



THE YOLO GARDENER

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A QUARTERLY PUBLICATION BY THE UCCE MASTER GARDENERS OF YOLO COUNTY

Sphagnum and Peat Moss Will Be Banned to Gardeners

Deborah Sorrill, UCCE Master Gardener, Yolo County

A part of our mission statement as Master Gardeners says that “*The UCCE Master Gardener Program encourages improved environmental quality and sustainable gardening practices ...*”. This clearly aligns us with programs designed to reduce global warming and the acceleration of climate disaster risks such as those developed by Nature Based Solutions (NBS) created under the UN’s Sustainable Development Goals for Climate Change.

While our Master Gardener mandate is to provide information and action locally, NBS issues need to be reviewed to understand how solutions can be applied locally. Among the issues that the UN recognizes as important are those that concern Peatland Bogs. These bogs need protection and restoration for all the following reasons:

- Peat moss is only 3% of the world's land mass yet sequesters 25% of global carbon soil.
- Peat soils contain more than 600 gigatons of carbon representing up to 44% of all soil carbon.
- Peatlands store twice as much carbon as all the world's forests.
- Peat moss is considered a fossil fuel that produces greenhouse gas (GHG).

Peat has been used since the 17th century for winter fuel. Both fire risks and harvesting practices emit the soil carbon into the atmosphere as carbon dioxide and methane. Ireland completely banned any harvesting of its decimated peat bogs. The UK, US, and Canada are banning the commercial sales of both peat and Sphagnum moss to gardeners by 2024. Commercial use for growers will be banned by 2030.

The sale of peat moss has been banned for these reasons:

- Harvesting dries the peat moss emitting the stored CO₂ (carbon dioxide) into the atmosphere where it persists for hundreds of years.
 - Harvesting destroys ecosystem plants and animals’ endemic to their geographic locations.

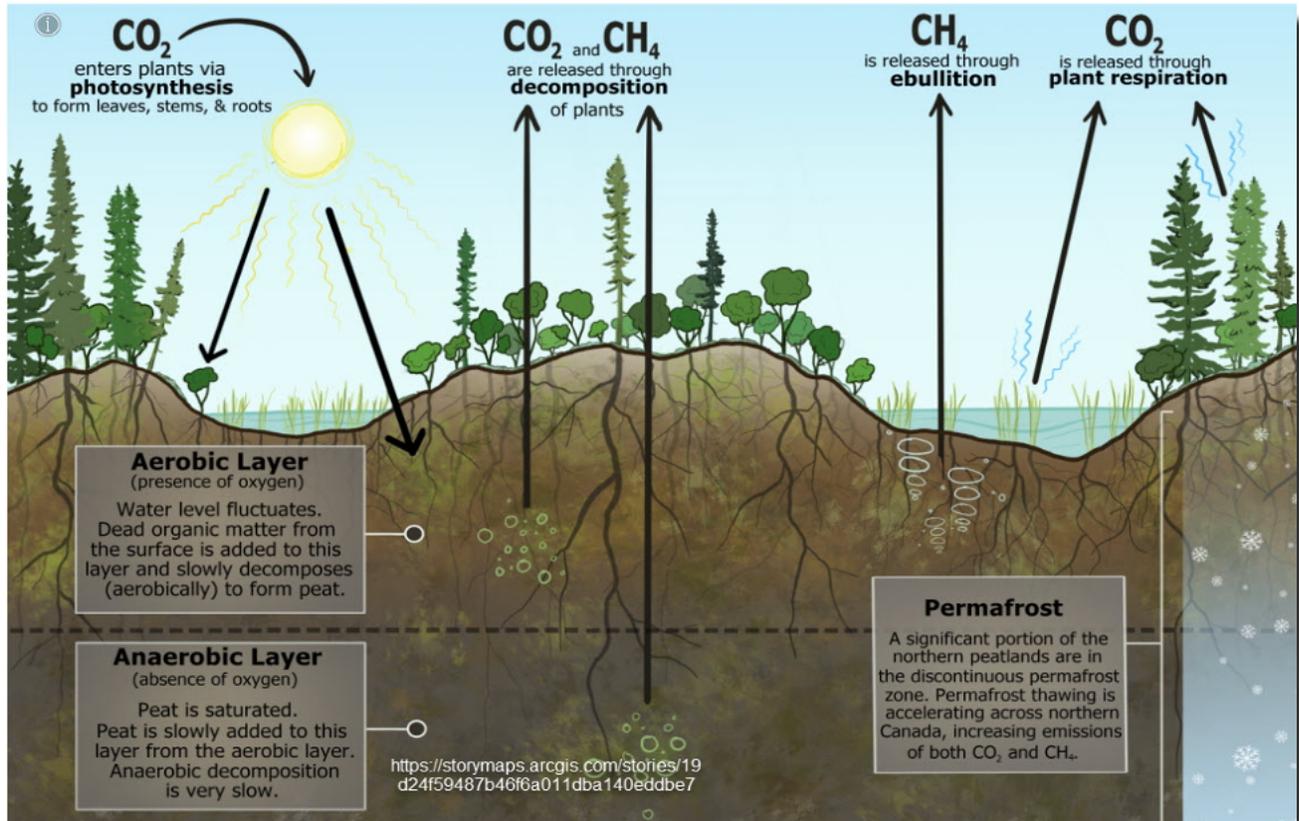
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- Only mitigation procedures recreating carbon sequestration through mechanical means or wetland restoration can reclaim the emitted GHGs.
- Mechanical procedures for sequestration are new creations still being perfected.
 - Global build-out for factories will take to the beginning of the 21st century.
- Peatland restoration takes thousands of years while our timeline for sustainable restoration is 2050.
- Scientists worry about reaching a tipping point where sustained high heat will overpower photosynthesis resulting in global-scale crop failures.
- Reaching this tipping point implies follow-on disaster risks such as global populations without food living in highly polluted areas from increased methane (NH₄) flareups.



Peatland Carbon Sequestration Cycle

By permission - Wildlife Conservation Society Canada:

<https://storymaps.arcgis.com/stories/19d24f59487b46f6a011dba140eddb7>

Main Issues for Gardeners and Growers

Locally, both commercial growers and home gardeners use soil amendments to increase soil health, and crop yields. Peat and Sphagnum mosses have been mainstay recommendations for increasing soil health. Recipes list a range from one-third to two-thirds addition of Sphagnum moss, by volume, to improve soil tilth, pH, and water retention. Most gardening venues still publish soil recipes with Sphagnum moss as the base of the soil recipe without offering alternatives.

While environmentalists and ecosystem sustainability professionals identified these issues, political pledges like fossil fuel pledges have lacked follow through until now. The U.S. imports its peat and Sphagnum moss from Canada. Within Canada, commercial peat moss harvesters have begun some restoration but resist the

idea of banning sales. Instead, their marketing campaigns only promote their restorations and rapid regrowth of the peat bogs. Rapid regrowth takes ten years. There is no mention of the gigatons of CO₂ released during their harvests. Further, it takes thousands of years to sequester the released carbon from their harvests. This quote in Garden Culture Magazine is from the Compost Council of Canada:

“More and more science is suggesting that peat isn’t a renewable resource. Technically, it grows back, but it does so at a rate of just .04 inches per year – which in industrialized countries, can’t keep up with the rate at which it is harvested. Therefore, peat is NOT a renewable resource. Add to that the reports suggesting that peat automatically grows back in only about 30-40% of farmed peatlands.” *Garden Culture Magazine, 2021*

We have until 2050 to draw down CO₂ from the atmosphere to mitigate accelerated disaster risks. In addition, the loss of unique biodiverse ecosystems is not mentioned in their sustainability discussions. This type of marketing is called “Green Washing”. To summarize, if you are reading about peat moss issues from commercial sellers, you will not get the whole story. Beware!



