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The Joy of a Gardening Journal

Jack Kenealy, UCCE Master Gardener, Yolo County

My sister, who recently retired, asked her contractor husband to build her a greenhouse. It is huge. More a conservatory than greenhouse, it makes me green with envy. She can be a difficult person to shop for, so this new addition to her life has given me the opportunity to come up with gift ideas to help her enjoy her retirement. Two thoughts came immediately to mind: one was a magnifying visor, the other a hardbound garden journal. Of the two, the journal is the most important, I think. Whether one grows flowers, vegetables, houseplants, or trees, the use of a diary or log is both useful and fun.

Today, I do things like plant my seeds in vermiculite set over a heating pad without a thought as to how or why I do it. But an entry in my garden diary dated April 9, 2009 reads in part, "no question the vermiculite tends to start seeds faster," and elsewhere I discuss the then-new-to-me danger of "damping off." When I was reviewing past years' journal entries in preparation for this article, I noticed that I am still making mistakes I made years ago. An entry dated December 22, 2006 read "a little chagrined–got lazy, didn't mark down what lettuce seeds were planted where–Also either the garlic or onion sets are breaking through–I can't tell which–because, again, no labels." Although I now recognize the difference between garlic and onion shoots, consistently labeling transplants is still an issue with me. That will be one of the goals I identify in the coming year's volume, and probably, based on past results, in the year after that!

But the information kept in a journal has other uses as well. I can be reminded of past pest problems, remedies I applied and of their effectiveness. Other subjects that occur in my journal on a regular basis are weeds and how they are controlled, the presence of beneficial insects, and what may draw those insects to my garden. I record the use of fertilizer and note the results. My composting efforts are notated if there is anything different or unusual about them. A journal also helps me with crop rotation. A question I no longer have to ask is, did I plant legumes in this bed last year, or was that the year before? I don't keep a daily record, nor do I record rainfall totals, daily temperatures, or cloud cover, although I can see these might prove useful.

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Each December and January, I use information from last year's calendar and my journal entries to create this year's calendar. Using this system I can tell you that in November, for example, the first frost in 2011 came on the eighth, the next year it came on the ninth, and on the seventeenth in 2016. I note weeks of deep freeze or violent winds, days of extreme heat or particularly nice weather, and if it comes early or stays late. While it is impossible to predict from one year to the next when the frost will come, it is helpful to remember what has happened in the past. The microclimates that occur

in your yard do persist from year to year and journal entries can help one anticipate their effects.

I make note of the varietals I plant and the failure or success of such plantings. Timing is critical in some cases. Knowing when I planted the peas or beans that produced a bumper crop is as important as knowing the variety of such things. This year I learned September is too early to harvest sweet potatoes, that late October is best, and my calendar will now reflect this. A written record helps me remember if the tomato or pepper I planted in the spring is a hybrid, whether I can save the seeds, and when I removed the plants. No matter how certain one may be that they will remember from year to year, or even season to season, it never happens.

Keeping a journal makes it possible to experiment in meaningful ways. I have planted tomatoes in varying ways over the years and thanks to record keeping believe I have arrived at a system that works for me. But I keep comparing one way against another and then keep a record of the results. Whether this effort results in any meaningful improvement in the process is almost beside the point. It is just plain fun. Reading past years' journals is almost as enjoyable as perusing seed catalogs.

When creating a journal, there are a number of things to consider. First, there is the journal itself. I am out of place in the digital age so I do not make my entries on a phone or laptop or computer. But I'm sure there are wonderful applications out there that would make maintaining a journal just as useful, rewarding, and fun as the handwritten record. But then, there are times when a sketch or drawing becomes necessary. Recently, for example, I found a gall attached to the underside of a leaf. (This was before the excellent article on the subject recently published in the *Blooming News*.) I drew what I found, including the insect inside that crawled across the very page I was writing on!

I have used both hardbound and soft cover spiral bound notebooks. Both have things to recommend them. The hardbound volumes can be difficult to keep open. Also, over the years the spines break and the pages can come unglued. But they look good on a shelf, have a certain air of permanence and might be better appreciated by children or grandchildren in future years. Spiral volumes allow greater flexibility, open and stay flat on the work surface, but lack the cachet of the bound volumes. Regardless of which you choose, be mindful that over time your journal will get wet. The hardbound volumes better protect against that eventuality. My most recent soft cover notebook has several pages that are difficult to read due to water damage. Also, having left it open, I allowed the sun to burn away all the lines on many pages.

There are many different commercial volumes of garden journals and planners available. I obtained a 2018 garden journal that is little more than page after page of one form all geared to one seed or plant. I guess a record of this information could prove beneficial, but I don't see how one could make much use of it. I will use it to keep a record of the seeds and seed companies, to track landscape plants whose names I never remember, and the like. There are other journals available with pages of grid-lined planners, gardening tips, forms and other information. It is difficult to know in advance

what one is getting over the Internet, because the vendors don't offer a glimpse between the covers. Over the years I have become accustomed to simple blank or lined pages so I can decide what to include in any given entry. Decide what works for you and don't be afraid to change or supplement it over time.

When I make a gift to my sister of her new journal, I will encourage her to record personal insights about her gardening journey, for gardening is a very personal endeavor. The rewards can be as much on the inside as in the soil. I recorded a very special entry once on the occasion of witnessing for the first time, through a magnified visor, the translucent swelling of a seed as it transformed a hard grain into life. And I know that everyone who gardens has special entries to make in journals of their own.

