THE YOLO GARDENER

Winter 2020

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Gardening and Tetanus Risk

Sharon Schwarz, UCCE Master Gardener, Yolo County

Tetanus is a bacterial infection caused by the bacterium, *Clostridium tetani*. Symptoms of the infection, which usually appear approximately eight days after initial exposure can include muscles spasms – usually starting with the jaw muscles (lockjaw or trismus). Spasms may also develop throughout the body. Many muscle groups (facial, chest, neck, back, abdomen and buttocks) may become involved. The spasms may become sudden and severe and lead to powerful painful contractions. Tetanus can also affect the nervous system of the body and can lead to paralysis and potentially death.

Tetanus was first described as early as the fifth Century BC, by Hippocrates. The etiology of tetanus was determined by Antonio Carle and Giorgio Rattone (University of Turin) in 1884, and a vaccine was developed forty years later, in 1924. According to *Wikipedia*, 'In 2015 there were about 209,000 infections and about 59,000 deaths globally. In the US there are about thirty cases per year, almost all of which have not been vaccinated'.

Many people believe that the rust is the cause of the tetanus – FALSE!

Clostridium tetani (*C. tetani*) bacterial spores are found throughout the world, most commonly in soil, manure, dust and saliva. Almost everyone is aware that stepping on a rusty nail can cause a 'puncture wound' and can increase your chance of developing tetanus. It is not, however, the rust on the nail that increases the risk, but rather the puncture wound (created by any sharp object, rusty or not) that creates an entry point for the *C. tetani* spores and which provides an environment for the tetanus spores to live. Tetanus spores can also enter the body via broken skin (a simple cut or open wound) or through injuries with contaminated objects.

Gardeners are at an increased risk of developing tetanus because they utilize sharp tools, and have an affinity for digging in the soil, often without using gloves! Gardeners are often pruning, handling and interacting with plants that have thorns or sharp edges, such as roses, citrus and cacti, to name a few.

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UC CE University of California Agriculture and Natural Resources Cooperative Extension

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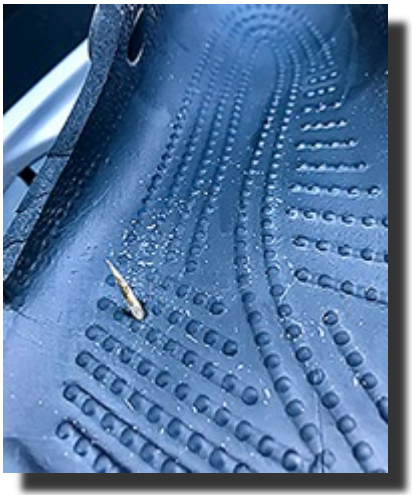


A citrus thorn has penetrated through a common soft-soled rubber shoe, and punctured into the foot of the unsuspecting patient.

Preventing Tetanus:

- Wear gloves while working in the garden. Beware of sharp buried objects, such as nails, when digging in the soil. Keep garden tools in a convenient tote or bucket, to avoid accidental injuries.
- Wear puncture proof, hard-soled shoes when gardening.
- Get your tetanus vaccine and/or booster every 10 years to maintain your immunity.

When Was Your Last Tetanus Vaccine?

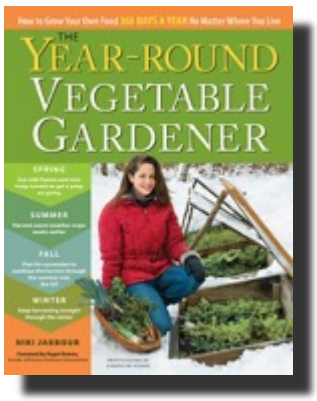
Health care providers often keep tabs on the health maintenance status of their patients. The frequency of blood monitoring, colonoscopies, mammograms, gynecological and prostate examinations are often discussed during annual or semi-annual appointments. Vaccination status is also tracked for items such as shingles and pneumonia vaccines and yearly influenza injection (flu shots). Immunization status for tetanus vaccines are also frequently tracked and recorded for infants, young children and preteens, **but not as regularly for adults.** According to the CDC it is recommended that adults receive a tetanus vaccine/booster every 10 years. It's important and **it may be up to you to keep track.** Be your own health advocate!

Snow and Vegetables: Why Not Enjoy Both?

Jack Kenealy, UCCE Master Gardener, Yolo County

No matter how frightful the weather, winter gardening sounds like fun. Imagine trudging back to the kitchen, arms filled with cool weather crops of kale, cabbage, broccoli and leeks. I can almost taste a hot soup or stew made with such harvest. Pictures of cold frames filled with the greenest of produce tucked in amongst huge snow drifts make me want to put the seed catalog down and pick up a dibble. Surely what works in June will work in January. With such thoughts in mind, I set off to discover to what extent such fantasies may become realized.

In Yolo County, all vegetative growth essentially pauses in between our first frost and our last frost, not because of the temperatures, but because from Thanksgiving to mid-January we have less than ten hours of daylight. Frost hardy cool weather crops simply survive as opposed to thrive during this period. As a consequence, by some definitions, winter gardening consists of over wintering certain vegetables that have been propagated and raised to a point where, through the use of season extenders, they can be harvested at various times during the winter months.



Years ago, I bought and read Eliot Coleman's *The Winter Harvest Handbook (*1999 Chelsea Green Publishing). Essentially it is a detailed discussion of Coleman's success growing vegetables using unheated hoop houses in the State of Maine. In researching this article, I discovered a second, perhaps more germane book of his titled *Four-Season Harvest: Organic Vegetables from Your Home Garden All Year Long*, 2d. Edition".

Another author who has seriously addressed the subject of winter gardening is Nikki Jabbour, author of *The Year-Round Vegetable Gardener* (2011 Storey Publishing Company LLC). She has another book on this topic due for release on

December 22, 2020 (shortest day of the year?) entitled *Growing Under Cover* (2020 Storey Publishing Company LLC).

As useful as these works are, however, sometimes things get lost in translation due to the location of the authors. I suppose a book on year-round gardening written by someone living in San Diego would lack a certain cachet, but I learn little from the fact that Coleman in Maine (Zone 5) or Jabbour in Nova Scotia, Canada plant beans every two weeks in May. But discussions of various cultivars, cloches, cold frames, tunnels and the like, transcend location. Frost is frost.

The first thing to consider in planting a winter garden is the planting of a spring or summer garden. Many times, I have been made to harvest too early all the onions and garlic I planted in October to make room in March and April for my cucumbers or tomatoes. Lettuce and spinach grow quickly unlike carrots or leeks. Before planting winter crops, just make sure there will be sufficient space for your Spring garden.

