

Master Gardener
University of California



The Curious Gardener

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The Chatter About Biochar in the Home Garden

by Jan Birdsall, Placer County Master Gardener

Have you seen a recent reference or commercial touting the benefits of using biochar in your home garden? Maybe pictures on Pinterest or other online garden sites showing larger sized vegetables grown with biochar vs. normal procedures? Most gardeners are always looking for that secret ingredient to make our gardens lush and productive. Let's explore recent biochar research and get some answers.

Biochar is a fine-grained charcoal from organic materials burned at high temperatures (anywhere from 350^o to 900^o C) in the complete absence of oxygen. Organic matter can include, but is not limited to, nut shells, animal manure, wood products and residual from harvested corn plants. In addition, biochar can be a byproduct of biofuel production. The origins of



biochar were discovered in the Amazon Basin which typically has poor infertile soils and rainforest climate. Some soils there, however, have been discovered to be black in color with charcoal particles, rich in nutrients and high organic matter content. This "amazon dark earth soils" was created by humans about 2500 years ago, either intentionally or as a waste product from cooking.

Although biochar is condensed to charcoal granules, they are not the same ingredients as your BBQ charcoal, which should not be used in your garden. Currently, it is almost impossible for a home gardener at this point to produce their own biochar due to the conditions needed: no oxygen and 350^o-900^oC over many hours. Improper cooking also generates carbon dioxide and other pollutants. The science behind biochar is complex; many variables are associated with both making and using biochar. For instance, differences occur in the type and amount of organic matter burned, the degree of temperature, and length of burn. When using biochar, you have to take into consideration the type

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of soil characteristics you are amending such as texture, organic content, and mineral nutrients levels, the amount you apply and the type of crop.

Climate change scientists are enthusiastic about biochar's potential as a valuable tool for carbon abatement. "The basic premise of biochar's benefit is straightforward," says Sanjai Parikh, assistant professor of soil chemistry at UC Davis. "You are putting highly condensed carbon into the soil, so that biochar itself has a longer residence time than just putting a piece of wood, or any raw biomass in the soil. The fact that biochar is a fairly recalcitrant form of carbon means that microbes cannot utilize it easily as a food source and carbon dioxide emissions are thus temporarily reduced. However, there is also a lot of excitement around the potential of biochar to also provide a host of specific agronomic benefits."

Dr. Linda Chalker-Scott of Washington State University cites some of those benefits: biochar "...has been used to remediate soils by binding contaminants such as pesticides and heavy metals. It offers a physical environment to mycorrhizae, which often benefit from biochar amendment. It binds nutrients such as nitrogen, preventing runoff or leaching". However, she warns residential gardeners, "The downside is that it is expensive and the research available applies to crops and not to its effectiveness in home gardens and landscapes."

Yes, Biochar is a recent development and consequently there are only a few studies regarding its relevance to home gardens. However, many experiments are underway. UC Davis has a biochar blog for collection of data gathered on the subject. There is some evidence that adding biochar to soil plantings of turf grasses and trees appear to benefit them. In 2014, the city of Thousand Oaks, California planted twenty pine trees, experimenting with a planting mixture including biochar. Turf grasses prefer a little more alkaline soil conditions which biochar can provide. Lawns with poorly drained and compacted soil have been shown to increase drainage and aeration with the use of biochar.

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Ph.D. candidate Deirdre Griffin at a research plot at the Russell Ranch Sustainable Agriculture Facility

Studies of how biochar works with our local soil characteristics and conditions in the Central Valley are even rarer. One four-year study conducted by UC Davis, Division of Agriculture and Natural Resources, at the Russell Ranch Sustainable Agriculture Facility regarding biochar created from walnut casings, cooked at 900°C and added as a soil amendment was used as an experiment on rotating tomato and corn crops. So far, the study found that it helped the corn yields by 8% in the second year after application and then improvement declined. The study's lead author theorized that the second-year delay may be due to biochar's characteristic to repel water when first in the ground and may interact with soil after significant time passes. This study is ongoing and will continue to report its findings.

Another study conducted by California Department of Water Resources at Terranova Ranch in Helm, California (outside of Fresno) is measuring the effect of biochar and compost upon crop water usage as well as crop yield. Four soil conditions for tomatoes are being studied:

- 1) No soil augmentation (control plot)
- 2) Soil augmented with biochar
- 3) Soil augmented with compost
- 4) Soil augmented with a combination of biochar and compost.

Tomatoes grown with added compost yielded 2% more than the non-augmented soil. Biochar augmented plot yielded 5% less than the control plot. The combined application of compost and biochar almost equaled control plot yields. Preliminary results from the study indicate that biochar had a negative impact on tomato yield. The water usage statistics of this study are still being analyzed.