Meet Me in St. Louis: The Missouri Botanical Gardens

Cathy Sutton, UCCE Master Gardener, Yolo County

If my oldest daughter had not moved to St. Louis twenty-three years ago, I would not have discovered the wonders of the Missouri Botanical Garden. Visiting the spectacular seventy-nine acre garden quickly became a family ritual on my annual visit from California.

The Missouri Botanical Garden is more than a place of beauty and biodiversity; it is renowned for research, education, and preservation. By definition, botanical gardens encompass all of these goals, as well as being a place of beauty and solace.

As the oldest botanical garden in the United States, the Missouri Botanical Garden is a National Historic Landmark. While making his fortune in St. Louis, English businessman Henry Shaw dreamed of creating a botanical garden with an emphasis on education and research. That dream became a reality when the Missouri Botanical Garden officially opened to the public in 1859, the year that Darwin's *Origin of the Species* debuted. In addition to the Garden, Henry Shaw also established the School of Botany at Washington University in St. Louis. Since the Garden's inception, the director of the Garden has always been a botanist from the university.

The mission of the Garden is "to discover and share knowledge about plants and their environment in order to preserve and enrich life." The Science and Conservation division accomplishes this by offering researchers from around the world:

- One of the largest herbariums with over six million specimens;
- An excellent botanical library with significant rare book holdings;
- TROPICOS, one of the world's largest digital libraries;
- The William L. Brown Center for plant genetic resources;
- And the Center for Conservation and Sustainable Development.

One of my favorite places to visit in the Garden is the William T. Kemper Center for Home Gardening. It is the largest nonprofit information center of its kind in the nation. Here, master gardeners have a strong presence, dispensing information and diagnosing plant problems for home gardeners. Here you will find eight and a half acres of landscaped gardens, including vegetable and landscape plantings. There is a "Plants of Merit" program, with plants especially suited for the St. Louis area, similar to the UC Davis Arboretum's All Stars. Over one hundred classes taught at the center emphasize water conservation, integrated pest management, environmental responsibility, and composting.

Another family favorite is the Japanese Garden or *Seiwa-en* (the garden of pure, clear harmony and peace). It is designed around the concept of a "wet strolling garden," a style developed by wealthy landowners in nineteenth century Japan. Visitors enjoy cherry blossoms, azaleas, peonies, lotus, chrysanthemums, and evergreens as well as the beauty of landscaping, pruning, and Japanese garden ornaments. The sound and sight of water are always present as you wander the paths in this fourteen-acre garden. A five-acre lake is teeming with colorful Koi fish that swim around the four islands and under the graceful wooden bridges. Snow is considered a flower in the Japanese garden, revealing many elements that come to life in the winter, such as the "snow viewing" lanterns. Each season in this and each of the gardens brings new colors, vistas, and plantings.

The Climatron conservatory is one of the most recognizable structures in the Garden. It was the first geodesic dome to be used as a greenhouse. The dome is seventy feet tall with a half-acre of tropical plants within its humid interior. It holds 2,800 rare, fragrant, and interesting plants. As you amble along its paths past waterfalls and tropical birds, each step reveals many exotic and unusual plants. Some of the cycads located there are thought to be over two hundred years old. The double coconut tree, *Lodoicea maldivica* from the Seychelles Islands, is an endangered species and very rare in cultivation. It has the largest seed in the entire plant kingdom. These and other unusual and rare plants fill this humid and light space. The Climatron is a good place to "vacation" during the cold St. Louis winter.

Climatron with reflecting pond

It takes many, many visits to truly appreciate the bio-diversity and beauty of the Garden. Some of the other gardens within the Garden are the Ottoman Garden, the English Woodland Garden, the Chinese Garden, the Strassenfest German Garden, the Bavarian Garden, the Victorian Garden, the Herb Garden, and the Children's Garden. In addition to these gardens, there are many areas with large collections of plants such as roses, boxwood, iris, daylilies, and other bulbs.

Several beautiful and notable structures are in the Garden. The Linnean House, built in 1882, is the oldest greenhouse in continuous operation west of the Mississippi River. It was built and named in honor of Swedish botanist Carl Linnaeus, creator of the standard binomial system of naming plants and animals. The glass and brick structure greets visitors as they first enter the Gardens and is a reminder of the importance of research and development in the Garden's past and present.

The final resting place of Henry Shaw is a copper-roofed rose-granite mausoleum in an area known as the Victorian District, surrounded by Shaw's beloved Victorian-style gardens. There, elaborate and colorful combinations of flowers, foliage, and succulents are arranged to create "plant tapestries."

Shaw imagined a place where people could enjoy the diversity and beauty of plants and where education and research could flourish. Such a place exists because of his vision and passion. If you are in St. Louis, or take a trip specifically to explore the Missouri Botanical Gardens, you will have the opportunity to explore one of the world's premier botanical gardens.

Fathman, Liz, Editor, *A Guide to the Missouri Botanical Gardens*, Published by The Missouri Botanical Gardens, 2011.

Keep it Simple Sweetie: One Gardener's Guide to Choosing Plants for the Garden

Michelle Haunold, UCCE Master Gardener, Yolo County

As a certified plantaholic, I find that the winter is a time for browsing catalogs, drooling over the pictures of gorgeous new flowers, and reading the descriptions of each plant as if it were a juicy new society page gossip column. I go into a swoon as I browse the garden design sites and nursery websites.

