perhaps our biggest news of the quarter is a changing of the guard in our internal Master Gardener group responsibilities. After nine years as co-coordinator, Leroy Jackson, Master Gardener Emeritus, is passing the baton to Dennis Lesowsky. A huge thank you to Leroy! Dennis will become co-coordinator this year and take over for Debbie the following year as she "retires." Like Bill Stillman, our coordinator for at least eight years (and maybe more), Debbie will not disappear quietly into the sunset, but will continue to be among the most active Master Gardeners. Many of our "newer" members are also taking on increased responsibilities in the group, so as to spread the workload and ensure things get done in our usual high-energy manner.

We look forward to getting together as soon as possible to confirm our plans for the 2020-2021 year. Since we will be the host area for the next Master Gardener Training Class, we are particularly anxious to be in full operation by January.

No Cheap Trick, Just Cheap Shade

Geneva Carreon, Bullhead City Master Gardener

With the arrival of summer, shade becomes more critical for the survival of many plants. My rescued sago palm, purchased at a neighbor's yard sale, was no exception. To my dismay, the palm began to display the sun-burned symptoms of some of my other nurtured, but now dead, plants.

While walking my dogs through a nearby park, I noticed many abandoned tree twigs and branches and wondered if I could somehow save my sad-looking little palm by creating a shade canopy made from these broken branches. So far it is helping, so I pass along this inexpensive project, in case you have beloved plants that need the extra attention during our intense summer heat.



Tools and supplies

1. Pruners
2. Hacksaw
3. Small Shovel
4. Branches
5. Thin Wire or Macramé String (twine)
6. Dried Moss

Wood Tips

Avoid branches that are brittle. When wiggling the cut sticks for the canopy's roof across other sticks, those with no flexibility easily broke in two. Opt for sticks that are somewhat straight (versus very curvy) and are of a similar diameter. Be sure the two Y-shaped branches for the legs of canopy are thick enough to hold weight of roof and withstand strong winds. (Or use 4 recycled PVC pipes with holes cut near the top to attach the 4 corners of the canopy)

Canopy Size

The number and length of branches will obviously depend on the size of the plant and desired canopy. My canopy measures 36" high by 11" wide by 24" long. It has: a) 21 sticks at 24" long for the canopy's roof length; b) 17 sticks at 11" long for the canopy's roof width; and c) two, 36" high forked branches for its legs. I added an additional 4" to height of the two forked branches to bury into the soil.

Instructions

1. Measure above plant the desired length and width for the roof top, and the height for two forked branches (or PVC pipe). The closer the canopy is to the plant, the more shade it provides.
2. Measure one stick for the roof top length (the longer ones) and use it as a cutting guide for the others. Do the same for roof width sticks. Use a pruner or hacksaw to cut necessary number of sticks. Sanitize tools before, during and after cutting.
3. After all sticks for the roof length are cut lay, as closely as possible, the number needed side by side (parallel) to attain the roof width, with a little extra. (When all sticks are tied tightly the length will decrease.) Place on top one of the

shorter width sticks at each end of the length sticks and attach by feeding string up and under each row of length sticks until they are lashed securely with the woven string.

4. Continue working across, adding the shorter sticks one by one, and weaving the string around over and under, catching the shorter width-wise sticks and lashing them to the wider cross-wise sticks. Repeat until the canopy is complete. (This can take some time!)
5. Insert dried moss between the crisscrossed sticks to fill-in gaps and create more shade.
6. Measure two, Y-shaped and trimmed branches (or drilled PVC pipe, rebar or other corner pieces).
7. Bury and stabilize the bottom of the corner pieces after checking where they should go, depending on the finished canopy size.
8. Tie-down with string the four corners of roof to the two, Y-shaped branches (or the 4 PVC or other corner pieces).



TO PRUNE OR NOT TO PRUNE?