Obviously, biochar research is still in its infancy and there are many variables. As such, the home gardener should be careful if using biochar in their planting. There is evidence that using too much biochar can injure beneficial soil organisms like earthworms as well as cause crop failure. Care should be exercised in the first few months after biochar application to confirm plantings do not have nitrogen deficiency. (Poor plant growth and pale green to yellow leafing are signs of low nitrogen.) It is suggested that your soil be tested and monitored regularly if you choose to try biochar.

Gardening for the Birds

by Ann Wright, Nevada County Master Gardener

The morning chirp—such an inviting way to welcome a new day! Melodious greetings can be more prevalent in bird-friendly gardens, and the Audubon Society has declared 2018 as the year of the bird. There are many ways to enjoy and celebrate birds. Just sitting in a quiet place in the garden and observing birds is a good way to learn about them. Pick out four or five birds in your yard—first to identify them, then to learn about them. Watch for different sorts of birds as many are migratory and are only here during certain times of the year. Some are insect eaters, some enjoy seed, and others eat berries from native shrubs. Watch as spotted towhees, juncos and sparrows forage through fallen leaves in search of seeds and insects. Consider the white-breasted nuthatch as it climbs head-down from a limb or trunk of a tree in search of insects or seed. There are many ways to establish garden habitats that may be more inviting to winged creatures.

Provide food, water and protection for birds. In general, smaller garden birds eat seed, insects, and caterpillars. Larger birds eat frogs, fish and other animals. To increase the habitat for garden birds, plant native plants. Native plants support native insects which helps attract more birds. Your garden may even become an island of habitat for migrating birds! The Cornell Lab for Ornithology has developed a number of “citizen scientist” sites to help promote understanding of wildlife habitat in local environments. The site: <http://content.yardmap.org/learn/> has a menu titled, “Which Bird, Which Plants” which filters birds by region with corresponding preferred food sources.

Increase leaf litter by keeping leaves on the ground. This provides habitat and forage areas for the birds as well as nutrients for the soil as leaves break down. Leaf mulch also helps plants because moisture is kept at ground level.

Plant layers within the garden. The greater diversity of food and layers in your garden, the greater diversity of birds that will visit. For example, *Dudleya* spp. or *Achillea millefolium* (dwarf yarrow) as ground cover, followed by taller native *Salvia* spp. (sages), *Epilobium canum* (California fuschia), and *Penstemon* spp. is a way to start new areas. Adding taller shrubs such as *Heteromeles arbutifolia* (toyon), *Frangula californica* (California coffeeberry) and other understory shrubs will add beauty to the garden as well as valuable habitat for birds.

Water. Birds like shallow water. If using a fountain, a recirculating pump will prevent mosquitos from breeding, and the bubbling water is attractive to finches and other birds. Bird baths can be deeper in one area for bigger birds. (Change the water a couple of times a week to prevent mosquitos and disease.)

Bird houses can provide nesting areas for birds and come in many different types. Birdhouses can be a good place to study birds and the small peeps of baby birds is a joy to hear. But keep the cat away! Some local volunteers monitor the bluebird populations and have placed special bluebird houses at different locations in the area. Be sure to clean out the birdhouses between seasons.

If providing supplemental food for birds, consider high quality no-waste type food to decrease seed build up on the ground. Clean seed feeders frequently to avoid mold and bacteria from building up. Likewise, hummingbird feeders should be cleaned every day or two in hot weather.

Other ways to reduce harm to bird populations is to eliminate the use of pesticides or poison for rodents. If using traps for rodent control, set the traps at night and bring the traps in during the day, or secure traps to ensure birds aren't inadvertently caught.

Enjoy your gardens and the birds! For more information about birds and their habitats, check the Audubon Society site at: <https://www.audubon.org/yearofthebird>. The Cornell Lab of Ornithology site (www.birds.cornell.edu) provides a great deal of information about birds, as well as interactive applications to help identify birds by sight as well as by sound.



Photo by Robyn Emme,
Placer County Master Gardener

Reducing Fire Risk with a Fire-Safe Garden

by Laurie McGonagill, Placer County Master Gardener

If there is one thing we can be sure of, it is the possibility of FIRE! This summer and past years have proved that. No longer can we count on having a designated “fire season”; fire now threatens the western states throughout the year. The dry nature of our foothills, continuing drought in spite of several seasons of adequate precipitation, and the fact that historically fire has been a natural occurrence, means that fire can blaze up at any time. When we factor in the state’s growing population and the many Californians who are moving away from more fire-defensible urban and suburban areas into the surrounding wildland, we must be proactive and take steps to protect our property.