We're lucky here in the Sacramento Valley: January and February are the perfect time to start putting in those new plants!! Many of the mail order catalogs don't start shipping until February or March, but the local nurseries, well, that's another story. As soon as the holidays are over, the shelves are soon stuffed with spring beauties just waiting to go home with a friendly face.

Over the years, I've gotten a little carried away wanting to shake the winter blahs with some fresh dirt under my nails and new color to gaze upon, and my garden started to look like a hodge-podge, with little organization or overall design or planning. Maybe some of you can relate. I'm a compulsive shopper when it comes to plants; when I go to the nursery to "browse" I end up reading tags and falling in love with the description and think, well, maybe just one plant….

I realized I needed to start doing a little planning if I wanted my garden to draw oohs and ahhs of appreciation. Designing and planting a garden can be overwhelming and figuring out where to start tends to send novices and master gardeners alike screaming for the hills. A simple rule of thumb is Keep It Simple Sweetie!

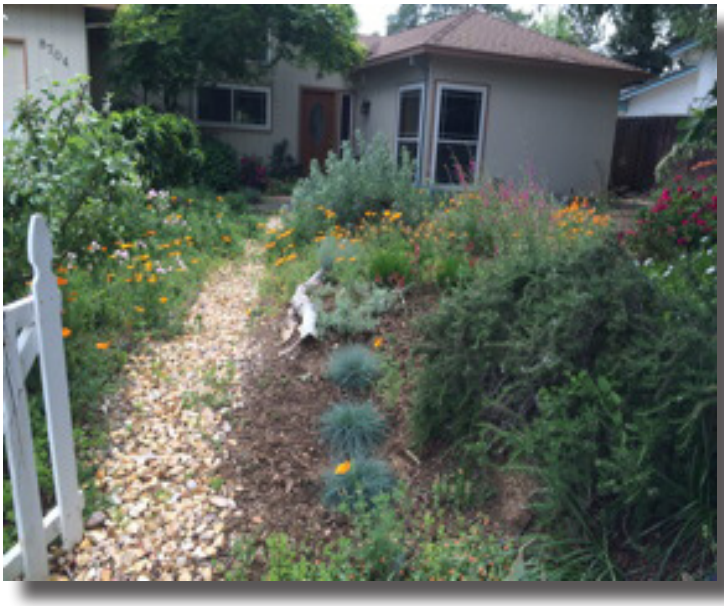
Before you start buying plants, look at the space you want to work with. Is it in full sun (six to eight hours of sunshine a day)? Does it get a lot of morning sun but shade in the afternoon (generally an east-facing spot)? Do you have a lot of trees? Is your neighbor nervous about plants creeping under his/her fence?

The author's front yard "before"

These are just a few of the basic questions you need to know before you start buying plants. Study your garden plot: really look at it and notice what is going on with the sunshine, the watering (is there an irrigation system, or would you have to hand water?), your neighbors, the trees, and other intangibles, like wandering neighborhood dogs and cats. Decide how much effort you are willing to put into your garden. Do you like pruning, or are you like me, and want a plant to stay put once you plant it and not need a lot of fussing over?

A common mistake for beginners it to try to tackle an entire garden all at once. It is overwhelming and can often cause all your plans and ideas to fall by the wayside, so Keep It Simple Sweetie! Start with a small 4 x 4 plot. Many of the home and garden TV shows are very misleading about the amount of time, money, and effort installing a garden can take, so do yourself a favor

and start small. If you have one small success, you will be much more excited about tackling the entire front yard, bit by bit.



The author's front yard "after"

Another way to decide what plants to choose is getting a better handle on what you'd like to see. Pinterest (pinterest.com) is a fabulous website for inspiration. Type in some key words (such as purple flowering plants, or drought-tolerant, or simple container gardens), and browse the pictures that pop up. If you see something you like, "pin it" to your "board" (a digital bulletin board you create) to go back and view any time you want. Notice what recurring themes pop up and use those to help guide your choice of plants for your garden.

I've noticed for myself I have several recurring "themes": a plant must be easy to care for; attract beneficial insects, bees, or butterflies; it must smell good, whether that is foliage or flower; and it must reseed itself or be a perennial. Finally, it must be drought-tolerant. I'm a big fan of lots of color, and I particularly like purples and oranges and hot pinks (I like the contrast). I don't mind my plants getting a little bushy or wild (I like the natural look). I don't want to have to keep pruning a plant to keep it tidy, but I don't want a plant to take over my garden either.

All these themes have led me to realize lavenders, rosemary, salvias, and succulents all share these "themes," so now when I head over to the nursery, I no longer get swayed by a pretty new plant or turn into a compulsive shopaholic grabbing every plant that catches my eye. I head straight to the perennial section, which cuts down on a lot of impulse purchases.

Other gardeners I know use color (such as they prefer all white and pink flowering plants); shape (fluffy, elegant, wispy); or height to help guide their choices. Whatever "themes" you notice when you look at other people's gardens, nursery displays, demonstration gardens, or the internet, keep track of them to help guide you.

But whatever you decide, keep it simple. Start small. Choose several plants that fit your themes and then instead of getting one of many different plants, depending on the size of your space, buy three to five of just two or three plants. Repeated patterns and large sections of the same plant and color are pleasing to the human eye. Using this simple design element can help you focus your garden as you work on one small plot at a time. This also gives you, the gardener, a sense of satisfaction and accomplishment when you create something that is pleasing to look at. You'll be much more likely to tackle your garden space, and not be so overwhelmed when planting time arrives.

