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Seeds For Thought

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LOCAL NATIVE BEES IN THE GARDEN

Paula Pashby, U.C. Master Gardener, Solano County

It is so nice to be able to step out into the garden every so often for a bit of Rest & Relaxation. What I mean is just taking the time to kick back and enjoy the garden, avoiding the impulse to get up every 5 minutes to pull a weed or snip a dead branch, as many gardeners tend to do. Often, we are so busy with common chores that we tend to miss out on some of the unexpected pleasures that our garden can bring.

I recently took a moment to quietly sit in the garden and noticed a carpenter bee buzzing from one salvia flower to another. I then noticed another bee following the same dance, and more came into focus as I scanned the garden. I soon realized that there were many pollinators buzzing around the garden looking for pollen and nectar… such a pleasure to witness nature taking its course in this little ecosystem.

Most of the pollinators I observed were native bees, which are vital pollinators for our crops and flowers. While doing some science-based research, I discovered that the most common native bees we may see locally are the mason bee, squash bee, sweat bee, bumble bee, carpenter bee and leafcutter bee.

Below are some general descriptions and pictures of some of the common native bees you may find in your own garden:

Mason Bee

There are many species in the mason bee genus, named because of their use of mud for constructing nests. The type we are likely to see in our local gardens tend to look almost like a black fly. The other day I was checking out my native bee barn and thought flies were invading the habitat! I was able to get close enough to take pictures and discover that they were actually mason bees.

Mason Bee
Photo by Paula Pashby

Mason bees nest in cavities, are active in early spring and are excellent pollinators. They also pollinate berries and early-blooming fruit trees. The one pictured here was laying eggs in my bee barn house in mid-April.

Squash Bee

There are many species of squash bees. The type you are probably going to see the most look similar to European honeybees, except these are slightly larger and have longer antennae. One way you will know that they are squash bees is if you spot one sleeping inside a squash plant flower, which closes up in the late afternoon.

Squash Bee Resting in Squash Blossom
Photo by Paula Pashby

The one in the picture took me by surprise. It was around dusk, and the flowers had already closed for the evening. I was curious about how many male and female flowers were on the plant, so I opened one of the flowers and was amazed to find this little cutie that was taking a nap. This was probably a male squash bee since they usually sleep in the closed flowers. The female squash bees nest underground.

Squash bees are active in the summer months when the squash is flowering. They play a large role in the pollination of both squash and pumpkins.

Sweat Bee

There is a good chance that you may have seen many sweat bees in your area, but are just not aware that they are actually bees. The sweat bee is so tiny that they almost look like a little gnat

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flying around. One variety of sweat bee displays a beautiful metallic color that shines in the sun. The picture below shows the size difference between a sweat bee and a European honey bee.

They are called sweat bees because they love human sweat! But fear not, they are not aggressive, and the males do not have stingers. These small bees are highly effective pollinators for cultivated crops and wildflowers. Sometimes they nest in softwood, but usually live underground.

Two Bees on Rock Purslane
Photo by Kathy Keatley Garvey

Bumble Bee

You have probably seen the large, fuzzy bumble bees in your garden. The most common types we see locally are black or yellow-faced bumble bees. Both varieties have fuzzy abdomens and nest in underground holes or above-ground dark cavities with other bees. They are usually around for a longer period than other native bees, spanning from March through August. They are attracted to many flowers and if you have tomato plants, you will probably want bumble bees in your garden for pollination.

Yellow Faced Bumble Bee
Photo by Kathy Keatley Garvey

Bumble bees and tomato plants have a symbiotic relationship. The plant pollen is packed tightly inside the tomato flower and need a vigorous shaking to release for the pollination process. The bumble bees can help out with a technique called 'buzz pollination' or 'sonication'. The bumble bee will grab a flower and move their flight muscles rapidly, which creates a specific sound energy that agitates the anthers. I am always happy to hear and see a bumble bee in action around my flowers.

Carpenter Bee

The carpenter bee is another fantastic pollinator, but often gets a bad rap from its nesting habits. Instead of nesting in pre-existing cavities like some of the other native bees, the carpenter bee will drill holes through the nest material with its strong jaws. Their preferred nesting material is wood - usually redwood, cedar, cypress, and pine that are typically used for decks or outside furniture. So, the carpenter bee can cause damage and homeowner dismay.

I usually leave woody nesting material out in the garden and away from the house, like a dead limb behind bushes. We did discover a carpenter bee nest is inside an old picnic table that we no longer use for dining and let them live in peace.

Folks often think that carpenter bees and bumble bees are one in the same. However, on close observation you will see that bumble bees are fuzzy, while the carpenter bees are shiny.
The two most common carpenter bees that you may see in our area are the valley and mountain carpenter bees. The valley male carpenter bee has very striking golden-brown colors and has been referred to as the 'teddy bear' bee by the late pollinator specialist Dr. Robbin Thorp, Emeritus Professor of Entomology at the Department of Entomology and Nematology at the University of California, Davis.

Male Valley Carpenter Bee
Photo by Kathy Keatley Garvey

Carpenter Bee
Photo by Tom Tucker

This bee always seems to follow me when I am out gardening, as if trying to tell me something. I never worry if he gets too close since he is male and does not have a stinger – truly breathtaking to see!

Leafcutter Bee

Leafcutter bees are interesting native bees that nest in pre-existing cavities, similar to the mason bees mentioned at the beginning of this article. Leafcutter bees are very efficient vegetable garden pollinators. Some types of leafcutter bees are even used in commercial operations for pollination of blueberries, alfalfa, and carrots.

Leafcutter Bee
Photo by Paula Pashby

Leafcutter bees are smaller than European honeybees but have similar coloring. They nest in pre-existing cavities and are usually hard to spot unless you have a bee barn house in a location where you can see them tending to their nest. Even though you may not see this little bee in your garden, you will likely notice the signs of their presence. The picture on the following page shows the

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leaves with smooth (not jagged) half-moon and full circle cuttings, a sure sign that leafcutters are hanging out close by to your garden!

Leafcutter Bee Leaf Clippings
Photo by Deb Sorrill

If you see these holes in leaves, it is an indicator that the female bee has been gathering leaf tissue to create nesting cells! First, she gathers pollen and nectar and stores this 'pollen loaf' mixture in the nesting cavity. The pollen loaf provides nutrients for the bee larvae once eggs hatch. Once the pollen loaf is in place, she lays an egg on top of it, surrounds the egg with the leaf cuttings, and then continues this process until the cavity is full. Once the cavity is full, she covers the opening with more leaf coverings to keep the eggs safe from predators and disease until they hatch and emerge the following spring.

Their leaf cuttings should have no negative affect on the plant. A few plant leaves that they prefer are roses and redbuds, where the leaves are smooth and do not have thick veins. They love the privet or 'volunteer' shrubs in my garden.