Endangered Species in Canadian Peatlands

Polar bears (left), Caribou (center), and Red Knots (right) are all species that frequent peatlands across Canada.

From: <https://storymaps.arcgis.com/stories/19d24f59487b46f6a011dba140eddb7>

Preparing for the 2024 Ban

A Canadian Initiative on Peatlands has responded to the UN’s Global Peatland SDG with a 2030 Emissions Reduction Plan.

“As Canada focuses on the value of conserving and protecting its peatlands, horticultural alternatives to peat, such as compost, will need to be available. We need to harness the advances in organics recycling to build capacity at the national scale to produce locally-made, renewable organic matter – compost – to substitute the use of peat in horticulture. As well as preventing peatland degradation, this also has the co-benefits of reducing methane emissions from food waste in landfill and the positive value of returning organic matter to the soil not only to sequester carbon but also to create healthy soils for increased fertility, cleaner water, and enhanced biodiversity.”

7 Peat Moss Alternatives That Are Better for The Planet:

Coconut Coir. Coconut coir, also known as coco peat or coir peat, is rapidly gaining popularity and is the best-known alternative to peat moss. Others include:

- Wood-Based Materials.
- Compost.
- Pine Needles.
- Rice Hulls.
- Leaf Mold.

- Composted Manure.
- Coco Coir and Coco Peat.

Already, there are shortages in the supply chain for peat moss, due to poor yields and restricted harvesting. The price of Sphagnum moss is increasing. Figuring out the best solution for your soil will take some time.

Here is one UCANR study I found on Strawberries which compares most of these soil amendments. Of course, this only applies to strawberries, but it gives you a feel for the different options.

[Strawberry Production in Soilless Substrate Troughs](#)



Growing Vegetables with Less Water

Tanya Kucak, UCCE Master Gardener, Yolo County

If you've been growing vegetables in Yolo County for a few years, you've probably figured out some ways to use less water. Even though water-use restrictions apply to ornamental landscapes and lawns, not food gardens, it still pays to learn how to water efficiently.

Timing Is Important

Gardening involves many trade-offs. For instance, if you plant warm-season crops while the soil is still holding moisture from seasonal rains (in late March or early April) the soil temperature may be too cool for these seedlings to thrive. To keep seedlings warmer, you can use season extenders such as water tubes or floating row cover. To help the soil hold onto moisture longer, you can add compost to the soil, and keep the soil covered with mulch.

Lisa Putnam, a UCCE Master Gardener, talked about this and other strategies in a talk on "Vegetable Gardening in a Time of Drought" in May in San Mateo. The talk is available at <https://www.youtube.com/watch?v=XY4R9KH7Abc>.

Choose Crops Wisely

The first question is always "What will you eat?" It's fun to have a small experimental area in the garden for crops that are new to you. To use water efficiently, however, plan most of your garden space in advance to include the produce you enjoy eating, in quantities you can easily handle. "It's more waterwise to grow your own" rather than purchasing produce from farmers' markets or grocery stores, Lisa said.

Take advantage of Yolo County's year-round mild climate by growing food year-round. Cool-season crops that are planted in the fall or spring can take advantage of winter rains. You can grow some cool-season crops year-round, but in general, they are easiest to grow, and require less added water, in fall and spring.

Avoid Bare Soil

Lisa stressed the importance of keeping the soil covered at all times by doing one of the following:

Warm-season crops that need long summer days and full sun include tomatoes, peppers, eggplant, summer and winter squash, melons, cucumbers, pole and bush beans, corn, and basil.

Cool-season crops that are planted in fall or spring include roots (beets, turnips), leaves (lettuce, cabbage, spinach), onions, garlic, fava beans, and peas.

For recommended planting times, see the Vegetable Planting Guide at

<https://ucanr.edu/sites/YCMG/files/206763.pdf>

- Plant in a diamond or honeycomb pattern rather than in rows, so that plants are still appropriately spaced but cover the soil.
- Plant around existing vegetation that is regularly watered. For instance, in an orchard or under fruit trees, plant vegetables along irrigation lines, using prickly plants such as squashes to deter predators.
- Use cover crops rather than leaving beds fallow. Choose a cover crop that is seasonally appropriate -- buckwheat in summer, fava beans in winter, for instance.
- Add two to three inches of mulch in vegetable beds to cut water needs in half. This bears repeating: Add two to three inches of mulch in vegetable beds to cut water needs in half.

Minimize Soil Compaction

With raised beds, or at least permanent garden beds, you can improve the water infiltration by disturbing the soil as little as possible. Don't step on the soil, and don't disturb soil layers. Adding compost also helps the soil hold more moisture. Rather than moving soil with a shovel, use a digging fork to loosen soil (step down on the fork, wiggle the fork, lift the fork straight up, and repeat) if needed.

Water Less, Observe More

The easiest way to monitor the moisture in the soil is to stick a finger a couple inches into the soil. Lisa suggested cutting your usual amount of water in half and observing the results. Most plants will benefit from deeper, more infrequent watering.

If your irrigation runs in the predawn hours -- or at any time when you're not in the garden -- test it regularly. Turn the irrigation on while you walk around the garden so you can check for leaks.

Over the life of a plant, water needs change. Seedlings need regular water to get established. Cut back on watering as plants grow, then bump it up again as the plants begin to set fruit. Once fruits have set, the water can be reduced again. In fact, Lisa said, if you stop watering tomato plants a month or two before the end of the season, the plants will look shriveled, but the fruits will taste much better.

I've found that shading pepper plants from harsh afternoon sun can minimize sunburn and keep leaves healthier by reducing some evaporation during the hottest part of the day.

Extra Water Tips

You may already be saving warmup water from the shower as well as vegetable-washing water to water outdoor plants. Here are other ways to optimize water use that Lisa suggested.

- Water potted plants next to garden plants so that the runoff stays in the garden.
- Use cooled pot water from steaming vegetables or boiling pasta.
- Put a mobile sink in the garden for washing veggies, or wash veggies outside with a hose under trees.

Dry Farming

You may have tried intensely flavored, dry farmed, Early Girl tomatoes from farmers' markets. But did you know that dry farming was widely used in California before irrigation systems became the norm?

Lisa's sister, UCCE Master Gardener Kathleen Putnam, discussed dry farming in the same aforementioned talk. Warm-season crops are deeply watered only once, at planting time, and planted deep into moist soil. The roots can grow as deep as eight to ten feet. Mulching is essential. Advantages include better taste, fewer weeds, and good production. "Probably ninety percent of our plants are overwatered," Kathleen said.