Sticking to these general guidelines, I've made better use of the money I have to spend on plants, and my front yard is finally starting to look like I know what I'm doing. Plus, it gives me great pleasure to stand and look at it, and think, wow, it almost looks like a professional did this! By keeping it simple, I have been able to create a yard that not only fits with my gardening style, but also is pleasing to look at.

Ready Set Start: The Benefits of Starting Your Own Plant

Michael Kluk, UCCE Master Gardener, Yolo County

Seeds seem like magic, containing everything necessary to grow a complete plant—be it a redwood tree or a tomato. No doubt our early farming ancestors thought so. We now know they are the result of millions of years of evolution and consist of a seed coat, endosperm, a food source, and an embryo, the tiny makings of the plant to be. But they are still magic.

Starting your own seedlings is easy and interesting. It will open up a world of new and unusual plant varieties not available in six packs at the nursery. You can grow tomatoes of every color, size and shape, an orange cauliflower, a rainbow of unusual flowers, or old-world heirlooms your gardening friends have never heard of. It could also save you a few bucks as a bonus.

In this article, I will discuss the benefits of starting seedlings indoors or in a sheltered area. This gives you an opportunity to grow seedlings in a controlled environment before they can be safely planted out in your garden. This is not necessary for all varieties. Some vegetables such as squash, corn, and peas are strong, hearty seedlings that do just fine when planted directly into the garden as long as you do not try to rush the growing season. But others such as tomatoes and peppers definitely benefit from a head start indoors in our climate. Many flowers, such as marigolds and petunias, are better started indoors. Others, such as a mix of California wildflowers, will be quite successful if planted directly in a garden bed.

I will not address perennial plants, such as lavender or rosemary. These plants often require special techniques to encourage germination although the basic equipment and approaches are essentially the same.

A variety of different containers work well for starting seeds

The Right Soil, Light, Heat, and Moisture Means Good Seed Germination

Healthy seedlings start with good planting medium. Do not use garden soil. Master Gardeners recommend that you use a prepared starter mix. It is more expensive than regular potting soil, but is very fine so it will not impede tender seedlings from poking through the surface. It holds moisture well but does not stay soggy. Most importantly, it is sterilized so that fungal or bacterial diseases will not attack your baby plants. You can use a fairly fine potting soil if you choose, but in that case you should sterilize the soil by putting it in a 250-degree oven until the temperature in the center of the mix comes to 180 degrees for at least thirty minutes. You can check that with a candy thermometer. Make sure that the potting soil you choose does not have fertilizer in it. More on fertilizing seedlings later.

The right soil can go in a wide variety of containers. Used six-packs, six-pack trays lined with newspaper, and other nursery containers are an obvious choice. If you use these, be sure to wash them out thoroughly and sterilize them by dipping them in a ten percent bleach solution. Other options are old milk cartons, egg cartons, or any reasonably sized container. If you use these, be sure to poke holes in the bottom so that they drain properly.

The right amount of light is important to produce healthy seedlings. Too little and your plants will grow slowly, becoming weak and "leggy." If you are starting plants in the summer for a fall/winter planting, this is often not a problem. A sheltered table outside will usually suffice. There the task is often keeping the plants from getting too much direct sun and heat. But starting plants inside is still the best option because you can control the environment and better protect your plants from birds and insects that may find them tasty. Starting plants in the late winter for a spring/summer planting essentially requires an indoor set-up.

Seedlings will grow faster and be stronger when started under grow lights

In the late winter, an unobstructed, south-facing window may suffice but is not ideal. The amount of strong, direct sunlight is simply not enough for good growth. A greenhouse window is better, although the amount of sun available in late winter is still too little. A true greenhouse can be better yet but the day length in the late winter and early spring is still not optimal. Further, it is best to keep nighttime temperatures in the greenhouse from falling below forty-five degrees. That will probably require some sort of heat source for cold nights.

Once seeds sprout, they should ideally get sixteen hours per day of full spectrum light, best provided by grow lights designed for the purpose. There are LED and florescent grow lights available that are efficient and provide full spectrum light. Grow lights can dramatically increase the speed of growth and the strength and health of the seedlings. Keep the lights four to six inches above the seedlings. You will need to raise the lights as the seedlings grow. Some of the new LED lights must be set higher because they are so bright they can actually "light fry" the seedlings. Carefully follow the instructions that come with the lights you choose.

Enough heat, but not too much, is important for plant growth. If you are starting plants in the late winter, keep them warm. A temperature of sixty-five to seventy degrees during the day and fifty-five to sixty degrees at night is ideal for germination and seedling growth. Germination and growth can be further enhanced with a heat mat that sits under the plant pots, providing bottom heat. Some heat mats come with a soil probe that allows the mat to turn off at a set soil temperature. Generally, a soil temperature of seventy to eighty degrees is best for most plants.

A heat mat will improve germination and speed early growth

Proper watering also is important. Mist newly planted seeds, keeping them moist but not soggy. Once they sprout, be sure to let the soil surface dry out between watering to prevent damping off, a disease caused by a

fungus in the genus *Pythium.* You will easily recognize damping off when otherwise health seedlings turn dark at the soil line and keel over dead in a day. Let the soil surface dry between watering but keep the soil down at root level consistently moist. You can also water by putting pots in a tray of water and letting water soak up from the bottom. This is often the best approach. You get even moisture with no dry spots. However, do not let seed trays sit in water longer than necessary.