These are a some of the beneficial bees that you can find in your garden and will enjoy the toils of their labor. To learn more about how to attract these vital pollinators into your garden, go to the following websites:

Häagen-Dazs Honey Bee Haven: https://beegarden.ucdavis.edu/wp-content/uploads/2018/04/How-to-build-and-use-bee-blocks.pdf

Xerces Society for Invertebrate Conservation: https://www.xerces.org/publications/fact-sheets/nests-for-native-bees ¤

PLANNING A WATER FEATURE

Dottie Deems, U.C. Master Gardener, Solano County

The delightful sound of a water feature in our own backyard seemed like an interesting project. Little did we know what was involved! It's not merely digging a hole, putting down a liner, buying a kit, putting the kit in the hole, adding some water, and flipping a switch. The list of things to be done before we got to sit back and enjoy the sight and sounds seemed to grow as fast as any of the weeds in our backyard. It is certainly not a project for the faint of heart or those with an achy back either.

"Before" Photo
All Photos in this Article by Dottie Deems

Our friendly landscaper, who has done all the heavy lifting at our place for about thirty years, finally convinced us that a "water feature" was exactly what we needed in our backyard. Even his short list of benefits that such a thing provided was enticing:

1) The sound of the water feature would help drown (no pun intended) out the sounds of the cars driving up and down Browns Valley Parkway. Our lot is adjacent to the roadway and the sound wall (is that because it intensifies the noise???) is the "fencing" at the back of our property.
2) Our lot slopes down from the sound wall to our lawn so we already had the makings of a waterfall feature.
3) It would provide a focal point in the yard.
4) Before starting the project they would dig up all the plants I wished I had never planted on the hillside so that I could start all over again.

Wow, that last one had me sold. I could say goodbye to the clumps of asparagus fern, the self-seeding California fuchsia, and last, but certainly not least, the morning glory vines that I had a love hate relationship with for many years. Say no more, I was SOLD!

There was lots of research and activity before a shovel hit the dirt, so to speak. We had to consider what kind of water feature, where we wanted to have it installed, how big we wanted it to be, not to mention how much we wanted to spend. When it comes to water features, we were absolute novices.

My husband and I are not DIY people. Changing light bulbs is about our limit! Our friendly landscaper was going to be our guide through the entire project. We sat down with him in our backyard and pinpointed a location and the estimated size of what we had in mind. We discussed the appropriate size of the water feature so we would not end up with one that overwhelmed the yard nor get lost in it. We knew some things we did not want to incorporate into our project. Things like standing water, mosquitoes, algae, and chemicals. We looked at pictures online of a variety of water features and decided that the most suitable would be a pond-less waterfall. That narrowed our choices somewhat. We put a dollar amount that we wanted to spend on the project. That budgeted amount had to include the permit, electrical contractor's charges, and the labor and materials for the project. The materials included the underlayment, liner, pump, pump vault, basin matrices, spillway, PVC flex-pipe, fittings, and sealant. It also included the

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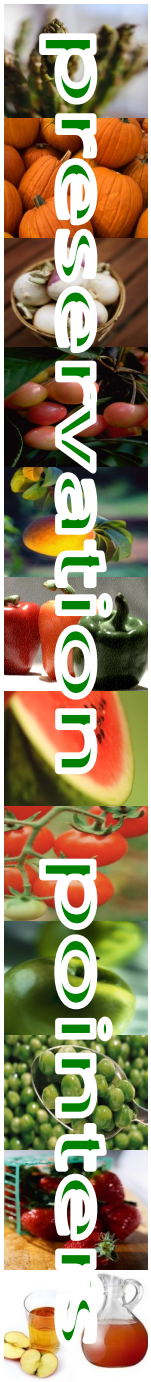
landscape rock we needed for the project. It was adding up fast plus we knew we would have to set aside contingency money for those little and big surprises along the way.

Our landscaper had installed over forty water features of different kinds, and we benefited from his experience tremendously. He explained that we would need to call 811 to have someone from our utility company make a free visit to our home to locate underground utility lines and to mark where they were located. We were going to need electricity to operate the pump and a switch to turn the pump off and on. We would also need to find out if a building permit would be required for the project.

I will be back in our next issue to tell you the rest of the story about the installation and show you the finished project.
For now, enjoy a "before" and an "under construction" photo of the project. ¤

"Under Construction"



POST-HARVEST TIPS FOR FRESH PRODUCE

Pearl Eddy, U.C. Master Gardener and U.C. Master Food Preserver, Solano County

I would like to share with you some ideas about how to care for the abundance of fresh fruit and vegetables that are available here, whether from the supermarket, farmers market or from our own yards. Harvest your fresh garden produce when the temperatures are cool, and protect them from the sun. Cool fresh produce quickly after picking, or purchasing. Don't wash store-bought produce before storage. You can lightly wash root vegetables from your garden to remove soil, then dry and store. Trim the green tops an inch away from root vegetables such as radishes and carrots.

Ethylene gas, a ripening agent, is produced by a variety of fruits, including apples, pears, tomatoes and unripe bananas. It's important to separate these from gas sensitive produce such as leafy greens, carrots, cabbage, eggplant and broccoli. Ethylene causes bitterness in carrots, so don't store with apples. Ethylene also causes dark spots in eggplants, and the yellowing of cucumbers. To ripen avocados and bananas quickly, store in a bag with apples.

Melons, grapes, pineapples, and strawberries do not actually ripen more after picking but can soften and may become more aromatic on a kitchen counter. The texture of Bartlett pears improves when picked early and ripened in a cool, dry area. The flavor and texture of tomatoes are affected if stored too cool, so leave them out of the refrigerator. Bananas can be refrigerated after ripening. The skin will blacken, but the inside will still be good. You can freeze ripe bananas in the skins for later use in baking and shakes.

Winter squash stores well in a dark, cool, dry place. I place mine on the garage floor in shallow boxes which are lined with newspaper or paper grocery bags. Persimmons and pomegranates keep well on paper lined trays in a cool garage. For longer storage place them in the refrigerator. Store dry onions and garlic loosely in a cool, dry, well-ventilated place away from sunlight.

Storage temperature has a significant impact on how long potatoes will last. Regular raw potatoes will keep for many months between 43 to 50 F without sprouting, and sweet potatoes are best stored between 55 to 6o F. Sunlight or florescent light can cause potato skins to produce chlorophyll and turn an undesirable green color. This is harmless, but sunlight can produce large amounts of a chemical called solanine which can be toxic to humans if consumed in high quantities. It is located in the peel and the first 1/8th inch of the flesh. Paring the skin and underlying green flesh can remove most of it. Sprouts can be removed with a sharp knife, creating a little cavity to be sure of removing the potentially toxic glycoalkaloids around the sprouts. Neither type of potatoes should be stored near onions which can cause sprouting and faster spoilage. Potatoes do best in brown paper bags or in paper-lined boxes or baskets in dark areas with good air circulation.