By Bill Stillman, Bullhead City Emeritus

A basic question is “why should we prune?” The most important reasons include safety and plant health. Secondly would be fruit production and plant regeneration. Esthetic reasons are probably a distant third, though usually this is the biggest concern to the average homeowner.

Most of us know from our horticulture classes and/or from experience that when pruning a tree, we should not leave a stub or cut into the branch collar.



We also know when removing large branches we should use the three cut method of pruning to reduce the chances of tearing the bark from under the branch or into the tree causing further tree damage.-

The three cut system is also referred to as “Natural Target Pruning.” This pruning method is the practice of using the branch collar as a guide to remove the branch for the final cut. Care should be taken as not to cut into the branch collar. When the branch is correctly removed, the tree will start to cover over the pruning cut by generating new growth cells.



The branch collar is made from interlocking layers of branch and trunk wood. The pruning wound is covered over by new cell growth that becomes compartmentalized

by sealing off the vertical vascular system from the top to the bottom of the wounded area. Pruning cuts are wounds. Plant wounds are not like human wounds. Human wounds normally heal. Plant wounds do not. When pruning is done correctly, wounds react by compartmentalizing, sealing themselves off.

When pruning cuts damage the branch collar, those damaging cuts can lead to bacterial infections, internal tree decay, tree decline and death.

Compartmentalization is also known as the CODIT system. The CODIT system (Compartmentalization of Decay in Trees) is a concept presented by Dr. Alex Shigo where there are four conceptual walls of protection created by the plant cells responding to plant wounds and infections. Compartmentalization leads to reduced spread of decay. (For a complete explanation of the make-up of the branch collar, Google “Alex L. Shigo, How branches are attached to the trunks”).

The reason for this article is to emphasize the need to properly prune. Driving around the Colorado River Area, I often see the damage done to trees in this area, in many cases by the professional landscape companies topping trees, not following the three cut method of pruning (ripping the bark off the trees, cutting into the branch collar), and in general just hacking and whacking trees. Just drive around and look at the major shopping centers to visually see the damage being done to.

Solution: educate the labor force.



Windbreaks: A Solution to Our Wind Problem

By Dennis Lesowsky, Bullhead City Master Gardener

A windbreak is just what the name implies-- a strategy, device or living structure designed to redirect the natural wind patterns in a specific area. If you are in an area where the wind is prevailing from a single direction, a windbreak can solve your problems. If you are in an area such as Bullhead City or Mohave Valley the problem is different because the winds are out of the out of the north all winter and from the south in summer. In such an area, two windbreaks could be needed.

In designing a windbreak, the idea is to divert the wind over or around the area to be protected. Stopping the wind is not an option because it is really impossible. The key word "break" means just that, to take a continuous solid wall of moving air, and cause it to disperse in a single direction, or in many directions to slow it to a livable level. A barrier density of 75% would be very effective. Higher density would cause too much turbulence on the leeward side, reducing its effectiveness close to break.

If you choose to use solid walls or fences, it is best to have spaces or openings in the first structure, and make it lower than the next structure. This serves to start the channeling process. The solid wall of air is now moving in several directions but still primarily in the same direction and adding lift. The next barrier in line should be higher to lift the air even more. It should also have negative spaces, but opposite of the first. These openings reduce the force by breaking the solid wall into many pieces. You could even mix structures with plants to accomplish this same diversion. An example would be a 3 to 4 foot hedge you can see through followed by a 5 to 6 foot fence or wall, then a 10 to 12 foot shrub hedge.