Some people will seal starting trays in a large plastic bag, such as a turkey-roasting bag, at planting time, to maintain humidity and moisture. Do not put the bag with seed trays in direct sunlight because it will get too hot inside. You may not need to water at all before the seedlings appear but you should remove the trays from the bag immediately when they do.

Planting and Transplanting

Plant seeds the depth recommended on the seed packet. A rule of thumb is to plant at a depth that is two times the diameter of the seed. If you plant in a tray to transplant later, you can transplant when the seedling has two true leaves. "True leaves" are those that come out after the two initial "seed leaves." Thin with scissors if necessary before you start – then gently dig each seedling out and transplant it into a larger cell or pot. If planting in the final container, such as a six-pack – generally plant 2 seeds per cell then thin by cutting off one with a pair of scissors if two come up.

You do not want to fertilize seedlings until they develop two true leaves. Fertilizer for seedlings should be low in nitrogen for the first two weeks. A fertilizer with higher phosphorus and potassium percentages than nitrogen, such as NPK- 6-20-20, will stimulate root development.

If you start seeds indoors or in a greenhouse, you should not plant them outside until they have been "hardened off." This means you will need to toughen them up before you can move them to the harsher outdoor environment. Skipping this step may cause them to stop growing for an extended period of time or even die. Move the plants outside for a short period of time initially, gradually increasing the time over a two-week period, to harden off. An hour outdoors the first day, two hours the second, and so on is a good approach. Be sure that the plants are not in direct sun the entire time. If night temperatures are above forty-five degrees, plants can be left outside in the shade and moved into the sun for increasingly longer periods. Protect plants from high winds. Reduce water as well, although not to the point where the plants begin to wilt.

Your plants should be moved into their final home before they become root bound. Ideally, the roots should just be reaching the edge of the container when transplanted. Vitamin B-1 solutions have not demonstrated any benefit when transplanting. Some research has shown that kelp derived fertilizers may help to make transplanting more successful.

Timing is Everything

It is important to plant your seeds at the right time, not too late to miss the start of the growing season but not so early that your plants are too mature for easy transplanting when the time comes. The best date can vary from species to species. And the weather in any particular year will play a role you do not have much control over. With experience, you will learn how to tweak the "standard" timing to give your seedlings the best chance.

Here is a link to a vegetable-planting chart developed by a professor at UC Davis: http://vric.ucdavis.edu/pdf/homegardening/Vegetable%20Planting%20Guide.pdf. This is a similar chart for flowers, developed for the Sacramento Valley: http://sacmg.ucanr.edu/Flowers/.

In Search of the Wild in our Nation's Capital

Willa Bowman Pettygrove, UCCE Master Gardener, Yolo County

Photos by Stuart Pettygrove, Emeritus Soils Extension Specialist, UC Davis

Now, calm down! Nothing in this article has anything to do with the inflammatory headlines that have seemed more common since November 2016. This is about the real wild that gardeners like to recreate and preserve wherever possible in its natural state.

Stuart and I went to Washington D.C. the first week of November 2017, not knowing what we'd find. We planned our usual museum explorations before tackling the U.S. Congress as part of citizen lobbying for our church. A house guest from Kentucky had told us about her favorite Smithsonian exhibit, a pavilion—of butterflies. What good advice! The following pictures are some of the butterflies we saw. The pavilion is located inside the Natural History Museum (not far from some dusty dinosaur bones), a bright spot that attracts many visitors, including school groups. Entrance to the pavilion is through a double door that prevents the escape of the precious pollinators. A docent guide instructed us to be aware of butterflies on the floor and on our clothes, and reminded us that the fruit on display was for the enjoyment of the insects, not the humans.

The insects are only present in the pavilion during their phase as butterflies. They must be raised elsewhere and brought into the comfortably warm, almost tropical, pavilion after they emerge from cocoon or chrysalis. The Smithsonian rotates the varieties of butterflies represented, which gives the visitors another challenge, trying to identify what butterflies they are seeing. (You may be able to identify some of the butterflies in the pictures from this chart. Master Gardeners, take note: Could we create charts like this for some of our rotating exhibits?)

American Native Persimmon Pollinator Garden

After some false starts (the information desk thought we were looking for the bird garden, not the pollinator garden), we continued to the east side of the Natural History Museum. There we saw an award-winning pollinator garden http://www.gardens.si.edu/our-gardens/pollinator-garden.html. We didn't see many pollinators (it was a damp, cold day) but did see one caterpillar responding to a last call on foliage, as well as flowers and fruits. It was especially thrilling to me to see a whole tree of American

Sweet Coneflower

Persimmons, something my mother remembered picking in the woods with her Dad. Of course, I had to have one "flower picture," *Rudbeckia subtomentosa* 'Henry Eilers,' common name Sweet Coneflower.

The Pollinator Garden started as a "butterfly garden" in the nineties. Funding from the Garden Club of America in 2000 supported a redesign to include all categories of pollinators. Labeling of plants made it easy for the visitor to identify plants they might use in their home garden. The Smithsonian's website supports this educational purpose.

Traveling around the District, it was easy to see many other instances of planting and landscape design that reflect current thinking on water conservation, use of native plants, and even modest attempts at biodiversity. A small but very interesting example was at the Library of Congress, a "Victory Garden" including posters used in that campaign to encourage sustainable practices on the home front. At the Museum of the American Indian, an artist created mounds outdoors to erode and become new horizons, or soil layers. Of course, there were also the native plants, the "three sisters corn, beans, and squash," also in evidence in that garden.