Mushrooms purchased in pre-packaged containers should keep well; however, mushrooms purchased in bulk should not be left in the store's plastic produce bags. Do not wash or clean them before time of use. Place them loosely in brown paper lunch bags in the refrigerator. After some time they may actually dehydrate without rotting. If so, simply re-constitute in hot water before using in recipes.

It is estimated that every day a family will discard more than half a pound of fruits and veggies. In total, Americans chuck a fourth of all the produce they buy, mostly because it's gone bad. We can help prevent this waste by understanding more about preservation. Proper storage of all produce can save money, quality and nutrients. ¤

BEYOND GARDENING

Spring Tseng, U.C. Master Gardener, Solano County

Lady Beetle (Ladybug) Larvae

All Photos In This Article by Spring Tseng

Thanks to the Master Gardener's training in the Spring of 2020, I have been spending more time outside: working in our backyard, admiring neighbors' landscapes, and visiting gardens in the area. Many times, I found myself lost in thoughts.

During the "soil and fertilizer" training, we reviewed contents from our high school biology classes; that N-P-K are the three key ingredients a plant needs to grow and remain healthy. The instructor said, in general, when there were insufficient such elements available, older tissues, such as leaves, would transfer them to the new growth. Therefore, it is common to observe the new growth from plants healthy and happy while the older tissues turn yellow, are drier, and seem to be suffering.

I thought, this is like the human world, where we care about our young and give all we have to ensure they have plenty. In the plant world, if the older tissues were to be more selfish and hold on the important nutrients, there would be fewer plants and smaller plants everywhere over time. How depressing that world would be!

I have learned that beautiful things may not all be beneficial. For example, the lovely pink star-cactus-like 'flowers' and those ping-pong ball sized 'fruits' we find on some oak trees, are actually galls. The pink 'flowers' are home to the larvae of a pink turbine wasp, and the ping-pong balls, that come in off-white, green or brown colors are home to the larvae of a California gallfly. In the past, I was awed at the beauty of these unknown appendices to oak leaves. But now, after learning the truth, I absolutely won't bring them home to enjoy.

On the contrary, an ugly creature does not always mean harm. For instance, the larva of a ladybug, unlike its cute grownup form, looks like a long, dark nasty bug. When we see one of them in our garden, our instinct would be to eliminate it at all costs. However, they feed on aphids aggressively and therefore are beneficial insects for our garden. Hence, I shall not judge people just by their looks.

Of course, I have learned: "Do not over-water". Over-watering usually makes plants grow super-fast and creates large juicy cells. These types of cells are more vulnerable to insects that have jaws or sucking tubes because these invaders can penetrate plant cells much easier. These invader insects not only weaken plants by taking nutrients from them, but also may bring harmful substance or diseases to the plants.

This situation can be transferred easily to the human world. Say, if we spoil our kids by giving them a lot of allowance and freedom. The result is an environment that likely to attract bad people. Later on, our kids stay home less and less, estranged from family members, and may even acquire some bad behavior! The general guidelines in irrigation include 'over watering causes more harm than under watering'. Hummm… I wonder how much allowance is adequate for a 15-year-old boy.

You probably already know that many plants prefer slightly acidic soil, for example, in the pH range of 5.5 – 6.5. However, water companies usually supply water that is slightly alkaline in order to protect water pipes from getting rusty too quickly. Gardeners must know their plants and amend the soil if needed to achieve adequate pH levels.

Likewise, every kid is a unique creation. Some kids need a hard punch to get going, others need sweet praise to be motivated. Understanding their personality and needs is an important task for parents to ensure successful communication.

By the way, if the soil's pH is too high (alkaline), which is common in our area, it can be lowered (made more acidic) by adding sulfur or aluminum sulfate. If the soil's pH is too low (acidic), it can be increased by adding lime or calcium carbonate, etc.

The movie *Spiderman* introduced a famous statement: :"With great power comes great responsibility'" When I work in the community garden, I often chat with people and let them know what I am doing and why. Gardening is a never-ending adventure. As a Master Gardener, I have the responsibility to educate myself and others at every opportunity.

Change the world, one seed at a time; change the world, one plant at a time; change the world, one kindness at a time. When I work in the garden, my thoughts take me far beyond what I see and touch. This experience is truly 'Beyond Gardening'. ¤

Valley Oak: Ball-Shaped Galls Are Home to Larvae of California Gallfly; Pink Galls Are Home to Pink Turbine Wasp Larvae

GARDENING FOR BUTTERFLIES: A BOOK REVIEW

Darrell g.h. Schramm, U.C. Master Gardener, Solano County

Throughout my childhood and somewhat beyond my college years, I was, during and after any drive in the countryside, aware of insect-splattered windshields. In those latter years, I would often drive my old blue Rambler to ramble or explore rural areas, hills, and meadows and woods. On return I had invariably to wash the windshield of hundreds, even thousands, of smashed insects. Today on return from any drive, I generally find my windshield as clean as at the outset.

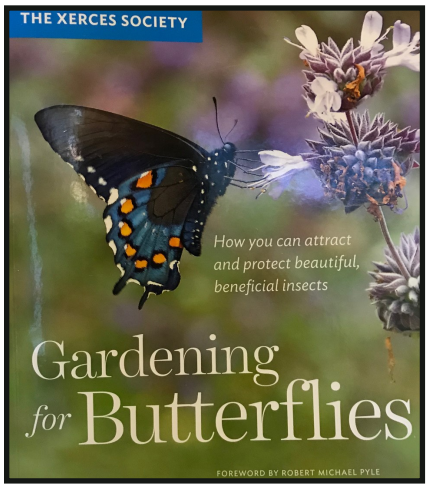


Photo of Gardening for Butterflies Book Cover by Darrell g.h. Schramm

Insects are disappearing! Among them are butterflies. Eighty per cent of Monarchs since the mid-1990s have already vanished. The book *Gardening for Butterflies*, published in 2016 by The Xerces Society, seeks to ameliorate—if not remedy—that disappearance of *Lepidoptera*, i.e., butterflies and moths, the second largest order of insects. That effort begins with gardens. And this book suggests ways we can attract and protect our beautiful and beneficial insects.

But why, you may well ask, are butterflies and other helpful insects vanishing? The greatest factor is habitat loss, especially through urbanization and monocultural agriculture, followed by climate change, pesticide usage, invasive plants, roadside mowing, and disease.

The book devotes sections to the butterfly families and what they require to thrive, to designs for butterfly gardens, to selections of native and some non-native plants to attract them, to excellent photos and descriptions of those plants, and to wildflower gardens.

Butterflies require larval host plants, nectar plants, and shelter for their various stages of life. A pollinator garden will be conducive to their needs. Free of insecticides, an open sunny, meadow-like habitat is best, whether the entire garden or certain plots or spaces, with some protection from strong winds.

Massed plants of one plant species is ideal, groupings of five or more of the same plant to create a block of color. Native shrubs, grasses, vines, and wildflowers are preferable. They also generally need less water. Native thistles are quite important. For our neck of the woods, that means Western thistle (*Cirsium occidentale*) and edible thistle (*C. edule*). Though gardeners tend to shun them, just a few thistles together in one part of the garden may actually provide accent to a flowerbed.

