



THE YOLO GARDENER

Spring 2012

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Breed Your Own Peppers

Tamar Rein, Yolo County U.C.C.E. Master Gardener

On Friday, February 2, the UC Davis Student Farm and Plant Sciences Department presented a two hour seed saving workshop at the UCD Bowley Plant Science Center. This valuable workshop included a chili pepper crossing demonstration and hands-on pepper seed saving. This program was made possible with funds from the USDA National Institute of Food and Agriculture for the purpose of teaching home gardeners how to breed their own vegetable varieties.

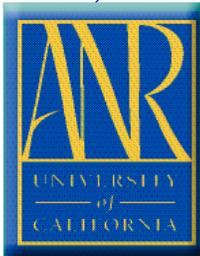
Raoul Adamchak, coordinator of the UCD Student Farm, began with a presentation about our beloved domestic peppers. Peppers are members of *Solanaceae* family, along with tomatoes, eggplants, and potatoes. It turns out that of twenty-three species of peppers only five are domesticated. By 1519, the time of Cortez' conquest of Mexico, the Aztecs already had at least poblanos, jalapenos, and seranos. There are two to three thousand different kinds of chili peppers ranging from the sweet bells to the insanely hot Indian Bhut Jolokia. About 40 varieties of peppers are grown at the UCD Student Farm, and Raoul invited the audience to stop by this summer and have a look. The Student Farm is located west of Orchard Park Circle, between Russell Blvd. and Orchard Rd.

The complex chemical compounds known as capsaicinoids are responsible for the heat in hot peppers, and are made up of seven alkaline compounds, including capsaicin. Raoul Adamchak showed us a wonderful chart comparing the heat of various common peppers measured in Scoville Heat Units (SHU). Pure capsaicin measures 15,000,000 SHU, military grade pepper spray runs in the 2.5 to 5 million SHU range, Bhut Jolokia is a million plus, Habanero and Scotch Bonnets are 100,000 to 350,000 while my favorite hot pepper, the jalapeno, runs only 2,500-5,000 SHU. (Even at that level I have suffered painfully by touching my eyes after mincing a jalapeno.)

The domesticated species of peppers are:

- *Capsicum Annuum*: the vast majority of the sweet and medium peppers;
- *C. Chinense*: characterized by wrinkly leaves and dominated by very hot cultivars like the Habanero and Bhut Jolokia a.k.a. Ghost pepper;
- *C. Frutescens*: this is the tobasco chili;
- *C. Pubescens*: fuzzy leaves (of course) and pretty purple flowers;
- *C. Baccatum*: 'berry like', although some cultivars are several inches in length.

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Contrary to popular belief, the seeds of a hot pepper do not generate capsaicin; it is generated by the cells of the placenta around the seeds. So the seeds may have some capsaicin on them, but it's only on their exterior.

When choosing cultivars for starting your own pepper breeding project, you might see the designator 'PVP' in the seed catalog. PVP stands for Plant Variety Protection, and it gives the developer of that cultivar twenty years' protection for the exclusive right to sell that seed. PVP cultivars breed true, like heirloom/open-pollinated varieties. For home gardeners, it means you can save PVP seed for your own use, but you cannot sell it or use it to develop a hybrid other than for your personal use.

If you want to continue an open-pollinated heirloom-type or PVP cultivar, you'll get true stable replication only if you isolate your pepper from other pepper varieties. Raoul Adamchak advised that the five species of peppers can cross, so even if you choose a couple of cultivars from two different species, you're still at risk of unintended crosses! If you grow more than one pepper cultivar and do not want to use an isolation bag or build an isolation cage to avoid unintended pollination, you'll need four hundred feet between pepper varieties, and that includes any your neighbors might plant. UC Davis isolates pepper cultivars by one mile! If you choose hybrid cultivars to start your project, know that their offspring, the 'F1' generation, will not be like the parent plant, but highly variable.

To develop a true breeding strain from hybrids, known as an 'inbred line,' will require breeding to the F8 generation--this will take nine years in the field. Working in a greenhouse speeds things up considerably, but getting to F8 will still take three to four years.

Theresa Hill performed the chili pepper crossing demonstration. Because peppers have complete flowers containing both male and female parts, they readily self-pollinate. Breeding your own peppers requires choosing a 'mother' plant that will develop the cross-bred pepper, and a second 'father' plant that will provide only DNA via pollen. The direction of the cross can affect the outcome, so you may want to try the cross both directions, reversing the rolls of the two plant parents. To avoid self-pollination, carefully choose a flower on the mother plant that is completely developed but still closed or sutured. If the flower petals have started to separate at all, even just barely cracked apart, don't use that flower for your cross as it may have already been pollinated. This flower

must be 'emasculated' of anthers. Theresa used a fine-cut away the male parts; any pistil, style or stigma will flower used for pollen must look for a fully developed dehiscing pollen. Theresa used tweezers to pull a stamen flower and dusted the stigma. She then covered the cross-



glassine envelope to prevent additional pollinations of that flower. She also added a small identification tag, being careful to avoid having the string constrict vascular tissue in the flower stem. As soon as the pepper fruit starts to develop, you can remove the glassine envelope.