World War II Victory Garden

Returning to Davis, I was able to report that one of the Arboretum All Stars, *Hydrangea quercifolia* or Oak Leaf Hydrangea, thrived with beautiful color in the almost tropical humidity of Washington. Californians know that the polite term for "swamp" is wetland, actually a good thing if you live on the edge of an estuary and Chesapeake Bay. This is a good time for us to remember the values of wildness.

Caterpillar Pollinator Garden

Managing Whiteflies

Liberty Galvin, UCCE Master Gardener, Yolo County

Commercial growers and backyard gardeners alike are experiencing plant injury from whiteflies this year. Whiteflies reach their peak population density in late fall through early winter and enjoy warm weather, but can survive and successfully reproduce in temperatures ranging from 50-70°F. These insects, related to aphids, are not host-specific and enjoy both agricultural and residential plants common to Yolo county including pomegranate, cucurbits, many vegetables, tomatoes, and citrus, as well as oak trees, begonias, iris, and roses.

There are many whitefly species all over the world that cause damage to agricultural and ornamental plants, with roughly ten species common to California. All species go through a similar lifecycle, from eggs, to crawler, flightless nymph stages, and finally the flying adults. Whiteflies appear in a variety of colors, have different identifying characteristics, and can cause different types of plant injury. For example, a study done in California on the greenhouse whitefly, *Trialeurodes vaporariorum*, has been documented to transmit a virus to tomatillo, potato, artichoke, lettuce and petunia; it's host range is very broad and includes most vegetables, herbaceous ornamentals, as well as fuchsia, gardenia and lantana. Most can overwinter in urban areas and migrate back to agricultural environments when weather becomes warmer, resulting in crop damage. To determine if you have a host plant in your yard, refer to the UC IPM Pest Note on Whiteflies, referenced below.

Not all whitefly species transmit diseases. However, they all use their piercing-sucking mouth parts to draw plants fluids from the phloem, or the part of the plant responsible for transporting nutrients from the leaves to the rest of the plant. Because of this, they are often found on the underside of leaves, causing chlorosis or necrosis. They excrete sticky honeydew, much like aphids, that can attract ants that will actively protect the whiteflies from predatory insects in order to harvest the honeydew. In addition to attracting ants, sooty mold can develop and grow on the honeydew. Sooty mold does not often cause injury to plants, however, large amounts covering the leaf surface can reduce photosynthesis, which can stunt plant growth, or cause leaves to senesce and to die prematurely.

Whitefly adults and nymphs on the underside of a leaf

Whiteflies can be controlled in a variety of ways, but it's best to take preventative measures to reduce pest populations. Preventative measures include checking plants for nymphs, adults, or eggs on the underside of leaves before planting in your garden. Sticky traps can also be used to monitor pest populations for better control; placing multiple sticky traps around the area where you think there is an infestation can help you determine which plants may be preferred by the insects. However, whiteflies are only a problem when populations are high; once you notice you have a whitefly problem it may be too late to take preventative measures.

When populations are low, it is possible to control them by removing plant material, e.g. leaves and stems, that have been infested; a vigilant schedule of hosing down the plants can also work. This method only works for flight-less nymphs and eggs, but could be critical for interrupting their lifecycles. For small plants, reflective plastic mulches, shiny paper, or silver spray paint applied to mulch can act as a repellant.

Mulches have multiple benefits for the garden such as providing habitat for beneficial insects, and can

help reduce other pests such as aphids and leafhoppers. In many situations, natural predators will destroy whitefly populations, however, these natural predators can be disrupted by ants, pesticides, dust buildup or host plant removal. Table 1 is a list of natural predators and their host plants. Encouraging the presence of these predators can keep whitefly populations at a manageable level, reducing the amount of time you will need to spend controlling them.

Whiteflies can only survive in a warm temperature range; even though we are seeing a significant increase in fall pest populations, the cold weather should reduce any current problems. Whiteflies can overwinter in your garden, so taking preventative measures such as early scouting and avoiding plants prone to infestation will help reduce urban and agricultural populations from causing any significant damage.

For more information please see: Flint, M.L. 2015. *Whiteflies*. UC IPM Pest Note, Publication 7401. http://ipm.ucanr.edu/PDF/PESTNOTES/pnwhiteflies.pdf.

Winter Gardening Tips

Peg Smith, UCCE Master Gardener, Yolo County

There are many resources through the master gardener program. Winter is a good time to look through our publications for general information or read a specific publication that will guide the winter care of your garden.

When the frost is gone take advantage of this winter 'quiet time' in the garden and consider what preparation for spring and summer can be undertaken. Careful pruning of fruit trees, deciduous trees (http://ceyolo.ucdavis.edu/files/52981.pdf), and shrubs can encourage healthy growth and stronger structure. Dormant care and garden hygiene can reduce disease in plants and trees. A carefully grown and treasured plant can disappear after a heavy frost: keep an eye on the weather forecast. http://ceyolo.ucdavis.edu/files/52971.pdf So far we have had a dry fall and beginning of winter; watch that pots and garden areas that are more sheltered get adequate water.

As the seed catalogues come in it is always a choice of "Should I buy fresh seed or will my leftover seed still have enough germination?" If the seed has been kept dry and in a cool place, here is a conservative, approximate guide of when to discard old seed.