On the cautious side, you may wish to ignore the lovely butterfly bush - *Buddleja davidii*. It has already become a noxious weed in Washington and Oregon by aggressively crowding out native species. Instead, you might substitute the attractive ornamental buttonbush (*Cephalanthus occidentalis*). Among the best butterfly plants are, for **spring**, the pink meadow checkermallow (*Sidalcea malviflora*); for **spring into summer**, golden yarrow (*Eriophyllum confertiflorum*), the blue foothill penstemon (*Penstemon heterophyllus*), and purple sage (*Salvia dorrii*); for **summer**, showy milkweed (*Ascelpias speciosa*), purple summer lupine (*Lupinus formosus*), blue wild rye grass and purple needlegrass; for **late summer**, the red hummingbird trumpet (*Epilobium canum*); for **autumn**, the tall Pacific aster (*Symphotrichum chilense*) and California goldenrod (*Solidago californica*); and for **winter into spring**, California pipevine (*Aristolochia californica*). The book suggests many more.

Certain non-native plants are also acceptable: coneflower, coreopsis, cosmos, lavender, Mexican sunflower, salvia, zinnia, as well as thyme, mint, fennel, and rosemary. I keep one wild fennel in my yard, a host for tiger swallowtail butterflies, which soar and skate through my garden every spring and summer. (I also have fritillaries, monarchs, cabbage, and sometimes painted lady and red admiral butterflies.)

Plants that attract pollinators are often the same plants that attract beneficial insects. Moths are also pollinators and are usually drawn to many of the same plants as butterflies, as are hummingbirds and bees. Keep in mind that butterflies and moths, especially in the caterpillar stage, are herbivores, and so you may find leaves and other parts of a plant chewed and eaten. But butterflies, bees, and birds frequenting a garden far outweigh a modicum of chewed leaves.

Photo by Torie Kury

The book concludes with a section on observing, photographing, raising, and releasing butterflies. *Gardening for Butterflies* is photogenic, informative, and environmentally valuable. For more information visit online xerces.org/pollinator-resource-center/ and Calflora.org. ¤

NITROGEN

Jenni Dodini, U.C. Master Gardener, Solano County

Fava Bean Plant Beginning to Flower

All Photos in the Article by Jenni Dodini

So, what's the scoop about nitrogen in our garden soil? Why am I even thinking about nitrogen right now? Do I actually NEED to fix the nitrogen in my garden? And then, how would I even know? All these questions came to mind after talking to Jacob (the man who manages the olive trees on our property) last fall. He said that he was putting out seeds to help improve the nitrogen in the soil. I guess that he had sent soil samples to be analyzed as that is the best way to know what is deficient in your soil. The reason for sending out a soil sample is that, by the time your plants are showing signs of any deficiency, they are already VERY stressed. So, what are the symptoms of nitrogen deficiency?

- Inhibited leaf growth
- Decreased growth in length and diameter of the stalks
- Leaves become pale to yellowish-green then start to wither and dry out, more so with the older leaves
- The whole plant looks pale to yellowish green
- Increased root growth and stunted shoot growth

Do I need to fix nitrogen in my garden? Well, that depends, but keeping the soil levels up seems to be easier than replacing it. First of all, are you growing plants that are high nitrogen users? Or are they replacers? You need to research that depending on what you are growing. You can find out by doing a quick internet search. The other thing that you can look at is what a good companion plant would be if you do have a high nitrogen-using plant.

I think that the biggest question is whether to use a commercially prepared fertilizer to replace nitrogen in your soil, or to do it organically. A fertilizer from the store is made to act more quickly but doesn't last as long in the soil. The variables are how much you put out, the amount of water in the soil, and how fast the water drains through the soil. The organic route takes longer but actually produces better results. Since our olive grove is organic, Jacob planted rye grass, sweet peas and fava beans.

Field of Rye Grass Going to Seed with Fava Beans and Sweet Peas in Olive Orchard

So now, let's torture ourselves with a little chemistry review. I know that we Master Gardeners did this in our soil science section, but frankly, for me, this was a section that I had to revisit many times and I still have to review it pretty much any time that I get a question about soil nutrients. Nitrogen is balanced in the soil with carbon. The most productive soil ratio is 10-12 or 10-15 parts carbon to 1 part nitrogen -- depending on the source. Nitrogen makes up 78% of our atmosphere, but in its gaseous form, it can not be used by most living organisms and must be changed to a usable form. Nitrogen is essential in protein, amino acid, DNA, and energy production. In plants, chlorophyll is that essential component. In the soil, the native bacteria are. Getting nitrogen to the plant roots requires it to be converted to a usable form and bacteria are a crucial factor in that conversion. Simply, nitrogen gets into the soil by diffusion from the atmosphere or decomposition of plant and animal sources. The bacteria convert it to ammonium, nitrite, and nitrate in the presence of water and oxygen in the soil. The plant roots can only take up ammonium and nitrates. Denitrifying bacteria converts nitrites into nitrogen gas that goes back into the atmosphere.

Sweet Pea Beginning to Flower

Now, let's look at the organic method by using legumes, although they are not the only nitrogen replacing plants. Different legumes have different bacteria associated with them. *Azotobacter*, *Bacillus*, *Clostridium*, *Klebsiella*, and *Rhizobium* are a few of those bacteria that are found in the soil and work with the legumes. When the seeds germinate, the bacteria attach to the fine root hairs causing them to deform and this facilitates the bacterial movement into the root structure. This stimulates nodule formation around the bacteria on the root. Now the bacteria is dependent on the plant for its energy and oxygen needs, and in return supplies the plant with nitrogen. This whole process is dependent on the amount of oxygen in the soil. The plant uses the nitrogen to build leaves and seeds that are high in protein. The nitrogen compounds do not go back into the soil until the plant dies and decomposes. To facilitate nitrogen return to the soil, the plants are cut and rolled back into the soil BEFORE they flower thus keeping more nitrogen in the nodules. Sow the plants as a winter cover crop then till them into the soil in the spring.

My last foray into nitrogen fixing for the purposes of this article is COMPOSTING. Please feel free to do more research as I will

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basically skim over it. The goal of composting is to create a carbon to nitrogen ratio of about 30:1 in your pile. Lower ratios give an excess of nitrogen production that is released into the atmosphere as smelly ammonia gas. Higher ratios produce insufficient nitrogen for optimal microbial growth. As the composting process proceeds, the ratio generally decreases to a ratio of 10-15:1. It is essential to maintain an adequate air flow in your pile to keep the process aerobic so the bacteria and fungi can do their work. The compost is then added to your garden when it is done "cooking". This compost supplies balanced nutrients to your garden soil. ¤

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UNDER THE SOLANO SUN: SEASONAL OBSERVATIONS BY THE UCCE MASTER GARDENERS

Sherry Richards, U.C. Master Gardener, Solano County

Congratulations to UCCE MG's in Solano Co. for ten years of blogs and to all the gardeners reading them as we share the joy of gardening!