Although there is no such thing as a totally fire-safe environment, danger can be minimized with thoughtful garden layout, plant choices, and regular and scrupulous maintenance. A home and landscape maybe our biggest financial asset. Protecting that asset requires an understanding that the landscape plan must be one which is not attractive to fire.

Let’s look at **fire-safe guidelines**, **non-fire-resistant natives**, **fire-resistant plants**, and how **regular maintenance** of our landscape can make it as resistant to fire as possible.

Fire Safe Garden and Landscape Guidelines

We want to keep shrubs and trees a minimum of 30 feet, known as the **home defense zone** or **green zone**, from dwellings and other structures. Trees and their branches will not overhang our roofs if this distance is observed. If the property is large or near wildland, extend that distance to 100 feet, called the **reduced fuel zone**. Increase the distance between plants if wind is a factor or if a slope is involved. (Consult ANR publication 8228, listed at the end of this article, for the specific distance in case of wind or slope issues.) Plants closer to the dwelling in the **home defense zone** should be low-growing, have green moisture-holding foliage, and be non-resinous.

Know Which California Native Plants are NOT Fire Resistant

California natives have adapted specifically to our climate. However, some have evolved to release their seeds with fire or burn periodically to regrow from rootstalk. Do not plant them as they burn easily. These are trees such as *Pinus sabiniana* (California gray or foothill pine), and some species of the ceanothus shrub. The seed cases are hard and release only under extreme heat conditions. Avoid trees or shrubs with resinous sap or flaky bark such as conifers (pines, firs, spruce, juniper) or *Arctostaphylos spp.*, (manzanita). If you must have these natives, plant them some distance from structures—at least 30 feet away or near the perimeter of your property—as they will burn easily and potentially spread to other less flammable plant growth. Remember that you are making decisions not only for you and



your family, but also your neighbors and community. You do not want to make choices that protect you while putting others at risk, so consider careful placement of natives that depend on fire to reproduce.

Fire-resistant Plants

There are many fire-resistant plants to choose from. (See websites listed at the end of this article for a more complete list.) Plant nursery personnel are also aware of plants that are resistant to fire and can guide you in making appropriate choices.

Here are a few plant choices that range in size from small to large:

Groundcovers: *Ajuga reptans* (Carpet bugleweed); *Sedum spp.*; *Dianthus spp.*; *Cerastium tomentosum* (Snow-in-summer).

Perennials: *Achillea millefolium* (Yarrow); *Penstemon spp.*; *Lavandula spp.* (Lavender); *Salvia spp.*; *Yucca spp.*; bulbs.

Annuals are fine although they need to be watered and maintained and must be replanted every year.

Shrubs: *Mahonia aquifolium* (Oregon grape); *Ribes spp.* (Flowering currant); *Spiraea douglasii* (Western spiraea); *Syringa spp.* (Lilac); *Symphoricarpos albus* (Snowberry).

Trees: Most deciduous trees, including fruit trees, work well because they have more moisture in their tissues and leaves and fewer branches with distance between them. Broadleaf trees are also desirable for the same reasons. These trees may have sap, but it is watery, and not attractive to fire

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as are trees with resinous sap. A few trees to consider are: *Cercis occidentalis* (Western redbud); *Platanus racemosa* (California sycamore); *Catalpa speciosa* (Western catalpa); *Quercus spp.* (Oak); *Acer spp.* (Maple).

Although most conifers should be avoided, the Ponderosa pine tree resists fire due to its thick bark and moisture in its foliage.

A word about turf (lawn). Turf, if maintained, can serve as a deterrent to fire. However, in our drought-prone area, there are other choices to surround the home with such as decomposed granite, pebbles, and other inorganic mulches that are equally attractive, minimize water use, and retard fire.

Plant and Landscape Maintenance

Plant choice is very important, but maintenance of our plant landscape is key to reducing threat of blaze. **Prune** dead wood out of trees and shrubs; **remove inner branches** to reduce fuel load and encourage air circulation. **Minimize ladder fuels**, low growing branches and foliage by which fire climbs up into the plant or its neighbor plant. The recommended distance from ground to the first branches for a mature tree, for instance, is 6-10 feet. Prune living and dead wood up to this point to discourage fire from grabbing hold and moving upwards. If your plant is a small tree or shrub, remove the lower third of its branches.

Create space between your plants. Since the fuel is harder to get to because of distance, it is more difficult for fire to advance. The recommended spacing between trees is three times the height at maturity.