To choose crops for dry farming, a general rule, Kathleen said, is "the smaller the fruit or vegetable, the better luck you'll have." Crops that have been dry farmed in California include artichokes, bush and pole beans, early corn, small eggplants, grapes, garlic, okra, melons, potatoes, strawberries, tomatoes, winter squash, and zucchini. 'Dark Star' zucchini was developed specifically for dry farming.

Amy Garrett of OSU Extension discussed squash, tomato, and other trials of different vegetable varieties undertaken in Oregon and California in detail in a webinar entitled “Adapting Dry Farming Techniques to Vegetable Gardens.” The 2019 webinar is available at <https://www.youtube.com/watch?v=3hR8poPhlzY>.

The key points from this webinar are as follows.

- Site requires deep soil with good water-holding characteristics.
- At the start of the growing season, the soil must be fully saturated to a considerable depth.
- Plants need adequate space, at least twice as much as in an irrigated garden (this may be the main drawback for gardeners with limited space).
- Eliminate weeds, which can pull moisture from the soil.
- Cultivate or mulch soil to prevent surface cracks.
- Use cover crops, compost, and no-till to improve soil quality.
- Choose drought-tolerant, early maturing, or dry-farmed vegetable varieties. Early maturing crops save water because they need less water to produce a crop.

Although most dry-farmed crops are grown in coastal areas and wine-producing regions of California and in Oregon, a recent presentation by the Public Policy Institute of California suggested that dry farming may be a key to future farming in the San Joaquin valley.

For home vegetable gardeners, choosing drought-adapted and early maturing varieties, mulching well, and using a range of water-saving strategies may be the key to successful gardening during drought years. 

Trees are for the Birds

Michelle Haunold Lorenz, UCCE Master Gardener, Yolo County

As our neighborhoods grow hotter, planting native trees and shrubs is one of the best things we can do to cool the landscape. If you love nature and would like to provide for the birds, butterflies, and insects that inhabit these areas, choosing trees that are attractive to these creatures is a win for all.



Pyracantha Berries
Photo by M.H.Lorenz

I became interested in this topic one day as I gazed out the kitchen window at a Pyracantha shrub (*Pyracantha coccinea*) that had grown into a small tree. The branches hung low, loaded heavily with bright red berries. I had often thought of tearing this shrub out because it was so thorny, but I had left it in place because it provided a dense protective screen between my neighbor’s yard and mine. It also required virtually no water, so it was easy to take care of. I occasionally watered it as an afterthought once or twice throughout the summer, but I loved that it stayed green and produced these gorgeous deep red clusters of berries. As I gazed out the kitchen window on that bright sunny March Day, I was startled to see a giant flock of Cedar Waxwings descend *en masse* on the bush, flit into the bush, then flash off with the flick of a wing. The flock of about one hundred birds repeated this process for the next hour as I watched fascinated. By the next morning, the bush was stripped bare of the clusters of red berries. Right then and there, I became a convert to providing trees and shrubs that provided a food source for birds.

I recently became acquainted with the Sacramento Tree Foundation because of my passion to learn more about how trees can help solve the problem of climate change. This local non-profit offers free trees to area

residents (who are SMUD customers) that not only survive in our climate but also thrive. I had a huge Deodora cedar fall during a storm several years ago and had been trying to figure out what to plant in its place. With my interest in not only planting a healthy tree but one that would also provide a food source for birds, Sacramento Tree Foundation recommended a Prairifire crabapple (*Malus 'Prairifire'*). I received my free tree in March with planting instructions, stakes, and ties to help the tree get established. I eagerly anticipate the bright pink flowers and small fruits that arrive shortly after flowering providing an additional food source for a variety of birds.



Other trees and small shrubs such as the Toyon (*Heteromeles arbutifolia*) and Manzanita (*Arctostaphylos spp.*) have small red berries that are bird magnets. The California native Holly-leaved cherry (*Prunus illicifolia*) grows thirty to forty feet tall and is considered a fast-growing evergreen whose small cherry-like fruits are highly attractive to birds. Often found with other area natives attractive to birds such as California Lilac (*Ceanothus spp.*), Redbud (*Cercis occidentalis*) and the decorative native currant (*Ribes spp.*) a habitat created by layering these trees and shrubs could fill your yard with year-round activity from happily feeding birds.

Prairifire Crabapple
Photo by M.H.Lorenz

Many of these trees and shrubs provide food and nectar sources for butterflies, bees, and other beneficial insects as well. Mixing evergreen species with deciduous species such as blue elderberry (*Sambucus nigra*) can create a layered natural look that provides seasonal interest as well as leaf debris in the fall that acts as natural mulch.

Adding a dense surrounding of native trees and shrubs to your landscape not only increases the natural shade and cooling of your property but also provides a variety of food sources for birds. The free show these foraging birds provide is an additional side benefit. For a list of trees and shrubs that attract a variety of birds, visit <https://www.laspilitas.com/bird.htm>



Trees to Plant for a Hotter, Drier Yolo County

Michael Kluk, UCCE Master Gardener, Yolo County

The best time to plant a tree was twenty years ago

The second best time is now

Chinese proverb

If you did plant a tree twenty years ago, you know the benefits that only trees can offer of shade, habitat for wildlife, beauty and much more. Planting a tree now is an act of hope for the future and a gift to the next generations. But we must acknowledge that the climate is changing. The Central Valley will be hotter and drier in the future. Urban and suburban forests are particularly vulnerable to heat, drought, extreme weather events and new pests moving into the area. If we are going to plant trees that will shade our children and grandchildren, we would do well to plant those that will thrive now and on into the future.

This article will look at ongoing research that hopes to identify tree species that will accommodate a hotter climate and name a few available in local nurseries now that should be growing strong twenty years in the future and well beyond.



Trees are an investment in the future. But the investment made many years ago must also be preserved. Even when trying your best to use less water, your trees should not be abandoned. Trees in the current landscape are particularly vulnerable to a hotter drier climate because many are temperate zone trees dependent on regular irrigation. These trees can be preserved and water saved by watering less frequently but more deeply. Adding mulch to conserve the water you apply is also very important. Here is a short article to give you some pointers.

<https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=46513>

Studies Look to the Future of Urban and Suburban Forests in the Central Valley

The UC Davis Arboretum has begun a long-term study of trees adapted to hotter drier climates than ours so that future upper story gardens can remain green and healthy. It is currently conducting field trials to identify species we should consider for the future. The forty species under study grow naturally in Texas. Seeds were collected and planted in the Arboretum Nursery until they were ready to be planted out in the field. Twenty-seven trees were planted last year and an additional seventy-eight were planted this past winter. The test plot is just north of the campus entrance kiosk on Old Davis Road. It is open to public viewing and offers a look at species that may thrive in Sacramento area cities and towns of the future. For more information see <https://arboretum.ucdavis.edu/news/texas-tree-trial-plantings>

The USDA Forest Service and the UC Davis Dept. of Plant Science are conducting another investigation of trees likely to do well in the future Northern Central Valley titled Climate-Ready Tree Species Study. This study looks at twelve tree species that were planted in 2014 at a test plot on the UC Davis campus and three parks in Sacramento. They were selected because they were expected to be successful in our current climate and the climate twenty or more years in the future. One goal is to create a more diverse and resilient urban/suburban forest. The twelve species were also selected because they are not commonly available in nurseries currently. However, at least three of the species currently are available in Sacramento area nurseries; Emerald Sunshine Elm, Desert Willow and Desert Museum Palo Verde.