Our *Under the Solano Sun* blog will celebrate its 10th anniversary September 2, 2021. Jennifer Baumbach, UCCE Master Gardener Program Coordinator of Solano and Yolo Counties, along with Kathy Thomas-Rico, a Solano County Master Gardener (MG), decided to start the blog as something fun and educational for the public. Blog name ideas came from MG's and the blog was finally named *Under the Solano Sun*. The blog was designed to be seasonal observations by UCCE (University of California Cooperation Extension) MG's, with blogs posted Monday to Friday.

MG bloggers have the freedom to write about anything involving horticulture. Sometimes, besides seasonal information, they share information about gardens they have visited, gardening books they read and more! MG's post blogs with photos to illustrate a blog's content.

I looked up the history of blogs and, according to the University of Notre Dame at Maryland University, the very first blog was created in 1994 by Justin Hall on Links.net. In 1997, the term "weblog" was created (somehow how "weblog" seems like a song and dance to me!) "Weblog" was shortened to "blog" in 1999.

Our first blog ***Welcome Gardeners!*** was written by Jennifer Baumbach on September 2, 2011. Kathy Thomas-Rico wrote the second blog called ***Birch Issues*** on September 5th. Within a few days blogs were posted such as, ***A Gardener's Labor Day*** by MG Patricia B., ***They're Naked in the Garden!*** by MG Karen M., and MG Sharon L's ***Vertebrate Visitor***.

Since that time Solano MG's have posted nearly 1900 blogs!

If you want to look at our blog, please Google: *Under the Solano Sun* or click the link on our webpage: http://solanomg.ucanr.edu.

The blog has a drop-down menu with a "Subscribe" section (subscribers are emailed new blogs as they are posted); and a list of "Recent Posts", followed by a "Recent Comments" section, where readers can comment about a blog. Click on "Archives" and you will find blogs posted by month and year since 2011; a good way to look for specific seasonal gardening information! Within the "Tags" pull-down you will find an **extensive** list of blog topics to choose from such as garden tools, pests, etc. You can also look up blog topics by Googling: *Under the Solano Sun,* and the topic. Here are a few examples of blogs written by Solano MG's:

* ***Winter Vegetable Gardening***
* ***Cooool Fall Vegetables***
* ***Mantodea (Praying Mantis)***
* ***Frost Plant Care***
* ***California Natives***
* ***OH! Rats***
* ***A Different Take on Dragonflies***
* ***Vertical Gardening***
* ***Thoughts on Landscape Design***
* ***Do Flies have An Advantage Over the Swatter?***
* ***Roots-Shoots-Buckets & Boots***
* ***Free Wood Chips!***
* ***Spotted Spurge Scourge***

(Continued on Page 9)

(Continued From Page 8 - Under the Solano Sun: Seasonal Observations by the UCCE Master Gardeners)

* ***Spotted Spurge Scourge***
* ***Doing Battle with Oxalis***
* ***My Summer in the Garden***

The following are a few blogs written by MG's that you might interested in at this time of year:

* ***Hot and Bothered*** - June 2020 by Melinda N.
* ***Manduca quinquemaculata*** **Tomato Hornworm**— November 2012 by Sterling S.
* ***What's Bugging My Plants This Summer?*** - August 2019 by Paula P.
* ***2 Alternatives for a Water-Wise Lawn for the Scorching Central Valley Summer***—November 2020 by Alex R.
* ***Bermuda is Not a Vacation***—February 2021 by Maureen C.
* ***Water-Wise Plants*** - February 2018 by Kathy L.
* ***Fire-Resistant not Fire-Proof***— October 2020 by Betty V.
* ***Cicadas***—April 2021 by Jenni D.
* ***Defeating the Blue Jay***—April 2021 by Launa H.
* ***All Cracked Up***—November 2012 by Erin M.

The University of California (UC) has several horticulture blogs. Here are some examples:

* UC - The California Garden Web ***Advice to Grow by …Ask Us!*** http://cagardenweb.ucanr.edu
* Master Food Preservers – Solano and Yolo Counties: find canning and preserving advice for all the delicious produce from your garden: http://solanomfp.ucanr.edu
* The Confluence– blog of the California Institute for Water Resources. A recent one: ***Tips for Saving Water and Money in Home Landscapes*** by John Karlik. http://ucanr.edu/blogs/confluence
* Integrated Pest Management (IPM) - Got a Pest bugging you? Check out the IPM— Agriculture and Natural Resources (ANR) blogs at http://ipm.ucanr.edu/blogs

There are also dozens of horticulture vlogs (video logs) by California MG's and UC Staff: Google: UCANR – YouTube UC Master Gardener Program.

(Special Note: Kathy Thomas-Rico, who helped start our blog, sadly passed away in 2014. You will find the many blogs she wrote informative and entertaining!) ¤

References:
UCCE Under the Solano Sun Blog, Solano County Master Gardeners
University of Notre Dame at Maryland "History of Blogging" March 22, 2018

GROWING THE WEST AFRICAN BAMBARA GROUND NUT IN THE CENTRAL VALLEY GARDEN

Alex Russell, U.C. Master Gardener, Solano County

California is getting hotter, particularly the Central Valley. This alone provides some motivation to think beyond growing just tomatoes, melons or even beans in the home garden. There is a whole world of food crops that have never spread with the same success as plants like wheat, corn or potatoes, and many of them grow well in hotter climates with less water. Bambara groundnut (*Vigna subterranea*), for example, hasn't got nearly the name recognition of its cousin the peanut (*Arachis hypogaea*) but it's well worth a try.

Bambara Seeds

Photo by Alex Russell

Bambara groundnut, domesticated in West Africa, has lots of names: Bambara-bean, Congo goober, ground-bean, hog-peanut, earth pea, jugo bean, pois de terre, eefukwa and many others depending on where they are grown. It is the third most commonly eaten legume in Africa after peanuts and cowpeas. The name "Bambara" refers to a people who live across West Africa and who speak the Bambara language.

Bambara groundnut is considered an "orphan crop." Like cowpea, cassava and true yams, Bambara groundnut is not traded internationally like corn or bananas. The lack of commercialization has left it largely neglected in terms of improvement. Orphan crops come from all over the world, and are mostly eaten in the areas in which they were originally domesticated. The United States has its own share of orphan crops, like the American groundnut (*Apios americana*), which is actually a tuber. Sometimes orphan crops achieve sudden fame, like quinoa.

Growing and Eating Bambara Groundnut

One advantage Bambara groundnut has over peanuts is that it is more tolerant of drought and poor soils. These characteristics help it thrive in arid parts of Africa that have a lot in common

(Continued on Page 10)

(Continued From Page 9—Growing the West African Bambara Ground Nut in the Central Valley Garden)

with our climate in this part of California and some of the soils we invest so much into improving. Bambara groundnut does not require nitrogen fertilizer. In fact, like other legumes, it fixes nitrogen into the soil for uptake by the next heavy-feeding crop.