Pick up plant debris regularly. This means that fire-attractive litter such as leaves and twigs must not be allowed to accumulate. **Cut down dry grasses and remove tree and shrub limbs close to the ground.**

Keep plants watered. Although we want to emphasize drought-tolerant plants, that does not mean that we should not irrigate. All plants need some water and keep-

ing plants appropriately hydrated helps them maintain vigor and retard fire. There are many irrigation systems to consider from sophisticated drip or rotary sprinklers to simple hand or hose watering. The point is to be aware of the water requirements of our plants and to supply them with water as needed.

Consider an inorganic mulch such as gravel or decomposed granite. Wood chips and other mulch generally retards fire as it preserves moisture in the soil but if it is thicker than two inches, it can smolder if exposed to fire and be difficult to put out. If you do use wood mulch, keep it five feet away from structures.

Our foothills are arid and prone to fire. With changing climate and a growing number of people choosing to live closer to wildlands, now, more than ever, we must make smart plant choices and take proper care of our gardens to protect our landscape.

Nevada County Master Gardeners' Fall Plant Sale

September 22 • 9:00 am to Noon

Nevada County Master Gardeners are busy starting and growing plants for the fall plant sale, scheduled for Saturday, September 22 from 9:00 am to noon. The sale will take place at the Demonstration Garden on the Nevada Irrigation District Business grounds, at **1036 West Main Street in Grass Valley**. In time for fall planting, perennials, cool season vegetables and ornamentals will be offered for sale.

- Greens! Arugula, lettuces, spinach, Asian greens, Swiss chard
- Different types of kale
- Milkweed- *Asclepias fascicularis* and *A. speciosa*.
- Various grasses and ornamentals.

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The Marketing of Mycorrhizae

by Trish Grenfell, Placer County Master Gardener

Recent scientific research on microbial soil life has been shaking the gardening world. If you haven't heard about this "revolution," you still may have encountered ads celebrating its new benefits for gardeners on media outlets or in your local garden nursery.

I wonder how many of *Curious Gardener* readers know the word "mycorrhizae." You may have seen it if you purchased a growing medium such as soil mixes for planting, potting, or seed-starting—or even mycorrhizal inoculum in packaging by itself. A tour of my local garden center turned up many products which advertised special ingredients called "endo and ecto mycorrhizae", "beneficial microbes", "beneficial microbes + mycorrhizae", and some that simply said "mycorrhizae." What are these ingredients and why are they suddenly so popular?

Fungi play important roles within our soils. Mycorrhizae are the symbiotic relationships that form between fungi and plants. Note: the word refers to the relationship, not the fungus. In this mutually beneficial relationship, the fungi colonize the root system of a host plant. In doing so, they provide water and nutrients to the plant using their long, hair-like hyphae which have the capacity to extend much further than the plant's roots. But the fungi do not provide this service without a fee. In return, the plant supplies the fungi with its food - carbon formed from its photosynthesis. Mycorrhizae allow home gardeners to reduce irrigation and fertilizer while increasing plant drought tolerance, pathogen resistance, and ability to survive severe stress.

Manufacturers seem to have jumped on the soil life bandwagon and are trying to entice "sophisticated" backyard gardeners by including mycorrhizae in their products. But an advertising campaign does not equal scientific research. And not all products are required to be effective. Fertilizers, growth stimulators, activators, and microbes require no performance testing. Only pesticides must submit efficacy research data prior to registration. Current research indicates mycorrhizal inoculums (supposedly live spores from mycorrhizal fungi) purchased at the store are not likely to be of any help. Instead, if you want the benefits of mycorrhizae in your garden, encourage the growth of naturally occurring populations by not tilling your soil, not overwatering, and not overfertilizing (especially with phosphorus).

In 2013 gardening guru Robert Pavlis wrote, "It is only natural that companies want to sell these fungi to you. Don't fall for it." His advice is to ignore the mycorrhizal fungi advertising.

Mr. Pavlis believes there are four reasons consumers should avoid these purchases. His opinions are not referenced to formal research and therefore cannot represent scientific advances but "only" the opinions of a well-read blogger who is respected by the university professors in the group "Garden Professors".

1. If any plant material is present in the area you wish to improve, these fungi are already in the soil.
2. "Manufactured mycorrhizal fungi consist of only 2 or 3 types of fungi. Science now believes there are hundreds if not thousands of different species in your soil and some of these are very specific to certain types of plants. How do you know your plants will benefit from the 2 or 3 types you buy?" (direct quote).
3. Since manufactured mycorrhizae are heat sensitive, they cannot live long in a greenhouse or transport truck. There is no guarantee that your purchase contains live fungi.
4. Manufactured mycorrhizae are most probably from a soil far from your own and quite likely are a foreign species which could inhibit your native garden species. It is never a good idea to introduce foreign species of any kind into your garden.