The campus test plot is north of Hutchison Dr. between Hopkins and Pedrick Roads. Four trees of each of the twelve species are planted there. A key to the plot, including the location of each of the twelve species, and directions are included in this article. <http://climatereadytrees.ucdavis.edu/meet-the-trees/> You can visit to do your own evaluation of trees you may want in your yard in the future.

Tree Species for a changing Climate

Only a few of the tree species included in the studies described above will be available at retail nurseries now. If you are looking to plant a tree that is likely to do well in coming decades, consider one of those listed below. Lists of drought tolerant trees are commonly available online. A good resource is the UC Davis Arboretum (All Star) Plant Data-Base- <https://arboretum.ucdavis.edu/plant-database> . There you can search for trees that have low or very low water use. The list below includes a few shade trees and a few fruit trees that will all go easy on the water supply.

Shade Trees

Valley Oak (Quercus lobata)- California native plant; provides shelter and food for many native insects and other animals; tolerates high heat, drought, and alkaline soil; provides refreshing summer shade; attracts beneficial insects and birds.

Formosan Flame Tree (Koelreuteria elegans subsp. Formosana) Tropical-looking shade tree; has broad clusters of bright yellow flowers in fall, followed by coral-red seed pods; adaptable to various soils and watering schedules.



Valley Oak

Chinese Fringe Tree (*Chionanthus retusus*) Attractive grooved or peeling bark provides winter interest; leaves turn yellow before falling off in the winter; has no known diseases. Grows to twenty-five feet tall and wide.

Washington Hawthorn (*Crataegus phaenopyrum*) Provides year-round interest with profuse white spring flowers, brilliant scarlet foliage in fall and ornamental fruit clusters in winter; graceful, open-limb structure disease free in our area; attracts birds although has thorns.

Sawleaf zelkova (*Zelkova serrata*) This is a reliable large shade tree that grows quickly to fifty or sixty feet tall when mature. It also provides nice fall color.

Fruit Trees

Pineapple Guava (*Acca sellowiana (Feijoa sellowiana)*) Attractive spring flowers are edible and sweet and attract hummingbirds. The fruit has a pineapple-like flavor. The small tree can be used as hedging or as a screen.



Pineapple Guava

Olive (*Olea europaea*) is a small tree that originated in the middle east. There are both fruiting and fruitless varieties. If you choose a fruiting variety, be prepared to cure a lot of olives. Olive trees need very little supplemental irrigation, have few pests and diseases and can develop into quite beautiful and unique small trees.

Jujube (*Ziziphus jojoba*) Also known as Chinese Date, the fruit of most cultivars is the size and shape of a large date or a little larger. The fruit can be eaten fresh or allowed to dry on the tree. The fruit of most cultivars, especially the more recently developed ones, is very sweet with the texture of an apple. The tree has shiny oval leaves, needs very little irrigation and is essentially disease free.

There are a surprising number of drought tolerant shade and fruit trees on the market now with more that will become available each year as the changing climate increases need and demand. If you are in the market for a new tree, be sure to shop around.



Zelkova

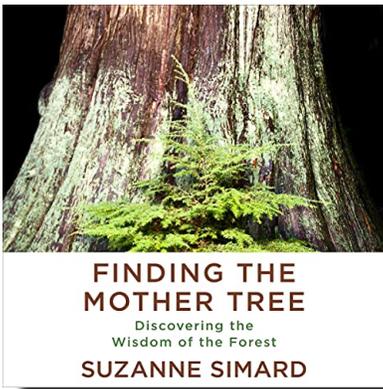


Jujube Fruit

The Wood Wide Web

Jack Kenealy, UCCE Master Gardener, Yolo County

It isn't often that I learn something that truly astounds me, that changes my perception of the world around me. This happened when my lifelong friend, Professor Robert Zierenberg of UC Davis related his research on life forms found among deep-sea vents, the volcanic meeting place of tectonic plates. That an entire life form, complete with sea pigs, worm like tubes, crabs and clams as big as dinner plates, independent of photosynthesis and thriving only on super-heated chemicals could exist undetected on our planet until mere decades ago truly amazed me. I had a similar reaction to my recent discovery of the Wood Wide Web, a vast weave of fungal pathways connecting plant root to plant root, and over which travel carbon, water, nutrients and information. Research regarding these mycorrhizal networks is challenging our basic assumptions about plant life, evolution and even intelligence.



As it happens, research in soil science has led to some remarkable discoveries. Much of the research is based upon the work of a true pioneer on the subject, Suzanne Simard, Professor of Forest Ecology at the University of British Columbia. Professor Simard authored *Finding the Mother Tree: Discovering the Wisdom of the Forest*, which combines her research and life story in a compelling way. She notes that in school the subject of mycorrhizae was touched on so lightly she didn't even take notes. The term itself is a combination of Latin derivatives myco (fungus) and rhizza (root), fungus root and was first identified in 1885 by German botanist A.B. Frank.

Frank hypothesized that mycorrhizae represent a “pervasive mutualistic symbiosis in which fungus and host nutritionally rely on each other; that the fungus extracts nutrients from both mineral soil and humus and translocate them to the tree host; and that the tree, in turn, nourishes the fungus.”([A.B. Frank and mycorrhizae: the challenge to evolutionary and ecologic theory - PubMed \(nih.gov\)](#)) While an accurate description of the association, as far as it goes, this flew in the face of conventional thinking and was rejected by his fellow scientists. Darwinism held nature was a matter of struggle, of survival not mutually shared resources. Frank was ignored.

Professor Simard took up soil research in response to her visceral dislike of the clear cutting the forests of her native British Columbia. A descendent of a long line of foresters and loggers located in the northern reaches of British Columbia. She grew up in the forests. As a student in 1993, she was employed by a logging company obligated by Canadian law to replant areas clear cut of trees. Based upon the assumption any existing vegetation would compete with the seedlings for resources, and consistent with the Canadian Forest Service's “free to grow” policy, herbicides were sprayed on anything growing in the area prior to planting the seedling in neat rows. Simard's job was to monitor the growth of these new seedlings. The contrast between the sickly seedlings she was monitoring and the vitality of seedlings in the wild propelled her into a life of research regarding the effect of plants upon one another.

One of Simard's early experiments involved exposing one of several trees jointly planted with others to radioactive isotopes. Shortly thereafter Geiger counters detected the radioactivity in the neighboring trees. Trees were sharing resources by mycorrhizal fungus connecting the trees as Frank had forecast. Subsequent research

has demonstrated that the resource sharing made possible by the fungal weave is very flexible and can travel in different directions depending upon conditions. For example, researchers at Laval University in Quebec found evidence that carbon moved via mycorrhizal networks from yellow trout lilies to young sugar maples as the maples leaves unfurled in spring, and then back to the trout lilies in the fall during rapid trout lily root growth”

Professor Simard demonstrated that the flow of carbon changed direction not once, but twice in a single growing season. In the spring, carbon traveled from a Douglas-fir to paper birch as its buds’ resumed growth. In the summer, carbon flowed from heavily photosynthesizing paper birch into stressed Douglas-fir in the understory. And in the fall, it flowed from the still photosynthesizing Douglas-fir into the paper birch as it shed its leaves.