Growing Bambara groundnut looks a lot like growing peanuts. Like the peanut, Bambara groundnut is a legume and drives spikes from spent flowers into the soil to form the seeds that we eat. This means that if you garden in deep mulch as I do, make sure to clear the mulch away when you see flowers so the spikes have bare dirt beneath them. It takes Bambara groundnut about four months from planting to harvest. The dried "nuts" can be stored in the same way as regular beans.

Cooking and eating Bambara groundnut is a lot like cooking and eating beans. It's an uncommon food outside of Africa, so it's unlikely America's Test Kitchen will have a recipe ready any time soon. That doesn't mean there aren't recipes out there, though. A quick search online turned up *eefukwa* fritters from Namibia and *mutakura*, boiled Bamabara and peanuts, from Zimbabwe.

Finding Bambara Groundnut Seeds

Finding Bambara groundnut seeds are a little more challenging than a run to the nursery shelves. Seeds are out there but you might have to look. I found a handful of sellers online, and a lot of them were sold out.

There are other differences with a plant like Bambara groundnut compared to more widely established crops. For one, there are no equivalents of the 'Tennessee Red' or 'Valencia' for peanuts. There are different colors, though. The seeds I ordered from a seller in Ghana came in purple, red, yellow and bi-colored. I'll sort them and plant them separately to see which ones grow best in my garden conditions. I'll also cook them separately to see if there's any difference in taste.

As I write this article, my Bambara seeds are in the freezer. Why? Let's just say I found a few stowaways I'd prefer not to release into the local wilds. Bean beetle (*Callosobruchus maculatus*) is a common pest in Africa and Asia where the temperatures stay warm. I read everything I could find online about the little buggers and it looks like a few days at freezing temperatures takes care of them and won't compromise dried seeds.

If you want to learn more about Bambara groundnut, Malaysia-based Crops for the Future has a dedicated website with a tremendous amount of information (bambaragroundnut.org). ¤

CREATING TERRARIUMS WITH SUCCULENTS

JoAnn Brown, U.C. Master Gardener, Solano County

Photo by Clairese Wright

Terrariums are back and are an enjoyable activity to do by yourself or with groups of any age! Created in the 1800's, this Victorian Era trend has become popular again. Terrariums are containers, commonly glass, sealed or unsealed, that contain at least soil and plants. These containers were first known as Wardian Cases and were created by the botanist Nathaniel Bagshaw Ward. They were not initially developed for pleasure but as an experiment to observe insects and plants. The history of the terrarium is very interesting. They became the vehicle for plants to be transported to other countries around the world. (See article by Jen Maylack, "*How a Glass Terrarium Changed the World*" The Atlantic.

There are two types of terrariums: closed and open. A closed/sealed terrarium can create its own water cycle by using the moisture from the soil and plants. Tropical plants are better suited for closed terrariums. An open terrarium is a container that is not sealed but has an opening. Most of these containers are glass and can be stationary, hanging, non-traditional (mason jars, science beakers), and come in a variety of different shapes and sizes. These open containers need watering like typical containers but more sparingly since they do not have holes in them for drainage.

Succulents are a good choice for open terrariums because they are easy to grow and to care for and they tend to grow slowly. However, consider their limitations because succulents retain water in their leaves and can be a bit tricky in a terrarium situation because they do not like to be overwatered or have standing water around them. Creating layers in your terrarium will help move water away from the roots thus helping to alleviate that problem.

There are an infinite number of ways to arrange a terrarium. They can be anywhere between traditional to fanciful themes such as a Fairy Garden. When planning your arrangement consider plant sizes, colors and textures. Have fun!

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(Continued From Page 10—Creating Terrariums with Succulents)

Creating a Succulent Terrarium

Supplies

- ◊ Plants
- ◊ Small rocks (for drainage and decor)
- ◊ Sand
- ◊ Activated Charcoal
- ◊ Moss (Sphagnum)
- ◊ Succulent soil
- ◊ Optional: decorative items (wash before putting in terrarium)

Ideas for Succulent Plants for Terrariums; Cuttings Are a Good Option

- ◊ Zebra plant
- ◊ Blue chalk sticks
- ◊ Jade
- ◊ *Echeveria* 'Lola"
- ◊ String of Pearls

Tools

- ◊ Tweezers and chop sticks can help to arrange plants and decor
- ◊ Gloves to handle the activated charcoal

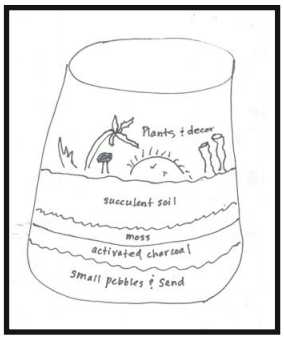
Layer Order Starting at the Bottom of the Planter

- ◊ Layer 1: Small rocks and sand for drainage
- ◊ Layer 2: Activated charcoal, thin layer, used to keep it from smelling and reduce fungus-(use gloves)
- ◊ Layer 3: Moss-thin layer to prevent soil from falling through the charcoal and pebbles
- ◊ Layer 4: Succulent soil for more drainage, deep enough for roots
- ◊ Layer 5: Plants and decorative items such as moss, weathered wood, fairy garden elements, game pieces or other unique ideas

Arranging

After you have put down the first four layers and before you start planting, have a plan of how you would like your terrarium to look. Start with the biggest plant or the plant that is in the middle and then work out to the edge of your container. When planting your plants take off most of the soil and trim any excess roots. Plant in soil layer and then add your decor items.

Plant Care and Maintenance



Terrarium Drawing by JoAnn Brown

Find a sunny window in your home to display your terrarium; although direct sun can burn the plants. Keep in mind that succulents need at least 2-3 hours of filtered sunlight each day, some types of plants may need more. Watering can be the hardest to manage. Overwatering or standing water can lead to death or rot. Consider using a narrow spouted water container to target plants and mist smaller plants. Check the edges and the bottom of the terrarium to see that you don't have standing water. Water once a week at first to see how your plants are doing and adjust as needed. As your plants grow you can trim them and use the cuttings for a new project.

Sit back and enjoy your creation! ¤

ARE HOMEMADE PESTICIDES A GOOD CHOICE?

Karey Windbiel-Rojas, Associate Director for Urban & Community IPM and Area Urban IPM Advisor for Sacramento, Solano, and Yolo Counties

Have you seen homemade mixtures online to control pests in your home and garden? Did you know even mixtures with household ingredients are actually considered pesticides? Even though it may be tempting to make your own home remedy when pests invade, even natural ingredients can still have risks and concerns associated with them. If you're looking for alternative to pesticides, IPM offers a number of options including hand-pulling weeds, enhancing biological control, and keeping plants healthy with proper irrigation and fertilization to reduce pest problems.