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If you want the benefits of mycorrhizae in your garden, encourage the growth of naturally occurring populations by not tilling your soil, not overwatering, and not overfertilizing.



Scratch back the surface of a healthy soil (such as the one in a mixed conifer forest in the Sierra Nevada pictured above) and you are likely to find white threads of fungal mycelia growing in association with plant roots. The term mycorrhizae refers to this symbiotic relationship.

Photo by Elaine Applebaum

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As recently as [January 2018](#), Dr. Linda Chalker-Scott of Washington State University advises her readers to save their money. She points to the mycorrhizal spores already in the soil under existing plants (especially established woody plants) near the planting area. Move some of that soil to the planting area. It may not work, but you won't have lost any money.

In 2010 two biologists from the University of Indiana wrote the final report of a three year trial using mycorrhizae purchased commercially and mycorrhizae existing in a nearby site. As per this report, "After three years of field data, we find that the native inoculum cultured from a nearby donor site outperformed a commercially available product in reducing soil erosion. We also tested the utility of applying a commercial mycorrhizal inoculant as specified by the vendor for use in restoring a cut slope lacking topsoil. We find no evidence for such a benefit...."

Frontiers in Plant Science, which is part of the National Center for Biotechnology Information, published a paper in October 2016, "Towards an Integrated Mycorrhizal Technology: Harnessing Mycorrhiza for Sustainable Intensification in Agriculture." The group calls for greater understanding of how mycorrhizal fungi can impact the sustainability of the world's food supply, which must include their interactions with other soil microbes. The second research priority states the need for a complete description of how and why mycorrhizae are most effective. We must know exactly why it sometimes fails. Their third research need is to expand the response variables for documenting all the effects of mycorrhizae. For example, current research has abundant data on plant growth responses, but dramatically less knowledge on an impacted plant's nutrition value.

We have much to learn about the value of microbes in the soil and how to make them consistently improve and enlarge the world's food supply. And yet, the marketing of mycorrhizae is a growing segment of the agricultural/backyard gardening industry today. Perhaps scientists will be able to achieve their goals in the future, but selling mycorrhizae today is premature.

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Insect Trivia: Dragonflies

by Bonnie Bradt, Nevada County Master Gardener

Let's face it, flying insects can be annoying. Except to entomologists (like me) who are generally weird people, anyway. Mosquitoes can bite you, and slurp your blood leaving itchy red welts. Bees and wasps can sting if they're protecting their hive or if you tick them off. Flies are just fairly disgusting, unless you are a lizard or a frog. But there's something magical about dragonflies. They are all around us in the summertime, especially where there is a body of water in which they can hunt and breed. So let's learn more about dragonflies. Thanks to the Smithsonian web page, [si.edu](#), for some of this interesting information.

- 1) There are more than _____ species of dragonflies, worldwide. All of them belong to the order *Odonata* which is a Greek word meaning "toothed one". That refers to serrated teeth on their mouthparts.
- 2) How long ago did the dragonfly originally evolve?
 - a. 10 million years ago
 - b. 50 million years ago
 - c. 300 million years ago
- 3) Modern dragonflies have a wingspan from 2 to 5 inches. How big were the largest of the ancient dragonflies? And what allowed them to get that size?
- 4) What do immature dragonflies eat?
- 5) True or False... The adult dragonfly can only eat prey they catch while flying.
- 6) How long do dragonflies live?
- 7) True or False.... Dragonflies can see 360 degrees all around them.
- 8) Adult dragonflies are such efficient predators that, in a recent study, they were able to catch _____% of the prey released into their large enclosure.
- 9) True or False... Dragonflies cannot/will not bite people. Actually, that's two questions.

Answers on next page

Hotline FAQs

By late summer, my flower gardens look so sad. Is there anything I can plant that will flower into the fall? I'd really like to have a longer flowering season.

by Pauline Kuklis,
Placer County Master Gardener

A long flowering season can easily be accomplished with a little bit of planning. First, ask yourself what color and size plants you'd like to add to your garden. Then choose your plants and get them in the ground during the late fall. By next year, you will be rewarded with color that continues well beyond the dog days of summer. Below are some suggestions for flowering perennials that can meet your needs:

- Late blooming bulbs, such as *Lycoris radiata* (spider lilies) or *Amaryllis belladonna* (naked ladies) will leaf out in the spring, then die back until late summer or fall when they surprise you with a show of color.
- *Zephyranthes* (rain lilies) will flower in late July through September and provide welcome color at a time when most perennials are looking spent.
- *Dahlia* tubers come in all sizes and colors, and typically will flower from spring through fall.
- *Scabiosa* (pincushion flowers) and perennial *Rudbeckia* provide a nice long flowering season.