DISCARD AFTER ONE YEAR:
Sweet corn, parsnips, spinach

DISCARD AFTER TWO YEARS:
Bush and pole beans, beets, leeks and onions, parsley, peas, peppers, swiss chard

DISCARD AFTER THREE YEARS:
Broccoli, Brussels sprouts, cabbage, cauliflower, kohlrabi (these may be good from three to five years depending on the conditions in which they have been saved)

DISCARD AFTER FOUR YEARS:
Radishes, Turnips

FLOWER SEED:
Annuals are generally good for one to three years; perennials for two to four years.

WINTER CLEANUP

- Continue to remove fallen leaves, spent annuals, and vegetable plants.
- Add disease-free plants and leaves to your compost pile.
- Clean garden pots and store for future use. Turn all unused pots on end to prevent water collection and breeding areas for pests and diseases. Treat pots with a dilute solution of bleach.
- Sharpen, clean, and oil garden tools.
- Lawnmowers need a yearly tune-up and blade sharpening. Now is a good time.
- Properly dispose of any old or unneeded pesticides and herbicides. The Yolo County Landfill accepts household hazardous waste every Friday and Saturday from 7:30 AM – 3:30 PM.

WATER

- Adjust the irrigation systems or turn them off once the rains begin.
- Check potted plants for moisture; too much water and inadequate drainage can lead to root rot.
- Make sure pots that are sheltered from the rain by eaves get any supplemental watering needed.
- Consider collecting rainwater for watering plants during dry periods.

PROTECTION

- **Protect frost sensitive plants,** including citrus, with a frost cover.
- Adding a string of old holiday lights can provide additional heat. (Newer LED lights do not produce much heat.)
- Watering the soil will also help the soil retain heat and can help the plant's roots and lower branches survive.
- Plastic sheeting is not recommended to protect plants because it cannot breathe and it traps moisture.

PLANTING

- December is the last month to plant spring-blooming bulbs such as daffodil, tulip, anemone, and crocus.
- What to plant now:
  - Cool-season annuals: Primroses, pansies, violas, snapdragons, calendulas, and poppies.
  - Cool-season perennials: Cyclamen, Hellebores, Daphne, and Iberia.
  - Herbs: Cilantro, flat and curly parsley.
  - Bare-root fruits and vegetables: Strawberries, berries, rhubarb, grapes, fruit.
  - Trees, artichokes, asparagus, horseradish, onions, and garlic.
- Use row covers to protect seedlings if plants are bothered by slugs, snails, or cold nights.
- Extend your harvest time by planting vegetables every two weeks in December.
- Late winter is the best time to plant or transplant most any shrub, roses, or trees.
- After you have discarded your summer vegetable plants, turn the soil over and add compost.
- Sow favorite vegetable seeds in trays in early February for your summer garden.

FERTILIZER

- In February or March, apply fertilizer to lawn with crabgrass preventive, and use turf builder to build a strong root system.
- Apply a fertilizer to dormant roses to encourage bud break.

PRUNING

- Roses can be pruned in late December through early February.
- Last chance to prune fruit trees and grape vines.
- Spray deciduous fruit trees and roses with dormant oil to smother pests, such as mites, and scale.

MULCH

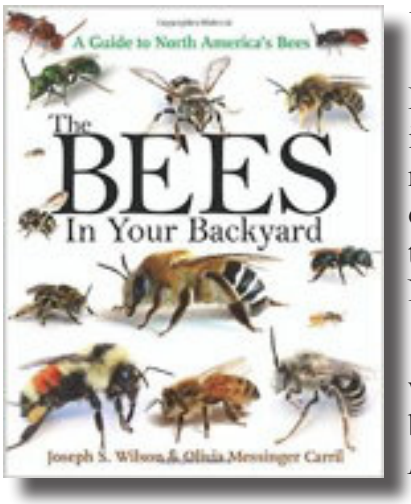
- Very important to lay three to four inches of bark mulch in the garden to retain moisture and prevent soil erosion from winter rains.

For further information refer to these websites: www.ucanr.edu/sites/YCM.G and www2.ipm.ucanr.edu

RECOMMENDED BOOKS

These books are single-subject books that are entertaining, interesting, and informative.

Gods, Wasps and Stranglers: The Secret History & Redemptive Future of Fig Trees by Mike Shanahan, a British biologist and writer whose work focuses on rainforests, climate change, biodiversity, and related issues. He studied at the University of Leeds, where he received a BSc in biology, MSc in biodiversity and conservation and PhD in rainforest ecology. Between 1997 and 1999, he undertook research in the rainforest of Lambir Hills National Park, in Sarawak, Borneo, and on an island volcano: Long Island, Papua New Guinea. His research focused on figs (Ficus species) and the animals that eat them.



Gathering Moss: A Natural & Cultural History of Mosses by Robin Wall Kimmerer, who holds a BS in Botany from SUNY ESF, and an MS and PhD in Botany from the University of Wisconsin. Dr. Kimmerer is the author of numerous scientific papers on the ecology of mosses and restoration ecology and on the contributions of traditional ecological knowledge to our understanding of the natural world. She was awarded the prestigious John Burroughs Medal for Nature Writing in 2005.

If ever you have wondered about a native bee seen in your garden this book will help you identify your native bee friend. The habitat that is needed for native bees to thrive and specific plants to encourage native bees are all included in *The Bees In Your Backyard* by Joseph S. Wilson & Messinger Carril.

Questions about your garden? We'd love to help!