With this consideration in mind, decide which cool season crop to plant as well as selecting a variety or cultivar that is consistent with cold conditions. Commercial growers continually develop new cultivars which will not only tolerate but thrive in different conditions, including short days and cold weather. As you peruse your seed catalogs, look for varieties described as "cold hardy." Some may even have "winter" in their name e.g. Giant of winter spinach and Rouge d' Hiver lettuce. In addition to the cool weather crops with which most are familiar such as spinach, broccoli, lettuce, cabbage, kale and leeks, several less familiar salad greens thrive in winter weather. Claytonia, mache, radicchio, cress and radish greens are delicious additions to any mid-winter salad. Both books cited here have lists of cold hardy varieties suitable for the coldest of winters.

Fall planting

Typically plants to be placed in a winter garden are begun in the weeks leading up to the first frost, either in a greenhouse or directly in the garden so as to give the plant a good start going into the colder months. These may also be started later with the use of lights and heating mats. Several University Extensions suggest on their websites to begin cool weather vegetables inside between December 2 and 16 and to transplant into the garden on January 20 as days begin to lengthen.

"As a way to get started, the basic cold frame is the simplest and most dependable aid for the four-season harvest," writes Coleman. His cold frames tend to be rather large, designed and built to cover an area roughly four feet by eight feet, a foot tall on the north side and eight inches tall on the south side. They are covered with glass, but plastic is an acceptable substitute. I've had good luck with the heavy corrugated plastic roofing cut into manageable lengths. "At its most basic," Jabbour states, "a cold frame is simply a bottomless box that traps solar energy." She suggests building a cold frame from wood, cinder blocks, even hay bales. Cold frames are not only useful, but easy to make.

If cold frames have a downside, it is that they can get too hot on sunny days. When temperatures inside the cold frame get too high, venting is necessary. The best use of a cold frame, in my view, is not to attempt ideal conditions but rather ensure sensitive plants do not freeze and cold hardy plants enjoy good, if not perfect environments. It's not so much I'm lazy as I've cooked too many poor plants. I over winter pepper plants and eggplants in a permanently vented cold frame and it works perfectly for that purpose.

Mini hoop tunnels are more temporary than a cold frame, but they extend protection to larger areas. In winter and early spring, they can protect spinach, lettuce, arugula, radishes and broccoli. It should be pointed out here though, that all these plants can survive a freeze. But the protection from the cold and wind, insects and other pests, as well as the increase in heat to air and soil give these vegetables a big assist. Hoop tunnels are also extremely easy to construct around the garden using very common materials.

Half-inch PVC pipe is flexible and very easy to work with.

Frames for the tunnel may consist of a heavy wire mesh arched over the garden bed. I use one-half inch PVC pipe bent into a hoop suggestive of a Calistoga wagon once covered with plastic sheeting. It is possible to place a mini hoop tunnel over a cold frame which, according to Jabbour, "has the effect of moving you at least two gardening zones to the south". Connecting the plastic sheet to the PVC frame is accomplished by the use of clamps, clothespins or snap on clips. Artichokes survive the deepest frost under a hoop tunnel, as will other sensitive plants.

Operating generally on the same principal as a hoop tunnel, the row cover is easy, economical and very effective. According to Jabbour a row cover is "simply a piece of lightweight, semitransparent fabric that is most often constructed from spun-bonded polypropylene or polyester". Row covers are used to deter insects, protect seeds and seedlings, to warm the soil and protect against frost. Finally, she recommends using row covers to add an extra layer of protection to cold frames, mini hoop tunnels and unheated greenhouses. "This pairing of season extenders is key in creating a year-round vegetable garden that provides a nonstop harvest and requires no supplemental heating."

A cloche (French for 'bell') also can be used on a short-term basis. Traditionally a cloche was constructed of glass in the shape of a bell, thus its name. Most typical today is a homemade cloche using a gallon milk jug or juice jar with the bottom cut out. It is especially important to remove or vent the cloche after the immediate hazard has passed as the heat can damage a plant quickly. I've found a bamboo shoot inserted in the mouth of the jar or jug will keep the cloche in place during wind and with a bit of work can hold the cloche off the ground until such time as it is needed again. "The downside to cloche culture is that it can be time consuming. If you have a large garden, you could find yourself spending an awful lot of time placing, ventilating, and removing cloches," notes Jabbour.

A winter garden is easy to maintain. Pests are not an issue. Weeds, for the most part are not an issue and irrigation is not necessary even in all but the longest of droughts. For the most part, winter gardening consists of extending the fall season on one end and the spring season on the other. An armful of fresh vegetables is indeed a possibility with a small amount of planning, the right selection of vegetables, a few inexpensive materials and a minimal amount of work. Let it snow, let it snow, let it snow.

How Do You Have a Plant Sale During a Pandemic?

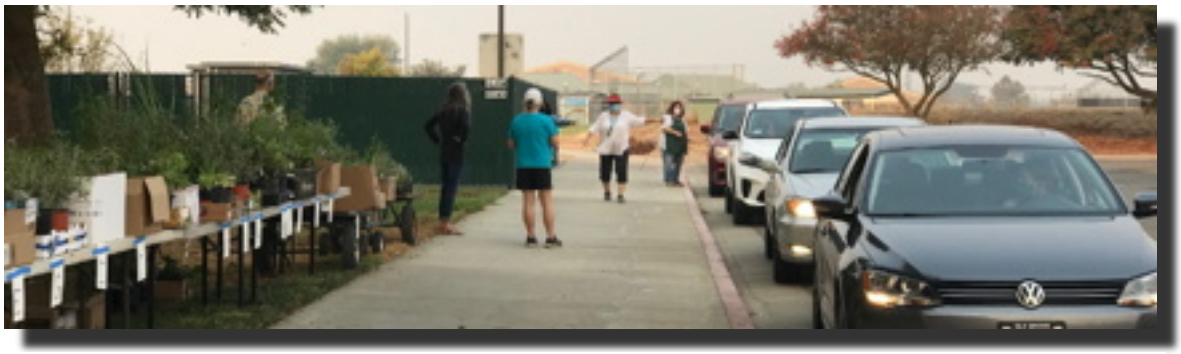
Gail Jankowski, UCCE Master Gardener, Yolo County

In order to support public gardening education in Yolo County, UCCE Master Gardeners hold two annual plant sales, one in spring and one in fall. In August of this year, we had grown more than four hundred plants for the fall sale, but because of Covid 19, Woodland Community College had restricted our use of its facilities where we normally host our annual sales. However, we learned that the University of California has a computer program called *SiteBuilder,* which potentially could solve our problems and convert what is normally an in-person sale to an online plant sale by utilizing carefully deployed pickup days. We thought the requirements for using this program would work well for our needs. We got together a committee and started meeting in order to plan the sale. We needed to move quickly so we divided up responsibilities.