Don't give up on color well into the fall—just take a moment to research your options and plan the flower garden of your dreams!

Do you have gardening questions?
Call the Master Gardener Hotline in your county

Placer Co. 530-889-7388

Staffed Tuesdays, Wednesdays and Thursdays,
9:00 am to noon

Nevada Co. 530-273-0919

Staffed Tuesdays and Thursdays,
9:00 am to noon



Lycoris radiata (top) and *Zephyranthes* (bottom) provide color in late summer or fall.

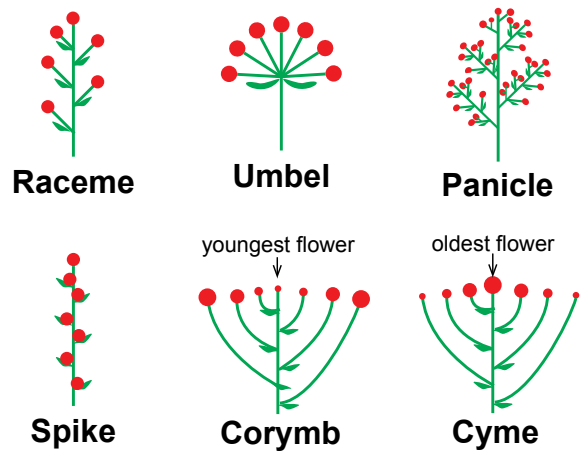
Photos by Pauline Kuklis.

Insect Trivia Answers:

- 1) 5,000. There are approximately 450 species found in North America. They are beautifully colored and expert flyers and fascinating to watch.
- 2) c. 300 million years ago in the Paleozoic Era.
- 3) Ancient dragonflies are known to have had a wingspan up to 2 feet across. It is thought that the very high oxygen levels found during the Paleozoic Era allowed these insects to grow to monster size.
- 4) Baby dragonflies, called nyads or nymphs, live in the water for their whole infancy, and eat almost anything smaller than them. Including each other!
- 5) TRUE. If a dragonfly can't fly, it will starve as they catch their prey on the wing, with their feet.
- 6) TRICK QUESTION. Some adult dragonflies live for less than a month and some live as long as a year. But the nyad or nymph life stage can be as long as two years under the water. So some dragonflies can live as long as three years in total.
- 7) FALSE. Despite the huge eyes on the head of a dragonfly, they do not meet in the back, so the dragonfly can't see directly behind him. But all other directions are covered!
- 8) 90-95% of the released prey was caught by the adult dragonflies. In the wild, adult dragonflies can consume up to hundreds of mosquitoes in a day. One more reason you gotta love them.
- 9) FALSE and FALSE. The answer to both questions. The serrated mouthparts on a dragonfly are capable of biting human skin and the critter would be willing if they are held by a foolish human in a way that 1) makes the animal feel threatened and 2) gives him access to a piece of skin. Otherwise the elegant, skilled, aerobic predator tends to his/her business making our world a nicer place with fewer gnats, midges and mosquitoes.

agri-cola, ae *m* tiller of the field, farmer, husbandman
caulis, is *m* stalk, stem of a plant; cabbage
colo, colui, cultum *3* to care for; a) to till, cultivate, farm; b) to tend; *adj.* **cultus** *3* cultivated, tilled (**cultra, orum** *n/pl* tilled land, gardens, plantations),
cresco, crevi, (cretum) *3* to grow
cultus *m* cultivation, labor, tilling; a) cultivated land; b) care, training, education; culture, civilization,
florens, tis blooming, ing, flourishing
floreo, ui *2* to som.
flos, oris *m*
fodio, fos-folium,
her-

Find Out What Those Weird Plant Names Mean
 BotLat Corner



by Peggy Beltramo, Placer County Master Gardener

What do these plant names have in common: *Actaea racemosa*, *Mentha spicata*, *Cassia corymbosa*, *Phlox paniculata*, *Iberis umbellata*, *Dudleya cymosa*?

Yes, each is a mouthful, but that is not the answer to a BotLat question. In this group, the specific epithet (second word in the name, the descriptor word) names the type of inflorescence (flower head) each plant has. These words may differ slightly from plant to plant; for example umbellata or umbellifera, but the ‘umbel’ part of the word tells that the flower shape is umbrella-like.

The diagram above shows some of the types of inflorescences in the plant world. Each plant in the above list has a specific epithet that corresponds to the flower forms. Can you match them?

Now, go out in your garden and see how many inflorescences you can find.