These trees were not competing, they were cooperating.

Simard submitted an article based upon her research to *Nature* which published it and made a reference to the “Wood Wide Web”. The metaphor was simply too perfect to pass up and an internet search of the term today leads to numerous articles on mycorrhizas. Subsequently Simard has published more than two hundred papers on the subject and has mapped connections between “hubs” or “mother trees” from which as many as 47 different plants and trees are connected. As a result of Simard’s research, the Canadian Forest Service changed the methods by which they reseeded their forests after harvesting and many are suggesting we revisit our assumptions about evolution itself.

Communication

In addition to resources, the common mycorrhizal network (CMN) can communicate the existence of pathogens or herbivores to other plants. A Chinese scientist from South China Agricultural University, Yuan Yuan Song, established a CMN using mycorrhizal fungus *Glomus* and tomato plants. She inoculated one of the “donor” plants with a pathogen. Within twenty-four hours the unaffected or “receiver” plants had activated six defense-related genes.

After Song’s research was published, a group of scientists from the United Kingdom produced evidence that the mycorrhizal network spread the fact that aphids were attacking a broad bean plant, again within twenty-four hours. With this information, the uninfected plants gave off volatile compounds that not only repelled the aphids but also attracted the aphid’s enemy, parasitic wasps. (<https://arboretum.harvard.edu/stories/food-poison-and-espionage-mycorrhizal-network>).

A collaboration between Suzanne Simard and Yuan Yuan Song found that drastically cutting back the foliage from a young Douglas fir connected by way of an ectomycorrhizal fungus to a Ponderosa Pine resulted in a transfer of both defense signals and carbon to the Ponderosa Pine. (Song, Y. Y., S. W. Simard, A. Carroll, W. W. Mohn, and R. S. Zeng. 2015. Defoliation of interior Douglas-fir elicits carbon transfer and stress signaling to Ponderosa Pine neighbors through ectomycorrhizal networks.

The Dark Side

The CMN’s are not entirely cooperative. They can also spread allelochemicals such as juglone exuded by the roots of walnut trees and which negatively affects the growth of many plants. Additionally, there are concerns that invasive plants can exploit mycorrhizal networks to thrive at the expense of native plants. An example involves spotted knapweed, an invasive which covers over seven million acres in the United States. Researchers at the University of Montana estimated that as much as fifteen percent of the above ground carbon in the spotted knapweed plants came from nearby native fescue by way of the mycorrhizal network. (<https://arboretum.harvard.edu/stories/food-poison-and-espionage-mycorrhizal-network>)

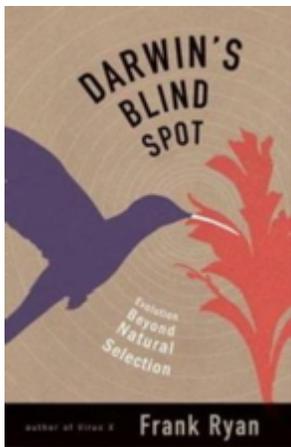
Implications of a Wood Wide Web

Phosphate fertilizer has very much been in the news lately given the unrest in the Netherlands caused by the protests of farmers. Climate change activists want to eliminate or greatly reduce its use. Worldwide drought is universally acknowledged to be happening right now. “With the increased resistance to diseases and pests and the better access to water and nutrients that mycorrhizal networks offer, there is increasing recognition of the potential for a new ‘Green Revolution’ based on using mycorrhizae in crop fields and forests.” (<https://arboretum.harvard.edu/stories/food-poison-and-espionage-mycorrhizal-network>).

Mycorrhizal fungi are especially good at locating phosphorous and delivering it to its partners. By finding ways to work with mycorrhizas we may reduce the need for mined rock phosphate. Changes in the way we till the soil, which can destroy the networks, and the way crops rotate will need be examined.

Finally, it is almost impossible to discuss the process by which plants are exchanging sugars or carbons derived from photosynthesis to the fungus in exchange for water, phosphates, nitrogen and other elements or explain the nature of the communication taking place on the network without using anthropomorphic terms. Research shows that plants will trade as much as twenty percent of their production of sugars and acquire as much as fifty percent of their needs in these “transactions” and that these amounts will vary depending upon changes of condition. Also, a tree may devote more of its resources to its offspring or kin to ensure the survival of the tree. A dying tree will release more of its carbon into the network as if to pass on its “legacy”. (Simard)

A YouTube video created by the Sonoma Land Trust and featuring doctoral candidate Lorenzo Washington (<https://www.youtube.com/watch?v=0jj30rNzyOM>) describes initial contact between the fungus and the root as “shaking hands” and “establishing boundaries”. The exchanges are likened to the stock market, a farmers’ market or a grocery store depending upon the type of network. It is impossible to speak of “renegotiating price” as Washington does, without turning to human conduct. Simard, herself, compares the web of interconnected trees and fungal pathways to a neural network as if it were a subterranean brain of the forest ecosystem.



And the cooperative nature of the associations raises other questions as well. “For others, the interesting question is: which is the true driver of evolution-competition or cooperation? The ground-breaking evolutionary theorist Lynn Margulis passionately insisted on the predominant role of symbiosis in evolution.” And for Frank Ryan, evolutionary biologist, A.B. Frank’s discovery of mycorrhizae in 1885 was a missed opportunity. (<https://arboretum.harvard.edu/stories/food-poison-and-espionage-mycorrhizal-network>.) “The intimate cooperation between wholly different life forms-plants and fungi-is not only an amazing biological phenomenon but also a vitally important factor in the diversity of plant life on earth. It should have been of enormous interest to evolutionary theorists, but at the end of the nineteenth century, as the fundamental principles of biology were being hammered into place in laboratories around the world, Darwinian evolution took center stage. And as Darwinism, with its emphasis on competitive struggle, thrived, symbiosis, its cooperate alter ego, languished in the shadows, derided or dismissed as a novelty” (Ryan F. 2002 *Darwin’s Blind Spot: Evolution Beyond Natural Selection*. Boston: Houghton Mifflin Harcourt.)

An expanse of fungal matter is as critical to plant life as roots. It transmits water, nutrients, and information and should cause us to reevaluate our approach to forestry, agriculture, the nature of our surroundings and our connections to it as well.

Zucchini – Fall Back in Love with the Love-Hate Crop of Summer

Sherry Blunk, UCCE Master Gardener, and UCCE Master Food Preserver Solano/Yolo County

In case you missed it, August 8th was National “Sneak Some Zucchini onto Your Neighbor's Porch” Day. In preparation, the web was abuzz with stealthy zucchini deliveries strategies and ideas for fortifying your own porch against unwanted zucchini donations. BUT, there is no need to limit these fun zucchini excursions to the summertime. Why not embrace your zucchini bounty by exploring a few ideas for their use, including some safe preserving and storage practices? This way you and ALL your family/friends/neighbors can enjoy your zucchini year-round.

Pickling- for the zucchini win (AKA the ZIN!)