Collecting Seed

all its stamen and immature tipped tweezers to carefully damage sustained by the prevent fertilization. The also be chosen carefully; flower with yellow anthers used the same fine-tipped from the pollen-donating of the emasculated flower. bred flower with a small

On to the seed saving part! After you've carefully grown those peppers, you'll want to do everything



possible to ensure the best germination rate for those special seeds. I was surprised to learn that improved rate of germination comes from collecting the seed of early mature fruit that has been allowed to ripen (dry) for three to four months, rather than collecting seed from older mature peppers that have been left intact on the plant after reaching maturity. When you are ready to collect the seed, be sure to wear gloves if you're working with hot peppers. A piece of window screen fixed in a wooden frame makes a very good sieve for washing your seeds. After washing, air-dry the seeds and then dry at one hundred degrees for six hours.



Washing Seed

Properly dried seeds should be brittle; store them with a desiccant packet in an air-tight freezer safe container in your kitchen freezer. Stored this way, your seed will remain viable for twenty-five years or more, far longer than the average two to five years. To determine germination rate, there are two tests: (1) The floating test: place stored seeds in water and discard any floating seed. Re-dry the heavy seeds immediately if you're not going to use them right away. You don't want the seed coats to start rehydrating; (2) The damp paper towel test: place ten to fifteen seeds on a damp paper towel and put into a plastic bag or sandwich box and place in a warm spot for several days to see if any of the seed sprout.

After attending this inspiring presentation, I am very excited about experimenting this summer with pepper plant breeding and saving seed. I hope the Bowley Center has these workshops regularly! You can see versions of both the pepper presentations with slides on the the UC Davis Student Farm website, at asi.ucdavis.edu/sf/SavePepperSeed-RA1-03.pdf. *

Your Neighbors are Asking!

Betsy Lurie, Yolo County U.C.C.E. Master Gardener

This is the first of a quarterly feature highlighting topical questions from the Yolo County Master Gardener phone line or e-mail. Keep abreast of the most up to date information and guidelines for handling issues that arise in the home garden. And please, send us your questions at ceyolo@ucdavis.edu, phone them in at (530) 666-8143, or come visit us at the Davis or Woodland Farmers' Markets!

Question 1. I have two cherry trees. One is a Van and I'm unsure of the other. Both get plenty of fruit but last year the fruit was infested with very tiny worms leaving holes in the fruit. They make good jam if I pick out the worms but they're no good for eating. Are these gnats? Is there something I can spray the tree with to prevent this?

A. Spotted wing drosophila (SWD), *Drosophila suzukii*, has been infesting cherries in many California counties. This tiny (2-3 mm) fly penetrates and lays eggs just under the surface of the fruit's skin, leaving tiny depressions called "stings". Eggs hatch and tiny larvae (up to 3.5 mm, white, cylindrical) develop into maggots and feed inside fruit, causing it to turn brown and soft, with sunken areas that exude fluid. Significantly, SWD attacks RIPE fruit, not just rotting or fermenting fruit. This distinguishes it from the common vinegar fly, *Drosophila melanogaster*, which usually does not attack undamaged fruit.

For a positive ID, inspect fly with a magnifying glass. Adult SWD are small with red eyes and a pale



brown thorax and black stripes on the abdomen. Adult males have a black spot toward the tip of each wing. UC Integrated Pest Management has a link to an ID key at <http://www.ipm.ucdavis.edu>.

SWD is new to California and there is limited research on control measures. However, it is important to **DISPOSE OF ANY INFESTED FRUIT**. Composting may not be a reliable way to destroy eggs and larvae. Seal fruit in plastic bag and throw in trash.

Malathion will control SWD but should only be used when the problem is identified with certainty, either from previous year's infestation or positive ID of trapped fly. Malathion is toxic to bees and other beneficials. Apply and follow label directions with care.

Another less toxic but less effective option is spinosad (Monterey Garden Insect Spray). Two sprays may be required; the first as fruit just begins to turn pink and the second seven to ten days later.

This caller's emphasis on "very tiny" worms and the fact that her fruit was still suitable for jam (not rotting or fermenting) points to SWD as her problem. If you suspect a similar problem and would like an ID, feel free to bring a sample fly into our Woodland office at 70 Cottonwood St. There are experts there to guide you.

As for spraying, while it won't prevent SWD it is time to be applying dormant oil spray to cherry trees. This is particularly important as SWD infestation makes tree more susceptible to other pests and diseases.

Further information is available at the UCIPM links, below.

Resources:

"Spotted Wing Drosophila, *Drosophila suzukii*: A New Pest in California. <http://www.ipm.ucdavis.edu/EXOTIC/drosophila.html> Spotted Wing Drosophila Identification Key. <http://www.ipm.ucdavis.edu/PDF/PMG/SWD-ID-Dsuzukii.pdf>



Larva of Spotted Wing Drosophila

Question 2. I have a variety of citrus trees (total of 5) in my yard and have not always been careful to cover them in the winter. The last couple of years I lost almost all of the fruit on a couple of citrus trees because of freezing. This year I want to make sure to protect them, and so far I think I am doing well, but I really don't know what I am doing. At what temperature do I need to be running out in the dark (after work) to cover my trees?

A. Citrus sensitivity to frost depends on an array of factors, including age of plant, vigor and health of the plant, characteristics of cultivar or species, rootstock used, and length and intensity of the cold. Kumquats and mandarins, for example, tolerate cooler temperatures than lemons. Interestingly, in our region you're more likely to have luck with your citrus if you live in Davis (Sunset zone 14) than if you live in Woodland (Sunset zone 8). That's because zone 8 is the cold air basin for the Central Valley, achieving colder lows in the winter and hotter highs in the summer than that seen in Davis' zone 14. **In general, when temperatures drop below 29 degrees F for more than thirty minutes, you risk frost damage. Trees younger than four to five years are particularly vulnerable.** Below is a general guideline. If predicted night-time lows fall in this region, it's time to protect your trees.