While ingredients in home remedies are items we might eat or use in the kitchen, the mixture of them is not tested for efficacy, health, or safety, so their impacts are unknown. Because of this, homemade pesticides have the potential to harm human health, damage plants, be toxic to pets and wildlife, and pollute the environment. Another concern is the potential hazard created during the mixing and making of home remedies. Some ingredients become more toxic during the process of cooking the mixture, which may concentrate the ingredients and increase risks of harmful health side effects due to inhalation of fumes or contact with skin. Products such as dish soap may not be organic or natural and can harm plants or soil microbes.

Home remedies don't specify how often mixtures should be applied and contain no guidance about wearing protective equipment like gloves. They lack the required label information

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(Continued From Page 11—Are Homemade Pesticides a Good Choice?)

registered pesticides contain. Without a label and knowledge of how a mixture can affect people when exposed, first aid information isn't available.

UC Master Gardener volunteers should adhere to the pest control solutions detailed in the research-based, peer-reviewed content on the UC IPM website and other UC ANR publications. Recommending home remedies while acting in your role as a UC Master Gardener could lead to potential problems and litigation should any adverse effects occur.

To read this full article, visit https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=46532 . For more information about alternative to pesticides, visit the UC IPM website at www.ipm.ucanr.edu and http://ipm.ucanr.edu/GENERAL/pesticides_alternatives.html. ¤

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PANDEMIC PROCESSING

An Anthology Describing How the COVID-19 Pandemic Has Affected Two Master Gardeners

HOW THE PANDEMIC CHANGED MY GARDENING AND MASTER GARDENER ACTIVITIES

Tina Saravia, U.C. Master Gardener, Solano County

As we head towards a summer season with the end of Covid restrictions, I can't help reflecting back on how the pandemic changed how I work in the garden and my Master Gardener activities.

In the beginning of the lockdown, because I could not go out to the garden center and buy garden supplies like soil, fertilizers and seeds, I had to depend on what I had on hand. The chickens tilled the soil and gave me fertilizers from their manure and eggshells. They pulled out unwanted weeds as they scratched and even helped harvest the blue potatoes (see picture).

I composted everything - leaves, branches, weeds, fruit and vegetable trimmings, newspaper, cardboard boxes, so I would have enough to use in the garden; I also used up all the seeds in my collection.

I planted more annual vegetables and herbs. I planted corn, pumpkins, green beans, cucumbers, tomatoes, eggplants, pepper, basils and more. I knew that I would have to cook more of our meals, so it helped to have a lot of vegetables to harvest on hand.

I got a lot of green beans and enough peppers. Sadly, I did not get a lot of yield from all that I planted. I got 2 eggplants, 2

Brownie With Her Potato Harvest

All Photos In This Article by Tina Saravia

pumpkins, hardly any tomatoes, and I did not get any tomatillos.

In comparison, I got better yield, with less work from my perennial vegetables (those you plant once and harvest year

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(Continued From Page 12—How The Pandemic Changed, My Gardening and Master Gardener Activities)

after year - like artichokes, asparagus, perennial kale). My tree collards yielded so much last winter that I was able to donate 22 pounds of greens to the Seed Bank, twice.

I like to "experiment" with new things in the garden. So I planted some of the vegetables in a waist-high raised bed. It was so much easier for my back.

I pruned back the passionfruit vine and it came back with a vengeance with nonstop blossoms that turned into very delicious fruit all year. I also harvested and ate the sweetest grapes from our three grape vines.

I spent a lot of time watching and learning from online classes. The Master Gardeners conducted numerous classes in the last year, and continue to do so. I wrote more for the *Under the Solano Sun* blogs and the *Seeds for Thought* newsletter. I also mentored a 2021 Master Gardener trainee exclusively online. I finally met her on graduation day months later. She looks much taller than her video version. Last April, I delivered my first online presentation on Zoom.

I did a lot of work in the garden and it gave back by being the healthiest and most productive it's ever been; for that I am grateful. I look out my kitchen window in the mornings and realize that I have a renewed appreciation and gratefulness of what I have.

I am grateful for all the beautiful plants and all the creatures, great and small, that exist in it. I am grateful for the cycles of life in the garden. I am grateful for having the ability to work in the garden. I am grateful for the life I have and I am grateful for the chance to look forward to what's to come.

And that is how the pandemic changed ME. ¤

CHANGES AND CHALLENGES OF THE PANDEMIC

Launa Herrmann U.C. Master Gardener, Solano County

Being an outside girl at heart who bucks at being trapped inside, I thought a lot about these past 18 months — from its isolation and toilet paper hoarding to how I turned my guest bathtub into a pantry of staples so my family could eat during the lockdown. Truth be told, my mantra is "I'd rather be gardening" not "I'm so thrilled to be locked down inside preparing and cooking three meals a day—again."

In the beginning, staying inside was okay. After all, the weather was cool. My plants tucked away in their flower beds for winter while I looked forward to presenting a workshop at the 2nd Master Gardener Succulent Extravaganza in May. But as one event after another was cancelled, and the long smoky summer of wildfires arrived, I grew disheartened. I missed volunteering at Home Depot on Saturdays. I longed to connect with others face to face. During quick in and outs to a grocery store, I felt like a bank robber stripped of my individuality by a common denominator I grew to despise: that face mask.

Working my way outward from such a restrictive focus was complicated. For me, Zoom wasn't a substitute for the real thing. And being stuck to a screen just isn't me. It wasn't that I was bored by lack of a To Do List. My time was taken, sometimes with more than I could handle. Evacuating twice from a fire that came within a quarter mile of my home. Hosing off ash that coated flowerbeds, trees, patio furniture, fences, outside walls and windows. Finding air purifiers to purchase for the debris invading my home that drifted daily through the smoky sky until late fall. Helping my teenage grandson stay engaged with school work. Wondering all the while, will this ever end?

Photo by Melinda Nestlerode

One thing I knew for sure, I did not want to remain stuck in the discouraging aspects of this pandemic. As a gardener I had discovered years ago that whatever happens in life, the first step back to getting your groove back is through a garden gate — because my garden continues to teach me. About loss. About change. About the required resiliency to start again. After all, plants live on high alert with daily uncertainty and seasonal unknowns. With new eyes, I took a good look at the potted succulent gone wild that I'd tucked in a patio corner and the neglected tangle of a flowerbed. Still here. Still stretching toward the light. And that's the bottom line. Through unexpected changes, challenges and individual losses, we are still here. Still on the right side of the grass. Still stretching toward the light. ¤

MASTER GARDENERS IN THE COMMUNITY

As the pandemic restrictions are lifted, Solano County Master Gardeners will continue to expand our presence in the community. Stay tuned to find out where we are!