Katie Churchill, UC *SiteBuilder* administrator for UCCE's Yolo County sites, agreed to program all of our plant information into the software's "Survey," which would then allow online viewers to explore our plant photo inventory, make their choices, select their pickup date, and pay for their plants all in one online effort. To implement this plan we first had to develop the plant list, adding photos and brief descriptions of each plant's characteristics. Another key was developing a network of publicity; getting the word out to the local gardening community was essential.

Plants organized alphabetically by buyer's name. MGs practicing social distancing. All wearing masks.

We chose October third and tenth as the plant pickup dates. All buyers coming to Woodland Community College for plant pickup were required to drive up to an organized pickup station wearing a mask. To provide for "contactless," delivery we asked customers to stay in their cars, give a masked "younger" Master Gardener their name, and pop their trunk, where we then placed box or boxes containing their plants.



Cars lined up for plant pick up.

All in all we had a very successful plant sale and we all learned by trial and error. It wasn't easy, but it worked. We sold approximately 470 plants at five dollars each. After expenses, the group cleared more than $2,000 whch will be used to support UCCE Master Gardener progams both at Woodland Community College and throughout the rest of Yolo County.

Having learned from this first event, we are now beginning our plans for a similar Virtual, Pre-Order, Drive-up, spring Heirloom Tomatoes and Perennial Plant Sale. If all goes well, we hope to see you in April for our next sale. Look for our flyer and our webpage http://yolomg.ucanr.edu in March and April 2021 for the link to our sale.

The Care and Fertilizing of Citrus Trees

Michael Kluk, UCCE Master Gardener, Yolo County

Citrus trees are a very popular with gardeners in the Sacramento Valley and with good reason. They do well in our hot summers and, with a little attention to species selection, handle the winters successfully too. Problems with disease and insect pests are generally manageable and fresh fruit hanging just outside in the winter is a big plus.

Backyard Citrus

Site and Species Selection

The best time to plant a new citrus tree is in the late winter or early spring after all risk of frost has passed. So, if you are contemplating the possibility of a new addition to your backyard orchard, you have a little time to research the options. Choose a tree from a reputable grower. Citrus trees are sold in containers, not bare root.

Choose a location that receives full sun the majority of the day. The soil should be well drained, avoid the low spots of your yard. Citrus trees should not be planted in the lawn or other areas that receive frequent irrigation.

Citrus trees are susceptible to freezing temperatures, some more than others. The most cold-hardy are kumquats and satsuma mandarins. Next up the cold sensitivity ladder are oranges, grapefruit, other mandarins such as clementine and Meyer lemons. The trees most sensitive to the cold are lemons and limes although Bearss lime seem to have a bit of an advantage in that group. More on cold protection later but choosing cold tolerant varieties is the first line of defense.

Planting

Dig a hole at least twice as wide as the root ball and just deep enough so that the top of the root ball will sit about an inch above the soil line. If you suspect the soil may stay soggy in the winter, planting on a low mound is indicated. Fill the planting hole with native soil, do not add any amendments. Construct a shallow circular ditch four inches from the trunk so that you can water the tree without the trunk getting wet. This will help to prevent root or crown rot. Water the tree thoroughly. Maintain regular soil moisture by watering every three or four days during hot spells through the first year but do not let the soil stay soggy. Covering the area with a few inches of mulch will help but be sure to keep it well away from the trunk.

Irrigation

While we often think of citrus as Mediterranean climate trees, they actually originated in what is now Australia and New Guinea, coming to the Mediterranean via Southeast Asia. They are not adapted to our dry summers and need regular irrigation. After the first year, watering can be spaced every seven to ten days from spring through fall. Since citrus trees have broad, shallow root systems, try to ensure that water extends down two feet. That can be estimated by driving a long metal stake into the soil after watering to see if the soil appears soft to that depth.

Watering should extend beyond the drip line (the edge of the branches) by a distance of half again the distance from the trunk to the drip line. Do not wet the trunk of the tree. During the heat of the summer, a young tree with a canopy diameter of six feet should receive about fifty-three gallons per week. For an older tree with a

canopy diameter of twelve feet, 210 gallons per week. During spring and the warm days of fall, thirty-five gallons for the young tree and 150 gallons for the more mature tree. That is a surprising amount of water, but it is necessary to support maximum quantity, size and quality of fruit. Regular sprinklers, micro sprinklers and drip are good methods to irrigate citrus. If using sprinklers, be sure that water does not hit the trunk. Soil type and mulch may affect the amount of water required. During a period of normal winter rains, citrus trees should not need to be irrigated. However, in a drought you will need to supplement water since citrus trees do not go dormant.

Fertilizing

It is likely your citrus trees will only need to be fertilized with nitrogen. Two to four ounces of actual nitrogen per tree are required the first year. If you are using a bagged fertilizer, choose one that is higher in nitrogen than other nutrients. The first of the three numbers on the bag indicates the percentage of nitrogen. For example, a 10-2-2 fertilizer is 10% nitrogen, 2% phosphorus and 2% potassium. You would need to apply twenty ounces to equal two ounces of actual nitrogen. Ammonium sulfate, a common source of nitrogen, is 20% nitrogen. Composted animal manures are generally about 1% nitrogen.

Apply ¼- ½ lb. of actual nitrogen the second year, ½ to ¾ lb. the third year. From the fourth year on, apply 1 to 1½ pounds of actual nitrogen per tree per year. The recommended amount should be split into three applications through the year. The first should be in January or February just prior to bloom. The second application then can be applied in April and the third in June. Avoid late-season fertilizing as it may affect fruit quality and encourage new growth that will be more susceptible to freeze damage in the winter.

Pruning and Thinning

Citrus trees definitely cut you a break on pruning. They need very little. Most citrus trees are grafted onto a rootstock. Any sprouts coming from below the graft union should be pruned off. Citrus naturally has a round growth habit. Prune any branches that touch the ground. You can prune up higher to make it easier to get under the tree if you want. Remove any dead or crossing branches. Pruning is best done just before the tree blooms or just after the fruit sets. Do not prune late in the season because that can encourage new growth which will be more sensitive to frost. To protect from sunburn, paint exposed branches and the trunk if exposed with tree white or interior white latex diluted 50:50 with water. If you choose, you can prune citrus to be a much smaller tree than it naturally would be, trim a row of citrus into a hedge or grow as an informal espalier. Citrus trees are quite compliant and forgiving.