Wrap trunk and branches with an insulating material. **Plastic alone provides little protection.** You can use cloth, sheets, blankets, palm fronds, cornstalks, cardboard. Holiday lights (not LED, they don't throw enough heat) can be an attractive solution. Likewise a one hundred watt bulb designed for outdoor use. Clear the ground around the base of tree of weeds, mulch, and other debris. Water thoroughly. Bare, moist soil radiates heat better and provides some protection.

If you do get frost damage, the leaves and twigs will appear water-soaked, wither, and turn dark brown or black. Resist any temptation to prune until warmer spring weather arrives. A fuller canopy provides some frost protection for the winter's duration and it is easier to see the true extent of damage when your tree begins to recover. Frost damaged fruit can be eaten but will deteriorate quickly.



Below is a link to ANR publication 8100, "Frost Protection for Citrus and Other Subtropicals." It gives specific temperature ranges and other helpful hints for getting your trees through winter. <http://anrcatalog.ucdavis.edu/pdf/8100.pdf>; see also "Growing Citrus in Sacramento". UCANR Garden Notes 127.

Question 3. Where can I get plastic to recover a greenhouse frame? Would a plastic drop cloth work? Also, what kind of plastic do I need to solarize a raised bed? Is this the same plastic that would work to cover my greenhouse?

A. Ah, it's the time of year when we gardeners think ahead to spring and look for ways to get a jump start on the season! Let's discuss the greenhouse first. No, a plastic drop cloth will not work. Polyethylene film is the most widely used option. It comes in various thicknesses--3, 5, or 6 mil--and is sometimes double layered with an air pocket for insulation. Factors to consider when choosing thickness are UV permeability, durability, and cost. Polyethylene plastic does a good job of diffusing light, dispersing the available sunlight and reducing shadows. There are a number of online sources for greenhouse supplies (Master Gardeners don't make specific recommendations for commercial suppliers.) Any of these sources can also supply polypropylene batten or patching tape. Here in Yolo County you will likely need to cover your greenhouse with shade cloth in the summer.



Solarization Demonstration at Central Park

Plastic needed for solarization is thinner than that used to cover the greenhouse. To solarize your raised bed you first need to loosen, moisten and grade the soil. Then cover it with a clear plastic sheet, 1 to 2ml thick, for four to six weeks **during the hottest part of the year**. If possible, use plastic containing UV inhibitors. Thicker plastic is more reflective and doesn't heat the soil as much. Do not use black or colored plastic, which will not allow the soil to heat up sufficiently. This is an effective way to control many (but not all) weeds and to control certain soil-borne diseases such as *Verticillium* wilt and nematodes.

Resources:

Pittenger, Dennis, Ed. *California Master Gardener Handbook*, p.239.

Flint, Mary Louise. *Pests of the Garden and Small Farm*, p.19. *

Rain Gardens

David Studer, Yolo County U.C.C.E. Master Gardener

Recently, a Sacramento County friend asked for help installing a “rain garden” in her front yard. I could have referred her to the Sacramento County Master Gardener’s Program but since she is a friend, I agreed to help.

So, what is a “rain garden”? That’s the first thing I wanted to know. The River Friendly Landscaping [file://\(http://www.msa.saccounty.net:sactostormwater:RFL:coalition.asp\)](http://www.msa.saccounty.net:sactostormwater:RFL:coalition.asp) Coalition defines a rain garden as a shallow depression landscaped and designed to collect rain water runoff

from roofs and/or pavements like sidewalks and driveways. An average sized rain garden can keep thousands of gallons of runoff out of the storm drains. Sounds simple, dig a hole, plant some deer grass (*muhlenbergia rigens*) and voila, a rain garden!

NOT SO FAST...“Greenjeans”!

First, what is our motivation? Why would gardeners want to dig holes in their landscaping to collect rain water anyway? To answer that we should start with a little discussion about water and more specifically storm water runoff. For this, let’s go to the Rain Garden Network (<http://www.raingardennetwork.com/water.htm>) for some quick facts about the world’s water supply. We may have all heard in grade school that approximately 70% of the earth’s surface is covered by water. Pretty impressive but listen to this, only three percent of that water is fresh water—usable by humans and other land animals. Furthermore, two-thirds of that fresh water is locked up in the form of ice in the polar ice caps and glaciers and other large ice fields like Patagonia. That leaves about 1% of all the earth’s water available for drinking and irrigation.

Here’s another factoid to impress party guests with: the quantity of water on earth has remained constant for hundreds of millions of years transforming from solid to liquid to gas. It also moves in a continuous cycle—evaporating into the air, where it



California Native Deer Grass (*muhlenbergia rigens*) adds grace to a rain garden.

forms into clouds which when saturated, release it in the form of snow or rain. Over land, the rain/snow falls to the ground and runs off. Eventually runoff finds its way back to the sea where the cycle starts all over again.

Two detours exist in the water's eventual journey to the sea—evaporation and absorption. In a natural landscape about ten percent of rainfall runs off, forty percent evaporates and fifty percent soaks in to either to replenish aquifers or help nourish plants. As development occurs, the amount of runoff increases and the amounts of evaporation and ground infiltration decrease. In a rural small town, the amount of runoff can double and large metropolitan areas shed over half of all rainfall as runoff into storm drains, rivers, creeks, *etc.* We have all witnessed the results of this in the Yolo Bypass during wet years.