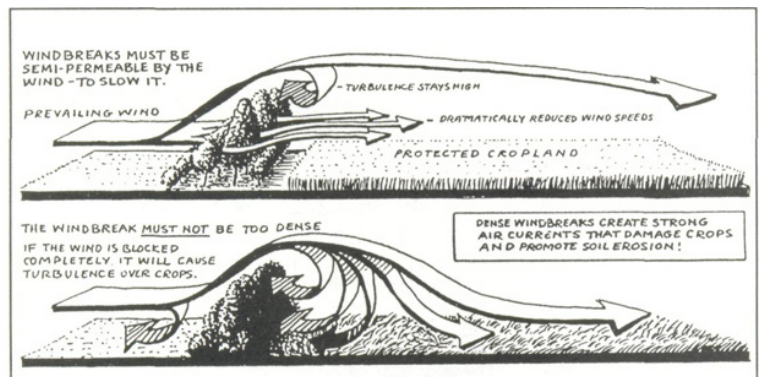
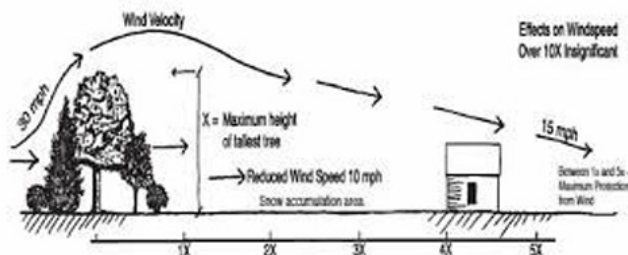
The wind speed is reduced over a distance about 3 to 5 times the height of the wind break and then starts to return to the speed before the break. In this example the maximum effect would occur at a distance of 36 to 60 feet. The total reduced speed area could be as much as 75 to 80 feet and allow for use of an otherwise unpleasant area.

A living windbreak could consist of rows of plants used to accomplish the same effect. These generally involve 5 rows of plantings to lift and divert the wind around the desired area. An effective windbreak can be grown in 3 to 5 years by utilizing fast growing shrubs and trees. Be sure to plant things compatible with your area and the height you need.

An example for a Mohave County wind break could consist of the following, starting on windward side: Row 1: Texas sage or Tacoma bells. Row 2: Acacia, in the 10 to 20 foot size, (There are several varieties to choose from). Row 3: Desert Hackberry. Row 4: Rosewood or Desert Willow. Row 5: Mondell or Aleppo pine. This planting would be approximately 40 to 50 feet tall giving a 120 to 250 foot area of reduced wind effect, a large space to use as needed. For smaller plots less drastic plantings are called for. A small garden would be able to get by with much smaller species and fewer rows.

Wind control saves crops from desiccation, and homes from losing heat in winter. In summer the reduced air movement can make enjoying the outdoors more possible, and the trees can provide additional shade.

An Example of the Effects of a Windbreak on Wind Speed.



Kingman Master Gardeners

Linda L Reddick, Coordinator
Melissa Palmer, Co-Coordinator

Hot, windy greetings from Kingman. I do believe Kingman has become a sister city to Chicago, or is at least trying to keep up with Chicago's windy reputation.

Needless to say, I have missed everyone and tried to stay in touch via email and phone. After all, we are family - or at least I see it that way. I do believe we all supported each other and the community thru the COVID-19 lock down. We had some interesting calls from clients, which we were able to assist via phone & email. All of them understood we could not make house calls, but were pleased with our resolutions or suggestions regarding their individual problems. We fielded questions on topics ranging from citrus and mulberry trees, to squash not producing, thru how to start a new garden.

With the extreme temperature fluctuations many of us have been experiencing unusual garden problems of our own, and searching for new solutions - especially for wind damage. Interestingly, while we are adjusting to being at home, the plants are trying to adjust to high temperatures, and wind. In a

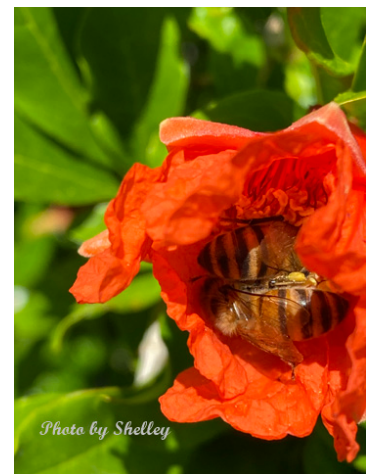
way, it's been beneficial as we are able to spend more time in our individual gardens. We have even had time to plant some extra vegetables and flowers.