Unlike most summer fruit trees citrus do not require fruit thinning. They will naturally drop some immature fruit, leaving only the amount they can ripen. A good fertilizing and irrigation regimen may lead to somewhat heavier fruit production.

Pests and Disease

There are literally dozens of insects, fungi and bacteria that can affect citrus. Fortunately, most are rare in the Sacramento Valley. It is always important to keep an eye on your trees. If you see anything unusual or suspicious, take a picture and email it to the UCCE Master Gardeners-Yolo Co. at mgyolo@ucdavis.edu or call (530) 666 8737. Here are a few problems you might encounter.

- Yellowing leaves. Typically, a lack of nitrogen, too much water or not letting the soil dry out between watering sessions.
- Small “bumps”, often brown, on branches. These are scale insects. Pick them off a small tree. Spray with a horticultural oil to smother them on a larger tree. Thorough coverage is necessary and is best done in February.
- Twisted, crumpled and deformed leaves. This is probably caused by citrus leaf miners, the larvae of a moth that feeds and matures within the leaf. Look for trails in the leaves. This is unsightly but will not cause significant harm to a healthy tree. There is no effective treatment available to backyard orchardist

Citrus leaf miner

insecticides. This will allow predators, generally parasitic wasps, to increase in number which can help to control the leaf miner population.

- Distorted, curled leaves, honeydew, and sooty mold. This is probably one of several species of aphids. Spray off with a stream of water, smother with an oil such as Neem or use an insecticidal soap if a heavy infestation. Control ants by applying a sticky barrier to the trunk since ants will "farm" aphids and protect them from predators.
- Split fruit. This is most common in naval oranges. It can be caused by irregular watering but also quick fluctuations in temperature or humidity beyond the grower's control.

You may have heard of and be concerned about Citrus Greening Disease or Huanglongbing (HLB) disease. This is a bacterial disease, fatal to infected citrus trees, that is transmitted by a tiny flying insect the size of an aphid, the Asian citrus psyllid (ACP). The ACP has been sporadically found in Yolo County but none of the insects have been infected with HLB disease bacteria. So far, the disease has been confined to a few areas in Southern California. But there is no guarantee is will not affect trees in Yolo County in the foreseeable future. That may be a factor you want to consider in deciding how much of an investment of time and money to make in new citrus trees.

Frost Protection

All citrus is susceptible to freezing temperatures, some species more than others as mentioned above. In addition to how low the temperature drops, the amount of time temperatures stay below 32 degrees F is also important. Older established trees are more cold-hardy than young trees. There are a few steps you can take if you know freezing temperatures are in the forecast. Rake mulch surrounding the tree off the soil early in the day. Bare soil absorbs the heat of the sun better. Throw row cover, burlap or old sheets over the tree to protect it from direct frost and hold in some heat that will radiate from the soil. If a small tree, try to erect a structure that will hold the fabric off of leaves to prevent the leaves from freezing to the fabric. It is best if your fabric "tent" extends right to the ground. Drape incandescent (not LED) string lights over the tree. Make sure that your trees are well watered. A well-watered plant can resist cold temperatures better. If you do have freeze damage resulting in dead branches, wait until spring to prune them out.

Citrus trees are generally very successful in our area and relatively easy to care for. With a small investment of time, you can be rewarded with juicy and delicious fruit to brighten the cold days of winter. I have not included information about growing citrus in pots as that is a subject well worth an independent article of its own. Such an article will appear in the next issue (March 2020) of the *Yolo Gardener*.

Giving New Plants the Best Possible Start

Sue Fitz, UCCE Master Gardener, Yolo County

As an experienced gardener, I have made many house calls to my friends to check out problems with their new plants, and consistently find the plants are transplanted incorrectly, resulting in a plant that dies within a few days or weeks after being planted. While there are many things that can go wrong at this critical stage in a plant's life, I see four mistakes made over and over, yet there is little written about these issues.

Planting Hole is too small

The first, is the gardener, in a fit of laziness, chisels out a small hole in badly compacted soil, and places the new plant into this barely adequate hole. Often when scraping out the hole, the shovel or trowel compacts the sides of the hole further, creating an almost impenetrable 'glazed' hole lining. The problem with this, is the plant

has merely been transplanted from one pot to another. Roots cannot penetrate compacted, rock hard soil that is so different from the loose potting mix they were purchased in. The plant dries out quickly, and one missed watering results in a compromised, failing plant.

The answer is to dig a hole much wider (but not necessarily deeper) than the original root ball of the plant, so the plant can quickly and easily grow roots out into the loosened soil. This also prevents the problem of a flat-bottomed root ball being placed in a hole that is sloped to a point at the bottom. That air pocket under the root ball will impede new root formation as well. If the soil is clay, a shovelful of fine textured compost mixed into the surrounding soil before planting, will help keep compaction at bay as the new plant is getting established.

Planting too high

The second mistake is planting too high. Much is written about planting too deeply, so the conscientious gardener makes sure during planting, the root ball of the new plant is slightly higher than the soil line. What we westerners need to remember, is most garden advice is written for the east coast, and their climate is not our climate. Temperatures are much cooler, the air more humid, and summer rains are very frequent, to the point that they rarely have to water. In a situation like this, yes, you can get away with having the top of the root ball of the plant exposed to air, and the plant will be ok with it. We can't do this. The plant is growing in potting soil. Potting soil is designed so it drains *very* quickly. Anyone who grows potted plants knows that once, and even twice a day watering is needed to keep them alive when it is warm. Garden soil, on the other hand, is much slower draining due to smaller particle size.

When a plant is planted in the ground with the potting soil exposed, it dries out almost immediately, even if the surrounding soil is still moist. It requires almost fanatical attention to watering in this situation, to keep a plant alive long enough for roots to extend into the surrounding soil, where it can find additional moisture. Inevitably, the gardener checks that the surrounding soil is damp, and does not notice the root ball of exposed potting soil is bone dry, and the plant wilts and dies. The solution is to plant the top of the root ball just at or *very* slightly below the soil line and place a half inch layer of native soil over the top of the root ball to seal over the potting soil. It needs to be soil; mulch is too coarse to provide the needed air barrier. If the plant is fussy about drainage, mound the soil slightly when transplanting, so the plant's crown is above grade, but still has that all-important cap of garden soil over the top of the root ball.