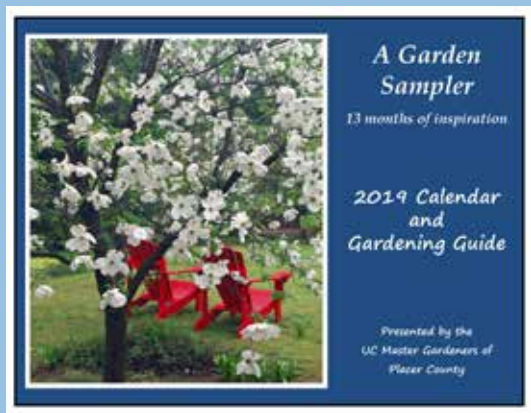
Available September 4, from the Master Gardeners of Placer County: 2019 Calendar and Gardening Guide!

Looking for garden ideas to reflect your personality or lifestyle? Or do you want to enjoy your garden more and work less on maintenance? This 13-month calendar and gardening guide is for you. The calendar is filled with beautiful photos and informative articles highlighting various garden styles. The monthly topics include a garden sampler of Succulent Gardens, Container Gardens, Low Maintenance Gardens, Rock Gardens, Fire Safe Gardens, Raised Bed Gardening, Gardening with Children, and more.

- Features of the 2019 Calendar and Gardening Guide include:
- Monthly “what to plant” and “in season at the market” lists.
 - Daily research-based gardening tips to remind gardeners of what to do and when to do it.
 - References and resources for more gardening information.
 - QR codes are included for quick access to online resources.

Calendars will be available beginning September 4 at nurseries and businesses in Placer, Nevada, and El Dorado counties, at the Placer County Master Gardener office, and on our website. A list of vendors and how-to-order details are listed online at pcmg.ucanr.org/2019-calendar/. Calendars will also be for sale at the master gardener booths at the following:

- Auburn Fall Home Show (September 28–September 30)
- Mountain Mandarin Festival (November 16–18)
- Auburn Farmers’ Market (1st and 3rd Saturdays, September through October)
- Farmers’ Market at the Fountains in Roseville (every Tuesday, September through October)





***Achillea millefolium* ‘Island Pink’, Island Pink Yarrow**

by Laurie McGonagill, Placer County Master Gardener

What is there not to love about yarrow, *Achillea millefolium*? It is an evergreen perennial plant which is drought-tolerant once established, easy to maintain, and has bounteous long-lasting blooms on long sturdy stalks. The variety ‘Island Pink,’ a native from the Channel Islands with deep rosy pink blooms from spring through fall, is a shoo-in as an UC Davis Arboretum All-Star because of these qualities. Like all yarrows, ‘Island Pink’ attracts pollinators such as butterflies and beneficial insects, repels deer, and once established requires little water. It can also serve as a lawn substitute, withstanding mowing and foot traffic. But it is just one of many varieties of yarrow.

There are dwarf species that grow four to six inches as well as those that top out at two feet tall. The native yarrow has white to off-white blooms, but different hybrids cover the color spectrum from yellow-gold to rose-red to orange. There are even lilac and purple colored yarrows.

Yarrow has an upright growth habit. Its flat-headed blooms are great as cut flowers. It has soft fern-like foliage that can range from deep green to silver.

Yarrow has a subtle but pleasant aromatic fragrance. It tolerates different soils and likes sun but can grow in part shade also. It propagates by rhizomes. These underground stems produce new growth which is easily dug up and transplanted, a plus for the budget-minded.

Care is easy. Cut back the stalks to the base of the plant when the bloom is starting to fade. This will encourage another bloom cycle. Divide when growth gets too dense. Enjoy the soft foliage during the winter and get ready for the long season of bloom.

Yarrow does well in any situation: center-stage, in the foreground, or as a backdrop. Plant dwarf yarrow around the garden perimeter, larger yarrow such as ‘Island Pink’ or ‘Moonshine’, in the back. Pair it with other blooming plants such as *Salvia clevelandii* for eye-catching appeal. Once you try it, you will always want yarrow somewhere in your garden and ‘Island Pink’ is a wonderful variety with which to start!