Looking forward, I sure hope you are raising items for the Mohave County Fair. Currently plans are going forward to have a Fair in September. So while you still have some extra time, get those projects underway whether its photos, crafts, sewing, or fruits and vegetables. Together we can get through anything. You may be able to side-track a gardener, but you can't stop one.

Regards
Linda L Reddick
Kingman Coordinator
Melissa Palmer
Co-Coordinator



Spider Web and Bees
Photos by Shelley



Summer 2020 Wind & Weeds Assembled by Shelley, Master Gardener

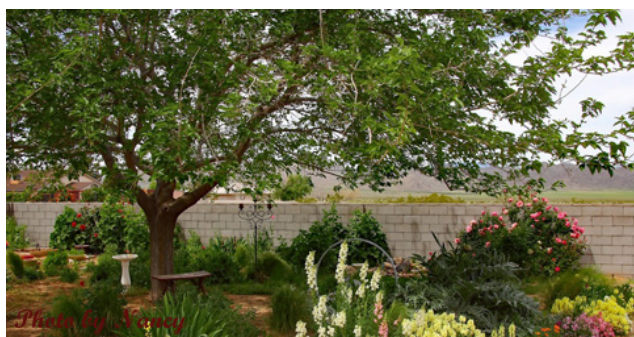


The Feral Garden

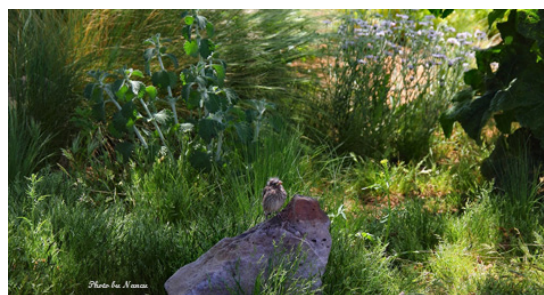
By Nancy Lea Sandy, Kingman Area Master Gardener

It's a work in progress—gardens always are—but it has reached the point of being delightful. Does that mean I'm happy with it? Well, yes—in a way. Happiness is a state of mind, a quiet humming in your soul that underlies your day to day activities. I'm a happy person but delight is different. It's more like a chuckle in your heart that makes you grin so big the corner of your eyes crinkle. It's always a surprise, discovered anew each morning when I step into my garden.

Gardens are meant to delight. The famous ones, the most beautiful, are often orchestrated by meticulous design. They are planned and plotted, manicured and maintained



to bring out the best in every plant. Some are rigidly sculptured in geometric patterns and intricate designs. Some offer carpets of colorful blooms, woven through with alluring pathways that hint of secret pleasures around each turn. All of them are alive. The sweetly scented air is filled with bird song above the soft droning of bees. Musical water features, a gaily splashing fountain or a bright flowing stream, add their voices to the symphony. Butterflies dance between blossoms that sway in gentle breezes. There are open spaces, soft cool lawns or artfully paved patios that invite you to linger. You can always find a comfy seat in some nook or cranny, out of the way of any traffic. There is peace, a feeling of completeness.



My garden probably wouldn't delight everyone. Perennials are brought in and abandoned, seeds scattered to the wind, weeds nurtured to uncertain glory. Everything is on trial—subject to frequent rearranging with each plant in search of its final destination. There are no carefully manicured beds, no neatly maintained pathways. The vegetable garden is no longer a proud little patch carefully separated from border beds and seating areas, relegated to some far corner as if these crops have no beauty and grace of their own. The perennial onions have wandered beneath the roses and the feathery foliage of carrots grace a large planter near a sacred datura that's sprawling across the geometric beds I was growing early potatoes in. There is no rhyme or reason here. This garden is a feral thing, rooted in whimsy and caprice. Wildflowers are welcome, and "weed" is more a matter of where the plant is growing than how it grows. The casual observer would probably think my gardening methods haphazard at best, but there has been planning and purpose to this madness, every step of the way. My niece calls it "feral gardening." I like that term.