Large urban areas such as Sacramento and its suburban surroundings contain a lot of impervious areas such as roofs, driveways, sidewalks and parking lots which increase runoff and decrease infiltration. It wouldn't hurt the city to improve its ability to absorb some rain where it falls instead of dealing with it as torrents in the local watershed. Hence, the Sacramento County Stormwater Quality Program's and the Sacramento County Water Agency's enthusiasm for providing financial assistance (up to \$500.00 rebate) to residents and businesses building rain gardens at their homes or place of business and by extension, my friend's enthusiasm as well!



Rain garden at the Sacramento Animal Care Facility

Before you get your hopes up, Yolo County residents do not qualify for the rebates, but rain gardens also:

- * *Filter out pollutants flowing into the watershed thus improving water quality;*
- * *Keep more water close to where plants can use it thus reducing the need for irrigation;*
- * *Protect rivers and streams from excessive erosion;*
- * *Provide habitat for birds, butterflies, and beneficial insects that eliminate pest insects;*
- * *Help landscapes survive drought seasons; and*
- * *Reduce the need for maintenance.*

For an explanation of these and other benefits, go to the Rain Garden Network website (see link above). All of these benefits provide ample reason to consider installing a rain garden in your landscape.

So, we have motivation and we're back to digging that hole, aren't we? Well slow down a little and consider these important bits of advice first:

- **Keep the rain garden at least ten feet away from any structure—e.g., the house—to avoid damaging or undermining the integrity of the foundation.**
- **Before digging, it's a good idea to locate and avoid the utilities. Call 1-800-227-2600 (Underground Service Alert or USA) to locate utilities, check with the local building department for the location of water, sewer and any irrigation lines and don't forget the cable guy. I dug up the cable and when the cable company reinstalled it, they dug up my sprinkler system—and reburied the broken pipe!**
- **Integrate the rain garden into the landscape where it can receive water from downspouts, the driveway and/or the sidewalk if possible. Think about how the runoff gets to the rain garden from the roof, etc. consider small drainage paths lined with plants or rocks or use drainage pipes.**
- **Size matters. Based on local rainfall patterns, Sacramento County recommends a rain garden about thirty-four percent the size of the area draining into it if in clay soil. If using amended soil to a ratio of 2:1:1 (sand:topsoil:compost), the rain garden only needs to be seventeen percent the size of the area draining into it.**

with the amended soil to the depths mentioned above. Install any necessary channels to guide runoff water into the rain garden.

With the depression dug and the rain water diversion created, the addition of a little greenery completes the project. Start with native plants—those that evolved in the region—and/or plants from similar climate zones like the Mediterranean. These plants do better in our hot summers and cool wet winters and, as a bonus, provide food and shelter to native pollinators and other creatures to enhance the health of our ecosystem. Filter this plant list down to those that tolerate having their roots wet for part of the typical rainy season. In Yolo County, low boron winter rains can leach out salts but boron tolerance should still be a factor in selecting plants for the rain garden. Several websites can help in this search including the UC Davis Arboretum All-Stars (http://arboretum.ucdavis.edu/arboretum_all_stars.aspx), the [California Native Plant Society](http://www.cnps.org/), (<http://www.cnps.org/>) and the River Friendly Landscaping Coalition (link above). Now all we need is some rain. Happy gardening! ✨

Fear not the mosquito! Mosquitoes require from ten to fourteen days to grow from egg to mature flying pest. A well constructed rain garden should drain in one to two hours and should not retain standing water longer than twenty-four hours at the most. Rain gardens are not suitable for mosquito breeding.

Now dig. The depression only needs to be about three inches below the surrounding ground level and six inches deep in the middle. The middle should be as flat as possible to increase the potential for absorption. On a slope, use a berm—a small hump of soil—on the downhill side of the depression to retain the runoff. Using amended soil helps the absorption process but it requires a deeper hole (about eighteen inches) backfilled

Spring Nursery Trips

Laura Cameron, Yolo County U.C.C.E. Master Gardener

For some, the long cold winter that has a number of freezes brings angst over the loss of some plants. However, there are those amongst us with hidden smiles who think - I have more space plants! With the advent of Spring, plans for visiting nurseries is a must. Whether one visits the same place or plans a day's journey to multiple nurseries, it is always best to think and plan ahead to avoid buying the ever-so-beguiling beautiful bloom because it is just that. Arriving home you read the label and gasp! You just bought the most beautiful, slightly pricey flower that doesn't stand a chance of survival in your yard. While the impulse buy is occasionally necessary, in order to avoid arriving home with a car full of inappropriate plants, planning is a must. The planning can be intensive or simply a long wander through the garden.

Create a checklist for each of your garden rooms and jot down notes. Look around: is there a bare spot, an old plant ready for the compost pile, a straggler that needs transplanting elsewhere, or just a garden tweak needed? What are the light conditions for each garden room? Do you have a color scheme you want to continue? What is the soil condition? What are the watering needs of other plants in the same area? What sizes are needed: short, medium or tall; spikey or full shrubs? What kinds of textures are needed? Should you incorporate edibles? How many annuals and perennials do you need? What size will the plants be in six months and in one year? Should you buy four inch, one gallon or five gallon pots? Is there time to start from seeds? Do you need hardscape? How much, if any, mulch, compost, bark or other ground covering is needed?