UCCE **Master Gardener, Yolo County Hotline**..... (530) 666-8737

Our message centers will take your questions and information. Please leave your name, address, phone number and a description of your problem. A Master Gardener will research your problem and return your call.

E-Mail..... mgyolo@ucdavis.edu

Drop In..... Tuesday & Friday, 9-11 a.m.
70 Cottonwood St., Woodland

Web Site ..... http://yolomg.ucanr.edu/

Facebook..... UCCE Master Gardeners, Yolo County

UC MASTER GARDENERS - YOLO COUNTY PUBLIC WORKSHOP SCHEDULE

January – March 2018

Dates and times subject to change.

Please check at http://yolomg.ucanr.edu/ for updates.

Workshops are open to the public and are free.

Workshops are held in several different venues.

Check the venue address for those in which you are interested.

JANUARY WORKSHOPS

DAVIS

Date	Time	Topic	Venue
Saturday, January 6	10:00 – 11:30 AM	Roses and Shrubs – Winter Care and Pruning	**CPG***
Saturday, January 20	9:00 – 11:00 AM	Take Care of Your Fruit Trees This Winter: Pruning and Dormant Care	**Grace Garden*****
Sunday, January 21	2:00 – 4:00 PM	2:15 PM Selecting and Planting Bare Root Trees and Vines 3:15 PM Spring is Coming! Selecting and Starting Seeds	**Davis Library****
Sunday, January 28	2:00 – 4:00 PM	A Year-Round Kitchen Garden Planting Bare Root Fruit Trees, Planting winter Vegetables Selecting Spring Seeds	**Davis Library****

CPG** ***(Central Park Gardens) at the corner of 3rd and B Streets in Davis, CA 95616

****Davis Library** ***(Davis Branch of Yolo County Library), conference room, 315 E 14th Street, Davis 95616***

***** Grace Garden** ***1620 Anderson Road, Davis, CA 95616. (At the back of the church parking lot.)***

WOODLAND

Date	Time	Topic	Venue
Saturday, January 20	10:00 – 11:00 AM	Rose Pruning	**WCC***

WCC** ***Woodland Community College, 2300 E. Gibson Road, Woodland, 95776

FEBRUARY WORKSHOPS

DAVIS

Date	Time	Topic	Venue
Saturday, February 3	9:30 – 10:30 AM 11:00 AM- Noon	Starting Seeds of Vegetables and Colorful Annuals Indoors Fruit Tree and General Pruning and Care	**CPG***
Sunday, February 18	2:00 – 4:00 PM	2:15 PM What Are Dormant Sprays? Which Plants Need Them 3:15 PM Pruning and Dividing Perennials	**Davis Library****
Sunday, February 25	2:00 – 4:00 PM	A Year Round Kitchen Garden Planting seed starts and seeds of winter vegetables. Feeding citrus.	**Davis Library****

CPG** ***(Central Park Gardens) at the corner of 3rd and B Streets in Davis, CA 95616

****Davis Library** ***(Davis Branch of Yolo County Library), conference room, 315 E 14th Street, Davis 95616***

FEBRUARY WORKSHOPS (continued)

WOODLAND

Date	Time	Topic	Venue
Saturday, February 3	10:00 – 11:00 AM	Grape Pruning	**WCC***

WCC** ***Woodland Community College, 2300 E. Gibson Road, Woodland, 95776

WEST SACRAMENTO

Date	Time	Topic	Venue
Friday, February 23	12:00 – 2:00 PM	Seed Starting: Vegetables and Summer Annuals	**West Sacramento***

***** Arthur Turner Library,** ***1212 Merkley Avenue, West Sacramento, CA 95691***

MARCH WORKSHOPS

DAVIS

Date	Time	Topic	Venue
Sunday, March 18	2:00 – 4:00 PM	2:15 PM When Do I Plant My Spring Vegetable Garden? 3:15 PM Now is the Perfect Time to Weed and Mulch	**Davis Library****
Saturday, March 24	9:30 – 10:30 AM 11:00 AM - Noon	Hardscape: Simple Ways to Construct Raised beds, Pathways, Trellises etc. Learn About the Importance of Insect Pollinators. Do You Know Our Native Bees?	**CPG***
Sunday, March 25	2:00 – 4:00 PM	A Year Round Kitchen Garden Planting the kitchen garden by seed – vegetables, edible flowers	**Davis Library****

CPG** ***(Central Park Gardens) at the corner of 3rd and B Streets in Davis, CA 95616
****Davis Library** ***(Davis Branch of Yolo County Library), conference room, 315 E 14th Street, Davis 95616***

WOODLAND

Date	Time	Topic	Venue
Saturday, March 24	9:00 – 10:00 AM 10:30 – 11:30 AM	Extending Color in The Late Summer Garden Seeding Summer Vegetables	**WCC***

WCC** ***Woodland Community College, 2300 E. Gibson Road, Woodland, 95776

WEST SACRAMENTO

Date	Time	Topic	Venue
Friday, March 23	12:00 – 2:00 PM	Learn About Composting and Vermiculture	**West Sacramento***

* Arthur Turner Library, ***1212 Merkley Avenue, West Sacramento, CA 95691***

U.C. Cooperative Extension
UCCE Master Gardeners of Yolo County
70 Cottonwood Street
Woodland, CA 95695

The Yolo Gardener - Winter 2017

Send a Letter
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Please put: *Yolo Gardener* in the subject line

or

UCCE Yolo County
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http://yolomg.ucanr.edu/

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