References

- *All-Stars Plant Details*. UC Davis Arboretum All-Stars. n.d. <https://arboretum.ucdavis.edu/plant/island-pink-yarrow>
- *Achillea millefolium—Horticulture in Virtual Perspective*. Ohio State University. n.d. https://hvp.osu.edu/pocketgardener/source/description/ac_olium.html

Nevada County Master Gardeners and Friends Talk Radio:

**Listen live on Saturdays
from 10:00 am until noon**

at KNCO 830AM

Or, live stream at
<http://www.knco.com>

Call in with questions to
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- Go to the KNCO website
- Click on the Podcast tab
- Scroll down to find the previous Saturday’s date
- Look for “Master Gardeners - The First Hour” and “Master Gardeners - The Second Hour”



Visit Master Gardeners at Local Farmers’ Markets

8:30 am to 1:00 pm every Tuesday,
May to October, near Whole Foods
at the Fountains, **Roseville**

8:00 am to noon 1st & 3rd Satur-
days, May to October, Old Town
Courthouse parking lot in **Auburn**

8:00 am to noon Mid May–Mid Sept.
at the Saturday Growers Market,
North Star House, **Grass Valley**



Events Calendar

Nevada County Demo Garden
1036 W. Main St., Grass Valley
(on NID Grounds)

Placer County Demo Garden
11477 E. Ave., Auburn
(Senior Garden, DeWitt Center)

▶ Nevada County events
in green boxes

▶ Placer County events
in yellow boxes



September

September 8

9:30 am - 1:00 pm
**"Bite Me" Tomato Tasting
and Open House**

10:30 - 11:30 am
Amazing Mason Bees workshop

11:30 - 12:30 pm
Salvias workshop
Demo Garden, NID Grounds
1036 W. Main St., Grass Valley

September 15

10:00 am - noon
**A Home Gardener's Guide to Seed
Saving**

Demo Garden, NID Grounds
1036 W. Main St., Grass Valley

September 15

10:00 am - noon
Planting with Natives
Small fee. Pre-registration advised.
Call 916-746-1550
Roseville Utility Exploration Center,
1501 Pleasant Grove Blvd. Roseville

September 22

9:00 am - noon
Master Gardeners Fall Plant Sale
Demo Garden, NID Grounds
1036 W. Main St., Grass Valley

September 28, 29, 30

Fri. 11:00 am - 6:00 pm, Sat. 10:00 am -
6:00 pm, Sun. 10:00 am - 5:00 pm
**Visit Placer Co. Master Gardeners
at the Auburn Home Show**
Gold Country Fairgrounds, Auburn

September 29

10:00 am - noon
**It's ALIVE! How to Build Living Soil
for Healthy Plants**
Demo Garden, NID Grounds
1036 W. Main St., Grass Valley

October

October 6

10:00 am - noon
Deer, Oh Deer!
Demo Garden, NID Grounds
1036 W. Main St., Grass Valley

October 13

10:00 am - noon
Composting with Worms
\$20 fee includes bin and worms. Pre-
registration advised. Call 916-746-1550
Roseville Utility Exploration Center,
1501 Pleasant Grove Blvd. Roseville

October 20

10:00 am - noon
**Fear the Rust: Tool Maintenance
and Sharpening**
Demo Garden, NID Grounds
1036 W. Main St., Grass Valley

October 27

10:00 am - noon
Landscaping with Native Trees
Demo Garden, NID Grounds
1036 W. Main St., Grass Valley

November

November 10

10:00 am - noon
**The Art and Science of Pruning
Fruit Trees**
Grass Valley Elk's Lodge
109 S. School St.,
lower level meeting room

November 10

10:00 am - noon
Composting & Mulching Basics
Small fee. Pre-registration advised.
Call 916-746-1550
Roseville Utility Exploration Center,
1501 Pleasant Grove Blvd. Roseville

November 16 - 18

**Visit Placer Co. Master Gardeners
at the Mandarin Festival**
Friday 11:00 am-5:00 pm
Saturday 9:00 am-5:00 pm
Sunday 10:00 am-4:00 pm
Gold Country Fairgrounds
1273 High St., Auburn



About Master Gardeners

Our mission as University of California Master Gardener volunteers is to extend research-based gardening and composting information to the public through various educational outreach methods. We strive to present accurate, impartial information to local gardeners so they have the knowledge to make informed gardening decisions in regard to plant choices, soil fertility, pest management, irrigation practices, and more.

The Master Gardener volunteer program was started in the early 1970s at the Washington State University. Farm Advisors became overwhelmed by all the incoming calls from home gardeners and homesteaders so they trained volunteers to answer these questions and the "Master Gardener Program" was born. The first University of California Master Gardener programs began in 1980 in Sacramento and Riverside counties. The Nevada County and Placer County Master Gardener Associations began soon thereafter in 1983.

35 Years of Serving Placer and Nevada Counties

Production Information

The Curious Gardener is published quarterly by the University of California Cooperative Extension Master Gardeners of Placer and Nevada Counties.

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Placer County Master Gardener

Have a Gardening
Question?

Call our Hotline

Placer County Residents

530.889.7388

Nevada County Residents

530.273.0919

Master Composter Hotline

530.889.7399

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Log on to http://pcmg.ucanr.org/Curious_Gardener_Newsletter/ to sign up for your electronic delivery.

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