The notes can be as simple as:

Kitchen view: Full sun, low to medium, pinks, heathers, soft grays

Street side driveway corner: All lavender, full sun

Shady Woodland: Anything that will work

A little more thorough:

Kitchen view: Full sun, two feet of shade next to front porch,
well-worked soil, two days of watering a week, no more than
two feet tall

Dolphin fountain area: *Powls artemesia*

Front curve close to house: Heathers

Front curve street side: Six small to medium bush/ball shrub
with pink flowers to form low hedge along walk

Behind hedge: One or two salvias, red and purple

Sidewalk: All ground cover white plants

Complex:

A plot plan; Photographs of existing yard; A list of plant names; Smart phone for research

Bring a garden book. Use your smart phone if you have one or borrow the nursery's garden book for more information. Ask the nursery staff questions; at a good nursery they are a font of information. Download planting guides and specific plant recommendations from the Yolo County Master Gardener website at http://ceyolo.ucdavis.edu/Gardening_and_Master_Gardening/Free_Gardening_Handouts/. It is important to know your zone, read the plant label, examine the picture, stand back and envision what the plant will look like in your garden, both now and when it attains full growth. It can sometimes be very difficult to do this when a plant is just calling, screaming, your name. Stare at the label. If it says bog conditions and is not appropriate for your drought-tolerant garden, no matter how beautiful it is . . . put it down and walk away.

When garden-shopping via catalogs or online, utilize the very same thought processes. Be aware of the quality of the vendors and look very closely at ship dates and conditions of shipping. Planning the right date to shop is also critical. Buying is one thing, planting is another; be sure to schedule a planting day close to the purchase date. Take water and snacks along, stop for lunch and breaks and enjoy the Spring shopping day. Your garden will appreciate the time you take.*

Citrus Versus Temperate Fruit Trees: Four Simple Facts

Willa Bowman Pettygrove, Yolo County U.C.C.E. Master Gardener

There are real differences between citrus (including oranges) and temperate fruit trees (such as apples), and when it comes to growing them, it helps to understand what these are. The following facts are intended to illustrate key differences between citrus and temperate fruit trees.

The world has come a long way since oranges were introduced into California in 1769, so far that what was once a rare Christmas treat is now the most common type of fruit world-wide. California agriculture has played many important roles in this development, not all of them intentionally. There were near misses, as when in the 1880s the cottony cushion scale nearly wiped out all citrus plantings in the state. It was the import of a beneficial predator from Australia, *Rodolia cardinalis* (Vedalia or lady bug), that saved that crop and introduced the concept of beneficial insects to California gardens. There are so many interesting facts about citrus in California's agricultural history, and so much one can learn. It helps to simplify, at least for a start. The following are intended to illustrate key differences between citrus and temperate fruit trees.

Fact #1: Citrus are never fully dormant. They are evergreen subtropical shrubs or trees, adapted to different climates within California's many climate zones. Unlike temperate fruit trees, citrus have year-round water and fertilizer requirements. These may drop to almost none at times (especially when cold and wet), but gardeners need to be aware that some attention may be required at any time of the year.

Fact #2: The roots and foliage of citrus are very different from those of temperate fruit trees. It's obvious to experienced gardeners that one will never buy a bare root citrus. Roots of citrus tend to be shallow and can extend twice as far as the drip line in an established tree. The evergreen leaves of citrus are crucial to year-round food storage in the plant, and the amount of foliage reaches a peak in about February. Heavy pruning at this point or later in the season interferes with fruit production. Leaf drop in citrus is a symptom that something isn't right with the tree, usually the roots. Trees do recover from this, if the cause is found and corrected.

Fact #3: Citrus vary in cold tolerance, although all are classified as subtropical. California's climate zones give gardeners many options; the trick is choosing the right citrus for your area. In addition, one must be prepared to protect young trees from unseasonable frosts. Fruit may be lost during such times on trees of any age. In addition to choosing the right variety, it is possible to site citrus to take advantage of microclimates. Planting the tree on the south or west side of a building and planting on a hillside where cold air can drain away from the tree are good strategies even when the right variety is planted.



Yellowing of Citrus Leaves Due to Winter Cold

In Yolo County, sweet oranges (naval and Valencia), Satsuma mandarins, Meyer lemons, and kumquats are usually successful. Adventurous gardeners who want to try more challenging varieties may be successful by growing them in containers, bringing them inside or under eaves as a last resort.

Fact #4: Mature citrus don't need regular pruning. The exceptions to this rule: very old trees, where pruning may stimulate growth of new fruiting wood; lemons, to remove spindly growth that won't support fruit; and removal of freeze damage, only after time is allowed for recovery.

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

Master Gardener Hotline..... (530) 666-8737

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

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

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

Like temperate fruit trees, citrus are typically grafted to standard rootstocks. There are choices here for the home gardeners that are different from what is offered for agricultural production. A good place to begin research for one's own citrus "grove" is at a local garden center, where different varieties are offered, including some on dwarf rootstocks. Another place in Yolo County's "backyard" is Four Winds Growers, which specializes in citrus for home gardeners. They supply many local garden centers, and have an informative web site <http://www.fourwindsgrowers.com/where-to-buy-in-california.html>. ▲

Spring Gardening Tips

Linda Parsons, Yolo County U.C.C.E. Master Gardener

Have you noticed that we have had an unusually dry winter? This fact, as well as one with cooler temperatures, was predicted in the 2012 *Farmer's Almanac*. Several heavy rainstorms are predicted to occur in mid-February and mid-March, but this is unlikely to bring us up to our area's average rainfall of about 19 inches. If the *Almanac* is correct, we will be having a cooler spring than normal. This is important to keep in mind, especially when determining when to plant your summer vegetables. I will soon begin to start my vegetable seeds indoors, but will wait until at least several weeks beyond the Vernal Equinox (March 20, 2012), to plant them in my garden. Now that spring is nearly here, you have a few more weeks to complete your garden spring-cleaning and pruning. Remember though to hold off on pruning your once blooming spring vines, trees, and shrubs.