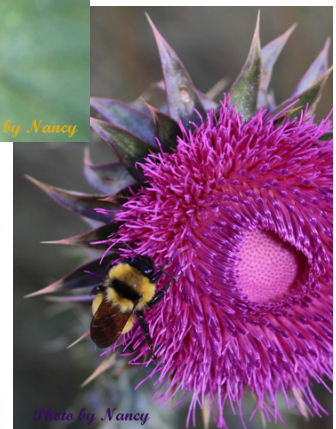


My yard was a blank slate when we first moved to Arizona. It had a few trees, a bank of roses beneath the bedroom window and a rosemary bush. I could start from scratch. I have to admit, I fumbled around the first couple of years, trying to figure out what gardening methods would work for me here. I knew I had three goals for my garden (the same three goals I've had everywhere I've had a garden):

1. It had to be welcoming to urban wildlife and pollinators and beneficial insects
2. It had to conserve resources, particularly water
3. It had to add beauty to my world.

To reach those goals, I researched all the best practices from a range of gardening methods including inter-cropping, intensive planting, raised beds, in-ground composting, careful selection of plants, including native plants, and zone watering. Then I threw out all the books and grew a garden. My garden is a tapestry of color and texture; it caters to all the senses. There is color and scent, and sound. There is the touch of tall grasses and the breeze on your face, the taste of baby carrots and new potatoes. There is running water and bird song. The butterflies dance between blossoms. There is peace here, and a feeling of completeness.

I think I know what it is that makes a garden delightful. It's a garden's ability to engage all of your senses at once without overpowering any of them. It's the way a garden includes you without expectations or judgment, wrapping itself around you, intimately comforting, suspending time and place for just awhile. A garden needs to be alive. Only then can it give back to the gardener all the tender care the gardener has lavished on the garden.



Lake Havasu City Master Gardeners

Dan Alberts, Coordinator
Sharon Gomez, Co-coordinator

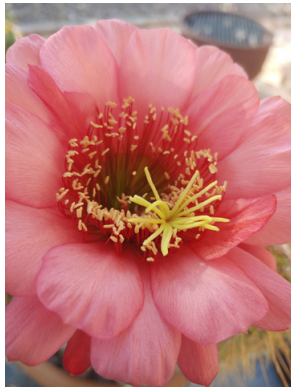
As we enter into summer and triple digit temperatures, hydrating our plants is pushed to the forefront of gardening tasks. We all realize, as Master Gardeners, that the early morning hours are the most opportune time to fulfill this need. I am an early riser, and enjoy the mornings outside providing water to my garden.

The last few months, as you know, have been different than any worldly event that we have seen, because of COVID-19. We have curtailed all of our routine events and meetings indefinitely, with no clear date as to when we may again reach normalcy.

When we do return to a normalized society, we have 10 new associates that we will welcome.

The Master Gardener hotline has remained active however, here in Lake Havasu. Questions that have surfaced have been varied, from weed identification, citrus issues, saguaro problems, to watering schedules. Thanks to Irene Rose for taking the lead on this.