VALLEJO FARMERS MARKET

Betsy Buxton, U.C. Master Gardener, Solano County

It's been a great few weeks since the Master Gardeners received the okay to resume our "booth" (a table actually) at the corner of Marin and Georgia Streets in downtown Vallejo **every Saturday**! The sunshine and the crowds of shoppers make for an interesting 5 hours, **from 9 am to 2 pm**, for the volunteers. Plenty of FREE parking, plenty of fresh, organic produce, and quite the variety of food booths make for an enjoyable midday session for all.

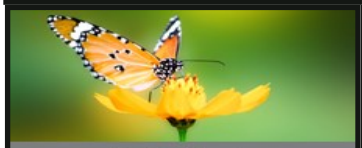
Almost everyone walking by seems to have a question about gardening: why something didn't flourish as promised by the seller; where to find a particular plant; how to grow this or that, etc. Most of the time we can give an answer right away: sometimes it's a dive into the various books we have on hand; sometimes, one of the handouts will have the answer; sometimes, it's an answer right off the cell phone that one of us has. And, unfortunately, sometimes we write down the question along with the person's phone or email address to call back later with the answer – WE ALWAYS CALL BACK!

Please come and discuss your gardening with us, problems or not. We are there to help with suggestions of reading material, handouts on various subjects, both plants and insects, and subjects related to gardening. We learn so much from your experiences in your landscapes!

Hope to see you soon!!

- Excerpted from Under the Solano Sun blog, June 16, 2021

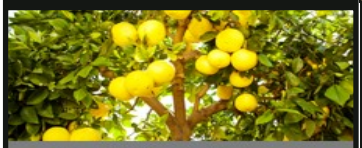
MASTER GARDENER RESOURCES



The California Garden Web >>>

The California Garden Web serves as a portal to organize and extend to the public the University of California's vast collection of research-based information about gardening.

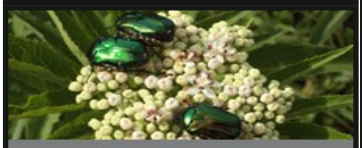
http://cagardenweb.ucanr.edu/



The California Backyard Orchard >>>

Visit The California Backyard Orchard to learn about the home orchard and understand that it is, in fact, a living expression of genetics interacting with soils, weather, tree spacing, pests, and many other factors.

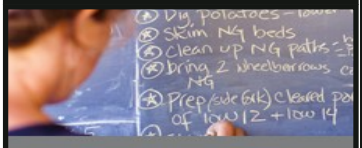
http://homeorchard.ucanr.edu/



Integrated Pest Managment (IPM) >>>

Integrated Pest Management, or IPM, is a process you can use to solve pest problems while minimizing risks to people and the environment. IPM can be used to manage all kinds of pests anywhere—in urban, agricultural, and wildland or natural areas.

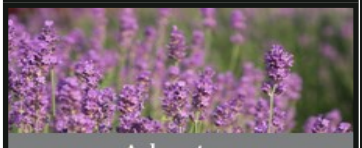
http://ipm.ucanr.edu/index.html



ANR Publications >>>

Find quality peer-reviewed products produced by UC Division of Agriculture and Natural Resources (ANR) at the click of a mouse. Whether you're looking for advice on crop production, pest management, study materials for Department of Pesticide Regulation (DPR) exams, nutrition, or gardening , you'll find it in the ANR catalog.

https://anrcatalog.ucanr.edu/



Arboretum All-Stars >>>

The horticultural staff of the UC Davis Arboretum has identified 100 tough, reliable plants that have been tested, are easy to grow, require little water, have few problems with pests or diseases, and have outstanding qualities in the garden. Many of them are California native plants that support native birds and insects. Most All-Star plants can be successfully planted and grown throughout California.
https://arboretum.ucdavis.edu/arboretum-all-stars?id=4

SUMMER GARDENING GUIDE

	JULY	AUGUST	SEPTEMBER
PLANTING	◊ For summer-to-fall color, choose ageratum, celosia, coleus, marigolds, and zinnias ◊ Continue planting warm-season vegetables until midmonth: beans, corn, tomatoes ◊ Start perennials from cuttings: dianthus, geraniums, verbena ◊ Sow seeds of columbine, coreopsis, forget-me-nots and foxglove	◊ Start seeds of cool-season crops: broccoli, cabbage, lettuce—to set out in August ◊ Direct-sow edibles: carrots, onions, peas, radishes ◊ Start sowing seeds of cool-weather bedding flowers in flats now: calendula, candytuft, pansies, snapdragons, stock	◊ Seed: try a selection of colorful salad greens, which are easy to grow at home ◊ Time to start thinking of what tree to buy. Consider fall color and shop when the leaves color up ◊ Shop for bulbs now to get the best selection ◊ After midmonth, sow seeds of California poppy and clarkia
MAINTENANCE	◊ Control weeds—pull or hoe them as soon as they appear ◊ Deadhead (remove old flowers) from dahlia, rudbeckia, rose and other perennials ◊ Fruit trees: brace limbs that are sagging with fruit. Clean up any fallen fruit ◊ Continue to irrigate plants, especially when hot and windy weather is forecast	◊ Deep-water trees. Use a soaker hose and place at drip line of tree ◊ Fertilize warm season annuals ◊ Deadhead spent blooms ◊ Refresh hanging baskets with new transplants. Succulents work well ◊ Continue to harvest vegetables for maximum production	◊ Get flowering annuals and perennials as well as fall-planted vegetables off to a strong start by incorporating a high-nitrogen fertilizer into the soil before planting. Fertilize again in 2—4 weeks, or follow label instructions ◊ Later this month is one of the best times to rejuvenate bluegrass, fescue, and rye grass lawns. Rake and reseed. Be sure to irrigate and keep moist
PREVENTION	◊ Budworms—inspect plants for holes in buds and black droppings. Use organic pesticide, such as Bt (*Bacillus thuringiencsis*), to control ◊ Deep water trees. Midsummer heat can cause drought stress. Deep water citrus, fruit and flowering trees once every week or two. Water less thirsty trees once a month ◊ When foliage dries completely, dig up spring-flowering bulbs and tubers. If daffodils and Dutch iris appear crowded, dig them up too. Store bulbs in a cool, dry place until fall planting ◊ Dig and divide overcrowded bearded iris clumps. Share with friends and neighbors	◊ Continue to deep water all plants to avoid sunburn and other damage from hot weather ◊ Continue garden clean up. Remove fallen fruit and garden debris ◊ Inspect plants for signs of spider mites. Apply a blast of water spray to undersides and tops of leaves to dislodge dust mites	◊ Use a selective pre-emergent herbicide on lawn to keep winter weeds under control ◊ Clean up fallen fruit and leaves to keep diseases at bay ◊ Clean up old vegetables to prevent over-wintering of insects and disease 

***Seeds For Thought* is produced by the UCCE Master Gardeners-Solano Co.**

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Please put '*Seeds For Thought*' in the email Subject line.

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http://cesolano.ucdavis.edu/newsletterfiles/newsletter130.htm

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Summer 2021 issue