The following tips and ideas will help you prioritize your garden chores and possibly discover some new adventures in gardening.

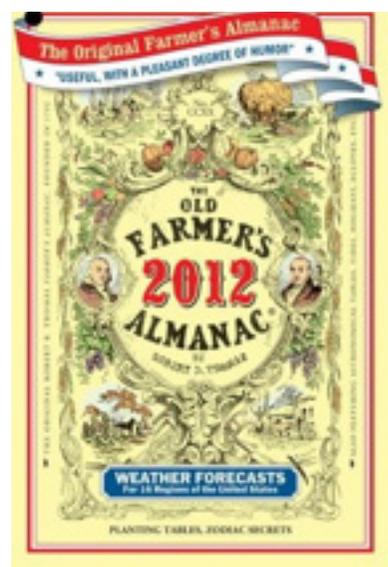
SPRING CLEANING

- Examine trees and shrubs for winter damage. Prune damaged foliage and branches.
- If you haven't pruned your roses and fruit trees, this is the last month to ready them for their spring bloom.
- Do not prune early flowering rhododendrons, magnolias, camellias, azaleas, viburnum and forsythia. It is best to prune them after the blossoms are spent or wait until early fall.
- Apply the final application of dormant spray to all fruit trees before the buds swell. Roses need to be sprayed to prevent over-wintering insects and fungal spores.
- Weeds are starting to sprout, so take care of them before they take over.
- Once your spring bulbs have finished blooming, dead head (remove blossom ends), however, don't remove the leaves until they turn yellow. This will help the bulbs store energy for next Spring's bloom. If they are unsightly, braid them or fold them over and secure with twine, until you remove them in late Spring.

FERTILIZING, COMPOSTING AND MULCHING

Your plants are hungry. Begin to lightly cultivate your perennial garden, being careful not to dig too close to your plants. Loosen the soil as soon as it is not too wet to work.

- Add soil amendments, such as compost, peat moss, and organic fertilizer.



- Roses and fruit trees need special attention now. In addition to organic rose food and soil amendments, I add a cup of alfalfa pellets and two tablespoons of Epsom salt to each rose plant. These help the rose to produce more basal breaks (new growth) and more chlorophyll.
- Be sure to use fertilizer that is recommend for each plant type. In particular, too much nitrogen will make the plant grow too quickly, producing growth which will not be as sturdy and which is more susceptible to sucking insects.
- Resume your feeding schedule for your lawn and fruit trees.
- Fertilize your spring blooming plants, such as camellias and azaleas, after they bloom and repeat for the next three months.
- Fertilize your houseplants.
- Mulch your garden to a depth of 3 inches. The reward will be fewer weeds and less watering in the months ahead.

PLANTING

Perennial plants need attention now.

- Remove any old growth.
- Dig and divide crowded perennial plants.

Select early blooming annuals,

- plant candytuft, pansies, violas, dianthus, Iceland poppies and primroses.

Select summer blooming plants.

Bulbs, corms, tubers can be planted now.

- Some colorful choices are cannas, begonias, lilies, and dahlias.

Shade plants include:

- astilbe, columbine, coral bells, dicentra, foxglove, hostas, nepeta, pulmonaria, and ferns.

Drought-tolerant and sunny-location plants:

Russian Sage, *Muhlenbergia*, Rabbits Tale Grass, Buddleia, Echinacea, Rudibeckia, and Gallardia.

Replace shrubs and roses. Be sure to select these plants with care to insure they have the correct growing conditions. Careful selection ensures healthy plants that are easy to grow and maintain.

After you have completed your planting, be sure to lightly fertilize your plants and mulch well. Remember that plants do better if they are planted at or slightly above grade.

If you are planning to grow your vegetables from seed, begin your seedlings indoors under lights. By late April or early May you can harden off and plant the seedlings in your vegetable garden. The soil temperature needs to be 50 degrees Fahrenheit before you set out your young plants.

DISEASE AND PEST CONTROL

If you have applied your dormant oil and fungicide, your plants will be off to a good start.

- Periodically check plants, especially roses, for signs of black spot, rust, and mildew. These often appear first on the interior or lower parts of the plant. If the spring is especially rainy, you will need to be more



vigilant and spray more often.

- While you are checking for disease, note whether slugs, snails, and earwigs are munching on your plants. Consider whether aphids, mites, thrips, and scale creep into your garden. As the weather warms these pests are usually kept in check by a variety of beneficial insects such as lacewings, mantises, ground beetles, tachinid and robber flies. Many plants attract beneficial insects including yarrow, alyssum, feverfew, dill, parsley, coriander, penstemon, and asters.

If you need to use commercial pesticides, consult <http://ipm.ucdavis.edu/> for excellent information on controlling pests and diseases.