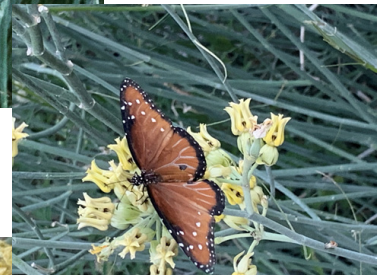
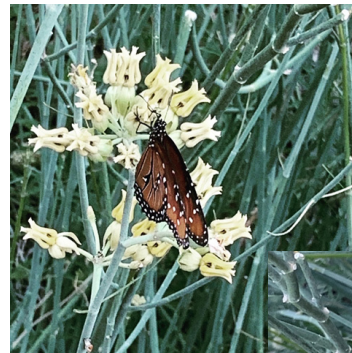
Due to lack of news to report from Lake Havasu, I have included some local pictures, along with an article by Jerry Cornell, one of the Lake Havasu City Master Gardeners. Enjoy!



Lake Havasu City
Master Gardeners
Photos



Monarch Waystation at Rotary Park
Photos by Jamie Zimmerman



Notes on Decay & Rot in Trees

By Jerry Cornell, Lake Havasu City Master Gardener

While viewing a webinar on detection of internal trunk decay and identifying root rot in trees, I decided to take a few notes for my collection of plant problems. The following results are outlined in two parts for ease of understanding.

Detecting trunk decay (Heart Rot)

Types of Heart Rot are:

- Brown rot – The most serious type that will dry out and crumble the internal trunk.
- White rot – Very severe cause of decay, but unlike brown rot the wood will feel moist and spongy.
- Soft rot – Can be caused by a fungal or bacterial infection. The tree will still decay, but at a much slower rate. It will cause the least structural damage.

Determining the location and extent of decay can be somewhat difficult. Professionals such as Certified Arborists may use sonic tomography, (a very expensive method) or visual inspection to include:

- Signs of canopy die-back, poor growth, wilt and early leaf drop, and dead branches indicating tree is beginning to deteriorate.
- Tree injury or wounds (improper pruning cuts) that are oozing reddish or black sap are signs of decay.
- Fungal growth on the base or other parts of the tree, such as mushrooms, brackets, or conks are all signs of advanced decay.

Unfortunately internal decay cannot be cured.

Identifying Root Rot:

Many symptoms will look like signs of pest infestation, or resemble drought stress and/or fertilizer deficiencies. Stunted or poor growth along with small pale leaves, and gradual or quick decline without obvious reason would be indications of root rot.

The main cause of root rot is poorly drained or over watered soil. Such conditions will prevent roots from absorbing oxygen and nutrients required for active growth.

Some well known species of soil and rot fungi are: Pythium, Phytophthora, Rhizoctonia and Fusarium. All thrive in wet soil and a sign of decay & rot.

Extensive tapering at the root zone may indicate a rot problem. By removing rocks & mulch around trunk root zone you will allow moisture to evaporate; at the same time removing soil to expose some roots to check if they are soft & brown instead of firm & white. If so, your diagnosis would be a fungal disease.

By the time you notice the tree has problems, the disease may have progressed to a point where it's unlikely it can be saved. However, a remedy for a mild case of rot would be to improve drainage, identify the fungi and purchase a fungicide for that specific fungus. Fungicides are very toxic chemicals, and should be left to the professionals.

The next best thing would be removal of the tree, keeping in mind that the fungus may persist in the soil, so only resistant species should be planted in its place.

Photos by Ilona Autowski

Lake Havasu City Blooms

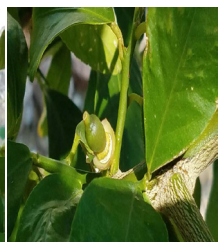
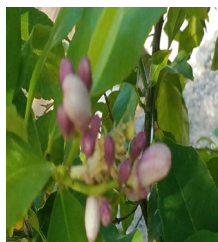
SAGUARO CACTUS IN BLOOM



OCOTILLO RED CLUSTER
FLOWERS



CITRUS HAPPENINGS IN APRIL 2020 LEMONS



CREATING NEW PLANTS

HOT PINK FLOWER OLEANDER CUTTINGS
TAKEN AND ROOTED FALL OF 2018



OLEANDER HOT PINK
AND WHITE
CUTTINGS 2 WEEKS
AGO MAY 2020