Cucumbers get most of the pickling attention and fame, but zucchini not only pickles well, but it also consistently delivers a much-coveted firmer pickle texture (mushy pickles are the worst!) Additionally, if you already have a favorite quick pickle (vinegar-based) cucumber recipe, you can safely substitute zucchini directly for cucumbers. However, if you are itching to try something new and with a little “zing”, this Zesty Relish, enhanced with peppers and horseradish, might be for you. A version of this relish placed First in Division at the 2022 California State Fair and earned a perfect 100 score from the judges (Figure 1 Bottom Right)!

ZESTY ZUCCHINI RELISH (modified Bernardin recipe)

Makes about 5 (16 oz) pints or 10 (8oz) half-pints

This recipe uses a boiling water bath to produce a finished product that is shelf stable for eighteen months and once opened it can be stored in the fridge for up to nine months.

YOU WILL NEED:

- 12 cups finely chopped zucchini (about 12 medium)*
- 4 cups chopped white or yellow onions (about 3 medium)
- 2 red bell peppers, seeded and chopped
- 1 green bell pepper, seeded and chopped
- ½ cup pickling salt
- 2 ½ cups sugar
- 2 ½ cups white vinegar (5% acidity)**
- 1 Tbsp ground nutmeg
- 1 Tbsp ground turmeric
- 4 Tbsp prepared horseradish (found in refrigerated section of grocery store)
- 1 chili pepper; including seeds, chopped

*Zucchini - can substitute other summer squash for zucchini or use a mixture of zucchini and other summer squashes (green and yellow zucchini, patty pan squash, and crookneck squash).

**White vinegar (5% acidity)- can substitute apple cider vinegar (5% acidity)

DIRECTIONS:

COMBINE zucchini, onions, red and green peppers and salt in a large glass or stainless-steel bowl. Cover and refrigerate for 12 hours or overnight.



TRANSFER to a small-holed colander placed over a sink and drain- if colander openings are large enough for the small pieces of mixture to escape, line colander with a cheese cloth. Rinse well with cool water and drain thoroughly. Using your hands, squeeze out excess liquid (Figure 1 Top Right).

Figure 1: Photo collage of relish stages. Top Left: Some raw ingredients and food processor components, Top Right: Chopped ingredients after salting for 12 hours and rinsing. Bottom Left: Relish with all ingredients near the end of cooking time. Bottom Center: Finished canned relish. Bottom Right: Winning relish and ribbon. (All photos taken by Sherry Blunk)

COMBINE zucchini mixture, sugar, vinegar, nutmeg, turmeric, horseradish, and chili pepper in a large stainless-steel saucepan. Bring to a boil over medium-high heat, stirring occasionally. Reduce heat and boil gently, stirring frequently, until liquid is reduced, and mixture is the consistency of a thick commercial relish, about 35-45 minutes (Figure 1 Bottom Left).

PREPARE boiling water canner. Heat jars in simmering water until ready for use. Do not boil. Set new lids and clean bands aside.

LADLE hot relish into hot jars leaving ½ inch headspace. Remove air bubbles and adjust headspace, if necessary, by adding hot relish. Wipe rim. Center a new lid on the jar and apply the band until fit is fingertip tight. Any leftover relish can be directly enjoyed and stored in the refrigerator.

PROCESS half-pints or pints in a boiling water canner for 15 minutes for altitudes up to 1000 ft (20 mins for alt 1,001-6,000 ft, and 25 mins for alt >6000 ft). After processing, turn off heat, remove canner lid and leave jars in water for an additional 5 minutes. Remove jars and cool. Check lids for seal after 24 hours. Lid should not flex up and down when the center is pressed (Figure 1 Bottom Center).

Let them eat cake... for the ZIN!

According to the Penn State Cooperative Extension experts, “frozen and thawed zucchini products work best in products that are baked.” Who are we to argue with the experts, especially when those experts are advising cake?

Zucchini has a high-water content and when frozen the cell walls swell and break down, releasing lots of liquid during reheating. For baking, grated zucchini is typically used and the National Center for Home Preservation advises the following steps for freezing grated zucchini: “Choose young tender zucchini. Wash and grate (large-size holes on box grater). Blanch in small quantities 1 to 2 minutes until translucent. Pack in measured amounts into containers, leaving ½- inch headspace. Cool by placing the containers in cold water. Seal and freeze. If watery when thawed, discard the liquid before using the zucchini.” (Clarifying note-the zucchini can be grated whole once the stem and blossom ends are removed. The seeds and peel do not need to be removed unless they are especially fibrous). Penn State Extension adds that “grated zucchini frozen without blanching will continue to experience enzyme changes and become tough.” Grated zucchini will maintain peak quality for up to 3 months in the freezer.

Either fresh or frozen (thawed and drained) grated zucchini can be added to most basic cake or cake-like recipes, including as an addition to a box cake mix! According to Betty Crocker Kitchens (2016), make the desired cake mix as directed and add 1-1.5 cups of grated zucchini. Typically, no change to baking temperature or time is needed. To freeze, cool the cake completely. Wrap tightly in foil or place in resealable freezer plastic bags with label and date. Recommended freezing up to 3 months for peak quality. Zucchini pairs well with citrus, spices (cinnamon/nutmeg/clove), and chocolate, so there are a lot of yummy options to zucchini-ify.

Zucchini sculptures... for the ZIN!

This October, if you are fortunate enough to find yourself the owner of a rogue giant zucchini... You know, those stealthy ones that magically remain hidden until they are too big and overwhelming to consider eating. Maybe, just maybe you too can test your skills at carving a zucchini jack-o-lantern. Finally, a porch zucchini people will be excited to see. <https://www.instructables.com/id/Carve-a.....Zucchini/>

For more information on safe home canning and food preservation, upcoming public classes, and resources like “Ask a Master Food Preserver,” please visit the Yolo and Solano Counties UC Cooperative Extension Master Food Preservers Program website at <https://solanomfp.ucanr.edu/>

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Fall Garden Tips 2022

Peg Smith, UCCE Master Gardener, Yolo County

Gardening has been a radical act of hope since time immemorial. In the search for ancestors through a parish register from 1739 I found a kindred spirit in the curate of that time. Tucked between the documentation of lives, born, married and died there were detailed notes on the espalier, pruning and care of fruit trees.

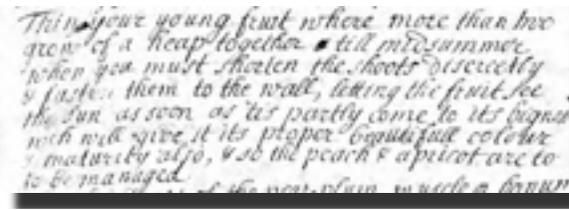


Photo by Peg Smith

From 1739 Parish Register for Edensor, Derbyshire "...Thin your young fruit where more than two grow of a heap : together till midsummer when you must shorten the shoots discreetly and fasten them to the wall, letting the fruit see the sun as 'tis partly come to its bigness, such will give it its proper beautiful colour and maturity also, and so the peach & apricot are to be managed."

With the *Yolo Gardener* Seasonal Tips we carry on the gardener's radical act of hope for a fruitful, abundant and pleasing garden with advice for our particular climate.

Fall is considered bulb planting season and we tend to plant the traditional bulbs that originate in colder climates. Perhaps this year is the time to try something a little different, well suited to Yolo County's climate yet equally beautiful. Here are some suggestions to add to the garden for year-round gardeners' delight of something hidden below the surface and looked for in its season as it bursts through with color and beauty.