LAWN CARE

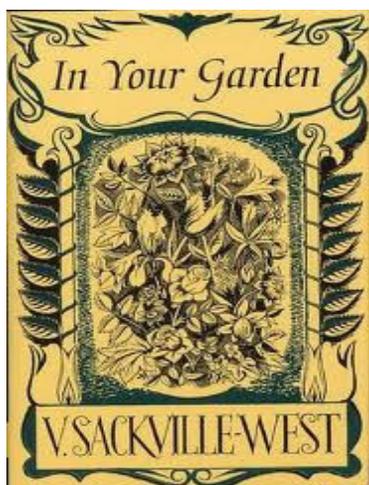
Lawn is often the forgotten plant and one of the most neglected plants in the garden. Lawn does surprisingly well if given a modicum of care. Most importantly, it needs to be fed and watered regularly.

- Check your irrigation system and be sure that the lawn is getting the proper amount of water. The amount will gradually need to be increased as the days become longer and warmer.
- You will also need to raise the mower blade to a height of 3 inches, as spring gives way to summer.
- Re-seed thin spots in your lawn and begin your fertilizing and mowing schedule in March.
- While it is easier to use commercial fertilizer, applying a light topcoat of compost to your lawn will greatly benefit your lawn's growth and health.



FINAL SPRING TOUCHES

- Paint the lower trunks of young trees with water thinned white latex paint to prevent sunburn and borer problems. Stake tall growing perennials and vegetables before they begin to bend over in late spring.
- In late spring, thin fruit trees, leaving 4 to 5 inches between each fruit. This will help the remaining fruit to mature properly and keep the branches from being over-weighted and splitting.
- Deadhead spent flowers to assure a long blooming season in your garden.
 - Plant containers with your favorite annuals and herbs.
 - Clean and re-stock bird feeders. Sharpen and maintain garden tools.
 - Hang your hammock or set out your favorite garden chair. Relax with some lemonade and take time to enjoy a new gardening book or listen to a local garden radio program.



SPRINGTIME IDEAS

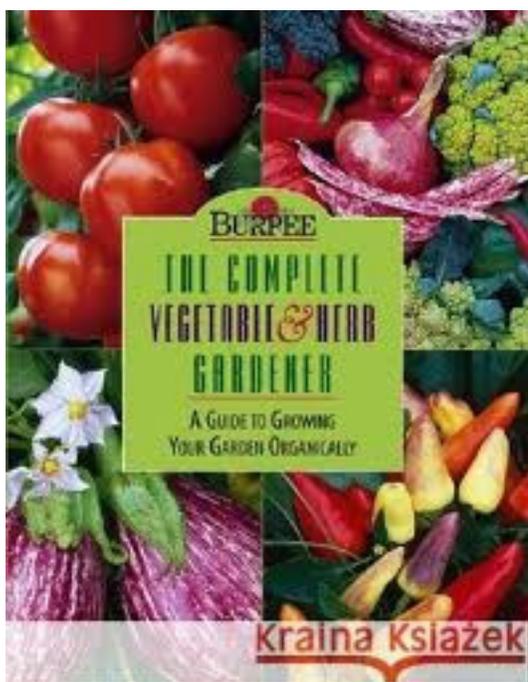
Books:

For garden inspiration, *The Writer in the Garden*, by Jane Garmey is a delightful book of essays written by and for gardeners. You will feel as though you are chatting over the garden fence with some very engaging gardeners.

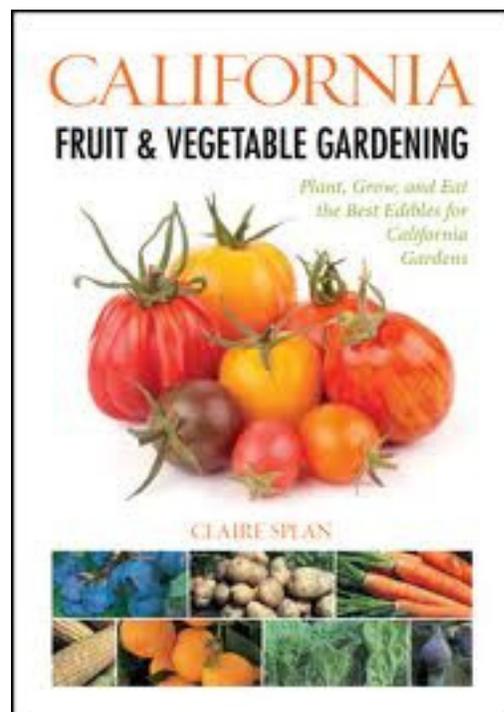
In Your Garden by Vita Sackville-West is a classic and period book.

Vita will enthrall you with her English wit and charm. She shares her monthly garden guide, as she tends her Sissinghurst Castle Garden. This book is based on her London newspaper column, which she wrote shortly after WW II.

If you are looking for a vegetable and herb garden resource, you can find few as comprehensive as *Burpee: The Complete Vegetable and Herb Gardener: A Guide to Growing Your Garden Organically* by Karen Davis Cutler, et.al.



I am eagerly awaiting *California Fruit and Vegetable Gardening: Plant, Grow and Eat the Best Edibles for California Gardens* by Claire Splan. This is due out in April, 2012. It would be great to find a vegetable garden book that is specific for our climate. Most garden books require a careful check for climate and zones, when recommending vegetable varieties to plant.



Radio garden shows and podcasts:

These can all be heard on weekend radio programs and there are podcasts available for past programs on their websites. *Also on Thursday.

farmerfred.com

<http://tunein.com/radio/Capital-Nursery-Gardening-Show-p128876/>

bobtanem.com

davisgardenshow.com*

Garden Adventures:

Visit your local nursery, the UC Davis Arboretum plant sale, consult garden catalogs or books to find the perfect plant. Check out UC Master Gardener Classes. Enjoy a day in the garden by visiting one of these local offerings.