Bark or Much in the Planting Hole

The third problem I see is when gardeners plant in an area that has been mulched with bark or other coarse compost. The mulch is scraped away, and a hole dug for the new plant. Unfortunately, the mulch falls back into the hole during planting, or the gardener inadvertently mixes mulch into the soil while filling in the hole, and now the plant is sitting in a mix of soil and loose mulch. The mulch, being very coarse, dries out at a very quick rate, so the plant dries out quickly as well. Again, unless the gardener pays close attention to watering the plant for the next several weeks, it will probably die. The obvious solution to this problem is to be sure to scrape the mulch well back from where the hole is being dug, to prevent it from being incorporated into the backfill. This is also why, if adding compost to the surrounding soil, it should be fine textured (rub homemade compost through a screen made of one-half inch mesh hardware cloth to get the right particle size).

Not Firming the Soil

The last mistake I see, is not firming the soil around the plant after backfilling. Yes, I know, the plant needs loose soil around it for the roots to penetrate into the native soil, but there is loose, and there is loose. Generally, when a hole is dug, the gardener waits for the soil to be slightly damp and soft, to make the soil easy to dig in. The disturbed soil particles clump into larger 'crumbs', with quite a bit of airspace between each crumb. Once the hole is backfilled with this loose, crumbly soil, the excess airspace needs to be reduced. Too much air in the soil makes the fine root hairs of the plant dry out before they can penetrate into the native soil (but not totally eliminated, some airspace is needed for water to collect in, and for roots to extend into).

The answer to this problem is to 'firm in' the plant gently by pressing down on the backfill around the plant with hands and some body weight if the soil is fairly damp, or even a carefully placed foot if the soil is dry enough not to compact too much under this degree of pressure. The final step is gently to run a slow stream of water around the plant from a hose, to help reduce any large 'crumbs' that did not get taken care of while firming in. British gardeners have a term for this, called 'puddling in'. It needs to be a hose, since sprinkler or drip irrigation is too gentle to accomplish the dissolving of the clumped soil.

These aren't the only problems that happen during transplanting, but they are the most common ones I see on a regular basis. If examined for a common denominator, the four problems basically involve the drying out of the root ball while the plant is trying to get established by extending new roots into the surrounding soil. If these mistakes can be avoided, the new plant has a very good chance of becoming established and living out it's expected lifespan. Happy planting!

Grace Garden – Time for a Change

Cid Barcellos, UCCE Master Gardener, Yolo County

In the beginning…Grace Garden was started in the summer of 2009. It was an idea gleaned from a garden at the Methodist Church in Santa Rosa. We started with 5/8 acre at the back of Davis United Methodist Church. At the time it consisted of Bermudagrass, morning glory vines, star thistles and various other weeds. Undaunted in 2010, we tackled the weeds and built four long beds, four raised beds, and two demonstration areas. Since then, we have added more beds. We now have sixteen inground beds, ten raised beds, along with a Mediterranean garden, and fourteen fruit trees.

A portion of the Garden

As a sustainable garden growing vegetable, herbs and flowers, our goal is to give the produce to those on the edge of our community. For the first ten years we donated the garden's produce to the Davis Korean Christian Church. Every Friday they had helped to feed the hungry. The Korean Church ended their program in 2018. Now we donate the garden's produce to the Yolo Food Bank and to St. Martin's Church, which provides cooked meals for the homeless.

Our best harvest year was 2019! In that year we harvested 2731 pounds of produce and fruit including 670 pounds of plums and pluots. Those trees are so prolific, and the fruit is yummy! Taste testing is a VERY important job!

After eleven years UCCE Master Gardeners Cid Barcellos and Gwen Oliver are ready to retire as Grace Garden's leaders. We have loved sharing the leadership, enlarging the garden, planting, harvesting and all the other tasks, but it is time for a change. This is an opportunity for community service to help feed the hungry, those who can't afford fresh vegetables and fruit, and to teach best practices for vegetable gardening to other volunteers and to members of the public. We have put together a manual describing in detail what we do that divides up the

different projects/tasks. We work as a team to accomplish these projects/duties. Teamwork makes these jobs much easier and more fun. Cid and Gwen will assist with the transition, answer questions, provide explanations, etc.

Here is a basic list of what we do:

- Administrator(s) – communication with volunteers, Steering Committee, send out emails, get substitutes for vacation coverage, make weekly list of tasks to be done, coordinate harvest deliveries.
- Fundraisers
  - Annual Plant Sale – usually in April. This is our main fundraiser.
  - Calendar – we have created a calendar each year. We have used pictures taken at the Grace Garden. The last five years or so we have taken pre-orders, so we don't have leftovers calendars.
  - Alternative Giving Fair – occurs every fall (Nov/Dec) at the church for church members and friends. We sell pomegranate jelly, small house plants, quilts and small quilted items (Cid).
  - In 2019 we held a parking lot sale.
- Volunteer Coordinator – We have a website that talks about Grace Garden. This has been very important for the UCD students who have been coming out and who have been our main line of volunteers. Volunteers got to our SignUp Genius site to volunteer.
- Irrigation – Grace Garden is on drip irrigation. The irrigation lines need to be checked at least annually for leaks and repaired. This is best done as a team of two or three people. Community member Jim Tischer, our current leader, is ready to explain how our system works.
- Orchard maintenance – UCCE Master Gardener Mike Kluk, current fruit tree caretaker, would appreciate the help of two or three more people. This includes pruning the eleven fruit trees, spraying (if needed) for peach leaf curl, and maintaining irrigation system (working with Irrigation person). Teamwork makes this much easier.
- Workshops & Classes – UCCE Master Gardeners, Yolo County have volunteered to hold classes in the church Fellowship Hall and in the garden/orchard. These classes need to be coordinated with the church calendar.

The Right Way to Wash Fruits and Vegetables

Jan Bower, UCCE Master Gardener, Yolo County

You should be able to eat snack carrots and celery sticks and munch on an apple or a pear without much thought. But at this time, with the presence of Covid-19 as a threat, we need to be particularly careful about the fruits and vegetables we eat from the markets, grocery stores, and gardens. Why? Because much of the fresh produce may contain pesticides or other contaminants from the soil and the environment in which they were cultivated.

A recent study of twenty-four thousand samples done by the U.S. Department of Agriculture (USDA) over a five-year period detected about 450 different pesticides found on fruits and vegetables. A less elaborate analysis was done by *Consumer Reports* (CR) with thirty-five fruits and vegetables. Fresh green beans, peaches, and potatoes received the worst scores. Although the CR experts recommended buying organic produce whenever possible, even though it may cost more, a worrisome pesticide was found on fresh organic spinach.