Bulbs – Early Spring Blooming

Here is a very resilient candidate for your garden, Summer Snowflake, *Leucojum aestivum* 'Gravetye Giant'.

The California native iris, *Iris douglasiana* are spring blooming, come in many colors and are summer dormant. They naturalize well.

Add in some dwarf daffodil, *Narcissus* 'tete-a-tete'L., and some Spanish squill (bluebells), *Hyacinthoides hispanicus* R. and you will have a fine spring show.

Bulbs - Late Spring Blooming

For late spring blooms you cannot go wrong with the reliable Allium family, ornamental onions. *Allium giganteum*, very showy with tall purple flowers. Drumstick Allium, *Allium sphaerocephalum* attractive when in bloom and when the flower heads dry. Star of Persia, *Allium christophii*, its bloom is like a living firework burst. Alliums are pollinator attractors.

Bulbs – Fall Blooming

The sea squill, *Drimia maritima* produces tall white spears in August/September. Its leaf season is winter and is most ideally grown in an area of ground cover or near grasses that will need winter cut back as its large leaves can smother other plants. It is summer dormant so place it where you will not disturb the bulbs during the summer. Best grown in companion with plants that are dormant in winter.

Something more diminutive but spectacular in its own way for August/September bloom is the Argentine rain lily, *Zephyranthes candida* that forms clumps of shiny, grassy leaves a good edging plant or groundcover, attracts beneficial insects.



Argentine Rain Lily
Photo by Peg Smith

For bright splashes of color in the Fall Aztec lily, *Sprekelia formosissima* and spider lily *Lycoris radiata*, both red, and autumn crocus, *Sternbergia lutea* is yellow.

Fall is truly the prime time to head into the garden to review and reinvigorate. Any perennial planted in the fall will go quietly about the business of producing healthy root growth throughout the fall and winter. By the spring and summer these plants have well established root systems and are better able to support a burst of spring growth and then cope with the following summer heat. Some of the more tender perennials planted in the fall may need a little frost protection on the coldest of our winter nights but most will come through with flying colors. You haven't missed the boat if you don't plant in the fall, spring planting will come, but do consider a detailed fall check of your planting needs.

Another way of adding to your garden palette of plants is to check with neighbors and friends to see if they are dividing any perennials that you may have noticed in a garden.



Lady Beetle Nymph
Photo by Peg Smith

Many of our beneficial insect friends like a somewhat messy garden that gives them shelter over the winter. Lady Beetles over winter under loose leaf layers so you can allow some of the fall leaf drop to remain as winter shelter for our beneficial lady beetles. It is actually the lady beetle nymph, emerging in the spring, which consumes many of the spring arriving aphids. The nymphs are perhaps 'odd' looking but they are of great benefit to the garden.

A carpet of leaves from trees such as sycamore, or oak need to be cleared if they fall densely on the crown of a plant. This blanket of leaves on the crown of a plant combined with heavy winter rains can encourage crown rot.

Fruit tree hygiene is important to control soil and waterborne fungal and bacterial disease. Clean up all old fallen fruit this will reduce the possibility of fungal spores over wintering under the fruit trees to re-infect the spring fruit. An early fall light pruning of dead or crossing branches will help trees weather the coming fall and winter storms. Follow the IPM recommended dormant spray applications for fruits and berries. <http://ipm.ucanr.edu/PMG/GARDEN/CONTROLS/dormant.html>

The year-round vegetable garden is one of the benefits of our Yolo climate. We don't need to shut down vegetable growing for the winter. If you love the brassica family, cabbage, broccoli, cauliflower etc., now is the time to plant for a winter crop. If you are growing your own brassicas from seed many of the brassica seedlings are almost indistinguishable from each other so 'label, label, label'. Our Vegetable Planting Guide is a great reference to what and when to plant in any season. <https://ucanr.edu/sites/YCMG/files/206763.pdf>

If you are not growing winter vegetables, plant cover crops such as fava beans, clover, or vetch to replenish the soil nitrogen for better spring yields. Cover crops also reduce the loss of the topsoil in heavy winter rain storms.

Now is the time to scatter seeds for California annuals such as poppies and tidy tips. Rake back any mulch from the dirt, scratch the soil surface to loosen, scatter the seed then lightly rake the area to cover the seed. Water gently so the fine seed is not washed away. Enjoy the show in the spring.

Fall Cleanup

- Remove fallen fruits, annual vegetables that have finished cropping, dense leaves covering plant crowns, spent flowers and weeds. Prune any dead shoots or limbs from perennials and trees.

Fruit and Vegetables

- Pinch back plants to allow tomatoes, melons, and squash enough time to mature before frost sets in.
- Remove unproductive plants.
- Take down squash, melon cucumber and tomato supports. Get them ready for planting peas and sweet peas in October.
- Pick tomatoes when daytime temperatures no longer exceed 65° F. Wrap them in newspaper or place on a windowsill to let them ripen indoors.
- Maintain your compost pile by adding clean (none-diseased) garden waste and leaves.
- Control earwigs, snails, and slugs.
- Apply liquid copper to citrus to prevent brown rot.
- Suggested Trees for Yolo County <https://ucanr.edu/sites/YCMG/files/181041.pdf>
- Planting Landscape Trees <https://ucanr.edu/sites/YCMG/files/361671.pdf>
- Apply the first dormant spray to fruit trees in November.
<http://homeorchard.ucanr.edu/calendars/>
<http://ipm.ucanr.edu/PMG/GARDEN/FRUIT/DISEASE/brownrot.html> - For Brown rot
<http://ipm.ucanr.edu/PMG/PESTNOTES/pn7426.html> - For Peach leaf curl
<http://ipm.ucanr.edu/PMG/GARDEN/FRUIT/DISEASE/shothole.html> - For Shot hole

Fertilize and Amend

If leaving an area of soil dormant for the winter

- Add well composted manure and/or compost to improve soil structure and fertility.
- Apply a layer of leaves, straw, or newspaper covered with grass clippings or leaves to your soil surface to reduce weeds next spring, to improve soil structure and prevent erosion.
- Consider planting a crop of green manure on any open ground to loosen the soil and to replenish soil nitrogen before planting in the spring. <https://ucanr.edu/sites/YCMG/files/362630.pdf>

If growing winter vegetables, flowers, bulbs or seeds

- Add well composted manure and/or compost to improve soil structure and fertility before planting winter vegetables, flowers bulbs or seeds
- If using a commercial fertilizer make sure to follow application directions. Over enthusiastic application of fertilizer will increase nitrogen availability which will encourage the plant to produce foliage rather than bloom or fruit.

Lawn care

There can still be a place for lawn in the waterwise garden. Lawns do not need daily watering to remain green. Encourage deep root growth by watering for a longer cycle less frequently (once or twice a week depending on temperature). If there is water run off before the cycle is completed, break the duration of the watering cycle into two shorter waterings with a shut off period between. Do this by adjusting the watering duration to turn off when water run off shows, allow the water delivered to penetrate the soil for an hour, then repeat the cycle of watering until run off. This should deep soak the lawn and encourage the roots to penetrate more deeply. A more deeply rooted lawn will better withstand the heat of the summer and should only require watering once or, at the most, twice a week in the heat of summer. Consider using a ‘smart’ irrigation controller that will manage the watering cycle for you dependent on the weather.