- Annual Woodland Rose Garden Tour April 29, 2012: Noon-5:00 p.m.
- Woodland, California: www.cityofwoodland.org
- Luther Burbank Mother's Plant and Corsage Sale on May 15, 2012: Santa Rosa, California: <http://www.lutherburbank.org>



- The International World Peace Rose Garden State Capital Park: Sacramento, California
- McKinley Rose Garden: Sacramento, California: Re-opens on April 15, 2012 after an extensive renovation of its 1000 rose plant garden: www.cityofsacramento.org
- The Good Life Garden: Edible Landscapes Garden at the Robert Mondavi Institute for Wine and Food: UC Davis, California
- Old City Cemetery, Sacramento, California: Saturday Tours: www.oldcitycemetery.com
- Central Park Garden 3rd Annual Mother's Day Tea: May 15, Davis, California: www.centralparkgarden.org

"A garden, like life, is composed of moments. I wish mine could always be as it is right now, this late afternoon at the end of March." Janice Emily Bauer (*The Writer in the Garden*). ✨

What is Pollarding?

Jan Bower, Yolo County U.C.C.E. Master Gardener

Practice

Since moving to Davis, I have noticed a lot of chopped-off trees with only the trunks standing, and I have wondered why this is done. I discovered that the practice is common and called pollarding; the converted tree is a pollard. In pollarding, the branches of trees are removed and callused knobs formed from which new, thick, leafy shoots grow. These swollen, ball-like pollard heads are considered ornamental features, and their knobby clubs at the end of the branches represent a form of grotesque beauty. Pollarding is often confused with coppicing. In both pruning practices, trees



Pollarded tree with new growth



Tree recently pollarded on Marina Drive in Davis

are cut back in order

to rejuvenate their tops; however, pollarded trees are not cut at ground level, but about six feet above the ground. In coppicing, new growth comes from the stump or roots at the base of the trees, whereas in pollarding, new growth comes from the top of the trunk of the trees.

Species

Broadleaf deciduous trees that have strong epicormic growth abilities work best for pollarding. In pollarding, the removal of the main apical stems releases the growth of dormant buds under the bark of the lower part of the trees. Tree species without this epicormic budding capability die when their leaves and branches are removed. Trees that do well as pollards include willows, beeches, maples, oaks, black locusts, hornbeams, horse chestnuts, lindens, mulberries, trees-of-heaven, and redbuds. Although most conifers do not have epicormic buds, yews are one of the few that do and can be pollarded. Pollarded trees tend to live longer than unpollarded specimens because they are maintained in a

juvenile state. They do not grow as tall and are not top-heavy when older, which makes them less susceptible to heavy wind and other weather damage.

Origin

Poll was originally a name for the top of the head; *to poll* was a verb meaning “to crop the hair.” This use was extended to similar treatment of the branches of trees and the horns of animals. A *pollard* simply meant someone or something that had been polled. Later the noun *pollard* became used as its own verb -- “pollarding.” “Pollarding” has now largely replaced “polling” as the verb in the forestry sense.



Two rows of pollards near Suis, Netherlands

Usage

Since medieval times, pollarding has been common in Great Britain and Europe, particularly in the cities and parks of France and Germany, as a practical way to harvest trees without killing them. Traditionally, young trees were headed back at a point above the reach of foraging deer and livestock and then regrown. The resulting sprouts were cut off every year or two for use as animal fodder, baskets, brooms, or firewood. In urban areas today, trees are pollarded to constrain tree size and maintain the height of tree rows. In urban forests, pollarding removes rotting and dead branches to improve the overall health of trees. If left untouched, these trees could eventually harm property and people. Pollarding encourages underbrush plant growth by allowing greater amounts of light to reach the woodland floor. It also expands the foliage on trees, contributing to their aesthetic value, shade, and pollution control. In Africa and India, the practice is used on moringa trees to bring the nutritious leaves into closer reach for harvesting. ✨

Free Master Gardener Workshops

Master Gardener Classes at Central Park Garden

March 17th

9:30 AM - 10:30 AM “Common Toxic Plants of the Garden” Kathy Hill, Donna Moyer, Kathy Sauvageau

11:00 AM - Noon “Honey Bee to Native Bee - What’s Buzzing (and pollinating) in the Garden” Gail Jankowski, Kelly McKee

April 14

9:30 AM - 10:30 AM “Easy Propagation Techniques for the Home Gardener” Jim Fowler

11:00AM - Noon “How to Create a Water Garden” David Studer

May 5

9:30 AM - 10:30 AM “California Natives to Enhance the Yolo Garden” Ann Daniel

11:00 AM - Noon “A ‘How To’ On Water Saving Irrigation for the Long Hot Summer” Arlen Feldman

Spring Plant Sale and Gardening Workshops at Woodland Community College

March 31,

9:00 AM - 12:00 PM,

Forty varieties of heirloom and hybrid tomatoes as well as other spring gardening plants will be available.

Free mini gardening workshops on vegetable gardening, tomato growing tips, drip and sprinkler irrigation practices, and attracting bees to the garden will be presented by Yolo County Master Gardeners.

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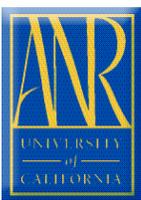
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<http://ceyolo.ucdavis.edu/newsletter.htm>

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