The danger of pesticides

Pesticides are chemical substances used to destroy insects or other living organisms on cultivated plants. However, harm can also come to persons exposed to pesticides while working with plants or living in or near a farm or agricultural area. According to the Environmental Protection Agency (EPA), human exposure to pesticides can be tied to asthma, bronchitis, non-Hodgkin's lymphoma, Parkinson's disease, cardiovascular disease, prostate and lung cancers, and reproductive issues. Experts also say pesticides can damage the brain and nervous system, leading to an increased risk of Alzheimer's disease and attention deficit hyperactivity disorder (ADHD) in children.

Now I don't want to scare you because food safety is always a prime consideration for farmers and those who work with plants, including UCCE Master Gardeners. But this is an important issue that should warrant concern.

What can be done

The solution isn't to eat less produce. To be healthy, an individual should eat at least two and one-half cups of vegetables and two cups of fruit per day. But the produce should be grown with fewer and safer or no pesticides. CR urged growers to stop using six chemicals: acephate, chlorpropham, chlorpyrifos, cyhalothrin, famoxadone, and fludioxonil. Since it is impossible for the consumer to know if a chosen fruit or vegetable is contaminated, it would help if growers substitute these pesticides for more sustainable pest management. It would also help if the government passed more laws prohibiting the use of certain chemicals and some policies to maintain the integrity of the organic program and help farmers transition to organic. Better pesticide regulations may be another avenue for President-Elect Biden's help with EPA, USDA, and the Food and Drug Administration.

The right way to wash

One thing easily done is to wash all fruits and vegetables, as we are doing with our hands during the pandemic. USDA recommends this procedure: Wash all produce, even those that will be peeled, in cold running water for 15 to 20 seconds. Use a vegetable brush for produce with tough skins, like potatoes and apples. If you sing the Happy Birthday song twice, it will be a *fait accompli*.

Why I Grew 15 Varieties of Egg Plant this Summer

Tanya Kucak, UCCE Master Gardener, Yolo

It all started when I read that Mitoyo eggplant was sweet when raw. I'd never thought of eggplant having a sweet flavor, and I love roasted eggplant! I'd been led astray by comments on online garden forums before: turnips that "tasted like melon"; radish pods that were "just like eating snap peas." Still, I went looking for Mitoyo seeds last winter, found them at Baker Creek, and also got Syrian Stuffing. Two. After all, I rationalized, stuffed eggplant with walnut sauce was a favorite meal.

I've been a member of several online gardening forums over the past couple decades and participated in many seed swaps. A gardener from Germany was seeking seeds for Mitoyo or Aswad, which were not available in Europe, in exchange for a couple of Chinese varieties. I had both! I responded, and in return, I was surprised to get seeds for Green Dragon, Xi'an Purple Jar, Xi'an Green, Aragon F1, and Madonna F1. (I could not find seed sources for any of these.) The "F1" means they're hybrid varieties, so if you save seed you won't get the same plant. I figured, why not! Might as well try them out and see what I get. Seven.

Thirteen varieties. Clockwise, starting at the small white eggplant: Sneg Sredi Leta, Galine F1, Chornyy Krasen, Aragon F1, Syrian Stuffing, Aswad, Calliope F1, Madonna F1, Matrosik, Nadia F1, Green Dragon, Diamond, Mitoyo

On another forum, a gardener in Wisconsin offered eight varieties of eggplant purchased from Nikitovka in Ukraine. How could I pass it up? I had Ukrainian heritage on my father's side, after all. I researched each one and asked for only four varieties: Chornyy Krasen (compact, early, high yield), Gandia (white with purple stripes, long-term storage), Matrosik (striped), and Sneg Sredi Leta (compact, white). Eleven.

Eleven! I've trialed multiple varieties of other vegetables before. One year, in the San Francisco Bay Area, I grew more than twenty varieties of pole beans. Most years, I grow thirty to fifty different varieties of tomatoes, with few repeats each year, and I share seeds widely. I've tried many kinds of kale. Several types of basil. Eight kinds of okra. And so on.

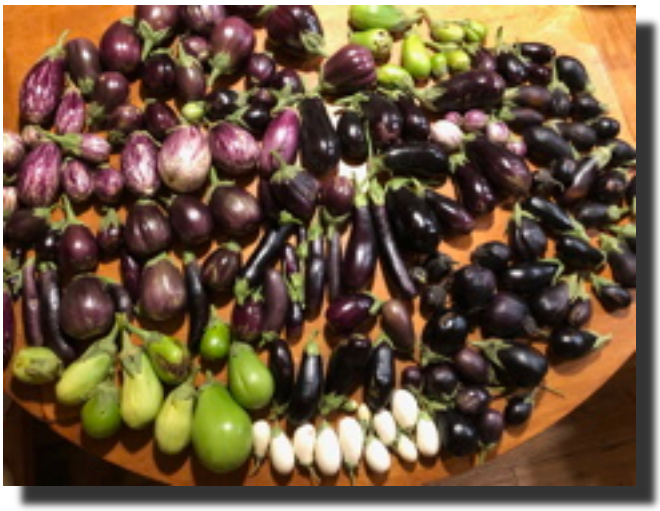
Since my move to Davis three years ago, I found eggplant does well in our intense summers. Last year I grew Aswad, Diamond, and Violetta Lunga from seed. But I planted late, and only one of the Aswad plants was especially vigorous. In both 2018 and 2019 I bought seedlings of Nadia F1 and Galine F1, which flourished, and a few others that did not do as well. Based on this experience, I expected that some of my plants would do better than others.

Since I was doing a trial, I also planted my 2017 Diamond and Aswad seeds. Thirteen. I started all my eggplants February 27. The first ones germinated within four days, but others took almost a month! One variety, Xi'an Purple Jar, never germinated. Twelve. The seedlings grew so slowly in my sunny window that, for insurance, I once again bought seedlings of Nadia F1 and Galine F1 in mid-April (from the UUCD plant sale held at Pacific Star Gardens). Fourteen. Finally, I bought purple-striped Calliope F1 at the farmers' market. Fifteen.

In the meantime, I was preparing a new, larger community garden plot: less than a thousand square feet, divided into fourteen beds. I planted my eggplants between May 31 and June 12, placing thirty-two plants in two and a third garden beds, at least eighteen inches apart, each one in a gopher cage. I gave each plant a big handful of homemade compost, and I mulched the beds with rice straw. I thoroughly watered them in, then hand-watered about every six days. Of course, they all thrived. At the time of planting, the purchased seedlings were much larger, but it didn't take long for the rest to catch up. After I noticed flea-beetle damage, I dusted the plants with diatomaceous earth once or twice, especially the underside of the leaves. I also hand-picked flea beetles! Because the seedlings were fairly sturdy when I planted them out, none of them succumbed.