- Renovate a poorly performing lawn by de-thatching, aerating, fertilizing, and over-seeding it with either an annual or perennial rye or fescue mix, which will keep it green through the winter.
- Fertilize lawns in early fall with a complete fertilizer (one that contains nitrogen, phosphorus, and potassium).

- Adjust the watering cycle on your lawn. It will require less water in the fall and little or none in the winter. Bermuda lawns go predominantly dormant in the winter and may appear ‘dead’. No need to worry they will recover with the natural rain cycle and push spring green growth.
- Continue to mow weekly and check your sprinkler system. Be sure it is properly adjusted with no leaking sprinkler heads and that all the nozzles are working.
- Remove dead leaves from your lawn regularly to prevent your lawn from expiring from lack of sunlight or contracting fungus infections.
- Fall is the best time to put in a new lawn with either seed or sod.
- Consider using a mower with a mulching system. With this grass clippings are cut more finely and drop to the lawn and are not collected in a bag. The grass clipping will break down and naturally feed the lawn.

For complete lawn care see UC IPM Healthy Lawns at <http://www.ipm.ucdavis.edu/PMG/menu.turf.html>

Annuals and Perennials

- Continue deadheading and removing dead leaves.
- Divide and transplant bulbs, tubers, and corms.
- If your oriental poppies, iris, agapanthus, and daylilies are becoming less vigorous, fall is the season to divide and replant them.
- Share extra bulbs, corms, and tubers with a friend.
- Enjoy the fall color of perennials. Wait until spring to trim or cut them back.
- Evergreen perennials should not be cut back in the fall. These include rock cress, creeping sedum, creeping phlox, and hens and chicks.
- Roses should keep producing flowers into December, but do not fertilize after September that will encourage shoot growth that will be nipped by the first frost. Deadhead as needed unless you prefer colorful rose hips to develop and provide winter interest.
- Plant fall flowers such as calendulas, chrysanthemums, bachelor buttons, dianthus, forget-me-nots, sweet peas, and violas. Many of these will over-winter and provide lush color in the spring.
- Spring-blooming perennials such as foxglove, columbine, salvia, and daylilies can be planted now.
- Fall is the best time to introduce perennials such as yarrow, asters, coreopsis, daylilies, salvias, geraniums, and lantana to your garden
- Consider planting winter vegetables such as broccoli, lettuce, endive, parsley, garlic, and onion sets. <https://ucanr.edu/sites/YCMG/files/206763.pdf>
- Take cuttings of your favorite annuals.
- Gradually move frost sensitive potted plants to more sheltered locations so they will adjust. Plants placed under the shelter of the eaves will not be watered by the rain so check the soil moisture and water as needed.



Asters and Coreopsis
Photo by Peg Smith

Trees and Shrubs

Fall is the best time to plant trees and shrubs. Some UCCE Master Gardener-Yolo handouts that might be useful include:

- Watering and Drought Care of Trees <http://ucanr.edu/sites/YCMG/217955.pdf>

The cooler air temperature and still-warm soil provide ideal conditions for new plant roots to take hold.

For autumn colors of red, gold, or yellow, choose these trees: Chinese pistache (*Pistacia chinensis*) ginkgo (*Ginkgo bilob*), tupelo, (*Nyssa sylvatica*) scarlet oak (*Quercus coccinea*) red oak (*Quercus rubra*), chanticleer pear (*Pyrus calleryana* ‘Chanticleer’), or red maple (*Acer rubrum*).

Plant drought-tolerant trees such as valley oak (*Quercus lobata*), blue oak (*Quercus douglasii*), or a Japanese pagoda tree (*Sophora japonica*). A new favorite is the Chinese Fringe Tree (*Chionanthus retusus*). You will need to have plenty of room if you are planting the oaks. An attractive smaller tree known as the chaste tree (*Vitex agnus-castus*) is also drought tolerant producing sprays of blue flowers.

- Apply a top dressing of manure and/or compost to help your trees emerge from dormancy with lush leaves and flowers.
- Plant easy-care and drought-tolerant shrubs such as crape myrtle (*Lagerstroemia*), California lilac (*Ceanothus* hybrids), heavenly bamboo (*Nandina domestica*), tobira (*Pittosporum tobira*), and Western redbud (*Cercis occidentalis*).
- Prune and shape trees in late fall.

Garden Keeping

- Sharpen spades, loppers, pruners, and your lawn mower blade. You can use a file or take your tools to a professional sharpener.
- Combustion lawn mowers should have an annual tune-up to reduce pollution. Consider switching to a battery powered lawn mower.
- Clean, disinfect, and oil your tools, so they will be ready for pruning roses, trees, and shrubs from late fall to early spring.
- Keep birdbaths and feeders clean and full for migrating birds.
- Check out your local farmer's market for a colorful selection of fall decorations, including pumpkins, gourds, dried corn, and fall flowers.
- Keep a journal. Record your watering cycle information, pruning, spraying, and planting information. Make a list of garden improvements and ideas. Fall and winter are ideal times to research, design, and plan spring improvements to either hardscape or landscape.
- Collect seeds from your garden. Some vegetables such as the cucurbit family (squash, cucumber, melon) easily cross pollinate so may not produce true to the parent plant the next season. Do not collect seeds you've planted from commercial packets labeled 'hybrid' they will most likely produce a sterile seed or no seed.
- Check out your favorite garden catalogs. It is time to think about ordering next spring's seeds, bare root roses, and garden tools.

For more information on vegetables, ornamentals, fruit trees, and lawn care, visit <http://www.ipm.ucdavis.edu>.

Garden Fun

- Make a fall wreath and table decorations from dried or fresh garden cuttings. Grape vines wrapped around a circular form, or simply wrapped around themselves, make an ideal base for a seasonal wreath.
- Use a hollowed-out pumpkin or gourd as a vase.
- Plant spring bulbs for a fresh look come March or April after we have a rainy winter (fingers crossed).



Things to do:

- Plant Sale Woodland Community College (2300 E Gibson Rd, Woodland, CA 95776) October 1 and October 8, 9:00 AM – 1:00 PM. Also, the Woodland Community College demonstration gardens.
- Take a walk in the UC Davis Arboretum for inspiration. Check the Arboretum website for their fall sales <https://arboretum.ucdavis.edu>

- Visit the Davis West Pond, surrounded by a showcase of waterwise plantings
https://localwiki.org/davis/West_Pond
- Have a look at the ‘Teaching Garden’ at the Winters Library.
<https://yolocountylibrary.org/locations/winters/teaching-garden/>
- Opposite the Farmers Market in Davis, along B Street, is Central Park Gardens in Davis
<https://www.centralparkgardens.org>
- Bee Haven UC Davis <https://beegarden.ucdavis.edu>

Check the UCCE Master Gardeners- Yolo County website for more gardening information and detailed topics.
<https://yolomg.ucanr.edu> 

Questions about your garden?

We'd love to help!

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

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

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

Web Site http://ucanr.edu/sites/YCMG

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



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<http://ucanr.edu/sites/YCMG>


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