Predictably, I got my first eggplant on July 11 from Galine, with Calliope, Madonna, Nadia, Diamond, Xi'an Green, Green Dragon, and Aswad producing before the end of the month. Matrosik was the latest, August 20. For most of the summer, I had an abundance of eggplants. Aside from sharing them with friends and neighbors, I dehydrated them and tried new recipes. One of my favorite foods is baba ganoush, a dip made from roasted

eggplant, tahini, lemon juice, and garlic. I hope I can maintain a constant supply with all the dehydrated eggplant!



Last harvest of the season

Here are some of the other ways my partner and I ate eggplant:

- Roasted eggplant pesto, with basil and almonds (https://fatfreevegan.com/) -- now my favorite pesto
- Eggplant lasagna
- Bulgur-stuffed eggplant, with a sauce made from pomegranate molasses and walnuts
- Small roasted eggplant pieces added to our homemade vegan pizza
- Provencal Tian or ratatouille, a beautiful roasted-vegetable dish with alternating slices of tomato, summer squash, and eggplant, arranged on end, with onions, garlic, and peppers
- Roasted eggplant slices for sandwiches with tomato, avocado, greens, and red onion on toasted sourdough
- Stir-fried tofu, eggplant, and basil with garlic sauce

In addition, I found many more oil-free vegan recipes I could have tried! Though older cookbooks advise salting eggplant to get rid of bitterness and peeling the tough skin, none of my homegrown eggplants needed that extra processing. In fact, raw Mitoyo did indeed taste sweet, as did Aswad, Green Dragon, and Xi'an Green.

A couple of the Ukrainian varieties were not true to type. My four plants of Gandia were not alike: some produced long, thin eggplants; others, squatter, rounder ones. One plant had rows of sharp spines along the stems and on the underside of the leaves. All of the fruit was dark purple rather than striped. Still, they all tasted good. White fruits of the one Sneg Sredi Leta ("Snow in Midsummer") plant never approached the expected size (7-8 oz.) but were all firm and seedy when picked at 2-3" long, and I ended up not using most of them (ditto Calliope, also tiny and seedy).

I tended to pick my eggplants on the smaller side. Though I didn't weigh my produce, I did count the number of fruits per variety. The total was more than five hundred eggplants. Here's a summary, with Variety (number of plants): average number of fruit per plant:

- Aragon F1 (2): 12
- Aswad (1): 7
- Chornyy Krasen(3): 23
- Diamond (2): 20
- Galine F1 (1): 30
- Gandia (4): 20
- Green Dragon (2): 15
- Madonna F1 (2): 19
- Matrosik (4): 12
- Mitoyo (4): 10
- Nadia F1 (1): 22
- Syrian Stuffing (4): 18
- Xi'an Green (2): 14

Galine F1 was the clear winner for production per plant. My favorites were the almost identical large green oval varieties, Green Dragon and Xi'an Green, and the striped oval, Matrosik, for beauty as well as taste. Mitoyo had a distinctive purple calyx (green on other eggplants). Nadia F1 seemed to keep a bit longer than most. I liked Syrian Stuffing's tall, upright habit. I'd grow all of these again.

Looking Ahead

Not knowing how big any of the plants would get, I didn't use any cages this year. I ended up adding some stakes to keep sprawling plants out of my paths. The green varieties and Diamond were the smallest plants. Aragon F1 and Madonna F1 could have used cages to stay more upright, but otherwise were fairly compact. Galine F1 and Nadia F1 were well-behaved. Syrian Stuffing stayed mostly upright. All the others sprawled and grew into each other and leaned into the paths. Next year, I will place small and medium tomato cages around each plant at planting time.

Green eggplants were new to me this year, but I liked them so much I'm inspired to try some new ones! I already have seed for a couple new-to-me varieties, Louisiana Green Oblong (a gift from a gardener in North Carolina) and Apple Green (a smaller one, from SeedsNSuch). I'm also trialing Prosperosa, a strikingly colored round eggplant (from Territorial Seed), and I bought seed for my mainstays Nadia F1 and Galine F1 (from SeedsNSuch and Fedco, respectively). I plan to start my seeds a lot earlier, early to mid-January, so that I can adjust for slow germination, as well as have larger, sturdier plants that I can plant out a month earlier (early to mid-May) to enjoy an extended season.

And I will try to contain my eggplants to a single garden bed! Eight varieties. Sixteen plants. Tops! That's the plan.

A Rose Garden Reborn

Maryellen McKenzie, UCCE Master Gardener, Yolo County

In September 2020, the UCCE Master Gardeners of Yolo County began pruning a rose garden at Woodland Community College that had been somewhat neglected over the past several years. The groundskeepers gave care here and there but were unable to give it the needed attention to a garden so large. So, the College called upon UC Master Gardeners in Yolo Co. to help them out.

A portion of the garden before renovation

The garden features more than Most of the roses are modern roses: hybrid teas, floribundas, grandifloras, and a few miniatures. Over the course of the next couple of months, rootstock, deadwood, weeds and palm starts were removed and the garden gradually came alive with a multitude of blooms. When we began our garden cleanup, there were only a very few roses in bloom. As of our last visit, the garden was resplendent in blossoms.

In January, COVID permitting, we will be back to the College starting our winter pruning. Stay tuned for more "after" photographs, as this garden continues to improve.

The following are just a few photographs of the transformation.

Janet Branaman with prize-winning weed

Gardener Diana Gomez Neves holds the record for the largest palm removed.

The progress so far.

Winter Garden Tips 2020

Peg Smith, UCCE Master Gardener, Yolo County

My word we certainly could use some good soaking rain! It looks as though we may get a dose of rain tomorrow and hopefully that will open the storm door, but It is a time to keep an eye on all our plants and keep them well hydrated. Plants certainly need less water in the winter and in dormancy but with the low humidity, the drying winds we are having and lack of rain, dormancy, with nice healthy full branch and twig structure can dry unfortunately to the point of 'dead' and not recover with the signal of spring. Our evergreen plants will also show wilt from the lack of soil moisture with the dry days and winds. Also, a plant's resistance to frost damage is reduced if the plant is not well hydrated. Plants, shrubs and trees will appreciate a periodic deep soaking, once or twice a month, as long as this dry spell in the weather holds. As gardeners, constant observation, even in the winter, is very important to catch any early problems of disease or pests.

Dormant fruit trees also need to be deep soaked just once or twice a month this will see them through until we have good rain. If you are growing stone fruits the overnight chill temperatures, we have been having will help promote next year's fruit crop. Chill hours are the number of hours when the night-time temperature sits between 32-45'. These colder air temperatures are needed to trigger good fruit production. It used to be common to have stone fruits needing over 1000 chill hours. Growers have responded to climate change conditions and many of the newer varieties available need only 400 – 700 chill hours. All stone fruit trees available have the information about chill hours on the detailed nursery label. With the dry weather it is also a good time to get ahead with the recommended dormant spray protocols for fruit trees, grapes and berries.

Interested in planting citrus? The important information to be aware of is HLB or citrus greening disease http://ipm.ucanr.edu/PMG/PESTNOTES/pn74155.html a disease that has decimated the citrus industry in Florida. Once a citrus tree is infected by the bacterium carried by the insect, Asian citrus psyllid, there is no cure and the tree must be removed. In California there are strict protocols for nursery growers and plants are labelled clearly when meeting these growing standards. At the present time citrus greening disease is present in southern California but not northern California, please do not transport any citrus fruit or plant material from southern California. If you are adding citrus to your garden, please buy locally and check the nursery label to see that the plants are certified.

Example of citrus greening disease

With our hot summers and more common prolonged dry periods during the winter you might consider converting a sprinkler system to a drip system. There are several companies that have easy to install sprinkler head to drip conversion components. Just be sure that when you choose a brand for your drip system you are consistent in using only components from that brand. Mixing components from different brands of drip systems can lead to leaks because of incompatibility in fittings. If you are starting from scratch with a drip system start with a smaller area. As you learn how to install the components, you'll gain confidence and be able to scale up your efforts.

When fall and winter come gardeners have a tendency to 'clear the decks' and rake everything but a slightly messy garden gives shelter through the winter to many of our beneficial insects, so a moderate approach is useful to encourage these beneficials. Lift a scattering of leaves and you will most likely find overwintering lady beetles. Come the spring these very useful beneficial insects will emerge, lay eggs and then the developing

lady beetle larvae will consume large numbers of aphids when they emerge in hoards in the spring. But it is important to clean up any old fallen fruit as this will reduce the possibility of bacterial or fungal disease infecting the new spring growth or developing fruit. With the winter rains make sure pots and trays don't accumulate standing water, mosquitos only need a very shallow amount of water to lay eggs and larvae to hatch as soon as the temperatures are ideal for them.

Most of all take a walk in your garden often and observe. It may look uniformly dull and as if nothing is happening but there is much small-scale beauty and discovery in a winter garden.

In this time of Covid-19 local nurseries are open and some are doing contactless deliveries so you can still enjoy doing some research and planning for the spring. What would you like to change or add to your garden? What new vegetable do you want to try to grow this year? Local websites such as https://www.sacvalleycnps.org/ (California Native Plant Society) and UC Davis Arboretum and Public Gardens (https://arboretum.ucdavis.edu/) are great resources for ideas and plant varieties to transition your garden to a reduced water use landscape.

WINTER CLEANUP

- Continue to remove fallen leaves, spent annuals and vegetable plants.
- Add disease-free plants and leaves to your compost pile.
- Clean garden pots and store for future use. Turn all unused pots on end to prevent water collection and breeding areas for pests and diseases. Treat pots with a dilute solution of bleach.
- Sharpen, clean and oil garden tools.
- Properly dispose of any old or unneeded pesticides and herbicides. The Yolo County Landfill accepts household hazardous waste every Friday and Saturday from 7:30 AM – 3:30 PM. https://www.yolocounty.org/community-services/planning-public-works/integrated-waste-management-division/central-landfill

WATER

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

PROTECTION

- **Protect frost sensitive plants during heavy frost** including citrus with a frost cover.
- Plastic sheeting is not recommended to protect plants because it cannot breathe and traps moisture. Old sheets or commercial frost protection covers work well.
  - Adding a string of old holiday lights can provide additional heat.
  - The newer holiday lights (LEDs) do not generate enough warmth to be effective.
- Watering the soil will also help the soil retain heat and can help the plant's roots and lower branches survive.

PLANTING

- December is the last month to plant spring blooming bulbs such as daffodil, tulip, anemone, and crocus.
- What to plant now:
  - cool season annuals : Primroses, pansies, violas, snapdragons, calendulas and poppies.
  - cool season perennials: Cyclamen Hellebores, Daphne and Iberia.
  - herbs: cilantro, flat and curly parsley
  - bare-root fruits and vegetables: strawberries, berries, rhubarb, grapes, fruit trees, artichokes, asparagus, horseradish, onions, and garlic.
- Keep up slug and snail abatement with hand picking and beer traps.

- Use row covers to protect seedlings, if plants are sensitive to cold nights.
- Extend your harvest time by planting vegetables every two weeks in December.
- Late winter is the best time to plant or transplant most any shrub, roses, or tree.
- After you have discarded your summer vegetable plants, turn the soil over and add compost.
- Sow favorite vegetable seeds in trays early February for your summer garden.

FERTILIZER

- Apply a fertilizer to dormant roses to encourage bud break.

PRUNING

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

MULCH

- Very important to lay three to four inches of bark mulch in the garden to retain moisture and prevent soil erosion from winter rains.
- Make sure that the mulch does not cover the crown (the interface area at the base of the plant where the branch growth emerges upwards and the root growth descends) of a plant. Covering that area with mulch will allow fungus and bacteria to thrive.

For further information on the above points refer to these websites: www.ucanr.edu/sites/YCMG and http://www2.ipm.ucanr.edu

RECOMMENDED GARDENING SOURCES:

With shutdowns extended there are still many ways to find answers and to explore and expand your gardening knowledge.

UCCE Master Gardeners of Yolo County have a collection of pdfs on the website with gardening advice on many topics. Garden questions will still be answered by email, a good photograph will help with providing advice or a solution to a problem. http://yolomg.ucanr.edu

The UC Davis Arboretum website is full of interesting articles on gardening for pollinators etc. This Fall the Arboretum Plant Sales were managed with online orders and pick up. The site will be updated with information as to when and how the Spring sales will be managed. https://arboretum.ucdavis.edu/plant-sales

The UC Integrated Pest Management (http://ipm.ucanr.edu) website is a good place to start to discover and identify if the 'bug' you have seen is a beneficial or something to deal with. Information on common pests and diseases are described and a least toxic solution is provided.

Xerces Society Webinars – The Xerces Society (https://www.xerces.org/) hosts webinars, free and open to the public and participates in events organized by other organizations.

The California Native Plant Society are holding online events with speakers from all California in various specialties. https://www.cnps.org

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://yolomg.ucanr.edu

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

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Send a Letter to an Editor!

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